Appendix

Appendix A: Actions Considered in the Cumulative Effects Analysis

Introduction

The following table shows the past, ongoing or foreseeable future activities within and surrounding the proposed Perk-Grindstone (P-G) project, within the same greater Ruidoso area wildland-urban interface (WUI). Activities or natural events listed in the table are those with effects that could potentially combine with the effects of the proposed project. The table does not list every human activity or natural event that has occurred or may occur in or around the area. It focuses on those that may be relevant to the issues identified for the Perk-Grindstone project, within the greater Ruidoso WUI area. Some resource topics discussed in chapter 3 of this EIS included consideration of additional activities or events outside the boundary of this Ruidoso WUI area if those activities were deemed relevant to the cumulative effects analysis for that specific resource.

Reasonably foreseeable future projects include those that are either on a published Schedule of Proposed Projects or for which resources have been allocated to planning or designing the project.

Historic and recent wildfires, as well as the fuel reduction treatments (thinning and burning) within and outside National Forest System lands, are shown on the maps that follow this table.

Other Activities that May Contribute to Cumulative Effects of the Proposed Project

Project, Event or Activity	Geographic Area and Extent	Timeframe Estimates	Affected Resources and Ongoing Effects
Historic Large Wildfires	About 5 large fires in the 1900s within the P-G project area; several hundred acres each.	1911: 1 in Perk & 1 in Grindstone 1939: 2 in Perk 1945: 1 in Perk	Unknown effects; likely similar to other large crown fires.
Recent Past Wildfires (many other fires and larger fires occurred in southern NM/AZ)	About 5 large fires occurred outside the P-G area, within 2 miles of the project area boundary in 2000-2001. Seventy to one hundred other fires in the area recorded over the past few decades were quickly suppressed.	2000: The 6,500-acre Cree Fire and six other smaller fires were recorded near the area. 2001: The Homestead, Musketball, and Trap & Skeet Fires near the area averaged 200-500 acres each.	Where large crown fires burned at high intensity, they consumed whole stands of trees, produced relatively large quantities of smoke, and increased soil erosion and sediment runoff into drainages. In other areas they burned at more moderate intensities with similar but less severe impacts. In some places, tree seed sources were lacking and high-intensity crown fire resulted in long-term conversion from forest to shrubland.

Project, Event or Activity	Geographic Area and Extent	Timeframe Estimates	Affected Resources and Ongoing Effects
Past Grazing	Throughout the area	In the early 1900s, the area was grazed by cattle and sheep. Authorized cattle grazing occurred in Ruidoso allotment until about 1955 and Cedar Creek allotment until about 1965. No authorized cattle grazing occurred after that time.	Grazing reduced grass cover, which in turn contributed to reduced spread of surface fires that would have naturally thinned out the number of tree seedlings.
Historic Logging	All areas with gentle slopes, especially along drainages.	Early 1900s	Reduced the number of large trees. Some skid roads continue to be bare soil areas with increased soil erosion and sediment runoff into drainages.
Past Thinning on National Forest Land Within the Project Area	Perk and Grindstone areas 3,146 acres (including fuelbreak strip).	1996-2002	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Maintenance Burning	In Perk area near Fitness Trail	2001-2005	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Past Thinning and Burning on National Forest Outside the P-G Project Area	2,082 acres in Eagle areas, 744 acres in the Turkey areas, 1,314 acres in other areas and 9 acres in Ruidoso Tower area	2000-2004—Eagle 2005-2007—Turkey 2005-2007—Ruidoso Tower	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Thinning and Firewood Collection Sales, Followed by Burning	460 Acres. Other national forest land outside P-G area.	1995-2007	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Thinning and Burning	Cedar Creek just outside the northeast corner of P-G area; 255 acres.	2006-Ongoing	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.

