

CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This section summarizes the existing environmental conditions found within the affected project area and potential changes that may result from implementing the alternatives. Resources associated with the natural, human, and cultural environment were studied and include the following categories:

- Land Use and Recreation Resources
- Socioeconomics and Environmental Justice
- Earth and Water Resources
- Air Quality and Noise
- Visual Resources
- Heritage Resources
- Biological Resources

The affected environment for the proposed project is discussed as the “study area” unless a resource is known to be affected beyond the limits of the study area. The study area includes all areas within ¼ mile to 1 mile on either side of the assumed centerline of the Proposed Action and Alternate Option routes and proposed substation site, depending upon the resource. The study area includes portions of NFS land, Arizona State Trust land, and private land.

ALTERNATIVE RESPONSES TO THE SIGNIFICANT ISSUES

No significant issues were identified for this project.

PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIVITIES

Depending on the resource, activities considered in this analysis may vary. Tables 3-1 and 3-2 display a general list of past, present, and reasonably foreseeable activities within the study area.

Project Name or Action	Type of Activity
Residential development	On-going development of homes and other buildings on private land
Grazing	On-going permitting and management of livestock grazing
Yavapai Substation	500/230/69kV substation
Gravel mine	Sand and gravel mining
El Paso pipeline	Natural gas pipeline
Twin 500kV Transmission lines	Power line
230kV Transmission line	Power line
69kV Subtransmission line	Power line

TABLE 3-2	
LIST OF REASONABLY FORESEEABLE FUTURE ACTIONS IN THE STUDY AREA	
Project Name or Action	Type of Activity
Residential development	Development of homes and other buildings on private land
Grazing	Permitting and management of livestock grazing
Transwestern natural gas pipeline	Proposed natural gas pipeline from Ashfork, Arizona, (near Williams) to Coolidge. Proposed route parallels an existing natural gas pipeline through center of study area, including 3.2 miles of the Proposed Action Alternate Option (Alternate Option Mileposts 0 to 3.2)

LAND USE AND RECREATION RESOURCES

The land use and recreation resources inventory identified existing, planned, and officially designated uses within the study area based on the review and interpretation of existing maps, documents, and field reconnaissance. Federal, state, county, and local agencies were contacted to obtain and/or confirm specific land use and recreation data.

Affected Environment

Land Ownership and Jurisdiction

The study area is located in north-central Yavapai County, Arizona, and includes portions of the Town of Chino Valley, NFS land, Arizona State Trust land, and private land. Private lands in the study area outside of the Town of Chino Valley are under the jurisdiction of Yavapai County. The remainder of the study area includes State Trust land and land under the jurisdiction of the PNF Chino Valley Ranger District. Approximately 3.2 miles of the proposed route are located on NFS land, 5.6 miles are on State Trust land, and the remaining 11.7 miles of the proposed route and the entire 4.6-mile alternate option are on private land. Land jurisdiction for the study area is presented in Figure 1.

Prescott National Forest Plan

The PNF Land and Resource Management Plan (Forest Plan) provides an in-depth description of current and future management directions and emphases for eight management areas within the PNF. The plan is currently being revised, but the 1986 plan will continue to be the guiding document until the revision is complete (anticipated date of completion is 2009). The study area falls primarily within Management Area 3 (Chaparral) and partly within Management Area 2 (Woodland). The management emphasis for Area 3 includes increasing water yield, improving watershed condition, and emphasizing wildlife habitat through management activities. The management emphasis for Area 2 is on wildlife management and on improving and maintaining watershed condition. Management activities within this area include a forest firewood program,

range management, and interpretation efforts along high-use roads, trails, sites, and areas (PNF 1986).

Existing Land Use

The following categories of existing land use were identified and mapped based on information from aerial photography, existing maps, and general plans, and verified through field reconnaissance.

Residential – The majority of the study area has either no residences or dispersed rural residences. One subdivision, known as Antelope Meadows, was identified within the study area, located just south of the Chino Valley town boundary (Township 16 North, Range 1 West, Section 35). Approximately 1.1 miles of the proposed route crosses the development, adjacent to the existing 230kV transmission line. This development is filling in but has not yet been fully built out. Isolated residences also are located within the study area south of Route Milepost 17.6 and north of Route Milepost 19.6.

Commercial – There is very limited commercial use within the study area. A meat packing plant is located on the northwest corner of Perkinsville Road and an unnamed dirt road (the northeast corner of Township 16 North, Range 1 West, Section 18).

Industrial – Industrial land uses within the study area include the gravel mine near the intersection of Perkinsville Road and Granite Creek, a wastewater treatment plant in Old Home Manor, and a small landfill/disposal area located near the proposed substation site on the north side of Old Home Manor.

Range Resources – The primary land use across much of the study area is grazing and ranching. Ranching operations that have grazing leases on State Trust land within the study area include Granite Dells Ranch Holdings, Lonesome Valley LLC, Perkins Ranch, Inc., Wells, and Fletcher. On PNF land within the study area, there are two grazing allotments. The Coyote allotment allows for 312 head of cattle during the winter season (November through May), and the Muldoon allotment allows for 195 head (Evans 2006).

Public/Quasi-Public – Public/quasi-public land uses within the study area include park and recreation facilities, government facilities, and educational facilities (the Yavapai College Agribusiness and Science Technology Center). These facilities are located in the Old Home Manor area of Chino Valley. Government facilities include a wastewater treatment facility and recharge basin and a police shooting range.

Transportation – The study area encompasses a mix of county and private roadways, and some Forest Service roads. The primary thoroughfare in the study area is Perkinsville Road. State Route 89, located approximately 1.25 miles west of the CV-3 proposed substation site. Paved and unpaved roads provide access to residences. Regularly maintained and non-maintained Forest Service roads, which provide access to NFS lands, are also present within the study area.

Part of the proposed route parallels Forest Service Roads 318A and 638. There is an existing unpaved road along the 230kV corridor, starting at the Yavapai substation. An unpaved, fenced road parallels the El Paso Corporation (El Paso) natural gas pipeline.

Air Facilities – There are no public airports within the study area. There is an airstrip used for model airplanes located in the southeast part of Old Home Manor.

Utilities – Several existing power lines were identified within the study area. The twin 500kV lines cross the east side of the study area in a north-south orientation, are operated by APS, and are co-owned by APS, Western Area Power Authority (Western), Salt River Project, and Tucson Electric Power. APS owns and operates the 230kV and 69kV lines. The 230kV line crosses the project area in an east-west orientation and includes a double-circuit north-south spur paralleling the 500kV lines that connect the line with Yavapai Substation. A 69kV line runs south from the Yavapai Substation and connects to the east-west APS 69kV line near Highway 89A (outside of the study area). Additionally, there is an existing north-south 69kV line in Chino Valley that crosses the proposed CV-3 substation site in the northwest corner of Old Home Manor, as well as a number of distribution lines (12.5kV) that are located throughout the Old Home Manor area to serve local customers.

Telephone lines are owned and operated by Qwest Communications. Other utilities identified within the study area include natural gas pipelines owned and operated by El Paso, including the gas pipeline in the center of the study area adjacent to the Alternate Option route.

Parks and Recreation

Recreation opportunities within the study area range from developed facilities within the Town of Chino Valley to dispersed activities on NFS and State Trust land. Recreation uses on NFS lands within the study area are of a dispersed nature, including off-highway vehicle use, hiking, wildlife viewing, camping, hunting, mountain biking, and horseback riding. There are no developed recreational sites on the PNF within the study area.

Hunting is allowed on State Trust land and the PNF. The study area is located within Arizona Game and Fish Department's (AZGFD) Game Management Unit 19A. Game species include Antelope, Black Bear, Elk, Javelina, Mountain Lion, Mule Deer, Tree Squirrel, and Quail. Hunting seasons vary by species, but generally occur between the months of August through November, with a few species extending into February.

The western edge of the Woodchute Wilderness Area is located approximately 1 mile east of the Yavapai Substation. This small wilderness area (5,923 acres) has one maintained trail.

The Recreation Opportunity Spectrum (ROS) is a land classification system that categorizes NFS land into six recreation management classes. Each ROS classification is defined by its setting and by the probable recreation experiences and activities that it affords (PNF 1986). In the Forest Service planning process, ROS classifications are used to help set recreation themes within each

of the Forest Service's Management Areas. All of the study area for the proposed project is located within the Roded Natural (RN) ROS classification. The RN class "characterizes a predominantly natural appearing environment with moderate evidence of the sights and sounds of man. Such evidence usually harmonizes with the natural environment. Opportunities exist for both social interaction and moderate isolation from sights and sounds of man" (PNF 1986).

The Town of Chino Valley has over 913 acres of public land designated as open space or developed recreational facilities and operates three community parks and a senior center. The largest of these facilities is Old Home Manor. At 880 acres, the park includes such amenities as an equestrian facility with a regulation roping arena and practice arena, a major league grass baseball field, a major league dirt practice field, an American Bicycle Association sanctioned BMX (bicycle motocross) track, and a model aviator airport with a 750-foot runway. Other facilities within Old Home Manor include an experimental farm run by Prescott College and the Yavapai College Agribusiness and Science Technology Center. Future recreational improvements planned for Old Home Manor include:

- 2 Babe Ruth-sized baseball fields
- 2 full-sized soccer fields
- viewing stands for these fields
- 2 ramadas with picnic tables and barbecues
- children's play area
- a trail system
- turf areas
- restrooms
- snack bar
- office facility
- swimming pool
- a man-made lake feature (Chino Valley General Plan 2003)

Future Land Use

Future land use was mapped based on information contained in existing planning documents and communication with staff and officials representing state, county, and municipal agencies. General plan information was the primary basis of this analysis and represents guidelines for development until specific development plans are proposed. The Town of Chino Valley General Plan was ratified in November 2003. An amendment was made to the Town of Chino Valley future land use map in March 2005 but is not relevant to the study area. The Yavapai County General Plan was adopted in April 2003.

Future land use for the areas of unincorporated private land within the study area would be guided by Yavapai County, but the county chooses to allow municipalities to plan for adjacent unincorporated privately owned areas surrounding municipalities within a defined "Area of Municipal Influence" (Kelly 2006). Thus, all future land use for non-federal land within the study area is guided by the Chino Valley General Plan. The Chino Valley General Plan states

that “the planning objective [for the town] is to have between fifty (50) and seventy (70) percent of the land developed as residential. ... Commercial zoning areas are expected to comprise of approximately fifteen (15) to twenty-five (25) percent and industrial use of five (5) percent.” Future land use for the study area is described below.

In general, the eastern portion of Chino Valley is currently undeveloped, but is expected to experience increased development, primarily residential. The general plan shows the majority of the study area as low-density residential (more than 2 acres per dwelling unit). The portion of the proposed route near Granite Creek is within an area designated for floodplain, industrial overlay and greenway uses. Commercial development is planned for the portion of Perkinsville Road that forms the southern boundary of Old Home Manor (Town of Chino Valley 2003). The Town’s plans for Old Home Manor include developing the area as a town center with mixed use development (Pupo 2004).

Portions of the proposed route and alternate option cross special development overlay areas located along the eastern boundary of the town, to the east of the Granite Creek floodplain, and along Perkinsville Road. These areas are intended for future job centers. The General Plan states that the timing of development in these areas will depend upon infrastructure improvements and future road alignments.

State Trust lands are administered by the ASLD. Typically, the ASLD holds trust land until area development pressure builds to a sufficient level to generate substantial revenue from the sale or lease of the land. Thus, the Town cannot predict when these lands will develop, but can include the land as part of its future planning area. The General Plan indicates potential future uses for these lands as low-density residential, medium-density residential, commercial/employment and open space.

The Town of Chino Valley and Yavapai County were contacted regarding future land uses within the study area. No official development plans have been filed with town or county authorities for lands within the study area (Kelly 2006; Nicolella 2006).

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section addresses socioeconomic conditions within the study area, including population, principal economic activities, income and employment, and discussion of environmental justice related to the construction, operation, and maintenance of the proposed transmission line. From a socioeconomic perspective, the primary effects typically associated with transmission line and substation construction include (1) potentially affected economic activities associated with right-of-way issues; (2) potential disturbance to existing access; and (3) potential impacts to nearby communities, particularly during construction (e.g., influx of construction personnel).

Affected Environment

The proposed line passes through unincorporated Yavapai County and the Town of Chino Valley. Yavapai County is located in central Arizona and encompasses 8,123 square miles (approximately the size of Massachusetts), with a population density of about 24.2 persons per square mile. The 196,720 residents of Yavapai County comprise a minority (3.4 percent) of the state's population (Arizona Department of Commerce [ADOC] 2005a). Yavapai County's population is expected to reach 240,849 by 2020 (Arizona Department of Economic Security [ADES] 1997a).

Chino Valley, population 9,530, covers approximately 63 square miles (ADOC 2005b, Chino Valley General Plan 2003). Chino Valley has a population density of approximately 151 persons per square mile. Population statistics for the State of Arizona, Yavapai County, and Chino Valley are summarized in Table 3-3.

Location	1990	2000	2004	% Change 1990-2004	2010 (projected)
Arizona	3,665,228	5,130,632	5,833,685	59	6,145,108
Yavapai County	107,714	167,517	196,720	83	198,052
Chino Valley	4,837	7,835	9,530	97	10,445

Sources: ADES 1997a, 1997b; ADOC 2005a, 2005b

Economic Activities

The primary influences on Chino Valley's economy are retail, commercial, and government activities. Principal employment sectors in Yavapai County are trade, transportation, and utilities; government; education and health services; and leisure and hospitality services (ADOC 2005a). Local economic and employment activity within the study area occurs predominantly in Chino Valley, with some government employment on the PNF, and some ranching activity on state and private lands outside Chino Valley. Economic activities in Chino Valley include ranching, agriculture, real estate, and sand and gravel mining. Major employers include American Sandstone, Chino Valley School District, Safeway, Town of Chino Valley, Performance Accessories, NAB Nursery, Willow Creek Greenhouse, Forest Service, Hunt's True Value Lumber, and Dewitt Brothers Trucking & Construction (Chino Valley Chamber of Commerce 2005).

