

Appendix C Special Status Species

Table C-1 Federally Listed, Candidate, and Proposed Species

Species	Status	Habitat Requirements	Analysis Summary
AMPHIBIANS			
Chiricahua Leopard Frog <i>Lithobates chiricahuensis</i>	LT	Occurs in a wide variety of man-made and natural ponds and pools. Also occupies stream habitats. Primarily associated with wetland habitats in oak, mixed-oak, and pine woodlands.	Kayenta Mine permit area is outside species geographic range of the species.
FISH			
Roundtail Chub <i>Gila robusta</i>	C	Occupies cool to warm water, mid-elevation streams and rivers where typical adult microhabitat consists of pools up to 6.6 feet (2 meters) deep adjacent to swifter riffles and runs with objects that provide cover. Sub-adults occur in slow moving water adjacent to overbank cover.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
Little Colorado Spinedace <i>Lepidomeda vittata</i>	LT	Found in water ranging from 0.5 to 4.3 feet (0.16 to 1.3 meters) in depth, but most abundant in depths of around 1.9 feet (0.6 meters). Most common in slow to moderate water currents, over fine gravel bottoms. Avoids deep, heavily-shaded pools and shallow, open areas. Prefers unshaded pools with rocks or undercut banks for cover.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
Apache Trout (Arizona) <i>Oncorhynchus apache</i>	LT	Presently restricted to cold mountain streams with many low-gradient meadow reaches at elevations above 5,000 feet (1,524 m).	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
Loach Minnow <i>Tiaroga cobitis</i>	LT	Large to small perennial streams with swift, shallow water over cobble and gravel at elevations below 8,000 feet (2,438 m).	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
REPTILES			
Northern Mexican Gartersnake <i>Thamnophis eques megalops</i>	C	Primarily occurs in densely vegetated habitat surrounding cienegas, cienegas sourced streams, stock tanks, and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat.	Kayenta Mine permit area is outside species geographic range.
BIRDS			
Mexican Spotted-owl <i>Strix occidentalis lucida</i>	LT	Mexican spotted-owls occupy a variety of habitats for breeding and foraging. Breeding habitat includes dense old-growth mixed conifer forests along steep slopes and ravines (AGFD 2005). Within this habitat, the trees are dense, and form a closed canopy with a high basal area. The ground often is littered with numerous downed logs and snags.	This species occurs about two miles northeast of the Kayenta Mine permit area. Monitoring surveys suspended in 2000 have been reinitiated in spring 2011. Impacts from mining activities during the permit period to Mexican spotted-owls will be limited to noise and light.

Species	Status	Habitat Requirements	Analysis Summary
Southwestern Willow Flycatcher <i>Empidonax traillii extimus</i>	LE	It utilizes dense stands of riparian vegetation that have a layered canopy and are next to or are flooded by perennial sources of water (NNHP 2008). The primary vegetation can either be native blocks of cottonwood and willow or non-native stands of tamarisk or Russian olive (<i>Elaeagnus angustifolia</i>) that are taller than 3 meters (10 feet) (NNHP 2008).	No suitable habitat occurs near the coal resource areas N-9, J-19, and J-21. No riparian habitat will be removed as part of development of these areas.
Western Yellow-billed Cuckoo <i>Coccyzus americanus occidentalis</i>	C	Occurs in large blocks of riparian woodlands (cottonwood, willow, or tamarisk gallery forests).	No suitable habitat occurs on Black Mesa.
Mountain Plover <i>Charadrius montanus</i>	PLT	Although cultivated land is used by wintering mountain plovers and is more abundant than non-cultivated land, mountain plovers appear to prefer short-grass prairie, alkali flats, burned grasslands, and livestock-grazed annual grasslands to cultivated sites (Knopf and Wunder 2006).	Potential habitat of limited quantity and quality occurs nearby in the inactive Black Mesa Mine and for a season or less after reclamation in the Kayenta Mine permit area. The closest breeding records for the species are about 200 miles away. Possible migrants have been documented about 90 miles away.
California Condor <i>Gymnogyps californianus</i>	LE	Utilizes canyon country and mountainous habitats for nesting and roosting, and can forage widely in a variety of habitats around these areas (NNHP 2008).	This species is unlikely to occur within the Kayenta Mine permit area. Annual wildlife surveys have not documented the presence of this species, and reintroduced individuals have not used this part of the state. Condors that could fly into the study area would be transients, and the effects of mining will be negligible on any individuals in the area during the permit period.
MAMMALS			
Mexican Gray Wolf <i>Canis lupus baileyi</i>	LE	Typically occurs in chaparral, woodland, and forested areas. May cross desert areas. Reintroduced experimental non-essential in the Apache National Forest in Greenlee and Apache counties have expanded into Navajo, Apache, and Gila counties on White Mountain Apache Tribal lands.	Kayenta Mine permit area is outside the reintroduced population's geographic range.
Jaguar <i>Panthera onca</i>	LE	Occurs in a wide range of habitats from desert scrub to pine-oak woodland and is associated with areas that have permanent sources of water.	Kayenta Mine permit area is outside species geographic range.