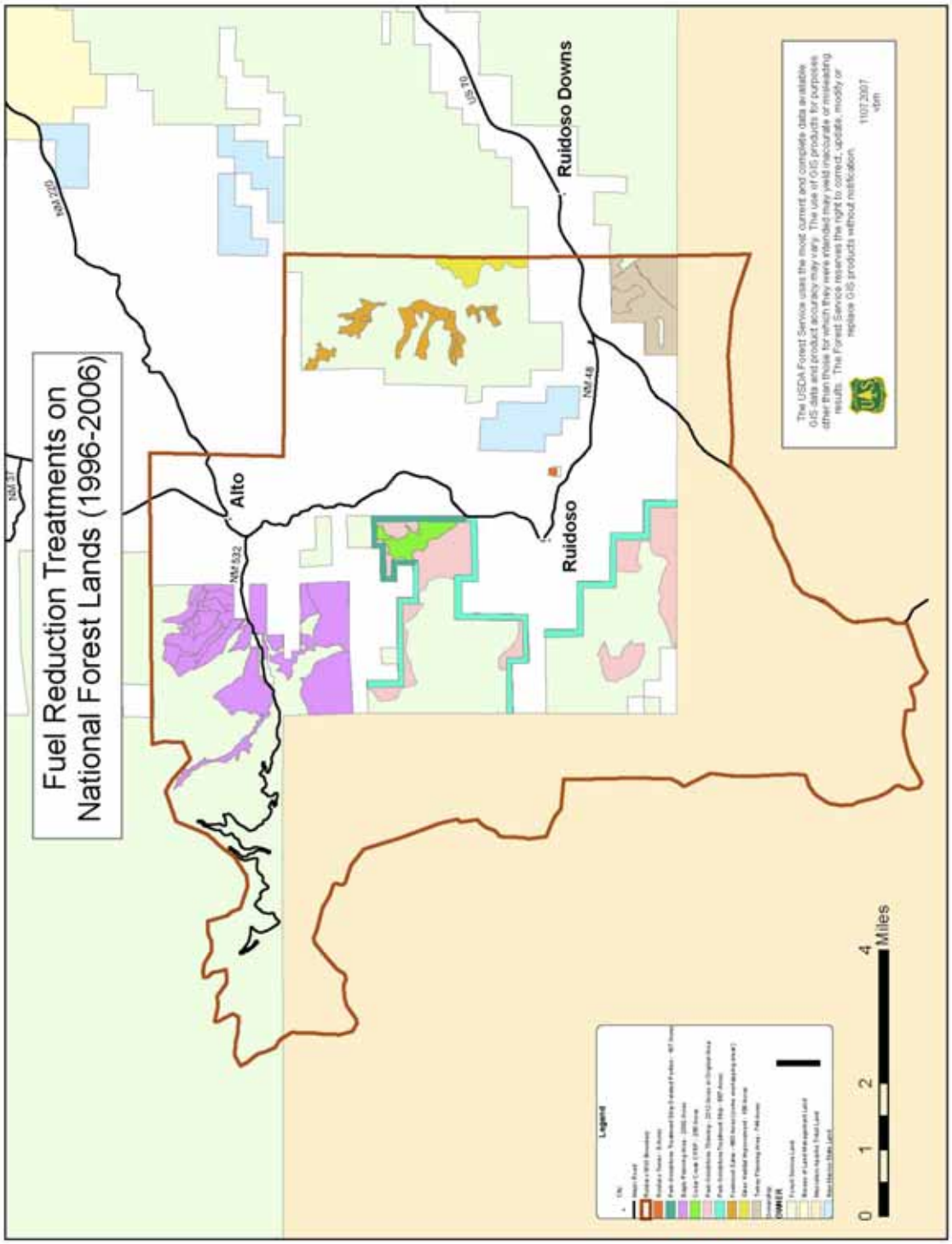
Project, Event or Activity	Geographic Area and Extent	Timeframe Estimates	Affected Resources and Ongoing Effects
Thinned and Broadcast Burned to Improve Wildlife Forage for Deer and Elk	188 Acres outside P-G area, north of Ruidoso Downs Race Track (Johnson Cyn).	2001	Improve wildlife forage and browse by reducing stand density toward a 60 percent cover/40 percent forage ratio.
Thinning on Private Lands in Village of Ruidoso (using various Federal, State and local funding sources)	182 Acres near Grindstone Lake (Map Unit 1); 335 acres near Eagle Creek (Map Unit 2); 706 acres in Upper Cyn between the Perk and Grindstone areas (Map Unit 3); 2,412 acres on other adjacent private lands (Map Units 3-8).	2000 to Currently Ongoing	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Thinning and Burning Projects on Mescalero-Apache Tribal Land	4,805 acres adjacent to south side of P-G project area, Map Unit 9.	Approx. 1996-2004	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Future Thinning and Burning Projects on Mescalero Apache Tribal Land	665 acres in 3 future projects adjacent to west side of P-G area, near Flume Ridge, (Map Unit 10).	Starting in 2008, 2009 or 2010	Lower stand density, less fuel, increased resistance to crown fire and insect infestations.
Recreation Activities			
Hiking, Mountain Biking and Horseback Riding Along Trails and Closed Roads	On designated and unauthorized trails and roads throughout the area.	Past and ongoing. Mountain biking, hiking and horseback riding uses are increasing. A horseback riding stable is located next to the project area near Grindstone Lake. The Fitness Trail is in the project area near the Cedar Creek border and is a very popular, well-used trail.	No major impacts. Recreational use of the area expected to continue to increase over time. Horses (manure) can contribute to the spread of invasive nonnative plants. Increases in recreation activity in area have been known to contribute to an increase in fire starts, and may increase disturbance to wildlife, especially during spring breeding season for some birds, including Mexican spotted owl and northern goshawk.