Income and Employment

In 2004 the unemployment rate in Chino Valley was 4.2 percent (Chino Valley Chamber of Commerce 2005). The median household income for Chino Valley in 2000 was \$32,289. Approximately 85 percent of Chino Valley residents have at least a high school education (U.S. Census 2000).

Environmental Justice

Presidential Executive Order 12898, regarding “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” requires that each federal agency identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. Demographic information for Chino Valley and Yavapai County are shown in Table 3-4.

	Chino Valley	Yavapai County
Race		
Caucasian	94.1%	91.9%
African-American	0.2%	0.4%
Native American	0.9%	1.6%
Asian	0.2%	0.5%
Other	2.6%	3.6%
Hispanic/Latino	9.8%	9.8%
Foreign born	4.3%	5.9%
Language other than English spoken at home	9.0%	9.7%

Source: U.S. Census Bureau 2000

During the scoping process the Forest Service considered whether the Proposed Action in this geographic area would potentially affect any low income, minority populations, or Indian tribes. A scoping letter was sent out to the potentially affected Native American tribes asking for input.

Social, economic, and environmental impacts of the project were considered and it was determined that none of the alternatives considered in this analysis would have a negative impact on any minority population in the immediate area or region at large.

EARTH AND WATER RESOURCES

Affected Environment

General Geology

The proposed project falls within the Verde River Basin, a part of the Central Highlands physiographic province (Arizona Department of Water Resources [ADWR] 2005 and 2006). The Central Highlands Province is an area of transition separating the Colorado Plateau to the north and the Basin and Range province to the south and west. The Central Highlands are characterized by a narrow band of mountains composed of igneous, metamorphic, and sedimentary rock of Precambrian age. A string of large and small valleys run lengthwise through the Central Highlands. These valleys typically possess well-developed terraces, marginal terraces of coarse gravel, and more central ones of fine lake silt, lake limestone, water-laid volcanic ash,

and a lesser amount of salt or gypsum. In comparison to most of the alluvial basins in the state, this province has minimal water storage capacity and exhibits high runoff characteristics, due predominantly to high elevations, steep gradients, and a high proportion of hard rock. The immediate study area is overlain by sand and silt originating from quaternary stream deposits (Chronic 1983).

Soils

The Natural Resource Conservation Service (NRCS, formerly the Soil Conservation Service) has characterized soils in the western portion of the project area as the Pastura-Poley-Partri association map unit. These soils are deep to shallow soils that are made up of nearly level to moderately steep soils on alluvial fans. The soils are well-drained and formed in mixed alluvium of sandstone and limestone and from a mixture of sedimentary formations and eolian deposits (U.S. Department of Agriculture [USDA] 1976). Temperature and precipitation have a significant influence on soil development. The average annual rainfall for areas containing this map unit is 12 to 14 inches. The average annual temperature is 50 to 54 degrees Fahrenheit (USDA 1976).

The NRCS has characterized the central portion of the project area as the Continental-Whitlock-Cave association map unit. These soils consist of shallow and very shallow, well-drained, loamy soils over sandstone and limestone. This soil unit is mainly found on undulating plateaus, mesas, and buttes (USDA 1976). Areas containing this map unit have an average annual rainfall of 8 to 10 inches. The average annual temperature is 60 to 68 degrees Fahrenheit (USDA 1976).

The approximately 3 miles of the eastern-most portion of the proposed route within the PNF have not yet been classified by the NRCS. It is assumed that this unclassified portion is similar to the western and central portions described above.

Water

The project area is within the Verde River Watershed. The watershed has a drainage area of approximately 6,188 square miles. Surface water drainage is by numerous intermittent washes and several perennial streams into the Verde River. The Verde River flows in a southward direction approximately 140 miles to its confluence with the Salt River near Phoenix. Granite Creek flows in a northerly direction through the study area joining the Verde River approximately 3 miles below Sullivan Lake. Most precipitation is absorbed by plants or evaporates. Heavy precipitation events encourage runoff into the Verde River, Granite Creek, and associated washes and streams (ADWR 2005, 2006).

Within the Verde River Watershed, neither the Verde River nor Granite Creek meet Environmental Protection Agency (EPA) and Arizona Department of Environmental Quality (ADEQ) water quality standards. The Verde River is listed as impaired, due to excessive levels

of selenium and copper, while Granite Creek is listed as impaired due to excessive levels of dissolved oxygen (ADEQ 2004).

The primary source of water for municipal, domestic, irrigation, and livestock water uses in the project area is groundwater. The Prescott Active Management Area (PAMA) primary groundwater basin covers approximately 485 square miles within central Yavapai County. Two sub-basins divide PAMA, one of which, the Little Chino Sub-basin (LIC), contains the project area. Within the LIC, the regional aquifer is composed of an upper alluvial unit and a lower volcanic unit. The upper alluvial unit is a primary source of groundwater for domestic wells, consisting of a mixture of sedimentary, volcanic, and younger alluvial rocks. The lower volcanic unit is a main source of groundwater for irrigation and municipal wells, consisting of lava flows interbedded with pyroclastic and alluvial material. This regional aquifer is the principle water-bearing unit in the LIC (ADEQ 2000; ADWR 2005).

AIR QUALITY AND NOISE

Affected Environment

Air Quality

Air quality in the project area is generally good to excellent. The existing air quality condition is a result of the relatively low population density and lack of pollution sources in the area. Air pollution in the local area is typically a result of airborne particulate matter (i.e., dust). Certain areas are given special protection from air quality degradation through the use of more stringent requirements. These areas are designated as Class I areas and include some (but not necessarily all) national parks, monuments, wilderness areas, and certain tribal land.

The Class I areas nearest to the project study area include the following:

- Sycamore Canyon Wilderness (approximately 36 miles northeast from the Town of Chino Valley)
- Pine Mountain Wilderness (approximately 48 miles southeast of the Town of Chino Valley)
- Mazatzal Wilderness Area (approximately 56 miles southeast of the Town of Chino Valley)

All of the lands involved with the alternatives are designated as Class II areas, in accordance with the provisions of the federal Prevention of Significant Deterioration program, along with the corresponding Arizona regulations. Most areas within the United States are designated as Class II, wherein standard pollution control requirements apply (ADEQ 2006; EPA 2006).

The Federal Clean Air Act (CAA) of 1970 required the EPA to adopt ambient air quality standards. The National Ambient Air Quality Standards (NAAQS) were developed by the EPA and are the maximum levels of background pollution that are considered safe for public health

and welfare. The NAAQS are represented as primary (human impact) and secondary (property impact) standards. States have also been given the opportunity to develop standards. Standards developed by individual states must be at least as stringent as those set forth by the EPA. The ADEQ has adopted the NAAQS as the State Ambient Air Quality Standards.

The EPA is required to designate areas that fail to meet the NAAQS as non-attainment areas. When an area is designated as non-attainment, regional air quality management agencies are required to develop detailed plans that will lower pollutants in order to reach attainment. As of August 15, 2006, the EPA has designated Yavapai County in attainment for all criteria pollutants. The closest nonattainment areas are the cities of Phoenix and Mesa, within Maricopa County, for ozone and PM₁₀ (EPA 2006).

Noise

Noise can be defined as unwanted or disagreeable sound. Existing levels of noise in the vicinity of the project area are generally a function of the local human population and existing land use activity. Wind, meteorological conditions, physiography, human habitation, vehicles, and other sources cumulatively determine the noise character of any given area. Land uses along the proposed route and alternate option are predominantly agriculture (including ranching and grazing) and forest lands, with some residential areas.

The main cause of audible noise associated with transmission and substation operation is corona discharge. Corona represents power loss on the transmission line and creates transmission line noise. The presence of dust particles or water on conductors will increase corona discharge. Corona formation factors depend on the surrounding environment, weather, and the electrical components themselves. The intensity of corona also depends on air pressure, electrode material, presence of water vapor, and the type of voltage.

Noise from construction and operation of the proposed project is not anticipated to exceed municipal (Town of Chino Valley Ordinance 408), county (Yavapai County Zoning Ordinance Section 558), or PNF (Region 3 Air Resource Management Program) noise requirements. Construction noise would be of a temporary nature.

VISUAL RESOURCES

The visual resource study addresses the potential visual effects of the proposed project and alternatives on landscape scenic quality and sensitive viewers. The inventory and assessment was completed between the spring of 2004 and July 2006. Following is a description of the affected environment followed by a discussion of potential impacts.

Affected Environment

Visual resources were inventoried within ½ mile of the proposed and alternative routes in compliance with the Forest Service Visual Management System (VMS) (Forest Service 1974).

In order to describe the visual resource values within and adjacent to the study area, the following inventory items were considered:

- Forest Service variety classes (A, B, C)
- Key observation points
- Existing scenic conditions
- Agency Management Objectives (Visual Quality Objectives [VQOs])

Within the eastern portion of the project area the terrain is moderately varied and includes St. Matthews Mountain. Vegetation ranges from grassland at the base of the mountains to chaparral and mixed piñon-juniper and juniper-oak woodlands on the higher slopes. The rest of the study area is characterized by open rolling to flat grazed grasslands punctuated by occasional juniper and piñon pine stands.

Existing conditions represent the degree of modification in form, line, color, and texture from the natural landscape. The most notable modifications situated within the study area are two transmission line corridors and a pipeline that runs north-south through the center of the study area. In addition to these linear modifications, several roads cross the study area.

Scenic Quality

There were no Class A landscapes identified within the study area. Class B scenery areas are characterized by the mountain peaks and rounded foothills associated with St. Matthews Mountain.

Class C scenery is typical of the study area and consists of unvaried low rolling hills and flat terrain. Vegetation consists of mostly native and exotic grasses with dispersed stands of junipers.

Key Observation Points

Key observation points include major travel routes, recreation areas, hiking trails, rural communities, and dispersed residences. Key observation points and associated visual sensitivity levels within the study area were determined by consulting PNF employees and through field investigations and include:

- Five dispersed residences within ¼ mile of the proposed project
- Perkinsville Road
- State Route 89

- Roads within Chino Valley
- Dispersed recreation and hunting

Agency Management Objectives

Existing VQOs acquired from the PNF that occur within the project are defined below:

Modification: Management activities may visually dominate the original characteristic landscape, but most borrow from naturally established form, line, color, or texture so as to remain compatible with the natural surroundings.

Maximum Modification: Management activities may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type.

HERITAGE RESOURCES

A cultural resource study consisting of a detailed records review and an intensive pedestrian survey was conducted in support of the Proposed Action. This study was undertaken to support the preparation of the EA, the Forest Service's compliance with the NHPA and ASLD compliance with the Arizona State Historic Preservation Act.

Affected Environment

A records review was conducted to determine previously identified recorded sites and historic features in the project study area. The survey involved a review of records maintained by the following institutions:

- Arizona State Historic Preservation Office (SHPO)
- National Register of Historic Places (NRHP)
- Arizona State Register of Historic Places
- Prescott National Forest Supervisor's Office
- Bureau of Land Management Public Records Office
- AZSITE (<http://azsite.asu.edu/azsiteweb/>)

The detailed records review identified six previously recorded sites and historic features within or immediately adjacent to the area of potential effect (APE). The sites consisted of prehistoric and historic artifact scatters and an abandoned railroad.

An intensive pedestrian survey for the Proposed Action's right-of-way corridor, construction laydown areas, and substation site identified one newly recorded site and revisited five previously recorded sites and historic features. One previously recorded site could not be

revisited because permission was not granted on the privately owned land. The newly recorded site consists of a prehistoric lithic scatter. NRHP eligibility recommendations for each of the six sites within the project APE are listed below. The land management status is listed after each site.

The following sites are recommended not eligible for listing on the NRHP:

- AZ N:3:31 (ASM)/AR-03-09-01-691 (PNF) – Previously Recorded – PNF and ASLD

The following sites are recommended eligible for listing on the NRHP:

- AZ N:3:29 (ASM) – Previously Recorded – ASLD
- AZ N:4:85 (ASM) – Previously Recorded – PNF
- AZ N:7:118 (ASM) – Previously Recorded – ASLD
- AZ N:7:158 (ASM) – Previously Recorded – ASLD
- AZ N:7:341 (ASM) – Previously Recorded – Private Land
- AZ N:7:406 (ASM) – Newly Recorded – Private Land

Site AZ N:4:85 (ASM)/AR-03-09-01-692 (PNF) consists of a prehistoric artifact scatter with a historic component that was originally recorded as eligible for listing on the NRHP under Criterion D, for its potential to provide significant information on the prehistoric regional settlement, subsistence, and resource procurement in the Chino Valley area during prehistory. Data recovery was conducted on the site during the Yavapai Substation and Transmission Line Project in 1996 (Shepard and Bruder 1996). Excavation of the sites revealed no subsurface features. At the time of data recovery, the site was extensively mapped with a total station, and diagnostic artifacts were collected from the surface of the site.

Sites AZ N:3:29 (ASM), AZ N:7:118 (ASM), and AZ N:7:158 (ASM) consist of artifact scatters that were originally recorded as eligible for listing on the NRHP under Criterion D for their potential to provide significant information on the prehistoric regional settlement, subsistence, and resource procurement in the Chino Valley area during prehistory. Data recovery was conducted on these sites during the Yavapai Substation and Transmission Line Project in 1996. Excavation of the sites revealed no subsurface features and only three artifacts. At the time of data recovery, the sites were extensively mapped with a total station, and diagnostic artifacts were collected from the surface of the sites.