Species	Status	Habitat Requirements	Analysis Summary
Black-footed Ferret <i>Mustela nigripes</i>	LE	Grassland plains on mountain basins and usually found in association with prairie dogs, which serve as their primary food source while also providing the ferrets with abandoned burrows for shelter.	Black-footed ferrets or evidence thereof have not been observed during monitoring studies for the species within the PWCC lease area (EMI 2010). The Kayenta Mine permit area is more than 200 miles northeast of a reintroduced population in the Aubrey Valley in Coconino County.
PLANTS			
Welsh's Milkweed <i>Asclepias welshii</i>	LT	Found on open, sparsely vegetated semi-stabilized coral pink sand dunes, in sagebrush, juniper, pine, and oak communities of the Great Basin desertscrub. Elevations range from 4,700 to 6,250 feet (1,434 to 1,906 meters).	No suitable habitat occurs in the Kayenta Mine permit area or on Black Mesa.
Navajo Sedge <i>Carex specuicola</i>	LT	Shady seep-spring pockets and hanging gardens, on vertical pink-red Navajo Sandstone cliffs and alcoves, from 4,600 to 7,200 feet (1,403 to 2,196 meters) elevation. Found within the piñon-juniper woodland zone.	No suitable habitat occurs in the Kayenta Mine permit area.
Peebles Navajo Cactus <i>Pediocactus peeblesianus</i> <i>var. peeblesianus</i>	LE	Occurs in exposed sunny situations on weakly alkaline, gravely soils of the Little Colorado paleochannels. Occurs at elevations from 5,100 to 5,650 feet (1,556 to 1,723 meters) near Joseph City to the Marcou Mesa region.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.

SOURCE: Arizona Game and Fish Department 2010; Arizona Game and Fish Department Heritage Data Management System species abstracts

NOTES: Agency or Law: ESA = Endangered Species Act; NESL = Navajo Nation Endangered Species List

Status Definitions: **ESA:** LE = listed endangered; LT = listed threatened; PLT = Proposed listing as threatened; C = candidate

Table C-2 Navajo Nation Endangered Species, State Species of Concern, and Eagle Protection Act Species