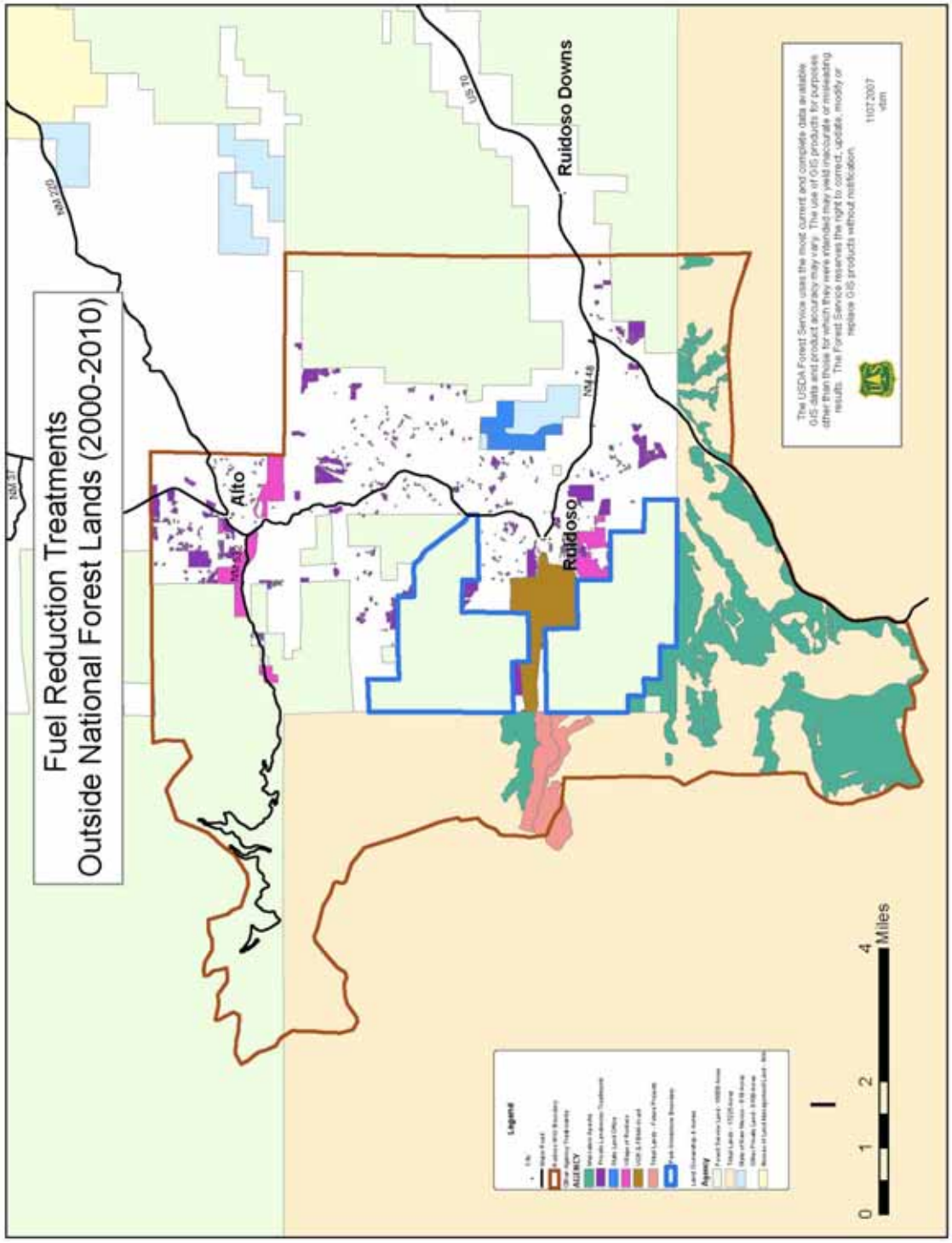
Project, Event or Activity	Geographic Area and Extent	Timeframe Estimates	Affected Resources and Ongoing Effects
Use of Small All-Terrain Vehicles and Motorbikes	On designated and unauthorized trails and roads throughout the area. This use is currently allowed along Sawmill Canyon Road.	Past and ongoing	Increased noise disturbance to wildlife that can affect breeding populations.
Camping in Undeveloped Sites	A few locations within P-G project area	Past and ongoing	Increased fire ignition risk and disturbance to wildlife. Increase in soil disturbance, potential for invasive weeds and soil erosion.
Developed Camping, Picnicking, Parking and Trail Uses	Adjacent to northeast corner of P-G project area along Cedar Creek Road, including the popular Fitness Trail.	Past and ongoing	Increased fire ignition risk and disturbance to wildlife.
Mountain Biking Trail	In project area.	Future. Decision made in 2007 to designate, upgrade and maintain a mountain biking trail, which was already in use for this purpose.	Increase in recreational use of the area, thereby increasing fire ignition risk and disturbance to wildlife.
Other Activities			
Invasive Plants/Noxious Weeds Treatments	Sawmill and Mine Canyons in P-G area, mostly along roads. Also occurs on all surrounding land ownerships.	As needed in 2008 and ongoing. Inventory and monitor for noxious weeds and manually spray approved herbicides to invasive plant populations found, as part of the forestwide noxious weed treatment program.	Improvement in abundance and diversity of native plant populations. No adverse impacts expected.
Installed Rainwater-Collection Tank for Wildlife Water Source	At base of Grindstone Mesa in Alfred Hale Cyn.	1999	Improved wildlife water availability in Grindstone area.