Site AZ N:7:341 (ASM) consists of a small historic artifacts scatter with two features. The site was not revisited because permission was not granted to enter the property. According to the site card, the site was originally recommended eligible for listing on the NRHP.

Site AZ N:7:406 (ASM) consists of a prehistoric artifact scatter located on a stabilized dune adjacent to Granite Creek. Artifacts are exposed in blowouts within the dune, indicating that portions of the site are buried and that subsurface cultural materials are present. For this reason, we recommend that the site is eligible for listing on the NRHP under Criterion D, for its potential to provide further information on prehistoric settlement, subsistence, and resource procurement.

BIOLOGICAL RESOURCES

Information on biological resources was obtained through a review of existing literature and previous studies conducted in the project area, secondary data from the Forest Service, the AZGFD – Heritage Data Management System (HDMS) on-line database, and during a site visit conducted on June 17, 2004. The Arizona office of the United States Fish and Wildlife Service (USFWS) does not currently respond to project specific requests for species information, thus, this information is typically obtained by accessing the USFWS internet site. Pertinent data for Yavapai County, Arizona was obtained from the USFWS internet site. The AZGFD provided Special Status Species Information for a two-mile buffer area around the proposed project (AZGFD 2004 and 2005).

The original study area proposed for the project in 2004 included the APS improvements in the Paulden area, north of Chino Valley. The project was subsequently redesigned and the Paulden area improvements became a separate project. This EA addresses only the proposed and alternate routes from the existing Yavapai Substation on the PNF to the proposed CV-3 Substation in Chino Valley. The closest portion of this project to the Verde River is the CV-3 substation site located 5.5 miles from the river. Due to the refinement of the project area to exclude the Verde River, the Designated Critical Habitat for the Spikedace (*Meda fulgida*) in the upper Verde River watershed (listed in the 2004 AZGFD project letter) is no longer within the area that could be affected by this project. This change also eliminates potential impacts to six other fish species and the Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), which also were listed in the AZGFD project letter (AZGFD 2004).

Affected Environment

Vegetation Communities

The proposed transmission line corridor crosses two biomes, as identified by the classification system of Brown et al. (1979). Habitat for most of the project route through the Chino Valley is within Great Basin/Plains Grassland. The east end of the line climbs in elevation as it approaches the PNF boundary where, at approximately 5,000 feet in elevation, the habitat transitions and becomes ecotonal with Great Basin conifer woodland habitat. Elevations along the proposed route and alternate option are from approximately 4,550 feet, at the proposed CV-3 Substation site, up to approximately 5,835 feet, just north of the connection with the Yavapai Substation, at the east end of the project.

Great Basin/Plains Grassland

Great Basin/Plains grassland is present in large areas of northern Arizona, as well as in parts of southern Utah, southwestern Colorado, and northern New Mexico. This biome is typically dominated by grasses in areas that are predominantly flat, open, and above 1,200 meters (3,940 feet) elevation (Brown 1982a). Grass species that are characteristic of Great Basin grassland include blue grama (*Bouteloua gracilis*), buffalograss (*Buchloe dactyloides*), Indian ricegrass (*Achnatherum hymenoides*), and galleta grass (*Pleuraphis jamesii*). Shrub species that may be present include fourwing saltbush (*Atriplex canescens*), winterfat (*Krascheninnikovia lanata*), rabbitbrush (*Chrysothamnus* spp.), and snakeweed (*Gutierrezia* spp.) (Brown 1982a). Great Basin grassland in the region of influence of the proposed Yavapai transmission line is bounded at higher elevations by Great Basin conifer woodland.

Great Basin Conifer Woodland

Great Basin conifer woodland is structurally simple and tends to be present in rocky habitats with thin soils. These woodlands are characterized by unequal dominance of junipers (*Juniperus* spp.) and piñons (*Pinus* spp.). Great Basin conifer woodland is generally open-spaced, except at higher elevations and in less xeric sites (Brown 1982b). Other tree and shrub species typical of this community include rabbitbrush, mountain mahogany (*Cercocarpus* spp.), cliffrose (*Purshia mexicana*), shadscale (*Atriplex confertifolia*), black sagebrush (*Artemisia nova*), crucifixion thorn (*Canotia holacantha*), and shrub live oak (*Quercus turbinella*). A variety of grasses may be present, including galleta (*Pleuraphis* spp.), Indian ricegrass, western wheatgrass (*Pascopyrum smithii*), and muhlys (*Muhlenbergia* spp.) (Brown 1982b). Elements of the Great Basin conifer woodland are present along the project route as it approaches the PNF boundary. Juniper (*Juniperus monosperma*) and sacahuista (*Nolina microcarpa*) are the dominant plant species.

Noxious Weeds

The proposed route was reviewed for the presence of noxious weed species during a site visit performed by an EPG biologist on June 17, 2004. The noxious weed lists developed by the Arizona Department of Agriculture (ADA) were used as a guideline for weed species that could potentially occur within the project area (ADA 2004). Habitat information for invasive weed species on the ADA lists was reviewed using various sources (Chambers and Hawkins, no date; Whitson et al. 2000). Table 3-5 lists plants from these lists for which there is suitable habitat available within the project study area. Prior to construction, a noxious weed survey of the project route would be completed, using the most current ADA weed list, as well as the PNF weed list.

**TABLE 3-5
NOXIOUS WEED SPECIES FOR WHICH SUITABLE HABITAT IS PRESENT, AND
THAT COULD POTENTIALLY OCCUR, OR WERE OBSERVED WITHIN THE
PROJECT STUDY AREA**

Scientific Name	Common Name	Presence
<i>Achnatherum brachychaetum</i>	Puna grass	None
<i>Acroptilon repens</i>	Russian knapweed	None
<i>Aegilops cylindrica</i>	Jointed goatgrass	None
<i>Cardaria chalapensis</i>	Lenspod whitetop	None
<i>Cardaria draba</i>	Globe-podded hoary cress	None
<i>Cardaria pubescens</i>	Hairy whitetop	None
<i>Carduus acanthoides</i>	Plumeless thistle	None
<i>Cenchrus spinifex (incertus)</i>	Coastal sandbur	None
<i>Centaurea biebersteinii</i>	Spotted knapweed	None
<i>Centaurea calcitrapa</i>	Purple starthistle	None
<i>Centaurea diffusa</i>	Diffuse knapweed	None
<i>Centaurea iberica</i>	Iberian starthistle	None
<i>Centaurea maculosa</i>	Spotted knapweed	None
<i>Centaurea melitensis</i>	Malta starthistle	None
<i>Centaurea solstitialis</i>	Yellow starthistle	None
<i>Centaurea triumphettii (squamrosa)</i>	Squarrose knapweed	None
<i>Chondrilla juncea</i>	Rush skeletonweed	None
<i>Cirsium arvense</i>	Canada thistle	None
<i>Convolvulus arvensis</i>	Field bindweed	None
<i>Cuscuta spp.</i>	Dodder	None
<i>Elymus (Elytrigia) repens</i>	Quackgrass	None
<i>Euphorbia esula</i>	Leafy spurge	None
<i>Euryops subcarnosus ssp. vulgaris</i>	Sweet resinbush	None
<i>Halogeton glomeratus</i>	Halogeton	None
<i>Helianthus ciliaris</i>	Blueweed	None
<i>Ipomoea ssp.</i>	Morning glory*	A few plants on shoulders of East Perkinsville Road just west of the proposed route.
<i>Isatis tinctoria</i>	Dyer's woad	None
<i>Linaria genistifolia var. dalmatica</i>	Dalmation toadflax	None
<i>Medicago polymorpha</i>	Burclover	None
<i>Nassella trichotoma</i>	Serrated tussock grass	None
<i>Onopordum acanthium</i>	Scotch thistle	None
<i>Peganum harmala</i>	African rue	None
<i>Portulaca oleracea</i>	Common purslane	None
<i>Senecio jacobaea</i>	Tansy ragwort	None
<i>Solanum carolinense</i>	Carolina horse-nettle	None
<i>Sonchus arvensis</i>	Perennial sowthistle	None
<i>Striga spp.</i>	Witchweed	None
<i>Tribulus terrestris</i>	Puncture vine	None

*All species except Mexican bush morning glory (*I. carnea*) and tree morning glory (*I. arborescens*)

The only noxious weed species observed was a species of morning glory (*Ipomoea sp.*) present along the shoulders of East Perkinsville Road just west of the proposed route. A few plants of Russian thistle (*Salsola kali*) were present in a few places, but while it is an invasive species, it is

not currently recognized by the ADA as a noxious weed. The single site visit was conducted in summer when some noxious weed species may not have been evident. Ground-disturbing activities could provide suitable habitat for non-native invasive plant species.

Wildlife

No wetlands or permanent open waterbodies are present within 1 mile of the proposed project. There are several earthen tanks for livestock watering within a mile of the proposed route, but none of these has permanent water that supports emergent vegetation or associated aquatic wildlife. The existing drainages within the proposed route are seasonally flowing xeric streambeds, which only carry water for short periods subsequent to significant precipitation events. A lack of permanent water sources along the proposed route precludes the presence of any fish species. Following is a summary of the wildlife that was observed or could occur within the project study area. A detailed listing of vertebrate species that could be present within the project area, and their associated habitat, may be found in Appendix A, Tables A-1, A-2, and A-3.

Mammals

Forty-six mammal species that could potentially be present within the project area are listed in Appendix A, Table A-1. Two species of ungulates are probably present. Mule Deer (*Odocoileus hemionus*) are very likely to be present, and would most likely be found at the east end of the project on NFS land, where open grassland habitat give way to juniper, brush, and some piñon pine (*Pinus edulis*) that provides cover for deer. The open grassland of the Chino Valley is preferred habitat for the American Pronghorn (*Antilocapra americana*) (Hoffmeister 1986), and several were observed along East Perkinsville Road during the site visit. Because of the presence of these ungulate species, Mountain Lions (*Puma concolor*) are likely to be present in the area.

The presence of cliffs and crevices in the foothills immediately east of the project, near the Yavapai Substation may provide habitat for several species of bats. The presence of abandoned mines and the possibility of karst features in the Kaibab limestone also could provide suitable habitat for roosting or breeding bats. Most bat species would probably only be present in the project area during nocturnal foraging activity.

Canids are probably represented in the project area by Coyote (*Canis latrans*) and Gray Fox (*Urocyon cinereoargenteus*). Numerous rodent species are likely to be present, including species of Pocket Mice (*Perognathus* spp.), Harvest Mice (*Reithrodontomys* spp.), species of *Peromyscus*, and Wood Rats (*Neotoma* spp.), among others.

Birds

A total of 58 species of breeding birds potentially occur in the project area (Appendix A Table A-2). Among these there are two introduced species, the Wild Turkey (*Meleagris gallopavo*) and the European Starling (*Sturnus vulgaris*). Two of the species we list, the Wild Turkey and Common Poorwill (*Phalaenoptilus nuttallii*) are suspected, but not documented, as breeding in the area. The remaining 56 species have been recorded as breeding species in the area (Tomoff 2000).

Typical Great Basin/Plains grassland bird species that could be present, not necessarily as breeding species, include Meadowlarks (*Sturnella* spp.), Prairie Falcon (*Falco mexicanus*) and the Western Burrowing Owl (*Athene cunicularia hypugaea*). While the project area is within the known range of the Western Burrowing Owl, and suitable habitat appears to be present for this species, these owls may not be present, and indeed the species is not listed by Tomoff (2000). Several Meadowlarks and many Horned Larks (*Eremophila alpestris*) were observed in grassland habitat along Forest Road 318A during the site visit in June of 2004.

Bird species typical of the Great Basin conifer woodland habitat include Piñon Jay (*Gymnorhinus cyanocephalus*), Gray Flycatcher (*Empidonax wrightii*), Gray Vireo (*Vireo vicinior*), Black-throated Gray Warbler (*Dendroica nigrescens*), and Scott's Oriole (*Icterus parisorum*).

Reptiles and Amphibians

Thirty-five species of reptiles and amphibians that could be present within the project area are listed in Table A-3 of Appendix A. Due to a general lack of permanent water sources within the project area, few amphibian species would be expected to occur here. However, because of their ability to aestivate during long periods of drought, the Great Plains Toad (*Bufo cognatus*), Red-Spotted Toad (*B. punctatus*), and the Mexican Spadefoot Toad (*Spea multiplicata*), may be present.

A rather wide variety of species of reptiles are likely to be present within the area. The Great Plains grassland biome is typified by the presence of several species of reptiles, including the Lesser Earless Lizard (*Holbrookia maculata*), Southern Plateau Lizard (*Sceloporus undulatus tristichus*), Great Plains Skink (*Eumeces obsoletus*), Coachwhip (*Masticophis flagellum*), and Arizona Black Rattlesnake (*Crotalus oreganus cerberus*). Only the Plateau Striped Whiptail (*Cnemidophorus velox*) is considered a typical representative of the Great Basin conifer woodland biome (Brown 1982b), although other species with wider habitat ranges are certainly present. A pair of Collared Lizards (*Crotaphytus collaris*) was observed in this habitat during the site visit in June of 2004. Only three species of rattlesnakes are likely to be present within the project area, the Black-tailed (*Crotalus molossus*), the Arizona Black, and the Western Diamond-backed Rattlesnake (*Crotalus atrox*).

Invertebrates

The AZGFD HDMS lists nine sensitive species of invertebrates as occurring in Yavapai County (AZGFD 2006), including five species of Springsnails (*Pyrgulopsis* spp.). Springsnails tend to have very limited ranges, often being endemic to a single spring or grouping of springs, where they are usually restricted to headsprings and upper sections of outflows (Hershler and Landye 1988). Since there are no known springs within the project area, none of these or other unknown species of Springsnails would be expected within the project area.

Because of the lack of permanent water sources within the project area, the two species of Caddisflies (*Metrichia nigrutta* and *Protophila balmorhea*) and the Riffle Beetle (*Cylloepus parkeri*) also would not be present in the project area.