Species	Status	Habitat Requirements	Analysis Summary
AMPHIBIANS			
Chiricahua Leopard Frog ¹ <i>Lithobates chiricahuensis</i>	WSC	Occurs in a wide variety of man-made and natural ponds and pools. Also occupies stream habitats. Primarily associated with wetland habitats in oak, mixed-oak, and pine woodlands.	Kayenta Mine permit area is outside species geographic range of the species.
Northern Leopard Frog <i>Lithobates pipiens</i>	NESL-2 WSC	Requires warm, shallow ponds and pools for breeding that are free of predatory fish and frogs. Post-breeding adults move to mesic grassland habitats, and post-metamorphosed sub-adults migrate to larger ponds that are free of predators (Smith and Keinath 2007).	Kayenta Mine permit area is outside species geographic range.
FISH			
Little Colorado Sucker <i>Catostomus sp. 3</i>	WSC	Occurs in creeks, small to medium rivers, and impoundments. Predominantly found in pools with abundant cover. Also found in riffles.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
Roundtail Chub ¹ <i>Gila robusta</i>	NESL-2 WSC	Occupies cool to warm water, mid-elevation streams and rivers where typical adult microhabitat consists of pools up to 6.6 feet (2 meters) deep adjacent to swifter riffles and runs with objects that provide cover. Sub-adults occur in slow moving water adjacent to overbank cover.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
Little Colorado Spinedace ¹ <i>Lepidomeda vittata</i>	WSC	Found in water ranging from 0.5 to 4.3 feet (0.16 to 1.3 meters) in depth, but most abundant in depths of around 1.9 feet (0.6 meters). Most common in slow to moderate water currents, over fine gravel bottoms. Avoids deep, heavily shaded pools and shallow, open areas. Prefers unshaded pools with rocks or undercut banks for cover.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
REPTILES			
Northern Mexican Gartersnake ¹ <i>Thamnophis eques megalops</i>	WSC	Primarily occurs in densely vegetated habitat surrounding cienegas, cienegas sourced streams, stock tanks, and in or near water along streams in valley floors and generally open areas, but not in steep mountain canyon stream habitat.	Kayenta Mine permit area is outside species geographic range.
Narrow-headed Gartersnake <i>Thamnophis rufipunctatus</i>	WSC	Occurs within the piñon-juniper and pine-oak woodland zone and into ponderosa pine forest where it is found in permanently flowing streams, sometimes sheltered by native broadleaf deciduous trees.	Kayenta Mine permit area is outside species geographic range.
BIRDS			
Northern Goshawk <i>Accipiter gentilis</i>	NESL-4 WSC	Inhabits a variety of mature forest types in North America (Kennedy 2003). In the West, it typically nests in mature ponderosa or mixed-conifer forests with high canopy closure and moderately steep slopes (Kennedy 2003). Adjacent foraging habitat has a similar structure but may require a less dense understory (Kennedy 2003).	This species is occasionally observed near the Kayenta Mine permit area. Impacts to the species will be minor during the permit period, because dispersing juveniles would rarely use the piñon-juniper woodland habitats.