Project, Event or Activity	Geographic Area and Extent	Timeframe Estimates	Affected Resources and Ongoing Effects
Residential Construction on Adjacent Private Lands	A few locations adjacent to project area boundary.	Past and ongoing	Increased fire ignition risk.

Notes:

-There is no livestock grazing in the project area, although there is a small administrative horse pasture for 4 horses.
-There are no campgrounds or other developments within the project area.
-There are no oil or gas leases in the area; no mining claims in the area.
-All system roads are currently in closed status.


Fuel Reduction Treatments on National Forest Lands (1996-2006)
Alto
Ruidoso
Ruidoso Downs
NM 37
NM 532
NM 48
US 70
Legend
0
1
2
4
Miles


Fuel Reduction Treatments
Outside National Forest Lands (2000-2010)
Ruidoso Downs
Alto
Ruidoso
US 70
NM 48
NM 37
NM 220
Legend
AGENCY
Agency
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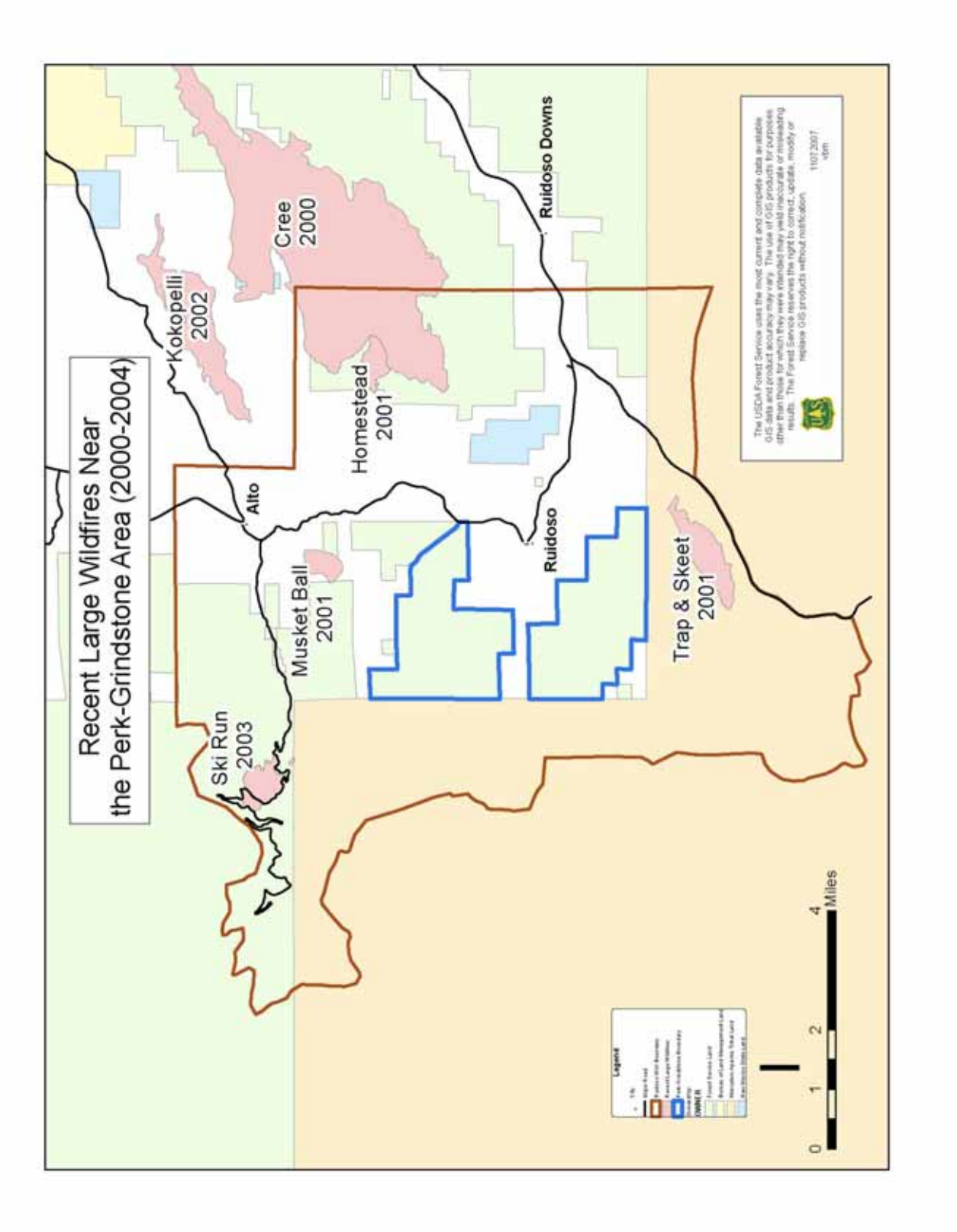
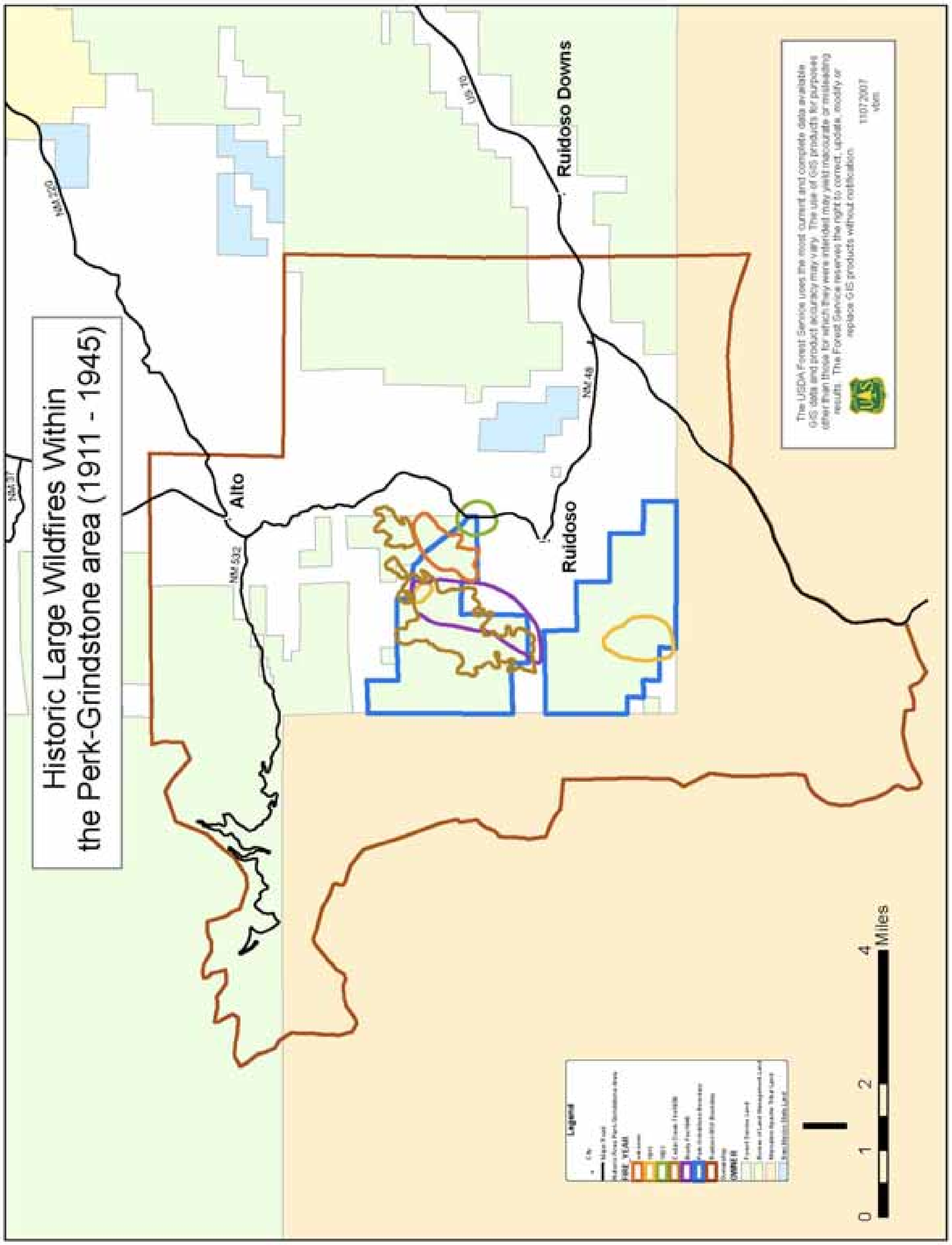
Miles