The Maricopa Tiger Beetle (*Cicindela oregona maricopa*) also is generally associated with water as a shore or strand-inhabiting species, usually in riparian habitats, and is seldom found far from a permanent water source. Due to the lack of permanent water on the project site, this species would not be present.

Each vegetation type, due to the suite of plant species of which it is composed, will support a distinct invertebrate flora associated with those species. Caves or crevices in the Kaibab formation could support unknown endemic cave-adapted invertebrate species. The Permian Kaibab formation, which is a known cave-forming (karstic) limestone body, is present over large areas of the Mogollon Rim (Chronic 1983). Karst drainage has developed in many areas on the Mogollon Rim where the Kaibab limestone is in contact with the overlying and less soluble Triassic Moenkopi sandstone (Chronic 1983). Existing caves are known to be present in several of these areas including an area less than 8 miles from the project area. There is some potential for cave resources along portions of the line wherever Kaibab limestone is present. However, only the eastern portion of the project on the PNF near the Yavapai Substation appears to contain any limestone, and the project is at the edge of the formation, where cave resources are less likely to be present.

Special Status Species

Special status species are those plant and wildlife species, which because of loss of habitat and/or decline in their numbers, have been listed by the federal and/or state governments as Species of Concern. The USFWS maintains a list of Threatened and Endangered species, as well as species that are candidates for such listing under guidelines of the ESA. The Forest Service maintains a list of Forest Service Sensitive Species. The AZGFD monitors Wildlife of Special Concern in Arizona (WSC) and the ADA provides protection for native plant species under the Arizona Native Plant Law (ANPL).

The AZGFD maintains the HDMS, which monitors species of concern within Arizona. The HDMS has listings for federal (ESA), state (WSC), and ANPL species, and also lists species of concern for the Forest Service. The current version of the HDMS (April 2006) was consulted in

the preparation of this EA. Federal, state, and Forest Service Special Status Species that are listed as occurring in Yavapai County are shown in Table 3-6. Under the classifications provided for in the ANPL, only Highly Safeguarded plant species (ANPL) are listed in Table 3-6. Species highlighted in gray in Table 3-6 are either known to be present, or are considered to have a moderate or better chance of occurring within the project area, and are discussed in the species accounts section following the table.

No suitable habitat is present along the proposed project route for any of the federally listed threatened, endangered, or candidate species known to be present in Yavapai County.

**TABLE 3-6
FEDERAL, STATE, USFS, AND ANPL HIGHLY SAFEGUARDED SPECIES RECORDED AS PRESENT IN
YAVAPAI COUNTY, AND PROBABILITY OF OCCURRENCE WITHIN THE PROJECT PLANNING AREA**

Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
MAMMALS							
Hualapai Mexican Vole	<i>Microtus mexicanus hualpaiensis</i>	E		WSC		Dry grassy habitats adjacent to ponderosa pine, Hualapai Mountain and Prospect Valley.	None
California Leaf-nosed Bat	<i>Macrotus californicus</i>	SC		WSC		Sonoran deserts scrub with caves or mines.	None
Pale Townsend's Big-eared Bat	<i>Plecotus townsendii pallescens</i>	SC				Roosts in mines, caves, or structures, from low desert up into pines.	Moderate
Spotted Bat	<i>Euderma maculatum</i>	SC		WSC		Roosts in crevices and caves in rocky cliffs from below sea level to pine forests.	Low
Allen's Big-eared Bat	<i>Idionycteris phyllotis</i>	SC				Roosts in mines, caves and snags, generally in mid-elevation forests.	Low
Western Red Bat	<i>Lasiurus blossevillii</i>			WSC		Riparian or encinal habitat at various elevations.	None
Occult Little Brown Bat	<i>Myotis lucifugus occultus</i>	SC				Oak-pine to ponderosa elevations, usually near a water source.	None
Fringed Myotis	<i>Myotis thysanodes</i>	SC				Uses a variety of roost types, typically in oak and piñon elevations.	Moderate
Cave Myotis	<i>Myotis velifer</i>	SC				Roosts in mines and caves at lower elevations within a couple miles of water.	Low
Long-legged Myotis	<i>Myotis volans</i>	SC				Uses a variety of roost types, generally above 4,000' in pine, juniper, or oak habitat.	Moderate
Western Small-footed Myotis	<i>Myotis leibii (ciliolabrum)</i>	SC				Uses a variety of roost types, usually above 3,500'.	Moderate
Big Free-tailed Bat	<i>Nyctinomops macrotis</i>	SC				Roosts in crevices or rock shelters, usually in high cliffs.	None
Camp Verde Arizona Cotton Rat	<i>Sigmodon arizonae arizonae</i>			WSC		Generally associated with drainages that have weeds and brush along the banks, but also in mesquite habitat with small amounts of grasses. Subspecies may be extirpated.	Low

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Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
BIRDS							
Northern Goshawk	<i>Accipiter gentilis</i>	SC	S	WSC		Present in coniferous, deciduous, or mixed forest at forest edges, or in open woodlands.	None
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T (PDL), BEA	S	WSC		Riparian areas, primarily Salt and Verde rivers watersheds.	None
Common Black Hawk	<i>Buteogallus anthracinus</i>		S	WSC		Nests in cottonwoods in riparian areas.	None
Ferruginous Hawk	<i>Buteo regalis</i>	SC		WSC		Often associated with prairie dog colonies in open, arid country.	Low
Yuma Clapper Rail	<i>Rallus longirostris yumanensis</i>	E		WSC		Tall dense vegetation associated with marshes, rivers, and lakes.	None
Belted Kingfisher	<i>Ceryle alcyon</i>			WSC		Usually found along watercourses, ponds, or lakes.	None
Western Yellow-billed Cuckoo	<i>Coccyzus americanus occidentalis</i>	C	S	WSC		Open woodland in the presence of thick underbrush, parks, riparian woodland, and scrub.	None
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	SC	S	WSC		Prefers open areas with good visibility, usually near water. Requires high cliffs for nesting.	None
American Redstart	<i>Setophaga ruticilla</i>			WSC		A migrant to the southwestern United States found in second-growth forest and at forest edges.	None
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	T	S	WSC		Dense forest, coniferous and hardwood, steep-walled canyons.	None
Western Burrowing Owl	<i>Athene cucularia hypugaea</i>	SC				Open areas of low slope where low vegetation provides good visibility. Usually associated with colonial burrowing rodents.	Low
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	S	WSC		Willow, tamarisk thickets in riparian areas.	None
Pine Grosbeak	<i>Pinicola enucleator</i>			WSC		Open coniferous or deciduous woods.	None

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FEDERAL, STATE, USFS, AND ANPL HIGHLY SAFEGUARDED SPECIES RECORDED AS PRESENT IN
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Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
AMPHIBIANS							
Arizona Toad	<i>Bufo microscaphus microscaphus</i>	SC	S			Rocky streams and canyons in oak-pine woodland in the Mogollon Rim area.	None
Chiricahua Leopard Frog	<i>Rana chiricahuensis</i>	T	S	WSC		Rocky streams with deep pools in oak and pine-oak woodlands and pine forests. Mountainous areas of southeastern Arizona, southwestern New Mexico, and Mexico.	None
Northern Leopard Frog	<i>Rana pipiens</i>		S	WSC		Usually associated with permanent water with aquatic vegetation, from grassland to high elevations.	None
Lowland Leopard Frog	<i>Rana yavapaiensis</i>	SC	S	WSC		Usually near permanent water, from desert to oak-pine woodland elevations.	None
REPTILES							
Arizona Night Lizard	<i>Xantusia vigilis (arizonae)</i>		S			A primarily diurnal and crepuscular lizard that is typically found beneath surface debris such as dead branches of Joshua trees, clumps of agaves, or large columnar cacti, or in crevices or beneath rocks.	None
Banded Gila Monster	<i>Heloderma suspectum cinctum</i>	SC				Primarily in succulent desert with shrubs or grasses, but does get up into oaks.	None
Sonoran Desert Tortoise	<i>Gopherus agassizii</i>	SC		WSC		Completely terrestrial desert species requiring firm, but not hard, ground for construction of burrows, frequents desert oases, riverbanks, washes, and rocky slopes.	None
Desert Rosy Boa	<i>Charina trivirgata gracia</i>	SC	S			Found in areas of rocky shrubland and desert. It is often attracted to oases and permanent or intermittent streams, but it does not require permanent water.	None
Mexican Garter Snake	<i>Thamnophis eques megalops</i>	SC	S	WSC		Generally found in pine-oak or piñon-juniper elevations, associated with permanent water sources.	None

**TABLE 3-6
FEDERAL, STATE, USFS, AND ANPL HIGHLY SAFEGUARDED SPECIES RECORDED AS PRESENT IN
YAVAPAI COUNTY, AND PROBABILITY OF OCCURRENCE WITHIN THE PROJECT PLANNING AREA**

Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
REPTILES Cont.							
Narrow-headed Garter Snake	<i>Thamnophis rufipunctatus</i>	SC	S	WSC		A highly aquatic-dependent species of rocky lakeshores and clear rocky streams. Occurs from piñon-juniper up to ponderosa elevations.	None
FISH							
Longfin Dace	<i>Agosia chrysogaster</i>	SC				A wide range of habitats, from sand-bottomed desert streams to cool, clear creeks in the lower mountains.	None
Desert Sucker	<i>Catostomus clarki</i>	SC				Found in small to moderately large streams with riffles and pools.	None
Sonora Sucker	<i>Catostomus insignis</i>	SC				Found in a variety of habitats from warm water rivers to trout streams, usually in gravelly or rocky pools of relatively deep, quiet water.	None
Little Colorado River Sucker	<i>Catostomus</i> sp. 3	SC		WSC		North-flowing tributaries of the Little Colorado River drainage including East Clear Creek.	None
Desert Pupfish	<i>Cyprinodon macularius</i>	E		WSC		Shallow water in springs, small streams, and marshes, often in areas with soft substrates and clear water.	None
Speckled Dace	<i>Rhinichthys osculus</i>	SC				This species is generally a bottom dweller, in rocky riffles, runs and pools of headwaters, creeks, and small to medium rivers.	None
Gila Chub	<i>Gila intermedia</i>	E	S	WSC		Utilize a variety of habitat types in smaller streams, springs, and marshes. Adults prefer heavily vegetated deeper pools while juveniles occur in riffles, pools, and along undercut banks.	None
Roundtail Chub	<i>Gila robusta</i>	SC	S	WSC		A resident of cool to warm water in mid-elevation streams and rivers.	None

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YAVAPAI COUNTY, AND PROBABILITY OF OCCURRENCE WITHIN THE PROJECT PLANNING AREA**

Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
FISH Cont.							
Loach Minnow	<i>Tiaroga cobitis</i>	T				A bottom-dwelling species frequenting turbulent riffles of rivers and larger tributaries. They prefer swift flowing streams with gravelly to cobbly bottoms.	None
Spikedace	<i>Meda fulgida</i>	T	S	WSC		Adults occur in flowing waters of medium depth, typically at the outflow of creeks feeding large streams. Proposed critical habitat in the Verde River.	None
Gila Topminnow	<i>Poeciliopsis o. occidentalis</i>	E		WSC		Vegetated springs and margins, pools, and backwaters of creeks and small to medium rivers.	None
Colorado River Pikeminnow	<i>Ptychocheilus lucius</i>	E (XN)		WSC		Typically present in warm waters of seasonally variable, fast-flowing rivers and streams with a high sediment load.	None
Razorback Sucker	<i>Xyrauchen texanus</i>	E	S	WSC		Eddies, backwaters, and deeper water, over sand, mud or gravel, Colorado River (designated critical habitat), Lake Mohave, and San Juan River (designated critical habitat). Designated critical habitat in the Verde River.	None
INVERTEBRATES							
Verde Rim Springsnail	<i>Pyrgulopsis glandulosa</i>	SC	S			Nelson Place Springs east of Cordes Junction in the Sycamore Creek drainage.	None
Montezuma Well Springsnail	<i>Pyrgulopsis montezumensis</i>	SC	S			Endemic to Montezuma Well, Arizona.	None
Page Springsnail	<i>Pyrgulopsis morrisoni</i>	C	S			Lotic waters of springs, seeps, and marshes. Known only from Oak Creek at Page Springs, Arizona.	None

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FEDERAL, STATE, USFS, AND ANPL HIGHLY SAFEGUARDED SPECIES RECORDED AS PRESENT IN
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Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
INVERTEBRATES Cont.							
Fossil Springsnail	<i>Pyrgulopsis simplex</i>	SC	S			Several springs along the perennial portion of Fossil Creek near Strawberry, Arizona.	None
Brown Springsnail	<i>Pyrgulopsis sola</i>	SC	S			Endemic to Brown Spring along lower Verde River.	None
Maricopa Tiger Beetle	<i>Cicindela oregona maricopa</i>	SC	S			Found on open sand or mud flats and stone terraces along streams as well as near temporary and permanent ponds and occasionally in open soil some distance from water.	None
Parker's Cylloepus Riffle Beetle	<i>Cylloepus parkeri</i>	SC	S			Small streams with loose gravelly substrate. Known only from Roundtree Canyon in Bloody Basin in the Verde River drainage north of Horseshoe Reservoir.	None
Page Spring Micro Caddisfly	<i>Metrichia nigratta</i>	SC				Known only from Page Spring on Horseshoe Mesa, Grand Canyon.	None
Balmorhea Saddle-Case Caddisfly	<i>Protophila balmorhea</i>	SC				Streams generally with warm water and low to moderate flow rates, usually with a cobble substrate that supports algae species preferred by the larvae.	None
PLANTS							
Pima Indian mallow	<i>Abutilon parishii</i>	SC	S			Occurs on rocky slopes and canyon bottoms in desertscrub, and up into semidesert grassland, from 2,477 to 4,856 feet.	None
Arizona agave	<i>Agave arizonica</i>	E			HS	Open, rocky slopes from desertscrub up into juniper grassland, from 3,600 to 5,800 feet. Known from clones in the New River Mts.	None