Species	Status	Habitat Requirements	Analysis Summary
Western Burrowing Owl <i>Athene cunicularia hypugaea</i>	NESL-4	Habitat is variable in open, well-drained grasslands, steppes, deserts, prairies, and agricultural land. Often associated with burrowing mammals. Sometimes nests in open areas near human habitation such as vacant lots, golf courses, or airports.	Annual wildlife surveys have not documented the presence of this species in more than 30 years, and impacts from coal mining during the permit period are not anticipated.
Northern Saw-whet Owl <i>Aeoglius acadicus</i>	NESL-4	Typically utilizes relatively open ponderosa pine, Douglas-fir, or mixed conifer forests for foraging and nesting activities (NNHP 2008). The species also may occur in old-growth riparian woodlands (NNHP 2008). It nests in tree cavities in these habitats (NNHP 2008).	Suitable habitat occurs about two miles northeast of the Kayenta Mine permit area. Annual wildlife surveys have not documented the presence of this species. Species could be impacted by noise and light pollution from mining, but topography and dense vegetation would attenuate the impacts.
Golden Eagle <i>Aquila chrysaetos</i>	NESL-3 BGA	Nests on steep cliffs normally directly adjacent to foraging habitat of desert grasslands or, with only sparse shrubs if present, that provides primary prey of cottontail and jackrabbits (NNHP 2008).	Species occasionally occurs in the Kayenta Mine permit area. Blasting and noises from vehicles may arouse or flush individual eagles near the coal resource areas, but impacts overall will be minor during the permit period.
Ferruginous Hawk <i>Buteo regalis</i>	NESL-3 WSC	The species occurs in grasslands, sagebrush scrub, saltbush-greasewood shrubland, and the periphery of piñon-juniper and other western forests (Bechard and Schmutz 1995).	This species could occur within the Kayenta Mine permit area. Annual wildlife surveys have not documented the presence of this species. Blasting and noises from vehicles may arouse or flush individual ferruginous hawks near the coal resource areas, but impacts overall will be minor during the permit period.
Mountain Plover ¹ <i>Charadrius montanus</i>	NESL-4	Although cultivated land is used by wintering mountain plovers and is more abundant than non-cultivated land, mountain plovers appear to prefer short-grass prairie, alkali flats, burned grasslands, and livestock-grazed annual grasslands to cultivated sites.	Potential habitat of limited quantity and quality occurs nearby in the inactive Black Mesa Mine and for a season after reclamation in the Kayenta Mine permit area. The closest breeding records for the species are about 200 miles away. Possible migrants have been documented about 90 miles away.
Western Yellow-billed Cuckoo ¹ <i>Coccyzus americanus occidentalis</i>	NESL-2 WSC	Occurs in large blocks of riparian woodlands (cottonwood, willow, or tamarisk gallery forests).	No suitable habitat occurs on Black Mesa.

Species	Status	Habitat Requirements	Analysis Summary
Southwestern Willow Flycatcher ¹ <i>Empidonax traillii extimus</i>	NESL-2 WSC	It utilizes dense stands of riparian vegetation that have a layered canopy and are next to or are flooded by perennial sources of water (NNHP 2008). The primary vegetation can either be native blocks of cottonwood and willow or non-native stands of tamarisk or Russian olive (<i>Elaeagnus angustifolia</i>) that are taller than 3 meters (10 feet) (NNHP 2008).	No suitable habitat occurs near the coal resource areas N-9, J-19, and J-21. No riparian habitat will be removed as part of development of these areas.
Peregrine Falcon <i>Falco peregrinus</i>	NESL-4 WSC	Nests in a variety of habitats, with steep cliffs typically more than 148 feet (45 meters) tall (NNHP 2008). Suitable habitat requires an abundance of prey (birds of various species) near nest and roost sites. (NNHP 2008). These areas typically occur along wetlands, riparian forests, and other forest habitats.	This species could occur within the Kayenta Mine permit area and previous surveys detected nesting pair in the canyons within three miles of the Kayenta Mine permit area. Species has not been detected during surveys conducted in 2008 and 2009; however, Peregrine falcons occasionally forage in the Kayenta Mine permit area, and individual falcons could occur periodically in the N-9 coal resource area and other places with piñon-juniper woodland (BIOME 2003, EMI 2009, 2010).
Northern Pygmy Owl <i>Glaucidium gnoma</i>	NESL-4	Occurs in a variety of montane forest habitats, and possibly wooded canyons that include coniferous forest (spruce, fir, and ponderosa pine), mixed conifer-hardwood with oak and aspen, hardwood bottomlands, and occasionally aspen stands (NNHP 2008).	This species could occur about two miles northeast of the Kayenta Mine permit area. Annual wildlife surveys have not documented the presence of this species. Species could be impacted by noise and light pollution from mining, but topography and dense vegetation would attenuate the impacts.
California Condor ¹ <i>Gymnogyps californianus</i>	NESL-4	Utilizes canyon country and mountainous habitats for nesting and roosting, and can forage widely in a variety of habitats around these areas (NNHP 2008).	This species is unlikely to occur within the Kayenta Mine permit area. Annual wildlife surveys have not documented the presence of this species. Condors that may fly into the study area would be transients, and the effects of mining would be negligible on any individuals in the area during the permit period.

