



United States Department of the Interior

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In reply refer to:

AESO/SE
22410-2006-F-0365-R3

May 24, 2018

Mr. Steven Hattenbach, Director
Wildlife, Fish, Rare Plants & Rangeland Management
U.S. Forest Service, Southwestern Regional Office
333 Broadway SE
Albuquerque, New Mexico 87102

Dear Mr. Hattenbach:

Thank you for your November 27, 2017, request to reinitiate formal consultation on the Phase II Utility and Corridor Maintenance in Arizona Forests (biological opinion dated July 17, 2008; file number 22410-2006-F-0365) with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544), as amended (Act). This reinitiation addresses potential effects from the continued implementation of the Phase II utility (Salt River Project and Arizona Public Service) maintenance project on newly listed species and their proposed critical habitat. You determined that the proposed action “may affect and is likely to adversely affect” the threatened narrow-headed (*Thamnophis rufipunctatus*) and northern Mexican (*Thamnophis eques megalops*) gartersnakes and their proposed critical habitat.

INTRODUCTION

This biological and conference opinion (BO/CO) is based on information provided in the November 27, 2017, biological assessment (BA) (USFS 2017), the 2008 BO (FWS 2008), meetings, telephone conversations, field investigations, and other sources of information. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, vegetation management activities, and its effects, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

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Consultation History

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| July 17, 2008 | The FWS issued a biological opinion to the Forest Service on the Phase II Utility and Corridor Maintenance in Arizona Forests. |
| December 19, 2012 | The Forest Service reinitiated consultation with the FWS on the Phase II utility and corridor maintenance for loach minnow, spikedace, Chiricahua leopard frog, and southwestern willow flycatcher critical habitat designations. |
| June 11, 2013 | The FWS issued a biological opinion to the Forest Service on the Phase II Utility and Corridor Maintenance in Arizona Forests for designated critical habitat. |
| March 29, 2016 | The FWS received the Forest Service's Phase II maintenance project BA to reinitiate consultation for New Mexico meadow jumping mouse, narrow-headed gartersnake, northern Mexican gartersnake, their proposed critical habitats, and the proposed roundtail chub for Western Area Power Administration (WAPA) and Navopache Electric Co-op (NEC). |
| November 9, 2016 | The FWS issued a concurrence to the Forest Service on the Phase II Utility and Corridor Maintenance in Arizona Forests for the newly listed and proposed species and proposed critical habitat for WAPA and NEC. |
| November 27, 2017 | The FWS received the Forest Service's Phase II maintenance project BA to reinitiate consultation for the narrow-headed and northern Mexican gartersnakes and their proposed critical habitats for Arizona Public Service (APS) and Salt River Project (SRP). |
| April 6, 2018 | The FWS, Forest Service, and APS refined the conservation measures. |
| April 25, 2018 | The FWS sent a draft BO/CO to the Forest Service. |
| May 9, 2018 | The FWS received comments from the Forest Service on the draft BO/CO. |

BIOLOGICAL AND CONFERENCE OPINION

DESCRIPTION OF THE PROPOSED ACTION

A complete description of the proposed action is found in your November 27, 2017, BA. This consultation addresses Forest Service authorization for APS and SRP to conduct ongoing utility vegetation management, line maintenance, vehicle travel, and repair of access routes along utility corridors within and adjacent to permitted rights-of-way (ROWs) in Arizona National Forests (excluding Coronado and Kaibab National Forests) in accordance with existing special use permits and line easements.

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Background

Utilities within Arizona have numerous transmission, distribution, and communication lines that cross United States National Forest System (NFS) lands. These utility lines lie within existing ROW corridors and are authorized under Forest Service special use permits. As part of the special use permit conditions, the Forest Service authorizes the utility companies to conduct maintenance-related activities within an established ROW. The utility companies are permitted to work within and outside (for hazard tree removal) the established corridors (or ROW) to maintain their structures and manage vegetation. Utility maintenance that occurs on private land or other non-Forest Service in-holdings is not part of the special use permit or part of this consultation because the Forest Service does not authorize these maintenance activities or have jurisdiction on non-Forest Service lands.

APS, SRP, WAPA, NEC, Garkane Energy, and Qwest entered into a consultation agreement (see February 29, 2008 BA, USFS 2008) with the Forest Service and FWS in an effort to streamline section 7 consultations for utility actions within and outside of ROW corridors. It should be noted that only Qwest communication lines that are under-built (i.e., included within the APS power line corridors) on APS lines were included in this consultation. The consultation agreement includes two phases.

The formal BO for Phase I (Hazard Vegetation Removal in Utility Corridors on Arizona Forests) was finalized on July 5, 2007 (file number 22410-2007-F-0364). That BO remained in effect until the completion of the Phase II BO (USFWS 2008). Phase I of the consultation agreement covered removal of all imminent danger, hazard vegetation (includes both live and dead standing tree or vegetation having defects in the roots, butt, bole, or limbs, which predispose it to imminent failure) along utility corridors on all of the NFS lands in Arizona, with the exception of the Coronado NF. The purpose of hazard vegetation removal is twofold: 1) it allows the utility companies to provide uninterrupted service to customers, and 2) it provides protection against wildfires that could result from hazard vegetation coming into contact with power lines.

The purpose of this consultation reinitiation is continued Phase II implementation while addressing the narrow-headed and northern Mexican gartersnakes and their proposed critical habitat for APS and SRP utility lines and ROWs within Arizona NFS lands. This consultation will address all utility line maintenance related activities (i.e., hazard vegetation treatments, routine vegetation maintenance, routine and hazard aerial and ground-based utility inspection patrols, maintenance of lines, hardware and structures, and other associated actions) for the next 3 years. Failure to address vegetation clearance and fuels hazards could result in wildfires, major power outages, and injury to life or property. Additionally, existing Federal regulations and utility standards require maintenance, and new Federal energy regulations mandate vegetation inspections and treatment to maintain lines in safe and reliable operating conditions (NERC Reliability Standard FAC-003-1). Special use permits for the individual lines may expire and be renewed within the 3-year timeframe of this project. If the special use permit requires the utility to operate or expand their impact area beyond what is considered in this consultation, the Forest Service will review the proposed changes and re-initiate consultation with FWS, as appropriate.

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In addition, this reinitiation extends the 2008 BO (USFWS 2008) for three years for only APS and SRP, with a new expiration date of July 17, 2021.

Proposed Action

Inspections – Aerial and Ground

Both utility companies conduct aerial and ground vegetation inspections to detect hazard vegetation, inspect power lines, and plan equipment repairs and vegetation maintenance. The purpose of the inspections are to identify and plan work areas. Information from inspections may include access route planning, data gathering, equipment repairs, and necessary crew size and treatment methods. Timing of aerial and ground inspections is unpredictable.

Utility Vegetation Management

Routine vegetation maintenance, hazard vegetation treatments, vegetation inspection, and vegetation disposal are four sub-categories described in the BA under utility vegetation management (USFS 2018). Utility vegetation management is the process of managing vegetation within and outside of ROWs for the purpose of providing safe, efficient, and reliable delivery of electricity while minimizing vegetation related fires. Routine vegetation management occurs infrequently, generally every 2-3 years. Hazard vegetation removal may occur at any time of year, but generally is completed in less than one day. Aerial and ground-based vegetation inspections are conducted 1-2 times per year. The previous BAs and BOs describe each subcategory in more detail, and previous BAs and annual reports provide a summary of vegetation maintenance activities along with the activity type, duration, frequency, timing, equipment, and crews used.

Defensible Space around Poles

Defensible space around poles (DSAP) treatment involves clearing vegetation down to mineral soil around distribution poles with electrical equipment that is capable of sparking. The purpose of this effort is to reduce fire ignition, and if one does occur, to provide a firebreak. The vegetation treatment is accomplished using hand tools. A total of 51 poles may require DSAP treatment (totaling 0.37 acres) within proposed narrow-headed gartersnake critical habitat (USFS 2017). Of these poles, the majority (65 percent) occur on a single Oak Creek Canyon distribution line. All the DSAP poles are located in upland vegetation, not riparian vegetation.

Maintenance of Power Line Infrastructure

Line maintenance involves inspections and patrols to identify problem areas along the lines, structures, and hardware, and the repair and replacement of these problem areas for overhead and underground transmission and distribution lines. Inspections and patrol programs are used to monitor the health of the system and detect problems prior to failure and to detect problem areas requiring attention. Inspections can either be aerial or ground inspections. Line maintenance to replace poles and/or cross-arms occurs very infrequently (about every 10 years), but smaller scale repairs may occur in any year.

For wood pole replacement, about 75% are placed in the ground and backfilled with existing dirt and dirt is tamped down. Conversely, there tends to be not enough dirt available for backfill for about 25% of the poles, so an expanding foam is used. Also, when wood poles are replaced, the

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previous pole is not dug up and removed. A new hole is dug adjacent to the pole being replaced. The old wood pole is cut down at or near ground level. For steel structures, the legs are placed within cement footers. Because of steel's durability, they are not likely to be replaced during the proposed action.

Throughout this three-year project, it was estimated, based upon the approximate 30-year lifespan of wood poles and need for underground line replacement/repair, that no more than 72 poles and 0.582 miles of underground power lines will be replaced within gartersnake habitat (and proposed critical habitat). In narrow-headed gartersnake habitat (and proposed critical habitat) about 47 poles and 0.235 miles of underground power line could be replaced, while 25 poles and 0.347 miles of underground line may be replaced in northern Mexican gartersnake habitat (and proposed critical habitat). There is expected overlap with these repairs/replacements between these two species, however, there is also uncertainty of where these replacements/repairs occur to know exactly where, when, and how much will occur. Underground line replacement/repair included trenching with mechanized equipment to dig under the earth.

Repair of Access Routes

In most cases, the power lines in the action area have roads that approach and/or follow along or within the ROW. Utility vehicles may travel on or off-road within the utility ROW, but do not typically travel off-road outside of the ROW. In some instances to provide safe and reasonable access to the ROW corridor, the utilities must repair or conduct minor road maintenance. All activities will be coordinated with the appropriate Forest Service District. The frequency of these activities is rare, and thus would be expected to occur extremely infrequently within sensitive species habitats.

Conservation Measures

Narrow-headed and northern Mexican gartersnakes

To conserve the narrow-headed gartersnake and northern Mexican gartersnake, the following measures are to be applied within narrow-headed gartersnake and northern Mexican gartersnake habitat (critical habitat) within APS and SRP power line ROWs (note: there are no SRP ROWs within northern Mexican gartersnake habitat).

1. For all maintenance activities that will occur within gartersnake habitat, provide crews with training material on identifying the gartersnake, what to do if a gartersnake is observed in the project area, and on the following conservation measures in order to reduce impacts to individuals and habitat. The FWS will develop with the Utilities and Forest Service training materials, which could include field guide materials, natural history literature, photographs, maps, comparison to other common snakes, contact lists, and instructions for collecting photo-documentation.
2. Within gartersnake habitat, only drive on designated open roads and do not drive over-land. Within upland gartersnake habitat, avoid driving over-land unless it is necessary for safe maintenance of utility infrastructure. When driving within

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- gartersnake habitat, drive at a speed slow enough to allow a surface-active snake to be seen by the driver and avoided.
3. For routine vegetation maintenance work, do not use mechanical mower within gartersnake habitat.
 4. Crews shall not touch or handle snakes of any species.
 5. Crews will coordinate the timing of activities such that work is consolidated into the least number of days of work and least number of trips in and out of gartersnake habitat to minimize the duration and frequency of disturbance to the gartersnakes.
 6. When working within gartersnake habitat, avoid filling in or crushing burrows and crevices at the base of trees or between large rocks and boulders; and, avoid moving large rocks, boulders and logs unless necessary for safe maintenance of utility infrastructure. A biological monitor may be needed if work involves ground disturbance or movement of rocks and logs (see #7 below).
 7. For significant ground disturbing work in gartersnake habitat, a biological monitor must be present during the ground disturbing activity to look for gartersnakes. The specific biological monitoring protocol will be developed by FWS in coordination with Forest Service and the Utilities.
 - a. A biological monitor will be needed while digging or filling the trench or hole, as well as for regular inspections of any hole or trench in order to ensure entrapment of any gartersnakes does not occur and to avoid injuring a gartersnake during digging or burying a snake while back-filling.
 - b. If there is uncertainty on whether a monitor would be needed, the Utilities will coordinate with FWS and Forest Service to determine the need for a monitor. An example of an uncertain circumstance is if a pole needs to be replaced within proposed critical habitat and that pole is located where a cliff face separates the pole and creek, a gartersnake would not travel up the cliff face to where the pole is located so a monitor would not likely be needed. Forest Service and FWS would be contacted to verify whether a monitor is not needed under this circumstance.
 - c. If there is a gartersnake detection, the detection must be reported to FWS within 72 hours. When a gartersnake is detected, work may continue with implementation of the conservation measures.
 8. For work that does not require a biological monitor (see number 7), report any observations of narrow-headed or northern Mexican gartersnakes on or near the worksite to the Utility, FWS, and Forest Service designated representatives within approximately one week of the observation. Reports must be accompanied by photographs whenever possible. Contacts will be defined in the crew training. The report should include at least the location (i.e. pole number or GPS coordinate), date, time, photo (if possible), and any observational information that may be useful.