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Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
PLANTS Cont.							
Tonto Basin agave	<i>Agave delamateri</i>	SC	S		HS	On open hilly slopes associated with drainages; Tonto Basin to Verde River area. Population remnants of Hohokam and Salado cultures.	None
Hohokam agave	<i>Agave murpheyi</i>	SC	S		HS	Desertscrub habitat on hilly slopes or alluvial terraces along washes in southern Yavapai and northern and eastern Maricopa Counties. Relictual populations from Hohokam cultivation.	None
Mt. Dellenbaugh sandwort	<i>Arenaria aberrans</i>		S			Meadows within oak and pine forest, between 5,500 and 9,000 feet elevation.	None
Arizona giant sedge	<i>Carex ultra</i>		S			Moist soils associated with springs and stream. Known in Yavapai County only from a single occurrence each in the Mazatzal and Hieroglyphic Mountains.	None
Tusayan rabbitbrush	<i>Chrysothamnus molestus</i>		S			Found in open pinyon-juniper grasslands.	None
Cameron water-parsley	<i>Cymopterus megacephalus</i>	SC	S			Occurs on sandy, gravelly, or shaly substrates. Known from Yavapai County on limey soils associated with <i>Canotia holacantha</i> . Elevations from 4,440 to 5,170 (7,000) feet.	Low
Rock fleabane	<i>Erigeron saxatilis</i>		S			Shaded bedrock in steep-walled canyons, from 4,400 to 8,350 feet.	None
Apache wild-buckwheat	<i>Eriogonum heermannii</i> var. <i>apachense</i>	SC				Occurs only on gypseous soils in Sonoran Desert habitat; associated with <i>Purshia subintegra</i> .	None
Heathleaf wild-buckwheat	<i>Eriogonum ericifolium</i> var. <i>ericifolium</i>		S			Found only on Tertiary lakebed deposits in powdery gypseous limestone, between 3,000 and 3,500 feet.	None

**TABLE 3-6
FEDERAL, STATE, USFS, AND ANPL HIGHLY SAFEGUARDED SPECIES RECORDED AS PRESENT IN
YAVAPAI COUNTY, AND PROBABILITY OF OCCURRENCE WITHIN THE PROJECT PLANNING AREA**

Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
Ripley wild buckwheat	<i>Eriogonum ripleyi</i>	SC	S			Restricted to tertiary lakebeds on well-drained powdery soils derived from limestone, sandstone, or volcanic tuffs and ashes. Occurs from 2,000 to 6,000 feet in elevation.	None
Flagstaff pennyroyal	<i>Hedeoma diffusum</i>		S			Found in shallow soils on Kaibab limestone pavement and cliffs in ponderosa pine forest, between 4,500 and 7,000 feet.	None
Eastwood alum root	<i>Heuchera eastwoodiae</i>		S			Shaded canyons between 5,000 and 6,000 feet in elevation.	None
Broadleaf lupine	<i>Lupinus latifolius</i> ssp. <i>leucanthus</i>		S			Higher elevations associated with riparian areas.	None
Flagstaff beardtongue	<i>Penstemon nudiflorus</i>		S			Dry slopes of ponderosa pine forest, from 4,500 to 7,000 feet elevation.	Low
Arizona phlox	<i>Phlox amabilis</i>		S			3,000 to 3,500 feet	Moderate
Hualapai milkwort	<i>Polygala rusbyi</i>		S			On limestone substrate, from 3,200 to 5,000 feet elevation.	Moderate
Parish alkali grass	<i>Puccinellia parishii</i>	SC			HS	Found on moist alkaline soils at seeps, or along streams, from 2,950 to 6,070 feet elevation.	None
Arizona cliffrose	<i>Purshia subintegra</i>	E			HS	Desertscrub habitat from 2,500 to 4,000 feet, usually on whitish Tertiary lakebed deposits. The closest known locality is near Cottonwood, Arizona, approximately 12 miles to the east.	None
Verde Valley sage	<i>Salvia dorrii</i> ssp. <i>mearnsii</i>	SC	S			Occurs in gypseous Tertiary lakebed soils in desertscrub habitat, in red-brown clay and sandy soils of the Supai/Hermit Formation in the pinyon-juniper zone, or areas of exposures of Redwall Limestone, between 3,120 and 5,120 feet elevation.	Moderate

**TABLE 3-6
FEDERAL, STATE, USFS, AND ANPL HIGHLY SAFEGUARDED SPECIES RECORDED AS PRESENT IN
YAVAPAI COUNTY, AND PROBABILITY OF OCCURRENCE WITHIN THE PROJECT PLANNING AREA**

Common Name	Scientific Name	Federal Status	USFS	State of Arizona	ANPL	Habitat	Probability of Presence
Tusayan flame flower	<i>Talinum validulum</i>	SC				Found on shallow rocky-clay soils derived from basalt, or on soils derived from Kaibab limestone from pinyon-juniper up into ponderosa forest.	Moderate

*ANPL Salvage Restricted (SR) plant species are not listed. Species highlighted in gray are either known to be present, or are considered to have a moderate or better chance of occurring within the project area.
Sources: AZGFD (2003); ARPC (2001); BISON (2004); Benson and Darrow (1981); Burt and Grossenheider (1980); Ehrlich et al. (1988); Hershler and Landye 1988; Hoffmeister (1986); ITIS (2003); Kearney and Peebles (1960); Minckley (1973); NGS (2002); Pavak (1993); Stebbins (2003); USFS (2004); Wheeler (2003).

Study Definitions:

- | | |
|-----------------------------------|--|
| E – Federally Endangered | DM – Delisted Taxon, Recovered, Being Monitored First Five Years |
| T – Federally Threatened | XN – Experimental, Nonessential Population |
| C – Federal Candidate for Listing | BEA – Protected by Bald Eagle Protection Act |
| SC – Federal Species of Concern | S – Forest Service Sensitive Species |
| PE – Proposed Endangered | WSC – State of Arizona Wildlife of Special Concern |
| PDL – Proposed for Delisting | HS – State of Arizona Highly Safeguarded Plants |

Species Accounts

Federally Listed Species

There are no federally listed threatened, endangered, or candidate species that would normally be present within the project area. No Designated Critical Habitat is present within the project area.

Forest Sensitive Species

Arizona Phlox (*Phlox amabilis*)

Status

Federal	None
USFS	Sensitive
State	None

Arizona phlox is a low plant with thick, oblong leaves that is endemic to southern Coconino, Yavapai, and Graham counties in Arizona (Kearney and Peebles 1960). Plants have been found between 3,000 and 3,500 feet elevation (NAZ 2004). The project elevation is above the usual range for the Arizona phlox, but the plant could be present in the project area.

Hualapai Milkwort (*Polygala rusbyi*)

Status

Federal	None
USFS	Sensitive
State	None

The Hualapai milkwort is known from Yavapai and Mohave counties in Arizona (Kearney and Peebles 1960). Habitat given on a specimen collected by Paul Boucher in 1985 states that the plant was collected on the Verde formation with *Canotia* and *Juniper* as associated plants. This location was a few miles northeast of Cottonwood, Arizona. Other locations include areas around Camp Verde and Montezuma Well National Monument. The Hualapai milkwort was found as several distinct populations north of Paulden during a 1995 botanical survey of the PNF-Limestone Grazing Allotment (SWBR 1995). These populations are approximately 24 miles northwest of the Yavapai Substation. The elevation of these populations was at approximately 4,800 feet. Suitable habitat for the species may be present in the vicinity of the Yavapai Substation. The Hualapai milkwort also was found just west of the Verde River, approximately 10 miles east-northeast of the project right-of-way, at an elevation of approximately 3,720 feet, during a botanical survey of other PNF grazing allotments (SWBR 1996).

Mearns Sage (*Salvia dorrii mearnsii*)

Status

Federal	Species of Concern
USFS	Sensitive
State	None

The Mearns sage is a low-profile multi-branched shrub up to 20 inches (50 centimeters) in height. The plants may be spiny, with narrow to slightly rounded leaves 0.4 to 1.4 inches (10 to 35 millimeters) in length. Flowers appear between April and May and have a bright blue corolla and a maroon calyx. The plants often are present as localized colonies of hundreds of plants (ARPC 2001).

The Mearns sage occurs on a variety of specific substrates including grayish powdery calcareous soils and white, powdery gypseous limestone of Tertiary lakebed deposits at Sonoran Desertscrub elevations. It also occurs on red-brown clay and sandy soils of the Supai/Hermit Formation, at piñon-juniper elevations, and on Redwall limestone, from 3,200 to 4,560 feet elevation (ARPC 2001).

The Mearns sage is known from a restricted range within the Verde Valley and the upper Verde River drainage (ARPC 2001). Twelve populations of the Mearns sage were located during a botanical survey conducted on PNF grazing allotments (SWBR 1996). These populations, ranging from 2,000 to 50,000 plants in size, were found in the vicinity of the Verde River, between 3,950 and 5,200 feet elevation (SWBR 1996), with the closest being only a little over 4 miles northwest of the project right-of-way. Some of these occurrences were in areas of disturbed soils along existing power line rights-of-way (USFS 2004). The Mearns sage could be present within the project right-of-way if areas with suitable soils are present.

Federal Species of Concern

Pale Townsend's Big-eared Bat (*Plecotus townsendii pallescens*)

Status

Federal	Species of Concern
USFS	None
State	None

Townsend's Big-eared Bat (*P. townsendii*) occurs throughout the western United States west of the Great Plains, north into British Columbia, and south to Oaxaca, Mexico (Barbour and Davis 1969; BCI 2002; Harvey et al. 1999). The Pale Big-eared Bat (*P. t. pallescens*) is mostly restricted to the desert southwest (Barbour and Davis 1969).

The Pale Big-eared Bat normally roosts in mines or caves, and they typically return to the same roosts each year (Harvey et al. 1999). These bats are highly sensitive to disturbance, and they will relocate within a mine or cave and eventually abandon the roost as a result of repeated disturbance (Barbour and Davis 1969; Schmidly 1991). It is probably the bat species most frequently encountered in caves and mines in the western United States (Barbour and Davis 1969). The Pale Big-eared Bat is found from low desert up into coniferous forest (Hoffmeister 1986). Colonies of Pale Big-eared Bats usually occur in groups from about a dozen up to a couple of hundred bats (Barbour and Davis 1969; WBWG 2004). Pale Big-eared Bats evidently hibernate in Arizona and are one of the few bats that are present year round (Hoffmeister 1986). Many references have stated that the Pale Big-eared Bat prefers moths to other prey (Barbour and Davis 1969; Harvey et al. 1999; WBWG 2004). However, other records indicate a variety of prey in their diet (Schmidly 1991).

Abandoned mines, karst features, and crevices in rock walls within the project area could provide suitable roosting habitat for Townsend’s Pale Big-eared Bats. The bats would be most likely on the project right-of-way during nocturnal foraging activities, primarily on Forest Service land in Great Basin conifer woodland habitat.

Fringed Myotis (*Myotis thysanodes*)

Status

Federal	Species of Concern
USFS	None
State	None

The Fringed Myotis is named for the fringe of short hairs present at the posterior edge of its interfemoral membrane. The Fringed Myotis is found in a wide variety of habitats from creosote bush in the low desert to coniferous forests, but it is most commonly encountered in oak or pinyon woodlands (Barbour and Davis 1969; Harvey et al. 1999; WBWG 2004). It has seldom been observed in the lower desert areas below about 2,500 feet (WBWG 2004). This bat roosts in mines, caves, rock crevices, trees, and buildings (Barbour and Davis 1969; Hoffmeister 1986; Schmidly 1991). Fringed Myotis are widespread but rather uncommonly encountered bats. They group in clusters of up to 300 bats in maternity sites in mines or caves (Barbour and Davis 1969). The Fringed Myotis feeds on various insects, but it seems to select small beetles and moths preferentially (Harvey et al. 1999; WBWG 2004). The Fringed Myotis is very sensitive to roost disturbance, and the primary threat to this species is the destruction of roosting sites (WBWG 2004).

The Fringed Myotis is likely to be present on NFS lands in the vicinity of the Yavapai Substation, among the juniper trees within Great Basin conifer woodland habitat. The bats would probably only be present on the project right-of-way during nocturnal foraging activity. However, day roosts in abandoned mines or karst features also could be present in this area.

Long-legged Myotis (*Myotis volans*)

Status

Federal	Species of Concern
USFS	None
State	None

The Long-legged Myotis is probably the most common species of myotis in the western United States (Barbour and Davis 1969). However, it is primarily a higher-elevation species, usually occurring no lower than 4,000 feet elevation in piñon, juniper, or oak (Hoffmeister 1986; Harvey et al. 1999). This species utilizes a variety of roosting habitat, but it does not typically use mines or caves for day roosts (Barbour and Davis 1969). The Long-legged Myotis may use cavities in trees, space beneath tree bark, crevices in cliffs, cracks or crevices in stream banks, or buildings (Barbour and Davis 1969; Harvey et al. 1999; Hoffmeister 1986). The Long-legged Myotis would most likely be present on the right-of-way only during nocturnal foraging activity.

Western Small-footed Myotis (*Myotis leibii (ciliolabrum)*)

Status

Federal	Species of Concern
USFS	None
State	None

The Western Small-footed Bat occurs from southwestern Canada south to central Mexico (Bat Conservation International [BCI] 2002; Schmidly 1991). This species occurs in a variety of habitats, usually above 3,500 feet in elevation (BCI 2002; Hoffmeister 1986). The Western Small-Footed Bat roosts in a variety of habitats; in crevices in rocky cliffs, in holes in embankments, in mines and caves, in talus piles, under bark, in buildings, trees, and even under rocks on the ground (Barbour and Davis 1969; BCI 2002; Harvey et al. 1999; Hoffmeister 1986). The Western Small-Footed Bat feeds on a variety of small insects. Insect prey that have been recorded are true bugs, leafhoppers, ants, moths, beetles, and flies (Barbour and Davis 1969; Harvey et al. 1999).