Species	Status	Habitat Requirements	Analysis Summary
Bald Eagle <i>Haliaeetus leucocephalus</i>	NESL-2 BGA	Typically nest in riparian areas with mature trees, particularly large mature cottonwoods that are adjacent to large bodies of water (major rivers, lakes, or reservoirs) with abundant prey (large fish and waterfowl) (NNHP 2008).	Blasting may arouse or flush individual eagles in the area, but impacts overall would be minor during the permit period because eagles rarely occur in the area.
Flammulated Owl <i>Otus flammeolus</i>	NESL-4	The flammulated owl nests in tree cavities in open conifer (usually ponderosa pine) or aspen forests, often with brushy understory of dense saplings or oak shrubs and clearings (NNHP 2008).	This species could occur about two miles northeast of the Kayenta Mine permit area. Species has not been detected during surveys conducted in 2008 and 2009 (EMI 2009, 2010). Species could be impacted by noise and light pollution from mining, but topography and dense vegetation would attenuate the impacts.
Osprey <i>Pandion haliaetus</i>	WSC	In Arizona, nests in coniferous trees, alongside or near rivers and lakes in the White Mountains and across the Mogollon Plateau (usually within 6 to 7 miles).	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.
Sora <i>Porzana carolina</i>	NESL-4	Inhabits a variety of natural and man-made wetland habitats (Corman and Wise-Gervais 2005). Suitable habitat has dense emergent vegetation, and shallows are needed for adequate foraging.	This species is occasionally seen within the Kayenta Mine permit area. Additional artificial wetlands developed in conjunction with further mining of the N-9, J-19, and J-21 coal resource areas could provide additional habitat resources for the species within the Kayenta Mine permit area during the permit period.
Mexican Spotted-owl ¹ <i>Strix occidentalis lucida</i>	NESL-3 WSC	Mexican spotted-owls occupy a variety of habitats for breeding and foraging. Breeding habitat includes dense old-growth mixed conifer forests along steep slopes and ravines (AGFD 2005). Within this habitat, the trees are dense, and form a closed canopy with a high basal area. The ground often is littered with numerous downed logs and snags.	This species occurs about two miles northeast of the Kayenta Mine permit area. Monitoring surveys suspended in 2000 have been reinitiated in spring 2011. Impacts from mining activities during the permit period to Mexican spotted-owls will be limited to noise and light, but topography and dense vegetation would attenuate the impacts.
MAMMALS			
Mexican Gray Wolf ¹ <i>Canis lupus baileyi</i>	NESL-1	Typically occurs in chaparral, woodland, and forested areas. May cross desert areas. Reintroduced experimental non-essential population in the Apache National Forest in Greenlee and Apache counties has expanded into Navajo, Apache, and Gila counties on White Mountain Apache Tribal lands.	Kayenta Mine permit area is outside the reintroduced population's geographic range.