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When a gartersnake is observed, work may continue with implementation of the conservation measures above.

9. After a gartersnake has been detected and reported in accordance with #7 and #8 above, the FWS, Forest Service, and Utility will review all relevant information and evaluate whether further discussion and protective action is necessary to address gartersnake conservation.

Action Area

The action area is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action (50 CFR § 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment.

The project area for this consultation, under Phase II, includes those areas where APS and SRP power lines, both overhead and underground, are present on Apache-Sitgreaves, Coconino, Prescott, and Tonto National Forest lands in Arizona. A total of 2,132 miles of power lines occur within the project area, of which APS has 1,741 miles, and SRP has 391 miles of power line. The project area includes a total of 27,507 acres (ac) of power line ROW, of which APS has 20,770 ac and SRP has 6,737 ac of the project area. Refer to the BA for comprehensive data on power line miles and ROW acres within the project area by utility, voltage, and proposed critical habitat by National Forest. To account for these variations in ROW widths, the analysis used the maximum ROW width by voltage for the acreage calculations in the analysis below. Refer to Table 1 for maximum ROW widths by voltage.

Table 1. Project Area Width by Voltage Based on Maximum Permitted Rights-of-Way

Line Voltage (kV)	Project Area Width (Maximum ROW) (feet)
Distribution	20
69kV	80
115kV	130
230kV	200
345kV	200
500kV	230

ANALYTICAL FRAMEWORK DETERMINATIONS

Jeopardy Determination

In accordance with policy and regulation, the jeopardy analysis in this BO/CO relies on four components in our evaluation for each species: (1) the *Status of the Species*, which evaluates the narrow-headed gartersnake and northern Mexican gartersnake range-wide conditions, the factors responsible for those conditions, and their survival and recovery needs; (2) the *Environmental Baseline*, which evaluates the condition of the narrow-headed gartersnake and northern Mexican gartersnake in the action area, the factors responsible for that condition, and the relationship of the action area to the survival and recovery of the species; (3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any

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interrelated or interdependent activities on the species; and, (4) *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the species.

In accordance with policy and regulation, the jeopardy determination is made by evaluating the effects of the proposed Federal action in the context of the species' current status, taking into account any cumulative effects, to determine if implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both the survival and recovery of the species in the wild. The jeopardy analysis in this BO/CO considers the range-wide survival and recovery needs of the species and the role of the action area in the survival and recovery as the context for evaluating the significance of the effects of the proposed Federal action, taken together with cumulative effects, for purposes of making the jeopardy determination.

Adverse Modification Determination

This BO/CO relies on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02, which became effective on March 14, 2016 (81 FR 7214). In accordance with policy and regulation, the adverse modification analysis in this Biological Opinion relies on four components: 1) the *Status of Critical Habitat*, which evaluates the range-wide condition of proposed critical habitat for narrow-headed gartersnake and northern Mexican gartersnake in terms of primary constituent elements and/or physical and biological features, the factors responsible for that condition, and the intended value of the critical habitat for conservation of the species; 2) the *Environmental Baseline*, which evaluates the condition of the proposed critical habitat in the action area, the factors responsible for that condition, and the value of the critical habitat for conservation of the species in the action area; 3) the *Effects of the Action*, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or interdependent activities on the physical and biological features and how that will influence the value of affected critical habitat units for conservation of the species; and 4) the *Cumulative Effects*, which evaluates the effects of future, non-Federal activities in the action area on the physical and biological features and how that will influence the value of affected critical habitat units for conservation of the species.

For purposes of the adverse modification determination, the effects of the Federal action on the species' proposed critical habitat are evaluated in the context of the range-wide condition of the critical habitat, taking into account any cumulative effects, to determine if the critical habitat range-wide would remain functional (or would not preclude or significantly delay the current ability for the physical and biological features to be functionally established in areas of currently unsuitable but capable habitat) such that the value of critical habitat for the conservation of the species is not appreciably diminished.

STATUS OF THE SPECIES AND CRITICAL HABITAT

The information in this section summarizes the range-wide status of each species that is considered in this BO/CO. Further information on the status of these species can be found in documents on our web page ([Arizona Ecological Services Species Documents](#)), and in other references cited in each summary below.

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Narrow-Headed Gartersnake and Proposed Critical Habitat

Additional details on the status of this species and proposed critical habitat are found in the final rule to list the species as threatened (USFWS 2014), the proposed rule to designate critical habitat (USFWS 2013), and the Status of the Species – THRU (10-25-2017) (USFWS 2017b) on file in the office. The status of this species discussion in these documents is incorporated herein by reference.

Legal Status and Description

The narrow-headed gartersnake was designated a threatened species on July 8, 2014 (USFWS 2014a). Critical habitat was proposed on July 10, 2013, and has not been finalized (USFWS 2013). Please refer to these rules for more in-depth information on the ecology and threats to the species and critical habitat, including references. The final and proposed rules are incorporated herein by reference.

The narrow-headed gartersnake is a small to medium-sized gartersnake with a maximum total length of 44 inches (Painter and Hibbitts 1996). Its eyes are set high on its unusually elongated head that narrows to the snout; and it lacks striping on the dorsum (top) and sides, which distinguish its appearance from other co-occurring gartersnake species (Rosen and Schwalbe 1988). Degenhardt *et al.* (1996), Rossman *et al.* (1996), and Ernst and Ernst (2003) further describe the species.

Life History and Habitat

The narrow-headed gartersnake is widely considered one of the most aquatic of the gartersnakes (Drummond and Garcia 1983; Rossman *et al.* 1996), typically active between March and November (Nowak 2006). This species is strongly associated with clear, rocky streams (Rosen and Schwalbe 1988, Rossman *et al.* 1996), but has been observed using lake shoreline habitat in New Mexico (Rossman *et al.* 1996). Narrow-headed gartersnakes specialize on fish as their primary prey item (Rosen and Schwalbe 1988, Nowak 2006). Narrow-headed gartersnakes have a lower preferred temperature for activity as compared to other species of gartersnakes (Fleharty 1967), which may facilitate their highly aquatic nature in cold streams.

Distribution, Abundance, Population Trends

The narrow-headed gartersnake historically ranged across the Mogollon Rim and along its associated perennial and intermittent drainages from central and eastern Arizona, southeast to southwestern New Mexico (Rosen and Schwalbe 1988; Rossman *et al.* 1996; Holycross *et al.* 2006a and b).

Population densities have noticeably declined at many sites, as compared to previous survey efforts (Holycross *et al.* 2006a and b). Narrow-headed gartersnakes were detected in only 5 of 16 historical localities in Arizona and New Mexico surveyed by Holycross *et al.* (2006a and b) in 2004 and 2005. As many as 43 of 51 (80 percent) of known narrow-headed populations may exist at low densities which could be threatened with extirpation. Another four populations may already be extirpated (Appendix 1).

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Threats

The occurrence of harmful non-native species, such as the crayfish (*Orconectes virilis*, *Procambarus clarki*), numerous species of non-native fish, and to a lesser extent, bullfrogs (*Lithobates catesbeianus*), have contributed to rangewide declines in the narrow-headed gartersnake, and continues to be the most significant threat to this species (USFWS 2014a). Additional significant threats to narrow-headed gartersnake populations include dewatering of streams, alteration of stream flows, as well as catastrophic wildfires and associated habitat effects (i.e. siltation) (Goode and Parker 2015, USFWS 2011, USFWS 2014a).

Conservation, Consultation and Recovery Planning

Several Federal actions affect this species every year and require formal section 7 consultation. As of 2017, there have been eight biological opinions that have included the narrow-headed gartersnake. A complete list of all consultations affecting this species can be found here: [Arizona Ecological Services Office Biological Opinions](#). Survey work and recovery projects also occur periodically and are summarized in the listing document (USFWS 2014b).

Proposed Critical Habitat

Proposed critical habitat for narrow-headed gartersnake occurs in six units in Arizona and New Mexico (USFWS 2013). All proposed critical habitat units are considered occupied. Critical habitat units occur in Greenlee, Graham, Apache, Yavapai, Navajo, Gila, and Coconino Counties in Arizona, as well as in Grant, Hidalgo, Sierra, and Catron Counties in New Mexico.

Primary Constituent Elements of Proposed Critical Habitat

Within these areas, the PCEs of the physical or biological features essential to the conservation of the narrow-headed gartersnake consist of the following four components:

- PCE 1: Stream habitat, which includes:
 - a. Perennial or spatially intermittent streams with sand, cobble, and boulder substrate and low or moderate amounts of fine sediment and substrate embeddedness, and that possess appropriate amounts of pool, riffle, and run habitat to sustain native fish populations;
 - b. A natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads;
 - c. Shoreline habitat with adequate organic and inorganic structural complexity (e.g., boulders, cobble bars, vegetation, and organic debris such as downed trees or logs, debris jams), with appropriate amounts of shrub-and sapling-sized plants to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities; and
 - d. Aquatic habitat with no pollutants or, if pollutants are present, levels that do not affect survival of any age class of the narrow-headed gartersnake or the maintenance of prey populations.

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- PCE 2: Adequate terrestrial space (600 ft. lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation;
- PCE 3: A prey base consisting of viable populations of native fish species or soft-rayed non-native fish species; and
- PCE 4: An absence of nonnative fish species of the families Centrarchidae and Ictaluridae, bullfrogs (*Lithobates catesbeianus*), and/or crayfish (*Orconectes virilis*, *Procambarus clarki*, etc.), or occurrence of these nonnative species at low enough levels such that recruitment of narrow-headed gartersnakes and maintenance of viable native fish or soft-rayed nonnative fish populations (prey) is still occurring.

Critical habitat does not include manmade structures (such as buildings, aqueducts, runways, roads, and other paved areas) and the land on which they are located existing within the legal boundaries on the effective date of this rule.

Northern Mexican Gartersnake and Proposed Critical Habitat

Additional details on the northern Mexican gartersnake and proposed critical habitat are found in the final rule to list the species as threatened (USFWS 2014a), the proposed rule to designate critical habitat (USFWS 2013), and the Status of the Species – THEQ (9-15-2017) (USFWS 2017a) on file in the office. The discussion of the status of this species in these documents is incorporated herein by reference.

Legal Status and Description

The northern Mexican gartersnake was designated a threatened species on July 8, 2014 (USFWS 2014a, 79 FR 38678). Please refer to this rule for more in-depth information on the ecology and threats to the species, including references. Critical habitat was proposed on July 10, 2013 (USFWS 2013, 78 FR 41500), and has not yet been designated. Details on proposed critical habitat are provided below. The final listing and proposed critical habitat rules are incorporated herein by reference.

The northern Mexican gartersnake, which reaches up to 44 inches total length, ranges in color from olive to olive-brown or olive-gray with three lighter-colored stripes that run the length of the body, the middle of which darkens towards the tail. It may occur with other native gartersnake species and can be difficult for people without specific expertise to identify because of its similarity of appearance to other native gartersnake species.