Tusayan Flame Flower (*Talinum validulum*)

Status

Federal	Species of Concern
USFS	None
State	None

The Tusayan flame flower is found on shallow rocky-clay soils derived from basalt or on soils derived from Kaibab limestone, from piñon-juniper up into ponderosa forest habitat. Tusayan flame flower is a low succulent perennial with woody stems. The branches, which are produced annually, tend to grow horizontally. The plants have small-diameter succulent leaves up to 1½ inches in length that are round in cross-section. The leaves eventually turn reddish, and this is the derivation of the common name for the plant. Flowers that are white to pale pink are generally produced between August and September in response to the summer rains, but the plants may also bloom in May (AZGFD 2002).

The Tusayan flame flower is known primarily from areas just south of the Colorado River at the south rim of the Grand Canyon, and from several locations in south-central Coconino and northern Yavapai counties (AZGFD 2002). The Tusayan flame flower was reported to be present as several populations within the PNF-Limestone Grazing Allotment just north of Paulden during a study conducted in 1995 (SWBR 1995). There it was found on limestone mesas at an elevation of approximately 5,700 feet. This area is approximately 25 miles northwest of the Yavapai Substation, where suitable habitat for the species is present. The Tusayan flame flower could be present within the project corridor in areas of suitable habitat.

ENVIRONMENTAL CONSEQUENCES AND CUMULATIVE EFFECTS OF THE NO ACTION ALTERNATIVE

LAND USE AND RECREATION RESOURCES

Environmental Consequences

No impacts on existing or planned land uses or recreation opportunities would result through implementation of the No Action Alternative. Under this alternative the transmission line and substation would not be constructed, and the land use and recreation resources of the area would remain unchanged.

Cumulative Effects

There are no direct or indirect effects of implementing the No Action Alternative, and therefore there are no cumulative effects from this alternative.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Environmental Consequences

For the No Action Alternative, anticipated impacts are associated with future problems related to reliability and marginal voltage levels for customers in Chino Valley, as described in the discussion on purpose and need in Chapter 1. Under a no action scenario it is expected that outages would occur as the system is overloaded. This may be a particular problem in either summer or winter months when electricity use peaks. The reliability of electric service would continue to deteriorate, voltage levels would become unacceptable, and curtailment of electricity to some customers would be necessary during peak loading periods. While implementation of this action may curtail new residential development it would also result in marginal and unreliable electrical service to existing customers. There would be no new revenues collected by the county.

Cumulative Effects

Implementation of the No Action Alternative, along with past, present, and reasonably foreseeable actions, could result in increased outages and an inadequate supply of electricity to serve existing and future development in the Chino Valley area. Indirectly, the lack of reliable power and insufficient capacity could reduce or limit development in the eastern Chino Valley area.

EARTH AND WATER RESOURCES

Environmental Consequences

Under the No Action Alternative, no project construction would occur. No impacts to the current soil and water conditions in the project area would result from this alternative.

Cumulative Effects

There are no direct or indirect effects of implementing the No Action Alternative, and therefore there are no cumulative effects from this alternative.

AIR QUALITY AND NOISE

Environmental Consequences

Under the No Action Alternative, no project construction would occur. No impacts to air quality and noise resources would result from this alternative.

Cumulative Effects

There are no direct or indirect effects of implementing the No Action Alternative, and therefore there are no cumulative effects from this alternative.

VISUAL RESOURCES

Environmental Consequences

The purpose of the visual impact assessment is to characterize and describe the level of visual modification in the landscape that could result from the construction, operation, and maintenance of the proposed project. Modification of the landscape is described in levels of visual contrast, which affects scenic quality, sensitive viewers, and compliance with VMS objectives. The visual impact analysis considered contrast as a result of introducing new facilities to the existing landscape setting, access and potential vegetation clearing, and the presence of existing facilities (e.g., substations, and transmission lines), and sensitive viewers.

Visual Contrast

Visual contrast is defined as the degree of perceived change that would occur in the landscape as a result of the construction, operation, and maintenance of the Proposed Action. Visual contrast typically results from: (1) landform modifications that are necessary to upgrade access roads and construct tower pad sites; (2) removal of vegetation to maintain rights-of-way and clearance zones associated with the conductors and towers; and (3) introduction of new structures in the landscape.

Project contrast levels range from strong to weak; however, only weak and moderate project contrasts are expected to occur as a result of the construction, operation, and maintenance of the proposed project. Weak project contrast occurs where the proposed project would parallel the existing 230kV or 500kV transmission lines (southern and eastern portions of the project). Moderate contrasts would occur where the proposed project would not parallel an existing transmission line.

Under the No Action Alternative, no project construction would occur. No impacts to visual resources would result from this alternative.

Cumulative Effects

There are no direct or indirect effects of implementing the No Action Alternative, and therefore there are no cumulative effects from this alternative.

HERITAGE RESOURCES

Environmental Consequences

There are five NRHP-eligible archaeological sites/historic features within the project APE; one of these is located on NFS land. No impacts to cultural resources would result from the No Action Alternative.

Cumulative Effects

There are no direct or indirect effects of implementing the No Action Alternative, and therefore there are no cumulative effects on heritage resources from this alternative.

BIOLOGICAL RESOURCES

Environmental Consequences

There would be no environmental consequences to biological resources under the No Action Alternative.

Cumulative Effects

There are no direct or indirect effects of implementing the No Action Alternative, and therefore there are no cumulative effects on biological resources from this alternative.

ENVIRONMENTAL CONSEQUENCES AND CUMULATIVE EFFECTS FOR THE PROPOSED ACTION ALTERNATIVE

LAND USE AND RECREATION RESOURCES

Environmental Consequences

Impacts to land uses and recreation resources under this alternative are anticipated to be minimal. Existing access and overland travel (on state and private land) would be used during project construction.

Effects On NFS Land

The proposed route would be adjacent to two existing 500kV lines for the first 1.4 miles, and adjacent to an existing 230kV line for the entire portion of the route within the PNF. No new

access roads would be developed and existing access would not be upgraded. No overland travel would occur outside of APS' rights-of-way. The alternative would not modify the ROS classification for the area. No impacts to grazing or recreational activities are anticipated.

Effects Off NFS Land

The majority of the proposed route follows existing linear features. The proposed route would be adjacent to an existing 230kV line for 8.3 miles, and would rebuild approximately 3 miles of existing distribution line within Chino Valley. Other portions of the proposed route follow section lines and existing roads.

A few private property owners in the Antelope Meadows Subdivision would be affected by the project. In particular, rights-of-way would need to be acquired from these parcels. No impacts to grazing or recreational activities are anticipated. No planned land uses would be affected by this alternative. Implementation of the proposed project would enable further development to occur in the project area.

Cumulative Effects

Implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, would have minimal cumulative effects to land use and recreation resources. The project would be one infrastructure component of several (roads, water, etc.) that will be needed to serve future development within and near the eastern portion of Chino Valley.

SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Environmental Consequences

Effects On NFS Land

The Forest Service would receive right-of-way payments for the portion of the route that crosses NFS land and distribute part of the revenues to Yavapai County.

Effects Off NFS Land

The primary socioeconomic effects associated with the Proposed Action include income from jobs, goods, and services during the construction period; right-of-way revenue to affected entities; and the establishment of new infrastructure that would enable future development. In general, Chino Valley would likely experience an increase in employment and income from the project construction. Any local hiring would primarily be laborers and depend on the skills of the individuals. Other social impacts would include potential short-term impacts from the influx of

construction workers, such as short-term housing or motel use. Long-term impacts could include economic effects of operation and maintenance activities and tax revenue from easements through federal, state trust, and private land in Yavapai County. Public contact activities to ensure that appropriate notification of the proposed project occurred are described in Chapter 1.

Impacts on Minority and Low-Income Communities

No disproportionately high or adverse environmental impacts on Native Americans or minority or low-income communities in surrounding areas are anticipated to occur from the Proposed Action. The proposed project would potentially provide jobs to minority and low-income communities, as well as positive economic effects associated with tax revenues.

Cumulative Effects

The proposed project would result in positive economic impacts that are directly related to the Proposed Action. Locally, there would be increased revenues associated with right-of-way lease agreements and purchases of goods and services during the construction phase of the project. Positive, long-term socioeconomic impacts also would be associated with accommodating future electrical needs to support additional growth and economic development in the surrounding area.

EARTH AND WATER RESOURCES

Environmental Consequences

Effects On NFS Land

Impacts to earth resources from the proposed project are expected to be minimal. Soil disturbance would be kept to a minimum by using overland construction and existing access roads. Temporary disturbance at each pole location would be approximately 10 square feet. Each pulling and tensioning site would be approximately 100 feet by 200 feet, and approximately 3 pulling and tensioning sites would be required. All pulling and tensioning sites would be located within APS's existing and proposed right-of-way. Total acreage disturbed for the construction of the portion of the subtransmission line on the PNF would be approximately 1.4 acres. During construction, soil erosion would be minimized by implementing standard construction erosion measures and implementation of site-specific BMPs and mitigation measures (as specified in Chapter 2).

Effects Off NFS Land

Total acreage disturbed for the construction of the portion of the subtransmission line off of the PNF would be approximately 16 acres. Construction of the substation would impact approximately 2 acres.

The effects of the proposed activities would be localized, and there would be minimal effects to soil and water resources.

Cumulative Effects

Other earthmoving-related developments being planned in the project vicinity in the foreseeable future that would result in cumulative effects to soil and water resources include the proposed Transwestern natural gas pipeline (adjacent to the alternate option) and development of residences and other outbuildings. These actions could produce soil disturbance and, potentially, erosion, unless mitigation measures are implemented. Implementation of the BMPs, the mitigation measures listed in Table 2-2, and other construction planning activities would effectively reduce the potential negative effects from construction of the Proposed Action. Additionally, subdivision development and other earthmoving-related developments in the project area would likely be required to have a Storm Water Pollution Prevention Plan to address soil and water impacts. Therefore, implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, are anticipated to have minimal cumulative effects on soil and water resources.

AIR QUALITY AND NOISE

Environmental Consequences

Short-term and temporary air quality impacts would result from construction-related activities including fugitive dust and exhaust emissions from construction equipment. Exhaust constituents resulting from the use of gasoline- and diesel-powered construction equipment would consist primarily of carbon monoxide, nitrogen oxide, hydrocarbons, and sulfur dioxide. The Proposed Action would not generate any air pollutants after the completion of construction activities.

Due to the relatively short duration of construction activities, air pollutant emissions would be temporary and would be dispersed quickly. Impacts on air quality resulting from the Proposed Action would be short-term, generally limited to the construction time period, and would not exceed air quality standards. Long-term impacts resulting from the Proposed Action are not anticipated.

Methods to control short-term pollution (i.e., fugitive dust) generated as a result of construction could include limiting the amount of traffic and vehicle speeds on dirt roads during construction

and by watering or other appropriate dust-abatement measures. Construction equipment and vehicles used during construction will be properly maintained to minimize exhaust emissions.

The National Academy of Sciences (1977) defines a short-term, temporary noise impact as a change in the acoustical or vibrational environment that occurs for less than six months. Noise levels resulting from the Proposed Action would be almost exclusively due to construction-related activities. Construction activities associated with the transmission line and substation would result in a temporary increase in noise levels during daytime hours and may cause impacts (annoyance) to people in the immediate vicinity of the project. Increased noise levels associated with construction activities may range between approximately 80 and 90 decibels (dB) within 50 feet of the activity. For purposes of comparison, the sound level associated with a tracked bulldozer at a range of 50 feet would be equal to 89 dB; the sound level associated with a water truck within a distance of 50 feet would be equal to 88 dB; and a pick-up truck within 50 feet would be equal to a sound level of 80 dB. Assuming exposure to sensitive human populations, sound levels in this range are considered to be substantial. The extent of the noise impacts is not only a function of noise levels, but also the density of population exposed to the noise and the duration of exposure.

The construction period associated with Proposed Action would be staggered over an eight-month period for the entire project, with no more than two to three months in one particular area. It is expected that sound levels would vary substantially during periods of construction, and would be dependent on the specific construction activity. During nighttime hours, when noise typically presents the greatest nuisance, construction noise would be reduced to low to none.

Operation of the transmission line and substation would generate an indiscernible amount of electrical noise. A few scattered residences are located within ¼ mile of the proposed route between Route Mileposts 7.6 to 8.7, a single residence is located within ¼ mile of the proposed route near Route Milepost 17.7, and there are a few residences near Route Milepost 19.6. A few residences also occur within ¼ mile of the substation site. Impacts from the operation of the facilities to these residences are expected to be negligible.

Effects On NFS Land

Since the portion of the project occurring on NFS lands is only three miles in length, the period of construction is expected to be brief, and noise impacts temporary. The pinyon-juniper habitat on the NFS portion of the project is too dense for Pronghorn use and too thin for Mule Deer fawning. Mule Deer are more likely to be present in winter, during breeding season, but should not be adversely affected by construction related noise. There are no residences in the vicinity of the NFS portion of the project so there would be no construction related noise impacts to humans.

Effects Off NFS Land

Due the lack of sensitive noise receptors in most of the project area, noise impacts are anticipated to be low.