Recent Large Wildfires Near the Perk-Grindstone Area (2000-2004)
Kokopelli 2002
Cree 2000
Homestead 2001
Musket Ball 2001
Ski Run 2003
Trap & Skeet 2001
Alto
Ruidoso
Ruidoso Downs
Legend
0 1 2 4 Miles


Historic Large Wildfires Within
the Perk-Grindstone area (1911 - 1945)
Alto
Ruidoso
Ruidoso Downs
NM 532
NM 48
US 70
NM 220
NM 37
0
1
2
4
Miles

Appendix B: Sensitive Species

This appendix displays the species listed in the "Regional Forester's List of Sensitive Species for the Forest Service's Southwestern Region," which have potential habitat or are known to occur on the Lincoln National Forest. The Regional Forester's sensitive species list dated June of 1999 was combined with the revised sensitive species list approved in September 2007. The forest and district wildlife biologists reviewed the species on both lists and the associated habitat habitat management information for those species. The biologists determined whether there is suitable habitat or species occurrence within the Perk-Grindstone Fuel Reduction Project area such that proposed project activities may effect the species or its habitat.

The project area contains arid coniferous ponderosa pine and mixed conifer forests and piñon-juniper and oak woodlands, at elevations ranging from 6,700 to 8,200 feet. The project area does not contain habitat features required by several of the sensitive species, such as: perennial streams, ponds or other waterbodies; riparian habitat or wetlands; grassland or meadow habitat; large rock cliffs, talus slopes or caves; spruce-fir, alpine or other high elevation forest types; or large patches of aspens or other deciduous trees. Therefore, several species were determined to have no habitat present in the project area or that would be impacted by proposed project activities.

The species that have suitable habitat in the area and are likely to occur in the area, or species known to occur in the project area, were carried forward for further analysis in the draft environmental impact statement (EIS), in either the "Plants" or "Wildlife" section of the EIS. Species that would not likely occur in the area or otherwise be affected by proposed project activities, were dropped from further analysis in the EIS.

Sensitive animal species are grouped in the following table by taxonomic groups, starting with vertebrates (animals with backbones) and listed by the subgroups of birds, mammals, reptiles, fish, and amphibians, followed by the invertebrates (animals without backbones), listed in subgroups of arthropods (insects, crustaceans and others with jointed legs) and molluscs (snails and others in shells).

Sensitive plants are included at the end of the table, if they have potential habitat or occur on the Lincoln National Forest and in Lincoln County. Surveys for sensitive plants, along with threatened or endangered plants, were conducted annually in the project area for the past several years. No sensitive plants have been found in the project area, although there are mitigation measures to be applied if any are found before or during implementation.

Sensitive Species Evaluation of Potential Habitat and Occurrence in the Perk-Grindstone Project Area

Sensitive Species Common Name and (*Scientific Name*)	Habitat Present Y or N	Species Present Y or N	Habitat Requirements and Whether it Occurs in the Project Area
Birds			
Bald Eagle *(Haliaeetus leucocephalus)*	Y	Y	Lakes and rivers with adjacent large trees. Winters at Grindstone Reservoir, directly adjacent to and downstream from project area; arrives in late fall and leaves in early spring.
Northern Goshawk *(Accipter gentilis)*	Y	Y	Large tracts of mature, closed canopy, deciduous, coniferous and mixed forests with an open understory.
American Peregrine Falcon *(Falco peregrinus anatum)*	N	N	Project area does not have cliff and rock outcrops over 200 feet high with ledges suitable for nesting.
Arizona Bell's Vireo *(Vireo bellii arizonae)*	N	N	Project area does not have riparian habitat.
Baird's Sparrow *(Ammodramus bairdii)*	N	N	Project area does not have low elevation grasslands, or any grasslands.
Bell's Vireo *(Vireo bellii)*	N	N	Project area does not have dense shrubland or woodland along perennial low land streams with willow and mesquite.
Burrowing Owl, Western *(Athene cunicularia hypugaea)*	N	N	Project area is too high in elevation for this species.
Gray Vireo *(Vireo vicinior)*	Y	N	Dry piñon-juniper and oak woodlands. Species is not found in Lincoln County on the Lincoln National Forest.
Swainson's Hawk *(Buteo swainsoni)*	N	N	Occurs as rare summer resident on Lincoln NF but project area is too high in elevation.
Western Snowy Plover *(Charadrius alexandrinus nivosus)*	N	N	Project area does not have sandy, alkaline beaches, flats and shores near water.
Yellow-billed Cuckoo – Eastern *(Coccyzus americanus)*	N	N	Project area does not have large blocks of deciduous trees near water.
Zone-tailed Hawk *(Buteo albonotatus)*	Y	N	Low elevation ponderosa pine; open park-like stands or riparian areas are preferred. Goshawk surveys would have detected this hawk species in the project area; none were found.