Life History and Habitat

The northern Mexican gartersnake is an active predator and believed to depend upon a native prey base (Rosen and Schwalbe 1988). Northern Mexican gartersnakes forage along vegetated stream banks, and search for prey in water and on land using different strategies (Alfaro 2002). Its diet primarily consists of amphibians and fishes, such as adult and larval (tadpoles) native leopard frogs, as well as juvenile and adult native fish (Rosen and Schwalbe 1988). In situations where native prey species are rare or absent, this snake's diet may include non-native species, including larval and juvenile bullfrogs, western mosquitofish (Holycross *et al.* 2006, Emmons

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and Nowak 2013), or other non-native fishes. In northern Mexican gartersnake populations where the prey base is skewed heavily towards harmful non-native species, gartersnake recruitment could be affected.

Throughout its rangewide distribution, the northern Mexican gartersnake occurs at elevations from 130 to 8,497 feet (Rossman *et al.* 1996). Within Arizona and New Mexico, records generally come from elevations ranging from 130 to 6,200 ft. This gartersnake is considered a “terrestrial-aquatic generalist” by Drummond and Marcías-García (1983). The northern Mexican gartersnake is often found in riparian habitat, but has also been found hiding under cover in grassland habitat up to a mile away from any surface water (Cogan 2015). The subspecies has historically been associated with three general habitat types: 1) source-area wetlands (e.g. Cienegas or stock tanks); 2) large-river riparian woodlands and forests; and 3) streamside gallery forests (Hendrickson and Minckley 1984, Rosen and Schwalbe 1988).

Distribution, Abundance, Population Trends

The northern Mexican gartersnake historically occurred in every Arizona county and nearly every subbasin, from perennial or intermittent creeks, streams, and rivers as well as lentic wetlands such as cienegas, ponds, or stock tanks (Rosen and Schwalbe 1988, Rosen *et al.* 2001; Holycross *et al.* 2006a and b, Cotton *et al.* 2013). In New Mexico, the gartersnake had a limited distribution that consisted of scattered locations throughout the Upper Gila River watershed in Grant and western Hidalgo Counties (Price 1980, Fitzgerald 1986, Degenhardt *et al.* 1996, Holycross *et al.* 2006a, b). Within Mexico, northern Mexican gartersnakes historically occurred within the Sierra Madre Occidental and the Mexican Plateau, comprising approximately 85 percent of the total rangewide distribution of the subspecies (Rossman *et al.* 1996).

Known viable and reliably detected northern Mexican gartersnake populations in the United States include: 1) the Page Springs and Bubbling Ponds State Fish Hatcheries along Oak Creek; 2) lower Tonto Creek; 3) the upper Santa Cruz River in the San Rafael Valley; 4) the Bill Williams River; and 5) the middle/upper Verde River. In New Mexico and elsewhere in Arizona, the northern Mexican gartersnake may occur in extremely low population densities within its historical distribution; limited survey effort is inconclusive to determine extirpation of this highly secretive species. The status of the northern Mexican gartersnake on tribal lands, such as those owned by the White Mountain or San Carlos Apache Tribes, is poorly understood. Less is known about the current distribution of the northern Mexican gartersnake in Mexico due to limited surveys and limited access to information on survey efforts and field data from Mexico.

We have concluded that in as many as 23 of 33 known localities in the United States (70 percent), the northern Mexican gartersnake population is likely not viable and may exist at low population densities that may be extirpated or may already be extirpated (USFWS files). Only five populations of northern Mexican gartersnakes in the United States are considered likely viable where the species remains reliably detected (Appendix 1).

Areas with protected backwaters, braided side channels and beaver ponds, isolated pools near the river mainstem, and edges of dense emergent vegetation that offer cover and foraging opportunities are important for acquisition of prey that includes native fish and amphibians.

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Threats

Harmful non-native species are a significant concern in almost every northern Mexican gartersnake locality in the United States and the most significant reason for their decline. Non-native species can contribute to starvation of gartersnake populations through competitive mechanisms, and may reduce or eliminate recruitment of young gartersnakes through predation. Other threats include dewatering or alteration of rivers and streams from dams, diversions, flood-control projects, and groundwater pumping that change flow regimes, reduce or eliminate habitat, and favor harmful non-native species; and effects from climate change and drought (USFWS 2014a, 79 FR 38678).

Conservation, Consultation and Recovery Planning

Several Federal actions affect this species every year that require formal section 7 consultation. There have been 21 biological opinions that have included the northern Mexican gartersnake. A complete list of all consultations affecting this species can be found here: [Arizona Ecological Services Office Biological Opinions](#). Survey work and recovery projects also occur periodically and are summarized in the listing document (USFWS 2014b).

Proposed Critical Habitat

Proposed northern Mexican gartersnake critical habitat occurs in 14 sub-basin and national wildlife refuge units in Arizona and New Mexico, totaling 421,423 acres (USFWS 2013). In Arizona, proposed critical habitat is located in portions of the Verde, Agua Fria, Bill Williams, Upper Salt, San Pedro, Babocomari, Upper Santa Cruz and Upper Gila rivers; Tonto and Cienega Creeks; Redrock Canyon; and Buenos Aires and San Bernardino National Wildlife Refuges. In New Mexico, proposed critical habitat is located in portions of Mule Creek and the Upper Gila River.

Primary Constituent Elements of Proposed Critical Habitat

The primary constituent elements of the physical and biological features essential to northern Mexican gartersnake conservation are:

- PCE 1: Aquatic or riparian habitat that includes:
 - a. Perennial or spatially intermittent streams of low to moderate gradient that possess appropriate amounts of in-channel pools, off-channel pools, or backwater habitat, and that possess a natural, unregulated flow regime that allows for periodic flooding or, if flows are modified or regulated, a flow regime that allows for adequate river functions, such as flows capable of processing sediment loads; or
 - b. Lentic wetlands such as livestock tanks, springs, and cienegas; and
 - c. Shoreline habitat with adequate organic and inorganic structural complexity to allow for thermoregulation, gestation, shelter, protection from predators, and foraging opportunities (e.g., boulders, rocks, organic debris such as downed trees or logs, debris jams, small mammal burrows, or leaf litter); and
 - d. Aquatic habitat with characteristics that support a native amphibian prey base, such as salinities less than 5 parts per thousand, pH greater than or equal to 5.6, and pollutants absent or minimally present at levels that do not affect survival of

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any age class of the northern Mexican gartersnake or the maintenance of prey populations.

- PCE 2: Adequate terrestrial space (600 feet lateral extent to either side of bankfull stage) adjacent to designated stream systems with sufficient structural characteristics to support life-history functions such as gestation, immigration, emigration, and brumation (extended inactivity).
- PCE 3: A prey base consisting of viable populations of native amphibian and native fish species.
- PCE 4: An absence of non-native fish species of the families Centrarchidae and Ictaluridae, bullfrogs, and/or crayfish (*O. virilis*, *P. clarki*, etc.), or occurrence of these non-native species at low enough levels such that recruitment of northern Mexican gartersnakes and maintenance of viable native fish or soft-rayed, non-native fish populations (prey) is still occurring.

ENVIRONMENTAL BASELINE

The environmental baseline includes past and present impacts of all Federal, State, or private actions in the action area, the anticipated impacts of all proposed Federal actions in the action area that have undergone formal or early section 7 consultation, and the impact of State and private actions that are contemporaneous with the consultation process. The environmental baseline defines the current status of the species and its habitat in the action area to provide a platform to assess the effects of the action now under consultation.

Description of the Action Area

The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). In delineating the action area, we evaluated the farthest reaching physical, chemical, and biotic effects of the action on the environment. As stated previously, the action area for consultation, under Phase II, includes those areas where APS and SRP power lines, both overhead and underground, are present on National Forest Service lands in Arizona.

Narrow-headed Gartersnake and Proposed Critical Habitat

A. Status of the species and proposed critical habitat within the action area

Within the action area, the narrow-headed gartersnake is known to occur in the East Verde and Verde rivers, and Haigler, Houston, Tonto, Oak, and West Fork Oak Creeks on the Apache-Sitgreaves (ASNF), Coconino (CNF), Prescott (PNF), and Tonto (TNF) National Forests. Approximately 37.97 miles of powerlines and 177 acres of powerline ROW occur within narrow-headed gartersnake proposed critical habitat (Table 2, Appendix 2). The Tonto Creek, Upper Salt River, and Verde River proposed critical habitat units occur within the Action Area (Table 2). This accounts for approximately 0.29 percent of proposed critical habitat on the National Forests in Arizona (USFS 2017).

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Table 2. Total Miles of Power Line in Narrow-Headed Gartersnake Proposed Critical Habitat within Action Area

Proposed Critical Habitat Unit	Proposed Critical Habitat Subunit	ASNF	CNF	PNF	TNF	Total
Tonto Creek Subbasin	Haigler Creek				0.46	0.46
	Houston Creek				1.19	1.19
	Tonto Creek				6.05	6.05
Upper Salt River Subbasin	Canyon Creek	0.18			0.36	0.54
Verde River Subbasin	East Verde River				6.37	6.37
	Oak Creek		14.46			14.46
	Verde River		4.50	3.27	0.87	8.63
	West Fork Oak Creek		0.27			0.27
Total Miles		0.18	19.23	3.27	15.30	37.97

At the East Verde River, we are aware of a single historical museum record in 1981 (Holycross *et al.* 2006a) of narrow-headed gartersnakes, and numerous observation records from 1985–1986 (n=12) (Rosen and Schwalbe 1988) and 1992 (n=1) (Sredl *et al.* 1995). These records indicate the species once occurred in the East Verde River, but has apparently declined. Native fish species persist (Voeltz 2002) in the presence of non-native, spiny-rayed fish and abundant crayfish. Turner and List (2007) reported that at least six species of native fish are known from the East Verde. Narrow-headed gartersnakes may disperse into the East Verde from the occupied Verde River to augment the population. This population likely occurs as a low to very low density population.

In the upper/middle Verde River, above Horseshoe Dam, there are several recent and vouchered narrow-headed gartersnake records, as well as several unvouchered records. All of these narrow-headed gartersnake records are outside of the action area. The Verde River represents a large, complex, and difficult area to survey. The recent records document that at least a low-density, but reproducing narrow-headed gartersnake population occurs within the upper and middle Verde River, but we are unable to conclude the population is currently viable. It is likely that a small population occurs in the middle Verde River near its confluence with the East Verde River, but is likely also not viable.

At Canyon Creek, the first historical narrow-headed gartersnake record appears to be in 1986, from approximately 2.25 miles upstream of the confluence with the Salt River on White Mountain Apache Tribal lands (Rosen and Schwalbe 1988). Additional reports to the Arizona Game and Fish Department's (AGFD) Heritage Database document the species in upper and lower Canyon Creek during the 1980s, and as late as 1991 (Holycross *et al.* 2006). Holycross *et al.* (2006) conducted three surveys of Canyon Creek, upstream of White Mountain Apache Tribal lands in 2004-2005, with no detections of narrow-headed gartersnakes. Native fish were detected, as were non-native trout (Holycross *et al.* 2006), which serve as prey species. No non-native, spiny-rayed fish, crayfish, or bullfrogs were detected in these surveys efforts (Holycross *et al.* 2006). The physical habitat looked "ideal" for narrow-headed gartersnakes, with cobble stream substrates and adequate streamside vegetation that included watercress and willow (Holycross *et al.* 2006). In 2015, AGFD successfully caught/detected eight individual narrow-headed gartersnakes in Canyon Creek for the first time in over 20 years (Burger 2015). In 2016,

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six narrow-headed gartersnakes were detected in Canyon Creek (AGFD 2017). Individuals from the Salt River may disperse into Canyon Creek and augment that population.

There are three unvouchered, but reliable narrow-headed gartersnake observation records from Haigler Creek during the early 1990s (Holycross *et al.* 2006). In 2008, surveys of Haigler Creek resulted in a photo voucher, with the hand-capture of an adult male narrow-headed gartersnake (Kern and Burger 2008). The Haigler Creek fish community consists of both native fish and non-native trout, which indicates a narrow-headed gartersnake prey base is present, but crayfish were also present (Kern and Burger 2008). No non-native, spiny-rayed fish or bullfrogs were detected (Holycross *et al.* 2006). In 2014, three juvenile narrow-headed gartersnakes on Haigler Creek were the first verified records of the species since 2008 (Goode and Parker 2015). Narrow-headed gartersnakes may disperse into Haigler Creek from occupied Tonto Creek and augment the population. It is likely that the narrow-headed gartersnake is still present along Haigler Creek, likely as a low-density population.