Cumulative Effects

Air quality and noise impacts may occur as a result of other proposed developments, such as the proposed Transwestern pipeline or residential construction, within the project area. These actions could produce adverse short-term air quality impacts due to fugitive dust. However, other than the Transwestern pipeline, no known new developments are being planned within the project area. Additionally, the incremental effects that result from the Proposed Action's short-term impacts would have minimal cumulative impacts. Cumulative impacts on air and noise resources as a result of the Proposed Action are expected to be directly related to the short term and temporary periods of construction. Implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, would have minimal cumulative effects on air quality and noise resources.

VISUAL RESOURCES

Environmental Consequences

Effects On NFS Land

Scenic Quality

Low impacts to scenic quality on the PNF associated with the construction, operation, and maintenance of the proposed project are anticipated as the Proposed Action would parallel an existing 230kV transmission line in Class B and C landscapes. Low temporary impacts are anticipated during the construction of the proposed transmission line. Construction materials would be stored at the (existing) Yavapai Substation. Ground disturbance would be minimized by using existing access. Using self-weathering poles would further reduce potential impacts.

Sensitive Viewers

Low impacts to sensitive viewers within PNF are anticipated to occur as a result of the Proposed Action. Viewers using Perkinsville Road would have direct views of the Proposed Action for a short duration. However, because portions of the Proposed Action would be positioned adjacent to an existing 230kV utility corridor, thus reducing vegetation clearing, impacts would be reduced.

Agency Management Objectives

The Proposed Action is compliant with modification and maximum modification VQO designation because the Proposed Action would parallel existing transmission lines through the PNF.

Effects Off NFS Land

Scenic Quality

Low impacts to scenic quality are anticipated since the Proposed Action would either parallel an existing 230kV transmission line for a portion of the route, involve re-building existing distribution lines, or parallel existing linear facilities. When not paralleling existing facilities, the line would cross only Class C landscapes.

Sensitive Viewers

Low to moderate viewer impacts are anticipated as a result of the proposed project. Low impacts are associated with approximately six residential viewers and several roads within the project area. Moderate impacts are anticipated to occur to one residential viewer and a small portion of Perkinsville Road. Using self-weathering steel poles where appropriate and non-specular conductor would effectively reduce the anticipated impacts for these sensitive viewers.

Alternate Option

Scenic Quality

Low impacts to scenic quality are anticipated because the Proposed Action would parallel an existing pipeline right-of-way for a portion of the route and cross only Class C landscapes when not paralleling existing facilities.

Sensitive Viewers

Impacts are not anticipated to occur as a result of constructing the alternate option because there were no sensitive viewers identified.

Cumulative Effects

Implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, may have direct and long-term minimal effects on visual resources. Existing residences

would have foreground to middleground views of the proposed project. Future residential development is planned in the vicinity of the project and may have views of the proposed project.

Alternate Option

Implementation of the Proposed Action alternate option, along with past, present, and reasonably foreseeable actions, may have direct and long-term minimal effects on visual resources. The construction of the alternate option would add vertical and horizontal elements (e.g., transmission line) into the landscape adjacent to dispersed residences and Perkinsville Road. Future residential development is anticipated in the vicinity of the alternate option and may have views of the proposed project. Additionally, a pipeline is proposed to be constructed adjacent to the alternate option, which could result in adverse impacts to the views from existing and future homes.

HERITAGE RESOURCES

Environmental Consequences

Effects On NFS Land

Within the project APE of site AZ N:4:85 (ASM)/AR-03-09-01-692 (PNF), EPG identified no artifacts and no surface features. The portion of the site that has been previously excavated is in close proximity to the proposed project APE. Previous excavations at this site did not identify any subsurface features.

Given the extensive size of site AZ N:4:85 (ASM)/AR-03-09-01-692 (PNF), the proposed project would not be able to avoid this site. It is our expectation that the proposed project would have a no adverse affect to the site, given that the site was previously excavated, and no subsurface features were identified. However, given the potential for discovery situations, it is our recommendation that an archaeological monitor be present on the site during construction. A monitoring plan has been drafted and is attached to the cultural resource report as Appendix D.

Effects Off NFS Land

Sites AZ N:7:341 (ASM) and AZ N:7:406 (ASM) are small artifact scatters and most likely can be avoided through careful pole placement and spanning. If construction is within 100 feet of these sites, EPG recommends monitoring for avoidance to prevent unanticipated disturbances. If the sites cannot be avoided, EPG recommends the preparation and implementation of a treatment plan for approval by the appropriate land managing agency and the SHPO, prior to construction.

Within the project APE of sites AZ N:3:29 (ASM), AZ N:7:118 (ASM), and AZ N:7:158 (ASM), EPG identified a few chipped stone artifacts and no surface features. In two of the sites, AZ N:3:29 (ASM) and AZ N:7:158 (ASM), the portion of the site that has been excavated is in close proximity to the proposed project APE. For those sites that have surface features, these are located north of the proposed APE and would not be affected by the project.

EPG concurs with the original recommendation that the sites are eligible for listing on the NRHP under Criterion D, for their potential to provide further information on prehistoric settlement, subsistence, and resource procurement. Given the extensive size of the sites, the proposed project would not be able to avoid the sites. It is our expectation that the proposed project would have a no adverse affect to sites AZ N:3:29 (ASM), AZ N:7:118 (ASM), and AZ N:7:158 (ASM) given the previous excavations. In order to mitigate adverse impacts to the sites, it is our recommendation that an archaeological monitor be present on the sites during construction.

Alternate Option

There are no previously recorded sites located within the alternate option. An intensive pedestrian survey was not completed for the area because landowners did not provide permission to access this portion of the project. Therefore, unknown sites may exist.

Monitoring and Mitigation Measures

Archaeological monitoring has been recommended for the Proposed Action. Archaeological monitoring consists of observing those ground-disturbing activities that occur within the archaeological site boundaries during construction to record and document any discovery situations that may occur as a result of the construction activities. Given that no subsurface features were identified during the testing on these register eligible sites, it is unlikely that subsurface features would be discovered during the construction activities.

A monitoring plan has been developed that addresses the protocols and procedures necessary for monitoring on this project. This document must be reviewed and approved by the appropriate land managing agencies and the SHPO prior to construction. In the event of a discovery situation, the guidelines outlined in the monitoring plan will be followed.

Cumulative Effects

Implementation of the Proposed Action, along with past, present, and reasonably foreseeable actions, would have minimal cumulative effects to heritage resources because sites AZ N:7:341 (ASM) and AZ N:7:406 (ASM) would be avoided, and sites AZ N:3:29 (ASM), AZ N:7:118 (ASM), AZ N:7:158 (ASM), and AZ N:4:85(ASM)/AR-03-09-01-692 (PNF) would be monitored during construction to mitigate adverse impacts. Due to the presence of archaeological sites within the one mile study area, future projects could impact heritage resources. Intensive

pedestrian surveys and prescribed mitigation would need to be completed for future projects and reviewed by the appropriate land managing agency and the SHPO.

BIOLOGICAL RESOURCES

This section of the EA addresses the potential effects to biological resources resulting from construction, operation and maintenance of the proposed project. Potential biological resource impacts and concerns may include: (1) the loss of vegetation during construction; (2) effects to wildlife, including disturbance during construction, loss of forage and prey resources, loss of habitat structure (vegetation cover), and mortality of fossorial animals by heavy equipment traffic; and (3) impacts to special status species.

Environmental Consequences

The proposed route makes use of previously disturbed areas along most of its length. The route follows existing roadways, and pipeline or transmission line routes. The utilization of previously disturbed habitat along with implementation of appropriate mitigation measures, would keep potential impacts to biological resources at a low level.

Vegetation

The proposed route would pass through approximately equal quantities of the two biomes represented within the project area. Impacts to these habitats would include some damage to existing vegetation from vehicle and equipment operation at pole placement sites and during stringing and tensioning of the lines. Some vegetation and ground disturbance would occur if new access roads were required for pole placement. Removal of vegetation would impact available forage, nesting, and protective cover provided by these plants. Because the majority of the proposed route follows existing roads and linear utility corridors with currently available access, there would be no increased human access to habitats along the project route. Removal of vegetation could increase erosion potential along the right-of-way.

Great Basin/Plains grassland dominates the landscape for most of the length of the proposed route. Cattle are currently grazing a large percentage of the area that would be crossed. Livestock use on the PNF occurs during the winter season, and perennial herbaceous species diversity comprises a good mixture of warm and cool season grasses that are in good to excellent vigor. The terrain for most of the project length is generally of low slope and provides easy access to the right-of-way, using existing roadways or utility routes.

Great Basin conifer woodland is not fully developed within the project area but is ecotonal with the grassland habitat on the portion of the route that is on NFS land. Some removal of juniper or piñon pine may be required in this area.

The potential for the introduction of nonnative or invasive plant species may exist as construction vehicles enter the project area. In addition, soil disturbance associated with right-of-way construction may provide suitable habitat for undesirable species, such as Russian thistle (*Salsola iberica*). Mitigation measures to address these potential impacts would be followed as described in Chapter 2, including cleaning equipment before entering public land, and use of weed-free seed for reclamation of disturbed areas.

Effects On NFS Land

Removal of some juniper and pine trees may be required along short distances of the line north of the Yavapai Substation. Juniper and pine density on the PNF portion of the project route is low since the area is ecotonal between the piñon-juniper plant association and the adjacent Great Basin/Plains grassland habitat to the west. Normal-density piñon-juniper habitat occurs only east of the project area, with increased elevation. Removal of piñon and juniper trees within the project right-of-way would therefore not greatly affect the amount of this habitat present in the area. Ground-disturbing activities for road construction and pole placement could allow establishment of invasive plant species that could compete with native vegetation, as well as adversely affect the local fire regime.

Effects Off NFS Land

The proposed route follows existing roads and electrical transmission line routes for most of its length. The alternate option follows an existing pipeline and road for all of its length. Because of this, impacts to habitat and wildlife would be low in most areas. Impacts to vegetation in grazed low-stature grassland areas (most of the project route), where species diversity is low, would be minimal.

Wildlife

Direct impacts to animals present on the access roads, right-of-way, or in occupied burrows in these areas during construction of the transmission line could result in injury or death of these animals by construction equipment or vehicles traveling or operating in these areas. Loss of these animals would have a small effect on the predator prey base in the area. Removal of vegetation would reduce cover for some species. Other potential impacts could include habitat fragmentation and an increase in area susceptible to colonization by invasive plant species that may compete with forage plant species. Noise during project construction would cause temporary disturbances to wildlife, but should have no long-lasting effects.

Effects On NFS Land

Small mammals in burrows and vegetation and nestling birds and/or eggs in nests on the ground or in vegetation could be killed by construction traffic and vegetation removal. The presence of

the transmission line would be attractive to perching birds and would present some potential electrocution and collision hazard, particularly for raptors. The narrow width of the right-of-way would impact a very small portion of habitats available in the area and would not affect habitats or individual plant or animal species to a significant degree. Only a portion of the acreage within the right-of-way would be disturbed, with the greatest impacts occurring at pole placement sites.

Effects Off NFS Land

Most of the project alignment outside of NFS land is within Great Basin/Plains grassland habitat, with a small portion near the forest boundary being ecotonal with Great Basin conifer woodland habitat. Since most of this portion of the alignment is in areas heavily grazed by livestock, impacts to the sparse cover and forage vegetation present would be minimal. Ground-disturbing activities could provide opportunity for invasive plant species to colonize these areas and compete with native vegetation. Many species of invasive plants are not useable as forage by wildlife. Vegetation removal could impact invertebrate species that are used as prey by wildlife, primarily by species of birds and bats.

Small mammals in burrows and nestling birds and/or eggs in nests on the ground could be killed by construction traffic. The presence of the transmission line would be attractive to perching birds and would present some potential electrocution and collision hazard, particularly for raptors. The narrow width of the right-of-way would impact a very small portion of habitats available in the area and would not affect habitats or individual plant or animal species to a significant degree. The greatest impacts would occur at pole placement sites. The placement of the transmission line along existing roads and utilities would minimize impacts to wildlife, and would not increase human access to the area.

Special Status Species

Federally Listed Species

There are no federally listed threatened, endangered, proposed threatened or endangered, or candidate species that would normally be present within the project area. No designated critical habitat is present within the project area.

Non-Federally Listed Sensitive Species

Pale Townsend's Big-eared Bat (*Plecotus townsendii pallescens*)

Pale Townsend's Big-eared Bats roost in mines, caves, or structures from low-elevation desert up into pines.

Effects On NFS Land

The Pale Townsend's Big-eared Bat is highly sensitive to roost disturbance. However, due to the nature of the construction process, abandoned mines, karst features, and crevices in rock walls within the project area that may provide suitable roosting habitat for these bats are unlikely to be adversely affected. Removal of vegetation in Great Basin conifer habitat could affect insect prey species that the bats consume, but the level of this impact is considered low.

Effects Off NFS Land

Pale Townsend's Big-eared Bats would be likely to occur only occasionally outside NFS land during nocturnal foraging activity. Removal of vegetation could affect insect prey that may be used by these bats, but the level of impact is considered low.

Fringed Myotis (Myotis thysanodes)

The Fringed Myotis utilizes a variety of roost types, primarily in caves, mines or buildings, typically at oak and piñon elevations. The primary threat to the Fringed Myotis is the destruction of roosting sites.

Effects On NFS Land

Several abandoned mine adits and shafts are present in the foothills at the east end of the project. These mines could provide roosting habitat for this species, but none of the known mines are within the right-of-way of the proposed route, and no impacts to such sites are anticipated from the construction of the transmission line. Large, dead snags suitable as roosts for bats are not present within the project area. The presence of the Fringed Myotis within the right-of-way would probably be restricted to nocturnal foraging activity, and no direct impacts to this species from the construction of the project are anticipated. Removal of Great Basin conifer vegetation could impact insect prey species that the bats consume, but the level of this impact is considered low.