Species	Status	Habitat Requirements	Analysis Summary
Townsend's Big-eared Bat <i>Corynorhinus townsendii</i>	NESL-4	Habitats include coniferous forests, piñon-juniper woodlands, deciduous riparian woodlands, and desert scrub habitats (NNHP 2008).	This species could occur within the Kayenta Mine permit area. Development of the coal resource areas could remove foraging habitat for the species during the permit period, but reclamation vegetation in these areas would replace the lost foraging habitats.
Navajo Mountain Vole <i>Microtus mogollonensis navajo</i>	NESL-4 WSC	Typically inhabits dry grassy vegetation in conifer forests and forest openings. The species also inhabits patches of sagebrush, greasewood, desert-olive (<i>Forestiera neomexicana</i>), and tamarisk with a heavy cover of grasses (NNHP 2008).	This species occurs within the Kayenta Mine permit area in native and reclamation habitats. Habitat for this species could be removed during mine development. Reclamation vegetation in mined areas replaces the lost habitats.
Jaguar ¹ <i>Panthera onca</i>	WSC	Occurs in a wide range of habitats from desert scrub to pine-oak woodland and is associated with areas that have permanent sources of water.	Kayenta Mine permit area is outside species geographic range.
PLANTS			
Welsh's Milkweed ¹ <i>Asclepias welshii</i>	NESL-3 HS	Found on open, sparsely vegetated semi-stabilized coral pink sand dunes, in sagebrush, juniper, pine, and oak communities of the Great Basin desertscrub. Elevations range from 4,700 to 6,250 feet (1,434 to 1,906 meters).	No suitable habitat occurs in the Kayenta Mine permit area or on Black Mesa.
Gladiator Milk Vetch <i>Astragalus xiphoides</i>	SR	Grasslands and alluvial plains from 5,000 to 6,000 feet (1,525 to 1,830 meters) elevation. Known to grow on Chinle and Moenkopi formations, and is generally associated with badlands of broken sandstone and clay bluffs, in washes, floodplains, or complexes of small arroyos.	Kayenta Mine permit area is outside species geographic range.
Navajo Sedge ¹ <i>Carex specuicola</i>	NESL-3 HS	Shady seep-spring pockets and hanging gardens, on vertical pink-red Navajo Sandstone cliffs and alcoves, from 4,600 to 7,200 feet (1,403 to 2,196 meters) elevation. Found within the piñon-juniper woodland zone.	No suitable habitat occurs in the Kayenta Mine permit area.
Roundleaf Errazurizia <i>Errazurizia rotundata</i>	NESL-3 SR	Found on northeast-facing slopes in sandy soils in sandstone, gravelly soils in calcareous outcrops, and deep alluvial cinders in sandstone breaks. Occurs at elevations from 4,620 to 5,200 feet (1,409 to 1,585 meters).	Kayenta Mine permit area is outside species geographic range.
Paper-spined Cactus <i>Pediocactus papyracanthus</i>	SR	Grows in open flats in grasslands and piñon-juniper woodlands, associated with grama grass and sandstone derived substrates. Grows at elevations ranging from 5,000 to 7,300 feet (1,525 to 2,227 meters).	Kayenta Mine permit area is outside species geographic range.
Peebles Navajo Cactus ¹ <i>Pediocactus peeblesianus var. peeblesianus</i>	HS	Occurs in exposed sunny situations on weakly alkaline, gravelly soils of the Little Colorado paleochannels. Occurs at elevations from 5,100 to 5,650 feet (1,556 to 1,723 meters) near Joseph City to the Marcou Mesa region.	Kayenta Mine permit area is outside species geographic range and no suitable habitat is present.

Species	Status	Habitat Requirements	Analysis Summary
Alcove Bog-orchid <i>Platanthera zothecina</i>	NESL-3	Occurs in several microhabitats in hanging garden communities at bases of alcove face-walls with flowing drip-line or with seepage down wall; in protection of dense vegetation or under rock debris of alcove foot slope; shaded sites along streams; and shaded seeps. Grows at elevations ranging from 3,950 to 6,400 feet (1,204 to 1,951 meters).	No suitable habitat occurs in the Kayenta Mine permit area. Species may be impacted by groundwater pumping associated with the Kayenta Mine permit area and regional pumping from municipal sources.

SOURCE: Arizona Game and Fish Department 2010; Arizona Game and Fish Department Heritage Data Management System species abstracts

NOTES: Agency or Law: NESL = Navajo Nation Endangered Species List; BGA = Bald and Golden Eagle Protection Act

Status Definitions: **Navajo Nation:** NESL-1 = Group 1 endangered species; NESL-2 = Group 2 endangered species; NESL-3 = Group 3 endangered species; NESL-4 = Group 4 endangered species. **State of Arizona:** HS = highly safeguarded plant in Arizona; SR = salvage restricted plant in Arizona; WSC = wildlife of special concern in Arizona.
¹ Species also has special status as a federally listed, candidate, or proposed species and appears in both Table C-1 and Table C-2.

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