Houston Creek has one photo-vouchered record for narrow-headed gartersnakes from 2005, according to Holycross *et al.* (2006). Houston Creek was surveyed in 2004 and 2005 by Holycross *et al.* (2006) with no narrow-headed gartersnakes detected, but native fish, crayfish, and non-native, spiny-rayed fish were observed. Survey conditions were poor in 2004, with limited visibility in the water due to recent flooding. Houston Creek is largely dry above Gibson Creek, but presents physically suitable narrow-headed gartersnake habitat below that point (Holycross *et al.* 2006). Narrow-headed gartersnakes may disperse into Houston Creek from occupied Tonto Creek and augment the population.

At Tonto Creek (tributary of Salt River), one neonate narrow-headed gartersnake was captured approximately 4.5 stream miles downstream of the Rye Creek confluence (2005), with two historical records from the area of Kayler Butte (1988) (Holycross *et al.* 2006). Holycross *et al.* (2006) surveyed Tonto Creek from the headwaters to approximately Gisela, Arizona in 2004 and 2005 that resulted in the detection of a single neonatal narrow-headed gartersnake (Rye Creek confluence record). In 2008, Burger (2008) surveyed for narrow-headed gartersnakes in Tonto Creek from Bear Flat Campground to the confluence with Haigler Creek, but did not detect any narrow-headed gartersnakes. Tonto Creek is known to be heavily occupied by a suite of non-native species including bullfrogs, crayfish, and a host of non-native fishes (Holycross *et al.* 2006, Burger 2008, Wallace *et al.* 2008), but native fish species still occur and, in some reaches, are well-represented (Voeltz 2002, Burger 2008). Structurally, the habitat was considered generally suitable for narrow-headed gartersnakes by the surveyors, and Holycross *et al.* (2006) suggested that significant declines in the narrow-headed gartersnake population have occurred in Tonto Creek since the 1980s; demonstrated by their significant survey effort and limited captures.

Oak Creek supports the most robust and well-studied population of narrow-headed gartersnakes in Arizona. Oak Creek boasts approximately 176 historical and recent records dating back to 1912, and represents the locality where over 80 percent of all Arizona specimens were collected (Holycross *et al.* 2006a). Brennan and Rosen (2009) surveyed Oak Creek in 2009, which resulted in the capture of 72 narrow-headed gartersnakes. Survey results, from the lower-most transect near Midgely Bridge, confirmed that the narrow-headed gartersnake continues to exist at

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very low densities in lower Oak Creek (Brennan and Rosen 2009). Nowak and Santana-Bendix (2002) documented a shift in Oak Creek from a largely native fish community upstream of Midgely Bridge to a community dominated by non-native, spiny-rayed fish species downstream of Midgely Bridge. Bullfrogs and crayfish occur in the lower reach of Oak Creek (Nowak 2006) and low to high crayfish densities in the downstream direction from Slide Rock State Park (Brennan and Rosen 2009). Narrow-headed gartersnake populations reach their highest densities in the upper-most reaches of Oak Creek Canyon, including West Fork Oak Creek and its confluence with Oak Creek. Downstream of that reach, population densities gradually decrease until Midgely Bridge, where the species is very rarely detected (Nowak 2006). There is a 2015 record of a narrow-headed gartersnake from near the center of Sedona, downstream of Midgely Bridge (Wilcox 2016) but generally, from Midgely Bridge downstream to the confluence with the Verde River, narrow-headed gartersnakes likely exist as a low, to very low density population. This population may be supported by occasional emigrants from Oak Creek Canyon or from the Verde River.

B. Factors affecting the species and critical habitat within the action area

The primary factors affecting the narrow-headed gartersnake and its proposed critical habitat are the presence of introduced harmful non-native aquatic species (bullfrogs, brown trout, crayfish and predatory warm water fish) that compete with and prey upon both the narrow-headed gartersnake and its native prey species, and the decline of the native fishes that are the gartersnake's primary prey. Other factors include but are not limited to: water diversions or other water-related actions that decrease water quantity and quality that negatively affect their prey base; activities that reduce or eliminate protective vegetation cover in areas heavily influenced by harmful non-natives; catastrophic fires and associated effects, and intentional or unintentional killing of snakes by forest visitors.

Northern Mexican Gartersnake and Proposed Critical Habitat

A. Status of the species and proposed critical habitat within the action area

Within the action area there are approximately 23.5 miles of APS power line and 117 ac of power line ROW within northern Mexican gartersnake habitat on the Apache-Sitgreaves, Coconino, Prescott, and Tonto National Forests. There are no SRP power lines within northern Mexican gartersnake proposed critical habitat. The Agua Fria, Tonto Creek, and Verde River proposed critical habitat units occur within the Action Area (Table 3). The northern Mexican gartersnake is known to occur in portions of the Verde River and Little Ash, Tonto, Oak, and Spring creeks within the action area (Appendix 2).

The first record for northern Mexican gartersnakes from Tonto Creek was from 1995 in the Kayler Butte vicinity at the Arizona State Highway 188 crossing (Holycross *et al.* 2006). Surveys in 2004 and 2005 resulted in the capture of 17 northern Mexican gartersnakes (Holycross *et al.* 2006). Surveys through 2017 continued to reliably find the northern Mexican gartersnake in lower Tonto Creek (Nowak *et al.* 2016; Myrand *et al.* 2016; Myrand *et al.* 2017; Nowak 2017). Native fish species persist in Tonto Creek, but bullfrogs, crayfish, and non-native, spiny-rayed fish are also present, with crayfish noted as abundant in one segment (Voeltz 2002, Holycross *et al.* 2006, Wallace *et al.* 2008). Recent records confirm the northern Mexican gartersnake as extant in TNF.

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Table 3. Total Miles of Power Line in Northern Mexican Gartersnake Proposed Critical Habitat within Action Area

Proposed Critical Habitat Unit	Proposed Critical Habitat Subunit	CNF	PNF	TNF	Total
Agua Fria River Subbasin	Little Ash Creek		1.36		1.36
Tonto Creek	Tonto Creek			6.34	6.34
Verde River Subbasin	Oak Creek	5.21			5.21
	Spring Creek	2.00			2.00
	Verde River	4.50	3.27	0.87	8.63
Total		11.70	4.62	7.21	23.54

Above Horseshoe Dam, several historical and current records exist for northern Mexican gartersnakes. Rosen and Schwalbe (1988) document records from 1986 at the Houston Creek confluence, one mile above the Verde River in Horse Creek (a tributary to Horseshoe Reservoir), Cottonwood (just below Dead Horse Ranch State Park), and Camp Verde. In 2012, AGFD conducted herptofaunal surveys along the Verde River from Childs downstream to Sheep's Bridge, but yielded no northern Mexican gartersnake detection (SRP 2012). Emmons and Nowak (2012) conducted a sampling effort for northern Mexican gartersnakes outside of the action area in the upper Verde River area from May-September 2012. This survey effort resulted in the combined capture of 47 individual northern Mexican gartersnakes. Other survey efforts through 2017 throughout the Verde Valley confirm the species continues to occur, in some cases as dense populations. The Verde River represents a large, complex, and difficult area to survey for a secretive species such as the northern Mexican gartersnake, but we expect they occur within the action area but in small numbers.

There are no museum records of the northern Mexican gartersnake from Little Ash Creek, but a specimen was reported found in this stream in 1984 and was retained as a captive (Rosen and Schwalbe 1988; Holycross *et al.* 2006). Recent survey efforts have been conducted in Little Ash Creek, but no snakes have been found (Emmons and Nowak 2012). Although no snakes were found during survey efforts, the presence of abundant bankside vegetation in areas, presence of a robust non-native, soft-rayed fish population (potential prey items), and previous records indicate that the species may still be present (Emmons and Nowak 2012).

Historical and recent records from Oak Creek include a 1975 record from near Midgely Bridge, numerous, recent records from the Page Springs and Bubbling Ponds State Fish Hatcheries located adjacent to Oak Creek, and two specimens observed in Oak Creek in 2012 at the Page Spring Cellars and Vineyard; the latter two locations are downstream of Midgely Bridge (Rosen and Schwalbe 1988; Holycross *et al.* 2006a; Boyarski 2011; Nowak, 2012, pers. comm.; Emmons and Nowak 2013). Oak Creek is comprised of two general sections: (1) the upper portion, above Midgely Bridge within Oak Creek Canyon, where Oak Creek is a steep-walled, canyon-bound stream that alternates between riffles, pools, and runs, with occasional side channels and backwaters; and (2) a lower portion, downstream of Midgely Bridge, that is dominated by runs and pools with more sinuosity and a wider floodplain (Nowak and Santana-Bendix 2002). Within Oak Creek Canyon, there are no known records for the northern Mexican gartersnake above Midgely Bridge, despite considerable survey attention on the narrow-headed gartersnake over the past two decades.

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The population of northern Mexican gartersnakes at the Page Springs State Fish Hatchery appears stable despite an abundant bullfrog population there as well as documented predation by largemouth bass (Young and Boyarski 2013), possibly as a result of heavily vegetated habitat that may provide protection from predation and allow recruitment into the population. Undoubtedly, this population acts as a source population for the adjacent reach of Oak Creek below Midgely Bridge. The Verde River, to which Oak Creek is a tributary, is also occupied, may also be a source of individuals occurring in Oak Creek. Nowak and Santana-Bendix (2002) document a shift in Oak Creek from a largely native fish community upstream of Midgely Bridge, to a community dominated by non-native, spiny-rayed fish species downstream of Midgely Bridge to the confluence of the Verde River. Based on recent records, this population is likely supplemented by emigration from the known population core at the Page Springs State Fish Hatchery.

A single historical record from 1986 for the northern Mexican gartersnake in Spring Creek is documented by Rosen and Schwalbe (1988). Spring Creek is a tributary to Oak Creek; the confluence is approximately 4.75 river miles downstream of the Bubbling Ponds and Page Springs Fish Hatcheries which act as a source population of northern Mexican gartersnakes to Oak Creek, and may be a source of individuals to Spring Creek.

B. Factors affecting the species and critical habitat within the action area

The primary factors affecting the northern Mexican gartersnake are the presence and introduction of non-native aquatic species (bullfrogs, crayfish, green sunfish, and other warm water sport fish) that compete with and prey upon both the northern Mexican gartersnake and its native prey species; as well as the loss and/or the decline of the gartersnake's primary prey species. Native prey species for the gartersnake include fish, amphibians, invertebrates such as earthworms and leaches, and small vertebrates such as rodents and lizards. Several of its prey species are also endangered or threatened, and have declined in waterways occupied by the gartersnake, contributing to its decline in distribution and density.

Other factors affecting the gartersnake include but are not limited to: heavy recreation; development or construction activities that trample, remove or degrade suitable stream bank habitat; drought that may exacerbate potential impacts of non-native species on native fish species; water diversions or other water-related actions that decrease water quantity and quality that would limit prey populations; and improper livestock grazing levels if they reduce protective cover needed by gartersnakes in the presence of harmful non-native species.

Factors that may affect proposed critical habitat are competition with harmful non-native species, water diversions, flood-control projects, and development of areas adjacent to and within Tonto Creek proposed critical habitat. In the Verde River, proposed groundwater pumping of the Big Chino Aquifer may adversely affect future base flow in the Verde River, reducing habitat and prey for the gartersnake. In addition, the elimination or reduction of crayfish, bullfrogs, and non-native fish is needed as well as ensuring adequate flow is retained in the Verde River.

EFFECTS OF THE ACTION

Effects of the action refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated and interdependent with

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that action that will be added to the environmental baseline. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

In our analysis of the effects of the action on critical habitat, we consider whether or not a proposed action will result in the destruction or adverse modification of critical habitat. In doing so, we must determine if the proposed action will result in effects that appreciably diminish the value of critical habitat for the recovery of a listed species. To determine this, we analyze whether the proposed action will adversely modify any of the PCEs that were the basis for determining the habitat to be critical. To determine if an action results in adverse modification of critical habitat, we must also evaluate the current condition of all designated critical habitat units and the PCEs of those units, to determine the overall ability of all designated critical habitat to support recovery. Further, the functional role of each of the CHUs in recovery must also be considered because, collectively, they represent the best available scientific information as to the recovery needs of the species.