Effects Off NFS Land

The Fringed Myotis would be unlikely to be present in areas off NFS land, but could occur in the Chino Valley during nocturnal foraging activity. Impact to the Fringed Myotis off NFS land would be restricted to removal of vegetation that could support insect prey utilized by these bats. The level of this effect is considered low.

Long-legged Myotis (*Myotis volans*)

The Long-legged Myotis utilizes a variety of roost types, generally above 4,000 feet in pine, juniper, or oak habitat.

Effects On NFS Land

Suitable roosting habitat for the Long-legged Myotis is probably not present within the right-of-way for this project, but suitable roosts may be present nearby. The presence of this species within the project right-of-way would probably only occur during nocturnal foraging activity, and no direct impacts to the Long-legged Myotis are anticipated from the construction of the proposed transmission line. Removal of Great Basin conifer vegetation could impact insect prey species that the bats consume, but the level of this impact is considered low.

Effects Off NFS Land

The Long-legged Myotis would probably not occur in habitats outside of Great Basin conifer habitat on the PNF.

Western Small-footed Myotis (*Myotis leibii (ciliolabrum)*)

The Western Small-footed Myotis utilizes a variety of roost types, usually above 3,500 feet.

Effects On NFS Land

The Western Small-footed Myotis could occur in Great Basin conifer habitat on the PNF portion of the project, where it would likely only be present during nocturnal foraging activity. No direct impacts to the Western Small-footed Myotis are anticipated from the construction of the proposed transmission line. Removal of Great Basin conifer vegetation could impact insect prey species that the bats consume, but the level of this impact is considered low.

Effect Off NFS Land

The Western Small-footed Myotis is unlikely to occur within the project area outside of suitable habitat on the PNF.

Arizona Phlox (*Phlox amabilis*)

Arizona phlox is endemic to north, central, and eastern Arizona, between 4,790 to 6,900 feet elevation. Arizona phlox occurs in open, exposed, limestone rocky slopes within piñon-juniper woodlands and ponderosa pine Gambel oak communities. Portions of the project area are within the elevation limits for this species, and part of the transmission line route falls within piñon-juniper woodlands, which is one of the vegetation communities in which the species occurs. Arizona phlox is known to occur along Chino Valley Road.

Effects On NFS Land

Arizona phlox is not known to be present on the project, but suitable habitat for the species may be present near the Yavapai Substation. Direct effects to any plants present could include crushing of the plants by construction activity. Potential habitat for the species within the project area is less than 15 acres, all on NFS land. If the Arizona phlox were present on the project, the potential disturbance level for the plants from construction of the line would be moderate.

Indirect effects could include alteration of habitat from disturbance of ground surface in limestone-derived substrate in piñon-juniper habitat. Ground disturbance could allow colonization of invasive plant species that could compete for resources with the Arizona phlox. Soil compaction from construction activities can adversely affect plant recruitment, and ground disturbing activities, particularly vegetation removal will increase erosion potential.

Effects Off NFS Land

There is no suitable habitat for the Arizona phlox outside of the portion of the project on NFS land.

Flagstaff Pennyroyal (*Hedeoma diffusum*)

This species is endemic to northern Arizona and is found on the Coconino and PNFs. It grows primarily on dolomitic limestone outcrops or soils derived from dolomitic limestone. However, it has been found on sandstone in the PNF. Flagstaff pennyroyal is known to occur in Sycamore Canyon, along Chino Valley Road. It is possible that some potential habitat exists for this species within the project area; however, this species is not known to occur in the project area.

Effects On NFS Land

Potential habitat for the Flagstaff pennyroyal may be present on the PNF, at the east end of the project. Direct effects to any plants present could include crushing of the plants. Potential habitat for the species within the project area is less than 15 acres, all on NFS land. If the Flagstaff pennyroyal is present on the project, the potential disturbance level for the plants from construction of the line would be moderate.

Indirect effects could include alteration of habitat from disturbance of ground surface in limestone-derived substrate. Ground disturbance could allow colonization by invasive plant species that could compete for resources with the Flagstaff pennyroyal. Ground disturbing activities can adversely affect plant recruitment, and vegetation removal will increase erosion potential.

Effects Off NFS Land

The only potentially suitable habitat for the Flagstaff pennyroyal within the project limits is on the PNF portion of the line.

Hualapai Milkwort (*Polygala rusbyi*)

This species is known only from northern and central Arizona on the Coconino and PNFs, at elevations of 5000 to 6500 feet.

Effects On NFS Land

Hualapai milkwort is not known to be present on the project but suitable habitat for the species could be present in the vicinity of the Yavapai Substation. The project area is between known occurrences for the species north of Paulden and at Camp Verde. If the Hualapai milkwort is preferential to soils of the Verde Formation, it is less likely that the plant would be present within the project area since these soils do not occur there. The nearest exposure of the Verde Formation occurs approximately 8 miles east of the east end of the project. Direct effects to any plants present could include the crushing of the plants. If the Hualapai milkwort is present on the project, the potential disturbance level for the plants from construction of the line would be moderate.

Indirect effects would be limited to ground disturbing activities that could allow colonization of invasive plant species that could compete for resources with the Hualapai milkwort. Soil compaction from construction activities can adversely affect plant recruitment, and vegetation removal will increase erosion potential.

Effects Off NFS Land

Suitable habitat for the Hualapai milkwort is probably not present within the project limits on lands outside of the PNF.

Mearns Sage/Verde Valley Sage (*Salvia dorrii* ssp. *mearnsii*)

Mearns sage is endemic to central Arizona in portions of Yavapai and Coconino counties, where it occurs at elevations from approximately 3,120 to 5,120 feet, in open desertscrub or piñon-juniper woodland with sparse vegetative cover. It occurs on limestone soils of Tertiary lakebed deposits and on red-brown clay and sandy soil of the Supai/Hermit Formation. Mearns sage is known from the Verde Valley, Sedona, and along Oak Creek. A portion of the project area is located within one of the vegetation communities associated with this species, and the elevation range overlaps with that in which this species occurs. Verde Valley sage is known to be present as several populations were located a little over 4 miles northwest of the project right-of-way.

Effects On NFS Land

Direct effects to the Mearns sage would be restricted to possible crushing of individual plants by construction equipment. Potential habitat for the species within the project area is less than 15 acres, all on NFS land. If the Mearns sage is present on the project, the potential disturbance level for the plants from construction of the line would be moderate.

Indirect effects would be limited to ground-disturbing activities that could allow colonization by invasive plant species that may compete for resources with the Mearns sage. Soil compaction from construction activities can adversely affect plant recruitment, and ground-disturbing activities, particularly vegetation removal will increase erosion potential.

Effects Off NFS Land

Mearns sage would probably not occur within the project limits outside of suitable habitats that may be present on the PNF portion of the project route.

Tusayan Flame Flower (*Talinum validulum*)

The Tusayan flame flower is found on shallow, rocky clay soils derived from basalt, or on soils derived from Kaibab limestone, from piñon-juniper into Ponderosa forest.

Effects On NFS Land

Potential impacts to the Tusayan flame flower from the construction of the proposed transmission line could include temporary disturbance of habitat and crushing of some plants by vehicles and equipment during pole placement, wire stringing, and tensioning operations. The project area is near known occurrences of the Tusayan flame flower, and there is suitable habitat present in the project area. Since this species is not known to be present in the project area, potential impacts to the species are considered low.

Ground disturbance could provide places where invasive plant species could become established. Invasive plant species could compete for resources with the Tusayan flame flower, and in the case of some invasive grass species, increase the frequency and magnitude of fires that could adversely affect this species.

Effects Off NFS Land

The Tusayan flame flower would not occur on lands off the PNF portion of the project route due to the lack of suitable habitat in those areas.

Prescott National Forest - Management Indicator Species

The NFS lands crossed by the subtransmission line route are all within Great Basin conifer woodland that is ecotonal with the Great Basin/Plains grassland habitat in the Chino Valley west of the PNF. There are three Forest Service designated management indicator species (MIS) associated with this habitat that could potentially be affected by construction of the transmission line. Impacts to habitats represented by these MIS would affect considerably less than one percent of these habitat types when considered on a forest-wide scale. None of the PNF MIS or their habitats would be significantly impacted by the construction or operation of the proposed transmission line.

Mule Deer (*Odocoileus hemionus*)

The Mule Deer is the MIS for early seral stage piñon-juniper and chaparral vegetation types. It is likely that this species occurs in the project area in piñon-juniper habitat.

There would be some minor loss of forage and cover from crushing of vegetation. Removal of juniper and pine trees on the PNF portion of the line would increase the quantity and quality of browse for Mule Deer. Habitat for the species within the project area is less than 15 acres, all on NFS land. Mule deer could be disturbed by construction activity, but the level of disturbance would be low. Also, the Mule Deer population in the project area is most likely small since the project is at the edge of suitable habitat for the species.

Ground-disturbing activities could increase erosion potential and allow incursion of invasive plant species that may not provide suitable forage for Mule Deer.

Juniper (Plain) Titmouse (*Baeolophus ridgwayi*)

The Juniper Titmouse is the MIS for late seral-stage piñon-juniper vegetation type and the snag component within piñon-juniper habitat. It is possible that this species occurs in the project area in piñon-juniper habitat. However, the piñon-juniper habitat along the proposed right-of-way is early seral stage, and the presence of this species would be only an occasional occurrence from more suitable adjacent habitat to the east.

There would be only very limited potential effects to piñon-juniper habitat from construction of the transmission line, and there is no late seral-stage development of this habitat type within the project area. Juniper trees present in the project area are not of sufficient stature to provide suitable snag nesting habitat for the Juniper Titmouse.

Removal of juniper trees could reduce the number of potential juniper recruits that could become snags of sufficient stature suitable for nesting for the Juniper Titmouse.

Pronghorn (*Antilocapra americana*)

The Pronghorn is the MIS for early and late seral-stage grassland/desert shrub vegetation types. During a site visit, Pronghorn were observed on the floor of the Chino Valley very near the proposed transmission line route.

Pronghorn could be disturbed by construction activities. Potential habitat for the species within the project area is less than 60 acres on state trust and private land. Because of the large area of suitable habitat for Pronghorn in the Chino Valley, Pronghorn can readily avoid localized construction activities in the valley, and disturbance levels would be low. Because there is no permanent water within 1 mile of the project route that would support Pronghorn fawning, there would be no impacts to Pronghorn fawning activities. There could be some minor loss of forage that could be used by Pronghorn resulting from crushing of plants by construction equipment.

Ground-disturbing activities could increase erosion potential and allow incursion of invasive plant species that may not provide suitable forage for Pronghorn.

Wildlife Species of Concern (State of Arizona/AZGFD)

Ferruginous Hawk (*Buteo regalis*)

Ferruginous Hawks occur in grasslands and other open habitats, primarily from lower (2,800 to 5,000 feet) to middle (5,000 to 7,500 feet) elevations. Ferruginous Hawks breed in grasslands

and other open habitats. Portions of the route located in grasslands may provide some foraging habitat for this species in the project area. It is unlikely that this species breeds in the project area because there are no large trees to provide nesting sites.

There could be some loss of small mammal prey that could be utilized by Ferruginous Hawks that may result from the potential killing of rodents by construction equipment or removal of cover vegetation that would support prey species, such as rabbits and birds.

Cumulative Effects

The project area is in the Granite Creek – Upper Verde River watershed. The total acreage of the watershed is 229,825 acres. The majority of the watershed (78 percent) is in private and state ownership, with the remainder being NFS land.

Much of the private or state land that has potential for residential and/or commercial development in the Chino Valley area is already experiencing development as well as increased disturbance associated with off-highway vehicle recreation. Future residential subdivisions in the project vicinity could also result in impacts to the vegetation communities or wildlife species in the area.

Livestock grazing occurs throughout the watershed on private, state, and NFS land. Range utilization standards and monitoring are in place on state and NFS land and are expected to maintain/improve vegetation conditions and provide for wildlife requirements in the area.

The Transwestern pipeline project proposed for Chino Valley would parallel approximately 3 miles of the alternate option for this project. Mitigation measures are being proposed that would reduce effects to vegetation and wildlife associated with the pipeline project.

A sand and gravel mining operation occurs on Granite Creek along the proposed transmission line corridor. Considering the small scale of the mining operation, continued operation or expansion of this facility would have minimal effects on vegetation or wildlife in the project area.

Cumulatively, the effects of the Proposed Action combined with these activities could produce a small change in existing vegetation conditions and minor effects to wildlife species from human use and disturbance.

Project Mitigation Measures

Mitigation measures for the project (Table 2-2) have been adopted, where applicable, to address potential effects specific to sensitive species or suitable habitat for such species, and for wildlife and vegetation in general. Potential impacts from invasive noxious weed species also are addressed.

Because there are no federally listed threatened, endangered, or candidate species that would be present, or whose habitat would be affected by this project, there are no species specific mitigation measures proposed.

To minimize disturbance to sensitive features in designated areas, structures and access roads would be sited so as to avoid sensitive features such as, but not limited to, riparian areas, water courses, residential uses, and cultural sites, and/or to allow conductors to clearly span the features, within the limits of standard structure design. Avoidance may be accomplished by spanning sensitive features or realigning the route, as approved by the Forest Service.

To minimize the effects of ground disturbance, areas with disturbed soils would be rehabilitated by seeding with a native seed mix tailored to match existing native vegetation in the project area. Seeding can include species that provide forage for Pronghorn and Mule Deer (MIS).

To minimize the spread of noxious weeds, all construction vehicles and equipment would be cleaned before coming onto NFS land. A high-pressure hose would be used to clear the undercarriage, tire treads, grill, radiator, and beds of any mud, dirt, and plant parts that may potentially spread the seeds of noxious plants. Should there be concentrated areas of noxious weeds within the project limits, additional cleaning may be required to prevent the contamination of uninfested areas. Seeds utilized for the reclamation of disturbed areas will be certified weed free.