Sensitive Species Common Name and (*Scientific Name*)	Habitat Present Y or N	Species Present Y or N	Habitat Requirements and Whether it Occurs in the Project Area
Mammals			
Dwarf shrew *(Sorex nanus)*	N	N	Project area is too high in elevation for this species
Gray-footed Chipmunk *(Neotamias canipes)*	Y	N	Mature forests with open canopies.
Guadalupe Pocket Gopher *(Thomomys bottae guadalupensis)*	N	N	Project area does not have prairie grasslands.
Long-Tailed Vole *(Microtus longicaudus)*	N	N	Project area does not have any large meadow habitat.
New Mexico Meadow Jumping Mouse *(Zapus hudsonicus luteus)*	N	N	Project area does not have any riparian areas, wet meadows or large mountain meadows.
New Mexico shrew *(Sorex neomexicanus)*	N	N	Project area does not have large meadows.
Pale Townsend's Big-eared Bat *(Corynorhinus townsendii pallescens)*	N	N	Project area does not have cave habitat. Grindstone Reservoir may be used for drinking and project would have no affect on that use.
Peñasco Least Chipmunk *(Eutamias minimus atristriatus)*	N	N	Project area does not have high elevation rock outcrops.
Ruidoso Red Squirrel *(Tamiasciurus hudsonicus lychnuchus)*	Y	Y	This species is addressed in the EIS as a management indicator species.
Spotted bat *(Euderma maculatum)*	N	N	Project area does not have cliff habitat or large openings with water. Grindstone Reservoir may be used for drinking and project would have no affect on that use.
White Mountains Ground Squirrel *(Spermophilus tridecemlineatus monticola)*	N	N	Project area does not have large meadows.
Yellow-Faced Pocket Gopher *(Cratogeomys castanops)*	N	N	Project area does not have grasslands.

Sensitive Species Common Name and (*Scientific Name*)	Habitat Present Y or N	Species Present Y or N	Habitat Requirements and Whether it Occurs in the Project Area
Reptiles			
Arid Land Ribbonsnake *(Thamnophis proximus diabolicus)*	N	N	Project area does not have low elevation riparian habitat; elevation is too high for this species.
Fish			
Greenthroat Darter *(Etheostoma lepidum)*	N	N	Cold water rivers; historically on Rio Hondo and Rio Penasco. Project area does not have perennial streams, and mitigations to limit downstream sediment results in no affect to this species.
Grey Redhorse *(Moxostoma congestum)*	N	N	Project area does not have any perennial streams. Species needs low gradient clear and warm water streams. Potential habitat exists on Guadalupe Ranger District.
Headwater Catfish *(Ictalurus lupus)*	N	N	Cold water reaches of Rio Grande and Pecos watersheds. Project area does not have perennial streams, and mitigations to limit downstream sediment results in no affect to this species.
Rio Grande Chub *(Gila pandora)*	N	N	Cold water rivers; historically on Rio Hondo and Rio Penasco. Project area does not have perennial streams, and mitigations to limit downstream sediment results in no affect to this species.
Rio Grande Cutthroat Trout *(Oncorhynchus clarki virginalis)*	N	N	Cold water reaches of rivers in northern New Mexico. Lincoln National Forest has historical range only. Project area does not have perennial streams, and mitigations to limit downstream sediment results in no affect to this species.
Amphibians			
Plain's Leopard Frog *(Rana blairi)*	N	N	Project area does not have riparian habitat or live streams, and mitigations to limit downstream sediment results in no affect to this species.
Sacramento Mountains Salamander *(Aneides hardii)*	Y	Y	Coniferous forest, moist areas under logs and rocks.