Narrow-Headed and Northern Mexican Gartersnake and Proposed Critical Habitat

While there are differences in narrow-headed and northern Mexican gartersnake locations/habitat/behavior, the proposed action and effects are very similar for both gartersnakes. Therefore, in order to reduce replication in language, we are combining these two species in our analysis and making distinctions between the two where appropriate.

Narrow-headed and Northern Mexican Gartersnake Summary

Overall, there are about 177 acres of narrow-headed gartersnake habitat (and proposed critical habitat) within the project area, and within about 164 acres, hazard vegetation removal, vegetation maintenance, pole protection, line maintenance/repair, and vegetation disposal may occur (Appendix 2) (USFS 2017). Presently, about 80 of those 164 acres have the potential for hazard vegetation treatments (USFS 2017). Also with narrow-headed gartersnake habitat, defensible space treatment will occur at 51 poles totaling 0.37 acres of upland habitat, and about 47 poles and 0.235 miles of underground line may be replaced.

For the northern Mexican gartersnake, there are about 117 acres of habitat (and proposed critical habitat) within the project area, and within about 102 acres, hazard vegetation removal, vegetation maintenance, pole protection, line maintenance/repair, and vegetation disposal may occur (Appendix 2) (USFS 2017). Presently, about 31 acres have the potential for hazard vegetation treatments (USFS 2017). A total of 11 poles consisting of 0.08 upland acres of northern Mexican gartersnake will receive defensible space treatment. Also, about 25 poles and 0.347 miles of underground line may be replaced in northern Mexican gartersnake habitat.

We anticipate adverse effects to both gartersnakes and proposed critical habitat from continuing to remove vegetation to maintain safe ROWs, to create defensible space around poles, and from holes and trenches created from replacing wood poles and underground lines. We anticipate the proposed conservation measures will help to reduce adverse effects to both gartersnakes for

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much of the proposed action; however due to the overall goal of the project and the necessary methods, we think that adverse effects cannot be avoided and are reasonably likely to occur.

Inspections – Aerial and Ground

Direct and Indirect Effects

Minimizing inspection vehicle access to undisturbed narrow-headed and northern Mexican gartersnake habitat is expected to prevent the likelihood of direct effects to gartersnakes such as trampling, injury, or death. Vehicles will primarily stay on established roads within gartersnake habitat (riparian or upland); however, vehicles will infrequently drive off-road or on primitive two-track dirt roads within suitable upland gartersnake habitat. Staying at lower speeds may help drivers detect and avoid snakes or provide snakes the opportunity to evade vehicles, but we anticipate there is a low likelihood of detecting or identifying these dark-colored, small snakes while driving. Northern Mexican gartersnakes are likely more vulnerable in upland areas compared to narrow-headed gartersnakes (USFWS 2014). Because of the gartersnake's low abundance, the avoidance of driving off-road in riparian areas, the infrequent need to travel off-road in upland habitat, and small number of inspections (1-2/year), we expect the likelihood of trampling a narrow-headed and northern Mexican gartersnakes with an inspection vehicle is so low that the effect is discountable.

We anticipate any indirect impacts to narrow-headed and northern Mexican gartersnakes and their habitat from ground inspection vehicles will be insignificant. Vehicles will stay on existing roads within riparian areas and whenever possible in upland areas. No new roads will be established under the proposed action. As a result of primarily staying on existing roads, the infrequent need to travel off-road in upland areas, and the limited number of inspections per year (1-2), we anticipate the minor and temporary vehicle alteration of upland vegetation will have an insignificant effect to narrow-headed and northern Mexican gartersnakes and its habitat.

We do not anticipate any direct or indirect effects to narrow-headed or northern Mexican gartersnakes or their habitat from aerial or foot inspections. There will be no landing of helicopters in gartersnake habitat and aerial inspection fly-overs will have no contact or effect to gartersnakes. Indirect effects to gartersnakes due to noise from inspection helicopters are also expected to be insignificant due to the short duration, infrequent occurrence, and high distance off the ground. Any foot inspections that occur outside of vehicles are not expected to result in any direct or indirect effects because of the brief 1-2 visits per year, the secretive nature and reduced abundance and distribution of the gartersnakes, and the unlikely scenario of workers trampling a gartersnake or noticeably altering any vegetation that gartersnakes rely upon.

Proposed Critical Habitat

We anticipate the effect to proposed narrow-headed and northern Mexican gartersnake critical habitat from vehicle inspections will be insignificant. Vehicles will primarily stay on existing established paved roads, dirt roads, and two track roads. No new roads will be established. Vehicles will never drive off-road within riparian areas. Vehicles may infrequently need to drive off-road in upland gartersnake proposed critical habitat, but the short-term and infrequent need to travel in these undisturbed areas (1-2 visits/year) is not expected to noticeably alter any lateral

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space (PCE 2) and will not affect any stream function, streamside vegetation, or prey base (PCE 1, 3, and 4).

Aerial inspections would have no effect on proposed narrow-headed and northern Mexican gartersnake critical habitat, and any impact to proposed critical from foot traffic is expected to be insignificant. Aerial inspection will never touch the ground and therefore will not impact stream function, vegetation, or prey. Worker foot traffic may mildly disrupt herbaceous vegetation, but will not impact any stream, stream function, prey, space, or vegetation relied upon by gartersnakes.

Utility Vegetation Management

Direct and Indirect Effects

We anticipate that there may be some short-term disturbance to narrow-headed and northern Mexican gartersnakes from workers conducting hazard, routine vegetation maintenance, and pole defense (vehicles, workers, cutting activities) in gartersnake habitat. Within both gartersnake's habitat, crews using chainsaws/hand tools, especially while gartersnake's are more active during the spring and summer, could cause snakes to quickly move to the nearest water, hole, burrow, crevice, or similar hiding place, likely preventing any direct effects from vegetation cutting. We note that the current environmental baseline of these work areas has already been affected due to past cutting; therefore they are currently altered and are comprised mostly of smaller trees and shrubs. We anticipate due to the short-duration of each work area (approximately a day), any alteration of a snake's behavior will be of short duration. Work crew vehicles will stay on existing roads, drive slowly, and pay attention to avoid snakes. Because gartersnakes are often subsurface, or reside under cover and move quickly to hide, even trained biologists experience low detection rates. While we anticipate narrow-headed gartersnake behavior may be altered from hazard/maintenance vegetation management activities, we expect that the effect from vegetation cutting activities (vehicles, workers, cutting) will be insignificant due to the gartersnake's low abundance, use of vegetated areas, ability to move to hiding areas, workers' use of hand tools, and the short-duration of activities in each work area.

We also expect that hazard, maintenance, or pole protection activities (vehicles, workers, cutting activities) will not likely adversely affect narrow-headed and northern Mexican gartersnakes in upland habitats in the fall and spring when gartersnakes are less active. If brumating or dispersing narrow-headed gartersnakes are present during upland habitat vegetation management activities, we expect snakes will likely be located in hollows created by rocks or downed debris, or quickly move into them. The work conducted in upland habitat during brumation and dispersal will occur on foot with no large machinery and will not remove any downed logs, boulders, or other gartersnake hiding areas. Because brumating/dispersing gartersnakes would not likely be present in the vegetation being cut, but located in undisturbed rock piles, crevices, hollows, or downed debris, we anticipate the effects to narrow-headed gartersnake behavior during routine upland vegetation maintenance and hazard vegetation work will be insignificant.

Routine maintenance, hazard vegetation, and pole protection treatments are expected to impact both gartersnake's habitat and its recovery by maintaining cleared areas within portions of approximately 164 acres of narrow-headed and 102 acres of northern Mexican gartersnake

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habitat. Within these acres, hazard vegetation cutting activities may occur within 80 acres of narrow-headed and 31 acres of northern Mexican gartersnake habitat, as well as continued vegetation maintenance (USFS 2017). For both gartersnakes, a total of just under a half acre of cleared vegetation is required for defensible space around poles. Gartersnakes rely on complex vegetated areas to bask, hunt, hide, and shelter. For example, narrow-headed gartersnake presence correlates with large overhanging streamside willows for hunting and their contribution to downed vegetation and organic debris; however, the plant species and canopy structure may be less important than the tree's size (USFWS 2013, 2014). Northern Mexican gartersnakes rely on complex vegetation to support its prey populations and the means to hunt, hide, and seek shelter. Tree removal, vegetation maintenance, and clearing reduces the overall habitat complexity and canopy structure important for gartersnakes to hide, shelter, thermoregulate, gestate, forage, and support prey populations (USFWS 2013). Cleared upland areas of structural diversity will also simplify and reduce shelter and hiding areas. Because these areas have already been affected from past vegetation clearing activities and are spread across 10 different streams and over 39 different sites (Appendix 2), we do not anticipate these actions will noticeably affect existing snake territories or brumation sites. However, the proposed action will continue to maintain these areas in a relatively cleared state, preventing more complex and important gartersnake habitat from developing. As a result, we find that the continued removal of vegetation for hazard, vegetation maintenance, and defensible pole space purposes will adversely affect overall gartersnake recovery.

We anticipate that downed material resulting from vegetation removal could provide some short-term benefits to narrow-headed and northern Mexican gartersnakes. Slash vegetation will primarily be lopped and scattered in the immediate area. Occasionally, at the request of the Forest Service and only where road access allows, vegetation may be chipped and broadcast in the immediate area. While the proposed immediate chipping of downed material is not expected to generate benefits, scattering cut vegetation could provide additional gartersnake cover. No slash piles are planned for development and removal. Due to periodic flooding and deterioration of leaf litter, etc., we expect any beneficial effects from scattering vegetation will likely be short-term in nature.

Proposed Critical Habitat

The proposed hazard, maintenance, and pole vegetation removal activities are expected to have adverse effects to narrow-headed and northern Mexican gartersnake proposed critical habitat and those PCEs related to riparian vegetation (PCE 1) and habitat structural diversity (PCE 2) within approximately 164 (narrow-headed) and 102 (northern Mexican) proposed critical habitat acres. The continued maintenance of ROW corridors and removal of hazard vegetation will adversely affect PCE 1 by continuing to prevent the development of riparian habitat with adequate organic and inorganic structural complexity. Additionally, continued vegetation removal in more upland areas is expected to adversely affect the vegetated structural characteristics (PCE 2).

We expect that hazard, vegetation, and pole maintenance will have an insignificant effect to narrow-headed and northern Mexican gartersnake critical habitat PCEs associated with river function and prey. Vegetation removal spread across 10 different streams and over 39 different sites is expected to result in an insignificant effect on the function of streams (river flow), rivers, springs, and cienegas (PCE 1a, b, and d). Because no work will occur within streams and also

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due to the habitat-removal projects spread across many sites (therefore no single area is cleared of many acres), maintaining cleared areas is expected to have an insignificant effect on gartersnake prey quality, quantity, or species composition (PCE 3 and 4).

We anticipate the proposed action would have a short-term increase in the quantity of downed trees and logs following vegetation removal and disposal. Spreading cut vegetation may provide a short-term benefit, supporting narrow-headed and northern Mexican gartersnake gestation, brumation, dispersal, shelter, hiding, and foraging. However, because the dynamic nature of rivers, we expect these features will deteriorate/disappear due to annual flood events.

Repair of Access Routes

Direct and indirect effects

We anticipate that any maintenance or repair of ROW access roads will have an insignificant effect on narrow-headed and northern Mexican gartersnakes. Many power lines have existing roads that approach and/or follow along or within the ROW. Road maintenance may occur to facilitate access to power line ROWs, provide safe access, or to repair damage caused by access to the ROWs. Repair activities would likely occur within or near power line ROWs or on established routes or access points, but would occur infrequently and even less so within riparian gartersnake habitat. Because these roads are already established, we anticipate minor and infrequent site-specific maintenance that is not expected to alter existing or the development of gartersnake habitat. Because gartersnakes prefer more complex vegetation and do not rely on roads, and also due to infrequent road maintenance needs, we do not expect that road repair activities will directly come in contact and impact individual snakes. It is possible that during the implementation of these tasks work crews could disturb a nearby gartersnake, but we would expect these instances to be rare and result in only a short-term behavior alteration. Therefore, we anticipate road maintenance activities will be an insignificant and discountable effect to the gartersnake and its habitat.

Proposed Critical Habitat

We anticipate the maintenance of existing access routes will have an insignificant effect to proposed narrow-headed and northern Mexican gartersnake critical habitat. Because no new roads will be developed and the maintenance of existing roads is expected to be site specific, infrequent, and mostly in upland areas, we anticipate that any indirect effects to streams or habitat (PCE 1), due to such factors as sedimentation, will be insignificant. Also because of the site-specific nature of road maintenance, its infrequent occurrence, and the lack of relied upon habitat occurring along roads, we do not expect any impact to terrestrial space (PCE 2), aquatic or upland prey habitat or populations (PCE 3), or prey species composition (PCE 4).

Maintenance of Overhead and Underground Power Line Infrastructure

Maintenance of overhead and underground power lines includes inspections and patrols to identify problem areas along the lines, structures, and hardware, and the repair and replacement of these problem areas for overhead and underground transmission and distribution lines. Above ground operations such as repairing equipment on poles or towers, splicing power line, and replacing cross-arms are generally conducted from a line truck parked at the pole, tower or splice

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location, or through climbing the structure. Ground disturbing activities include digging to install a new power pole or trenching to repair/replace underground power lines. Old poles are not dug up and removed, but simply cut down near its base, close to the ground.

There is uncertainty exactly how many poles and how much underground line requires replacement within gartersnake habitat. Based upon the abundance and general age/longevity of wood poles and underground line, APS estimated that about 47 poles and 0.235 miles of underground power line could be replaced in narrow-headed gartersnake habitat and 25 poles and 0.347 miles of underground line in northern Mexican gartersnake habitat (L. Young, APS, pers. comm). There is overlap in these two gartersnake's habitat, therefore it is expected that the actual number of poles dug and length of trench dug will be less than 72 poles and 0.582 miles.

We have determined that although current surveys are lacking and both species are very secretive, proposed critical habitat (and thus, gartersnake habitat) areas are considered occupied (USFWS 2013). Narrow-headed gartersnake populations are currently known to occur along the East Verde and Verde rivers, and Haigler, Houston, Tonto, Oak, and West Fork Oak creeks, and northern Mexican gartersnakes are known to occur along Little Ash, Tonto, Oak, and Spring creeks. Both gartersnake species are cryptic, secretive, difficult to detect, quick to escape (sometimes underwater and underground), and capable of persisting in low or very low population densities that make positive detections nearly impossible in structurally complex habitat. Both gartersnakes also take advantage of underground burrows, holes, rock outcrops, and crevices for hiding and brumation. Regardless of whether it is the warmer or cooler time of the year, gartersnakes spend most of their time underground or under cover, and when gartersnakes are frightened or disturbed, they can seek cover in underground hiding spots.

Direct and Indirect Effects

We anticipate that due to the abundance of digging to install new poles and trenching to install/repair underground lines within occupied gartersnake habitat, direct adverse effects to gartersnakes are unavoidable and reasonably likely to occur. Over a three-year period, no more than 72 new holes and 0.582 miles of trench may be dug within gartersnake habitat (likely upland habitat) (L. Young, APS, pers. comm). The timing and location of this work is unpredictable. Much of this ground disturbance will occur with mechanized equipment, such as truck-mounted augers (possible hand held augers in remote areas) and vehicle-mounted trenchers. Larger mechanized equipment accomplishes earth-moving goals efficiently, but also disturbs large amounts of earth quickly with greater force and impact, which is more likely to cause adverse effects to hiding or brumating gartersnakes. Trenches and holes will not stay open for an extended period of time (few days), but could potentially attract and trap gartersnakes during work and backfilling. Because gartersnakes occupy areas where ground-disturbing work will occur, spend most of their time underground or undercover, and due to the abundance and unpredictability on where and when holes and trench will be dug mechanically, we anticipate that direct effects to gartersnakes (death and injury) from these earth-moving activities are reasonably likely to occur.

We do not expect direct or indirect gartersnake effects associated with above ground equipment repair of poles or towers, splicing power line, or replacing cross-arms. These activities occur from a parked truck at a pole, tower, or splice location, or through climbing the structure.

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Vehicle travel to and from repair locations will primarily stay on roads at slow speeds and will rarely go off-road, causing only minor, localized, and temporary impacts to herbaceous vegetation. Work to repair lines, poles, etc. will typically occur from a truck and on the pole itself, therefore no ground disturbing actions from the repair activity are likely to occur and no interaction with ground dwelling gartersnakes. Vehicle movement on roads and parking at work sites could result in a rare, but temporary disturbance to a nearby gartersnake. As a result, we anticipate that any impact to gartersnake habitat from vehicles or alteration of their behavior from above ground equipment repair of poles and towers will have an insignificant effect to both gartersnakes and their habitat.

Proposed Critical Habitat

We anticipate the digging of no more than 72 holes and digging just over a half-mile of trench will have an adverse effect to proposed gartersnake critical habitat. The approximate 0.235 miles of trenching within narrow-headed gartersnake and 0.347 miles of northern Mexican gartersnake proposed critical habitat will temporarily alter terrestrial space adjacent to streams supporting gartersnake gestation, migration, and brumation (PCE 2). The earth moving activities will temporarily move above ground rocks, boulders and other organic and inorganic materials gartersnakes take advantage of and remove vegetation and earth while digging and trenching. It is expected that this habitat alteration will be temporary because trenches will be filled and afterwards, will be left unaffected. It is not anticipated that trenching and hole digging will occur within riparian areas adjacent to streams. Because trenching and hole digging is expected to occur in the uplands and dispersed throughout proposed critical habitat, we do not anticipate any impact to stream function (PCE 1), prey populations (PCE 3), or prey species composition (PCE 4).

We expect above ground line maintenance work will not have a noticeable effect on any aspect of proposed gartersnake critical habitat. Repair work will occur above the ground on poles and lines preventing any impact to streams, space, or prey populations. Vehicles will primarily stay on roads and may periodically go off-road to access some poles or underground line. As a result, of vehicles staying on roads with the infrequent need to travel off-road in undisturbed areas, we anticipate repair vehicles will not noticeably alter any lateral space (PCE 2) and will not affect any stream function, streamside vegetation, or prey base (PCE 1, 3, and 4).

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation under section 7 of the Act.

Most land within the action area is managed by the Forest Service, thus, most activities that could potentially affect gartersnakes and their habitat are Federal activities subject to additional section 7 consultation. The effects of these Federal activities are not considered cumulative effects.

Future non-Federal activities within the action area that are reasonably certain to occur include the modification of gartersnake habitat and disturbance from actions occurring on adjacent State,

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private, tribal and other non-federal ownerships and inholdings (e.g., road construction, land clearing, water use, land management, recreation, etc.). As a result, some residential and potential commercial development, road construction, farming, livestock grazing, off-highway vehicle use, recreation, and other activities occur on these lands and are expected to continue into the foreseeable future. Non-federal actions on these lands could collectively or individually contribute to the introduction or movement of non-native species, dewatering of streams, and degradation to riparian habitat and uplands that impact gartersnakes and their habitat on adjacent Federal lands. Livestock operations off public lands could degrade narrow-headed and northern Mexican gartersnake habitat. Recreation, off-road vehicle use, and human-caused wildfire originating off public lands could spread onto Forest Service lands impacting gartersnakes. These activities may reduce the quality and quantity of gartersnake habitat, with a pronounced effect when overlapping with areas harboring harmful nonnative species; resulting in disturbance to gartersnakes, and contributing as cumulative effects to the proposed action.

CONCLUSION

After reviewing the current status of the narrow-headed gartersnake, northern Mexican gartersnake and their proposed critical habitats, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is our biological opinion that continued implementation of the Phase II project will not jeopardize the continued existence of the narrow-headed gartersnake and northern Mexican gartersnake, and will not destroy or adversely modify their proposed critical habitat. We base our conclusion on the following:

1. No more than about 0.5 miles of trenching and 72 holes will result in temporary impacts to gartersnake proposed critical habitat. Trenches and holes will be filled within days of being dug and then will be left to continue to serve their conservation role. Therefore, trenching and hole digging will cause temporary impacts, but will not destroy or adversely modify proposed gartersnake critical habitat.
2. Hazard vegetation removal and vegetation maintenance work will occur within about 164 acres of proposed narrow-headed gartersnake and 102 acres of northern Mexican gartersnake critical habitat (some acreage is shared between these two species). Overall, hazard vegetation work may occur within about 80 acres of narrow-headed and 31 acres of northern Mexican gartersnake critical habitat. These actions will be spread across at least 10 different streams and 35 different sites, dispersing the effect throughout gartersnake proposed critical habitat. While continuing to maintain cleared areas eliminates the complex habitat preferred by gartersnakes, areas will not be paved or permanently eliminated, but will be comprised of openings (which naturally occur throughout riparian areas). Due to dispersing these cleared areas across the action area, the impact is minimized, and therefore we do not expect the vegetation removal will affect the overall function of the streams, nor affect prey populations or prey species composition.
3. The work within 164 acres of narrow-headed gartersnake and 102 acres of northern Mexican gartersnake proposed critical habitat is a minute fraction of the approximate 620,000 acres proposed as gartersnake critical habitat. Because the amount of overall vegetation being removed is dispersed across many areas and because the removal is not

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expected to alter stream function or gartersnake prey species/populations, we anticipate that proposed gartersnake critical habitat will not be destroyed or adversely modified and will continue to function its conservation role.

4. We anticipate that the adverse impact to gartersnake recovery by maintaining cleared ROW corridors is minimized because vegetation clearing is dispersed across 10 different streams and at least 35 different sites. As a result, we do not think these localized and dispersed changes to gartersnake habitat quality will jeopardize gartersnakes.
5. Gartersnakes are secretive, able to persist in low densities, and dispersed across various streams in the United States within Arizona and Mexico (USFWS 2013). As a result of populations persisting and dispersed across a broad area, and likely more persisting than are known, we think the direct impacts caused by this project will not result in jeopardy.
6. The implementation of conservation measures and attention paid to gartersnakes should minimize the occurrence of incidental take and may provide new information about gartersnake distribution and abundance.

The conclusions of this BO/CO are based on full implementation of the project as summarized in the “Description of the Proposed Action” section of this document, including the conservation measures that were incorporated into the project design.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. “Take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. “Harm” is further defined (50 CFR § 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. “Harass” is defined (50 CFR § 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. “Incidental take” is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

The measures described below are nondiscretionary, and must be implemented by the Forest Service so that they become binding conditions of any grant or permit issued to an applicant/permittee, as appropriate, for the exemption in section 7(o)(2) to apply. The Forest Service has a continuing duty to regulate the activity covered by this incidental take statement. If the Forest Service (1) fails to adhere to the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Forest Service

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must report the progress of the action and its impact on the species to the Service as specified in the incidental take statement [see 50 CFR 402.14(i)(3)].

Amount or Extent of Take

Based on the best available information for the narrow-headed and northern Mexican gartersnakes, the habitat needs of this species, the project description, and information provided by the Forest Service, incidental take is considered likely for the narrow-headed and northern Mexican gartersnake from the proposed action. Incidental take of both narrow-headed and northern Mexican gartersnakes is expected in the form of injury or death due to mechanized earth moving and filling while trenching and hole digging to replace poles and underground lines. Because of the limited amount of work, short duration of the project, and reduced number of known gartersnake populations, we do not anticipate the number of gartersnakes to be taken to be more than three (3) individuals (any combination of the two species). Furthermore, because gartersnakes are small-bodied, secretive, well-camouflaged, use subsurface retreats and protective cover, and because heavy machinery operations extend underground, gartersnakes may be incidentally taken but not observed. If gartersnakes are observed during heavy equipment activities (trenching, hole digging, backfilling), there is a greater likelihood of their presence and incidental take. Therefore, if a total of two live gartersnakes (narrow-headed or northern Mexican) are observed during earth moving (trenching/hole digging and back-filling) activities, the Forest Service and/or Utilities will contact this office as soon as possible to discuss whether consultation reinitiation and/or additional conservation measures are necessary. Based upon the detection of two dead gartersnakes (any combination of narrow-headed and northern Mexican gartersnakes) during heavy machinery operations (hole digging, trenching, backfilling) (because finding incidentally taken gartersnakes is difficult), we will consider the amount or extent of incidental take of three gartersnakes (any combination of the two listed gartersnake species) has been reached.