Sensitive Species **Common Name and (*Scientific Name*)**	**Habitat Present** **Y or N**	**Species Present** **Y or N**	**Habitat Requirements and Whether it Occurs in the Project Area**
Western Barking Frog *(Eleutherodactylus augusti cactorum)*	N	N	Project area does not have damp areas in limestone caves, crevices and ledges. Potential habitat exists on Guadalupe Ranger District.
Invertebrates: Arthropods (insects, crustaceans, and others with jointed legs)			
Bonita Diving Beetle *(Deronectes neomexicanus)*	N	N	Project area does not have slow streams with sand or gravel bottoms. Only known occurance is along Bonito Creek, 4 miles west of the Village of Lincoln, Lincoln County.
Fairy Shrimp *(Streptocephalus n. sp.1)*	N	N	Project area does not have ephemeral wetlands.
Northern Threeband *(Humboldtiana ultima)*	N	N	Project area does not have the mixtures of rock rubble and leaf litter in deep canyons. Potential habitat exists on Guadalupe Ranger District.
Poling's Hairstreak *(Fixsenia polingi)*	N	N	Occurs on Smokey Bear Ranger District near Glencoe. It is a low elevation, oak dependent species. Project area is too high in elevation for this species.
Sacramento Mountain Checkerspot Butterfly *(Euphydryas anicia cloudcrofti)*	N	N	Found only on the Sacramento Ranger District in open meadows in mixed conifer habitat. Currently petitioned to be listed as endangered.
Vagabond Holospira *(Holospira montivaga)*	N	N	Found only on fairly arid, western slopes of the Guadalupe Mountains.
Invertebrates: Molluscs (snails and others that live in shells)			
A Woodland Snail *(Ashmunella rhyssa altissima)*	N	N	Project area does not have the limestone terraces associated with this species in the Sacramento Mountains.
Capitan Woodlandsnail *(Ashmunella pseudodonta)*	N	N	This species is only found from the Captian, Patos and Carrissa mountains. The project area is in the White Mountain range.
No Common Name Snail *(Oreohelix nogalensis)*	N	N	Only known to occur from the Sierra Blanca and Nogal Peak area. Found under maples and aspen with very little rock. Project area has no stands of aspen or maple, and a very limited amount of those tree species. Where the maple occasionally occurs in canyon bottoms, there is a no treatment buffer, so no effect is expected.

Sensitive Species Common Name and (*Scientific Name*)	Habitat Present Y or N	Species Present Y or N	Habitat Requirements and Whether it Occurs in the Project Area
Pope's Mussel *(Popenaias popeii)*	N	N	Project area does not have fresh water aquatic habitat. Potential habitat exists on Guadalupe Ranger District.
Plants			
Alamo Penstemon *(Penstemon alamosensis)*	N	N	Project area is outside the range of this species, which occurs on the west escarpment of the Sacramento Mountains, and project area is on east escarpment.
Egg-leaf coral drops *(Besseya oblongifolia)*	N	N	Project area does not have high elevation alpine habitat.
Goodding's Onion *(Allium gooddingii)*	N	N	Only found at 9,000-foot elevation; project area is too low in elevation for this species.
Kerr's Milkvetch *(Astragalus kerrii)*	N	N	Only found on Capitan Mountain; would not occur in the project area.
New Mexican Stonecrop *(Sedum integrifolium ssp. Neomexicana)*	N	N	Project area does not have alpine tundra.
Scarlet Penstemon *(Penstemon cardinalis)*	Y	N	In transition zone between ponderosa pine and mixed conifer forests at 7,000 to 9,100 feet in elevation. Surveys have not found this plant in the project area.
Sierra Blanca Cinquefoil *(Potentilla sierrae-blancae)*	N	N	Project area does not have alpine tundra.
Sierra Blanca Cliff Daisy *(Lonactis elegans)*	Y	N	The plant has only been found in a single canyon on the east side of Sierra Blanca. Suitable habitat is on diorite rock in openings of mixed conifer at approximately 8,000 feet elevation. Surveys did not find the plant in the project area.
Sierra Blanca Kittentails *(Besseya oblongifolia)*	N	N	Project area does not have alpine tundra.
Virgin's bower *(Clematis bigelovii)*	Y	N	Moist mountain slopes and shady, rocky canyons; 5,000 to 7,500 feet in elevation. Surveys have not found this plant and the forest botanist believes this plant does not occur on the forest.

Sensitive Species **Common Name and (*Scientific Name*)**	**Habitat Present** **Y or N**	**Species Present** **Y or N**	**Habitat Requirements and Whether it Occurs in the Project Area**
White Mountains Larkspur *(Delphinium novomexicanum)*	Y	N	Montane forests in canyon bottoms and forest meadows, from 7,200 to above 10,000 feet in elevation. Surveys have not found this plant in the project area.
Wooton's Hawthorn *(Crategus wootoniana)*	Y	N	Canyon bottoms and openings in lower montane forests. Surveys have not found this plant in the project area.
Wooton's mock orange *(Philadelphus wootonii)*	N	N	Only found in Gavilon Canyon (Cree Burn area); not found in project area.
Wright's March Thistle *(Cirsium wrightii)*	Y	N	Project area does not have springs, wetlands or streams. Surveys did not find this plant in project area. Downstream habitat is protected by the no treatment stream channel buffers.

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