Effect of the Take

We have determined that the level of anticipated take described above is not likely to jeopardize the continued existence of narrow-headed or northern Mexican gartersnakes or to result in destruction or adverse modification of their proposed critical habitat.

REASONABLE AND PRUDENT MEASURES AND TERMS AND CONDITIONS

Because all appropriate measures to reduce and minimize effects and monitoring strategies to assess when the amount or extent of incidental are part of the proposed action's conservation measures, we have not identified any Reasonable and Prudent Measures and Terms and Conditions.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to

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minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

Narrow-Headed Gartersnake and Northern Mexican Gartersnake

1. We recommend the Forest Service work with FWS to implement recovery actions as described within the narrow-headed gartersnake and northern Mexican gartersnake recovery plans when they are completed.
2. We recommend the Forest Service work with FWS and AGFD to not only prevent the introduction or movement of non-native aquatic species, but also implement a removal program for non-native aquatic species over the long term that reduces the distribution and density of harmful non-native species in their predatory size classes on NFS lands.
3. We recommend the Forest Service work with FWS and AGFD to conduct surveys to better determine the distribution, abundance, and trends of species populations on the TNF.
4. We recommend the Forest Service maintain active participation in the Gartersnake Conservation Working Group, by ensuring forest biologists and other appropriate staff attend meetings and coordinate in monitoring and recovery planning.

In order that we are kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

This also concludes the conference on the action(s) outlined in the request. You may ask us to confirm the conference opinion as a biological opinion issued through formal consultation if the proposed species is listed or critical habitat is designated. The request must be in writing. If we review the proposed action and find there have been no significant changes in the action as planned or in the information used during the conference, we will confirm the conference opinion as the biological opinion for the project and no further section 7 consultation will be necessary.

After listing as threatened or endangered and any subsequent adoption of this conference opinion, the Forest Service shall request reinitiation of consultation if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion;

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(3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

Certain project activities may also affect species protected under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. sec. 703-712) and/or bald and golden eagles protected under the Bald and Golden Eagle Protection Act (Eagle Act). The MBTA prohibits the intentional taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when authorized by the FWS. The Eagle Act prohibits anyone, without a FWS permit, from taking (including disturbing) eagles, and including their parts, nests, or eggs. If you think migratory birds and/or eagles will be affected by this project, we recommend seeking our Technical Assistance to identify available conservation measures that you may be able to incorporate into your project.

For more information regarding the MBTA and Eagle Act, please visit the following websites. More information on the MBTA and available permits can be retrieved from [FWS Migratory Bird Program web page](#) and [FWS Permits Application Forms](#). For information on protections for bald eagles, please refer to the FWS's National Bald Eagle Management Guidelines (72 FR 31156) and regulatory definition of the term "disturb" (72 FR 31132) published in the Federal Register on June 5, as well at the Conservation Assessment and Strategy for the Bald Eagle in Arizona ([Southwestern Bald Eagle Management Committee website](#)).

In keeping with our trust responsibilities to American Indian Tribes, we encourage you to continue to coordinate with the Bureau of Indian Affairs in the implementation of this consultation and, by copy of this biological opinion, are notifying affected Tribes of its completion. We also encourage you to coordinate the review of this project with the AGFD. We appreciate the Forest Service's efforts to identify and minimize effects to listed species from this project. Please refer to the consultation number, 22410-2006-F-0365-R3, in future correspondence concerning this project. Should you require further assistance or if you have any questions please contact Greg Beatty (602-242-0210) or Brenda Smith (928-556-2157).

Sincerely,

Acting Field Supervisor

cc (electronic):

Assistant Field Supervisor, U.S. Fish and Wildlife Service, Flagstaff, AZ

Assistant Field Supervisor, U.S. Fish and Wildlife Service, Tucson, AZ (Attn, J. Servoss)

Bobbi Barrera, Deputy Director, Wildlife, Fish, and Rare Plants Program, U.S. Forest Service, Albuquerque, NM

Steve Plunkett, Assistant TES Program Manager, U.S. Forest Service, Albuquerque, NM

Lisa Young, Arizona Public Service, Phoenix, AZ

Ruth Valencia, Salt River Project, Phoenix, AZ

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Chip Lewis, Environmental Coordinator, Bureau of Indian Affairs, Phoenix, AZ

Clayton Honyumptewa, Natural Resources Director, Hopi Tribe, Kyotsmovi, AZ

Tim Stevens, Wildlife and Recreation Department Director, San Carlos Apache Tribe, San Carlos, AZ

Wally Davis Jr., Cultural Resources Director, Tonto Apache Tribe, Payson, AZ

Josh Parker, Game and Fish Department Acting Director, White Mountain Apache Tribe, White Mountain, AZ

David Lewis, Environmental Protection Department Manager, Yavapai-Apache Nation, Camp Verde, AZ

Amber Tyson, Environmental Program Director, Yavapai-Prescott Indian Tribe, Prescott, AZ

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Appendix 1

Table A-1. Current predicted population status of the narrow-headed gartersnake.

Row	Location	Last Record	Suitable Physical Habitat Present	Native Prey Species Present	Harmful Non-native Species Present	Predicted Population Status
1	West Fork Gila River (NM)	2014	Yes	Yes	Yes	Likely low density
2	Middle Fork Gila River (NM)	2017	Yes	Yes	Yes	Likely viable
3	East Fork Gila River (NM)	2006	Yes	Yes	Yes	Likely low density
4	Gila River (AZ, NM)	2009	Yes	Yes	Yes	Likely low density
5	Snow Creek/Snow Lake (NM)	2012	Yes	No	Yes	Likely low density
6	Gilita Creek (NM)	2017	Yes	Yes	No	Likely low density
7	Iron Creek (NM)	2009	Yes	Yes	No	Likely low density
8	Little Creek (NM)	2017	Yes	Possible	Yes	Likely low density
9	Turkey Creek (NM)	1986	Yes	Yes	Possible	Likely low density
10	Beaver Creek (NM)	1949	Yes	Possible	Yes	Likely extirpated
11	Black Canyon (NM)	2010	Yes	Yes	Yes	Likely low density
12	Taylor Creek/Wall Lake (NM)	1960	Yes	No	Yes	Likely extirpated
13	Diamond Creek (NM)	2016	Yes	Yes	Yes	Likely viable
14	Tularosa River (NM)	2017	Yes	Yes	Yes	Likely viable
15	Whitewater Creek (NM)	2012	Yes	Yes	Yes	Likely low density
16	San Francisco River (NM)	2011	Yes	Yes	Yes	Likely low density
17	Negrito Creek (NM)	1977	Yes	Yes	Yes	Likely extirpated
18	South Fork Negrito Creek (NM)	2010	Yes	Possible	Yes	Likely low density
19	Blue River (AZ)	2017	Yes	Yes	Yes	Likely low density
20	Dry Blue Creek (AZ, NM)	2010	Yes	Possible	Yes	Likely low density
21	Campbell Blue Creek (AZ, NM)	2016	Yes	Possible	Yes	Likely low density
22	Coleman Creek (AZ)	1989	Yes	Possible	No	Likely low density
23	Saliz Creek (NM)	2015	Yes	Possible	Yes	Likely low density
24	Eagle Creek (AZ)	2013	Yes	Possible	Yes	Likely low density
25	Black River (AZ)	2017	Yes	Yes	Yes	Likely low density
26	East Fork Black River (AZ)	2004	Yes	Possible	Yes	Likely low density
27	West Fork Black River (AZ)	1991	Yes	Yes	Possible	Likely low density
28	Fish Creek (Tributary to East Fork Black River; AZ)	2004	Yes	Yes	Possible	Likely viable
29	Bear Wallow Creek (Tributary to Black River)	2003	Yes	Yes	Possible	Likely viable
30	North Fork Bear Wallow Creek (Tributary to Black River)	2004	Yes	Yes	Possible	Likely viable
31	Reservation Creek (Tributary to Black River)	2016	Yes	Yes	Yes	Likely low density
32	White River (AZ)	1967	Yes	Possible	Possible	Likely low density
33	East Fork White River (AZ)	1964	Yes	Possible	Possible	Likely low density
34	North Fork White River (AZ)	1986	Yes	Yes	Possible	Likely low density

Row	Location	Last Record	Suitable Physical Habitat Present	Native Prey Species Present	Harmful Non-native Species Present	Predicted Population Status
35	Diamond Creek (AZ)	1986	Yes	Possible	Possible	Likely low density
36	Tonto Creek (tributary to Big Bonita Creek, AZ)	1915	Yes	Possible	Possible	Likely low density
37	Canyon Creek (AZ)	2017	Yes	Yes	Yes	Likely low density
38	Ash Creek (Tributary to Salt River)	2016	Yes	Yes	No	Likely low density
39	Upper Salt River (AZ)	1985	Yes	Yes	Yes	Likely low density
40	Cibeque Creek (AZ)	1991	Yes	Yes	Possible	Likely low density
41	Carrizo Creek (AZ)	1997	Yes	Yes	Possible	Likely low density
42	Big Bonito Creek (AZ)	1986	Yes	Yes	Yes	Likely low density
43	Haigler Creek (AZ)	2014	Yes	Yes	Yes	Likely low density
44	Houston Creek (AZ)	2005	Yes	Yes	Yes	Likely low density
45	Tonto Creek (tributary to Salt River, AZ)	2005	Yes	Yes	Yes	Likely low density
46	Christopher Creek	1993	Yes	Yes	Yes	Likely low density
47	Deer Creek (AZ)	1995	No	No	No	Likely extirpated
48	Upper Verde River (AZ)	2012	Yes	Yes	Yes	Likely low density
49	Oak Creek (AZ)	2016	Yes	No	No	Likely viable
50	West Fork Oak Creek (AZ)	2016	Yes	No	No	Likely viable
51	East Verde River (AZ)	1992	Yes	Yes	Yes	Likely low density

Notes: “Possible” means there were no conclusive data found. “Likely extirpated” means the last record for an area pre-dated 1980, and existing threats suggest the species is likely extirpated. “Likely low density” means there is a post-1980 record for the species, it is not reliably found with minimal to moderate survey effort, and threats exist which suggest the population may be low density or could be extirpated, but there is insufficient evidence to support extirpation. “Likely viable” means that the species is reliably found with minimal to moderate survey effort, and the population is generally considered to be somewhat resilient.

Table A-2: Northern Mexican gartersnake predicted population status in the United States.

Row	Location	Last Record	Suitable Physical Habitat Present	Native Prey Species Present	Harmful Non-native Species Present	Predicted Population Status
1	Gila River (NM, AZ)	2015	Yes	Yes	Yes	Likely low density
2	Spring Canyon (NM)	1937	Yes	Possible	Likely	Likely extirpated
3	Mule Creek (NM)	1983	Yes	Yes	Yes	Likely low density
4	Mimbres River (NM)	Likely early 1900s	Yes	Yes	Yes	Likely extirpated
5	Lower Colorado River (AZ)	2015	Yes	Yes	Yes	Likely low density
6	Bill Williams River (AZ)	2012	Yes	Yes	Yes	Likely viable
7	Big Sandy River (AZ)	2016	Yes	Yes	Likely	Likely low density
8	Santa Maria River (AZ)	2016	Yes	Yes	Likely	Likely low density
9	Agua Fria River (AZ)	1985	Yes	Yes	Yes	Likely low density
10	Little Ash Creek (AZ)	1993	Yes	Yes	Yes	Likely low density
11	Lower Salt River (AZ)	1968	Yes	Yes	Yes	Likely extirpated
12	Black River (AZ)	1982	Yes	Yes	Yes	Likely low density
13	Big Bonito Creek (AZ)	1986	Yes	Yes	Yes	Likely low density
14	Tonto Creek (AZ)	2016	Yes	Yes	Yes	Likely viable
15	Upper /Middle Verde River (AZ)	2016	Yes	Yes	Yes	Likely viable
16	Oak Creek (AZ) (Aquatic Research and Conservation Center formerly known as the Page Springs and Bubbling Ponds State Fish Hatcheries)	2016	Yes	Yes	Yes	Likely viable
17	Spring Creek (AZ)	2014	Yes	Yes	Yes	Likely low density
18	Sycamore Creek (Yavapai/Coconino Co., AZ)	1954	Yes	Possible	Yes	Likely extirpated
19	Upper Santa Cruz River/San Rafael Valley (AZ)	2017	Yes	Yes	Yes	Likely viable
20	Redrock Canyon/Cott Drainage (AZ)	2008	Yes	Yes	Yes	Likely low density
21	Sonoita Creek (AZ)	2013	Yes	Possible	Yes	Likely low density
22	Scotia Canyon (AZ)	2016	Yes	Yes	No	Likely low density
23	Parker Canyon (AZ)	1986	Yes	Possible	Yes	Likely low density
24	Las Cienegas National Conservation Area and Cienega Creek Natural Preserve (AZ)	2017	Yes	Yes	No	Likely low density
25	Lower Santa Cruz River (AZ)	1960 2015?	Yes	Yes	Yes	Likely extirpated
26	Buenos Aires National Wildlife Refuge (AZ)	2000	Yes	Yes	Yes	Likely low density
27	Bear Creek (AZ)	1987	Yes	Yes	Yes	Likely low density
28	Brown Canyon (AZ)	2014	Yes	Yes	No	Likely low density
29	Fort Huachuca (AZ)	1994	Yes	Yes	Yes	Likely low density
30	San Pedro River (AZ)	2006	Yes	Yes	Yes	Likely low density
31	Babocomari River and Cienega (AZ)	2009	Yes	Possible	Yes	Likely low density
32	Canelo Hills-Sonoita Grasslands Area (AZ)	2015	Yes	Yes	Yes	Likely low density

Row	Location	Last Record	Suitable Physical Habitat Present	Native Prey Species Present	Harmful Non-native Species Present	Predicted Population Status
33	San Bernardino National Wildlife Refuge (AZ)	2005	Yes	Yes	Yes	Likely low density

Notes: "Possible" means there were no conclusive data found. "Likely extirpated" means the last record for an area pre-dated 1980, and existing threats suggest the species is likely extirpated. "Likely low density" means there is a post-1980 record for the species, it is not reliably found with minimal to moderate survey effort, and threats exist which suggest the population may be low density or could be extirpated, but there is insufficient evidence to support extirpation. "Likely viable" means that the species is reliably found with minimal to moderate survey effort, and the population is generally considered to be somewhat resilient

Appendix 2

Table A-3. Power Line Summary and Maintenance Actions in Narrow-Headed Gartersnake Habitat and Proposed Critical Habitat

Power Line	Voltage	Length Miles	Acres ^a	Forest	Proposed Critical Habitat Subunit Name	Number of Poles Present	Number DSAP Poles	Suitable Habitat Present?	Inspection - aerial	Inspection - ground	Vegetation Maintenance	Hazard Vegetation	Vegetation Disposal	Climbing Inspection	Wood Pole Inspection	Repair & Replacement
500-3	500	0.25	6.95	TNF/ASNF	Canyon Creek	2	0	None	X	X	X		X	X		X
CO-SI	500	0.30	8.17	TNF/ASNF	Canyon Creek	2	0	None	X	X	X		X	X		X
NE-21	69	0.43	4.10	TNF	East Verde River	1	0	Upland habitat	X	X	X		X	X	X	X
TT 14	Dist OH	5.94	14.26	TNF	East Verde River	67	7	Riparian & upland habitat		X	X	X	X		X	X
PR 06	Dist OH	0.45	1.08	TNF	Haigler Creek	3	0	Upland habitat		X	X		X		X	X
PR 06	Dist UG	0.01	0.02	TNF	Haigler Creek	0	0	None		X						X
345-1	345	0.83	15.62	TNF	Houston Creek	1	0	None	X	X	X		X	X		X
PR 02	Dist OH	0.33	0.79	TNF	Houston Creek	2	0	Riparian & upland habitat		X	X		X		X	X
PR 02	Dist UG	0.04	0.08	TNF	Houston Creek	0	0	Upland habitat		X						X
NW-02	69	0.24	5.11	CNF	Oak Creek	4	0	Upland habitat	X	X	X		X	X	X	X
NW-05	69	0.26		CNF	Oak Creek	5	0	Upland habitat	X	X	X		X	X	X	X
CN 02	Dist OH	2.75	31.83	CNF	Oak Creek	48	0	Riparian & upland habitat		X	X	X	X		X	X
CN 04	Dist OH	0.47		CNF	Oak Creek	0	0	Upland habitat		X	X		X		X	X
CP 02	Dist OH	0.61		CNF	Oak Creek	0	0	Upland habitat		X	X	X	X		X	X
QS 02	Dist OH	0.03		CNF	Oak Creek	1	1	Upland habitat		X	X		X		X	X
SE 06	Dist OH	0.63		CNF	Oak Creek	8	3	Riparian & upland habitat		X	X	X	X		X	X
SE 14	Dist OH	9.00		CNF	Oak Creek	175	33	Riparian & upland habitat		X	X	X	X		X	X
CP 02	Dist UG	0.44	1.15	CNF	Oak Creek	0	0	None		X						X
SE 06	Dist UG	0.02		CNF	Oak Creek	0	0	None		X						X
SE 14	Dist UG	0.02		CNF	Oak Creek	0	0	None		X						X
345-1	345	0.70	13.51	TNF	Tonto Creek	0	0	Riparian & upland habitat	X	X	X	X	X	X		X
MZT06	Dist OH	0.89	11.58	TNF	Tonto Creek	12	0	Upland habitat		X	X		X		X	X
PR 06	Dist OH	4.00		TNF	Tonto Creek	52	0	Riparian & upland habitat		X	X	X	X		X	X
MZT06	Dist UG	0.28	1.10	TNF	Tonto Creek	0	0	None		X						X
PR 06	Dist UG	0.18		TNF	Tonto Creek	0	0	None		X						X
NW-01	69	0.04	24.95	CNF	Verde River	0	0	Upland habitat	X	X	X		X	X	X	X
NW-02	69	2.22		CNF/PNF/TNF	Verde River	24	0	None	X	X	X		X	X	X	X
NW-04	69	0.55		CNF/TNF	Verde River	2	0	None	X	X	X		X	X	X	X
230-2	230	0.30	7.37	CNF/PNF	Verde River	1	0	None	X	X	X		X	X	X	
500-2	500	0.51	11.06	PNF	Verde River	0	0	None	X							
CU 06	Dist OH	1.08		PNF/CNF	Verde River	17	1	Riparian & upland habitat		X	X	X	X		X	X
CZ 02	Dist OH	1.34		CNF/TNF	Verde River	7	1	Riparian & upland habitat		X	X	X	X		X	X

HD 02	Dist OH	0.26	11.70	CNF/PNF	Verde River	5	1	Riparian & upland habitat		X	X	X	X		X	X
QS 02	Dist OH	1.15		CNF/PNF	Verde River	16	3	Riparian & upland habitat		X	X	X	X		X	X
QS 10	Dist OH	1.17		CNF/PNF	Verde River	14	1	Riparian & upland habitat		X	X	X	X		X	X
230-02	230	0.27	6.59	CNF	W. Fork Oak Creek	2	0	Upland habitat	X	X	X	X	X	X	X	X
Totals		37.97	177.05			471	51									

^a Acres were calculated by voltage rather than by power lines for accurate calculations where multiple lines share a ROW. Acre calculations by power line are not available.

Dist OH = overhead distribution power line, Dist UG = underground distribution power line

Table A-4. Power Line Summary and Maintenance Actions in Northern Mexican Gartersnake Habitat and Proposed Critical Habitat

Power Line	Voltage	Length Miles	Acres	Forest	Proposed Critical Habitat Subunit Name	# of Poles	# of DSAP Poles	Suitable Habitat Present	Inspection - aerial	Inspection - ground	Vegetation Maintenance	Hazard Vegetation	Vegetation Disposal	Climbing Inspection	Wood Pole Inspection	Repair & Replacement
NW-04	69	1.36	12.98	PNF	Little Ash Creek	12	0	Upland habitat	X	X	X		X	X	X	X
NW-02	69	0.24	2.73	COF	Oak Creek	4	0	Upland habitat	X	X	X		X	X	X	X
NW-05	69	0.02		CNF	Oak Creek	5	0	Upland habitat	X	X	X		X	X	X	X
CN 02	Dist OH	2.75	10.21	CNF	Oak Creek	48	0	Riparian & upland habitat		X	X	X	X		X	X
CN 04	Dist OH	0.47		CNF	Oak Creek	0	0	Upland habitat		X	X		X		X	X
CP 02	Dist OH	0.61		CNF	Oak Creek	0	0	Upland habitat		X	X	X	X		X	X
QS 02	Dist OH	0.03		CNF	Oak Creek	1	1	Upland habitat		X	X		X		X	X
SE 06	Dist OH	0.63		CNF	Oak Creek	8	3	Riparian & upland habitat		X	X	X	X		X	X
SE 06*	Dist UG	0.02		1.12	CNF	Oak Creek	0	0	None		X					
CP 02	Dist UG	0.44	3.87	CNF	Oak Creek	0	0	None		X						X
NW-05	69	0.40		CNF	Spring Creek	5	0	Upland habitat	X	X	X		X	X	X	X
CN 02	Dist OH	0.48	3.14	CNF	Spring Creek	17	0	Upland habitat		X	X		X		X	X
CP 04	Dist OH	0.57		CNF	Spring Creek	0	0	None		X	X		X			X
WML01	Dist OH	0.24		CNF	Spring Creek	3	0	Upland habitat		X	X		X		X	X
WML01	Dist UG	0.30	0.74	CNF	Spring Creek	0	0	Upland habitat		X						X
345-1	345	0.70	13.51	TNF	Tonto Creek	0	0	Riparian & upland habitat	X	X	X	X	X			
MZT06	Dist OH	0.96	11.77	TNF	Tonto Creek	12	0	Upland habitat		X	X		X		X	X
PR 06	Dist OH	4.00		TNF	Tonto Creek	52	0	Riparian & upland habitat		X	X	X	X		X	X
MZT06	Dist UG	0.50	1.64	TNF	Tonto Creek	0	0	None		X						X
PR 06	Dist UG	0.18		TNF	Tonto Creek	0	0	None		X						
NW-01	69	0.04	24.95	CNF	Verde River	0	0	Upland habitat	X	X	X		X	X	X	X
NW-02	69	2.22		CNF/PNF/TNF	Verde River	24	0	None	X	X	X		X	X	X	X
NW-04	69	0.55		CNF/TNF	Verde River	2	0	None	X	X	X		X	X	X	X
230-02	230	0.30	7.37	CNF/PNF	Verde River	1	0	None	X	X	X		X	X	X	
500-2	500	0.51	11.06	PNF	Verde River	0	0	None	X							
CU 06	Dist OH	1.08	11.70	PNF/CNF	Verde River	17	1	Riparian & upland habitat		X	X	X	X		X	X
CZ 02	Dist OH	1.34		CNF/TNF	Verde River	7	1	Riparian & upland habitat		X	X	X	X		X	X
HD 02	Dist OH	0.26		CNF/PNF	Verde River	5	1	Riparian & upland habitat		X	X	X	X		X	X
QS 02	Dist OH	1.15		CNF/PNF	Verde River	16	3	Riparian & upland habitat		X	X	X	X		X	X
QS 10	Dist OH	1.17		CNF/PNF	Verde River	14	1	Riparian & upland habitat		X	X	X	X		X	X
Totals		23.54	116.79			253	11									

Dist OH = overhead distribution power line, Dist UG = underground distribution power line

*This location is actually located on private land but was captured in GIS analysis due to slight data errors