DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

RIN 1018–AU33

Endangered and Threatened Wildlife and Plants; Proposed Rule to Designate Critical Habitat for the Spikedace (*Meda fulgida*) and the Loach Minnow (*Tiaroga cobitis*)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), propose to designate a total of approximately 633 river miles (mi) (1018.7 kilometers (km)) of critical habitat for spikedace and loach minnow. Proposed critical habitat is located in New Mexico and Arizona. We hereby solicit data and comments from the public on all aspects of this proposal, including data on economic and other impacts of the designation. We may revise this proposal prior to final designation to incorporate or address new information received during public comment periods.

DATES: We will accept comments from all interested parties until February 21, 2006. We must receive requests for public hearings in writing at the address shown in the **ADDRESSES** section by February 3, 2006.

ADDRESSES: If you wish to comment, you may submit your comments and materials concerning this proposal, identified by RIN number 1018–AU33, by any one of several methods:

1. You may submit written comments and information to Steve Spangle, Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services Office, 2321 West Royal Palm Road, Suite 103, Phoenix, Arizona, 85021.

2. You may hand-deliver written comments and information to our Arizona Ecological Services Office, or fax your comments to 602/242–2513.

3. You may send your comments by electronic mail (e-mail) to *SD_LMComments@fws.gov.* For directions on how to submit electronic filing of comments, see the ''Public Comments Solicited'' section.

(4) Federal eRulemaking Portal: *http://www.regulations.gov.* Follow the instructions for submitting comments.

All comments and materials received, as well as supporting documentation used in preparation of this proposed rule, will be available for public inspection, by appointment, during normal business hours at the above address.

FOR FURTHER INFORMATION CONTACT: Steve Spangle, Field Supervisor, Arizona Ecological Services Office (telephone 602/242–0210; facsimile 602/242–2513).

SUPPLEMENTARY INFORMATION:

Public Comments Solicited

It is our intent that any final action resulting from this proposal will be as accurate and effective as possible. Therefore, we solicit comments or suggestions from the public, other concerned governmental agencies, the scientific community, industry, or any other interested party concerning this proposed rule. On the basis of public comment, during the development of the final rule we may find that areas proposed do not contain features essential to the conservation of the species, are appropriate for exclusion under section 4(b)(2), or not appropriate for exclusion, and in all of these cases, this information would be incorporated into the final designation. We particularly seek comments concerning:

(1) The reasons why any areas should or should not be determined to be critical habitat as provided by section 4 of the Act, including whether the benefits of designation will outweigh the benefits of excluding areas from the designation.

(2) Specific information on the distribution and abundance of spikedace and loach minnow and their habitats, and which habitat contains the primary constituent elements essential to the conservation of these species and why.

(3) Land-use designations and current or planned activities in or adjacent to the areas proposed and their possible impacts on proposed critical habitat.

(4) Any foreseeable economic, national security, or other potential impacts resulting from the proposed designation, in particular, any impacts on small entities.

(5) Whether our approach to designating critical habitat could be improved or modified in any way to provide for greater public participation and understanding, or to assist us in accommodating public concerns and comments.

(6) In addition, please consider the following: We specifically solicit the delivery of spikedace- and loach minnow-specific management plans including implementation schedules for areas included in this proposed designation, and comment on: (a) Whether these areas are occupied and contain the primary constituent elements that are essential to the conservation of the species; (b) whether these areas warrant exclusion; and (c) the basis for excluding these areas from critical habitat pursuant to section 4(b)(2) of the Act.

(7) We are not proposing the upper portion of the San Pedro River as critical habitat because of the presence of nonnative fish species and the absence of both spikedace and loach minnow. We seek comment on whether this area is essential to the conservation of the species and whether it should be included as critical habitat.

(8) Some of the lands we have identified as containing features essential to the conservation of the spikedace and loach minnow are being considered for exclusion from the final designation of critical habitat. We specifically solicit comment on the possible inclusion or exclusion of such areas;

(a) Whether these areas are occupied and contain the features essential to the conservation of the species and;

(b) Whether these, or other areas proposed but not specifically addressed in this proposal, warrant exclusion and;

(9) We are not proposing Fossil Creek as critical habitat because it is currently unoccupied. However, we seek comment on whether this area is essential to the conservation of the species and whether it should be included as critical habitat.

If you wish to comment, you may submit your comments and materials concerning this proposal by any one of several methods (see **ADDRESSES** section above). Please submit electronic comments in ASCII file format and avoid the use of special characters or any form of encryption. Please also include ''Attn: spikedace/loach minnow'' in your e-mail subject header and your name and return address in the body of your message. If you do not receive a confirmation from the system that we have received your Internet message, contact us directly by calling our Arizona Ecological Services Office at 602/242–0210. Please note that the e-mail address, *SD_LMComments@fws.gov*, will be closed at the termination of the public comment period.

Our practice is to make comments, including names and addresses of respondents, available for public review during regular business hours. Individual respondents may request that we withhold their home addresses from the administrative record, which we will honor to the extent allowable by law. There also may be circumstances in which we would withhold from the rulemaking record a respondent's identity, as allowable by law. If you wish us to withhold your name and/or address, you must state this

prominently at the beginning of your comments. However, we will not consider anonymous comments. We will make all submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, available for public inspection in their entirety. Comments and materials received will be available for public inspection, by appointment, during normal business hours at the above address.

Designation of Critical Habitat Provides Little Additional Protection to Species

In 30 years of implementing the Act, the Service has found that the designation of statutory critical habitat provides little additional protection to most listed species, while consuming significant amounts of conservation resources. The Service's present system for designating critical habitat is driven by litigation rather than biology, limits our ability to fully evaluate the science involved, consumes enormous agency resources, and imposes huge social and economic costs. The Service believes that additional agency discretion would allow our focus to return to those actions that provide the greatest benefit to the species most in need of protection.

Role of Critical Habitat in Actual Practice of Administering and Implementing the Act

While attention to and protection of habitat is paramount to successful conservation actions, we have consistently found that, in most circumstances, the designation of critical habitat is of little additional value for most listed species, yet it consumes large amounts of conservation resources. Sidle (1987) stated, ''Because the ESA can protect species with and without critical habitat designation, critical habitat designation may be redundant to the other consultation requirements of section 7.'' Currently, only 470 species, or 38 percent, of the 1,253 listed species in the United States under the jurisdiction of the Service have designated critical habitat.

We address the habitat needs of all 1,253 listed species through conservation mechanisms such as listing, section 7 consultations, the section 4 recovery planning process, the section 9 protective prohibitions of unauthorized take, section 6 funding to the states, and the section 10 incidental take permit process. The Service believes that it is these measures that may make the difference between extinction and survival for many species.

We note, however, that the August 6, 2004 Ninth Circuit judicial opinion, (*Gifford Pinchot Task Force* v. *United States Fish and Wildlife Service*) found our definition of adverse modification was invalid. In response to the decision, the Director has provided guidance to the Service based on the statutory language. In this rule, our analysis of the consequences and relative costs and benefits of the critical habitat designation is based on application of the statute consistent with the 9th Circuit's ruling and the Director's guidance.

Procedural and Resource Difficulties in Designating Critical Habitat

We have been inundated with lawsuits for our failure to designate critical habitat, and we face a growing number of lawsuits challenging critical habitat determinations once they are made. These lawsuits have subjected the Service to an ever-increasing series of court orders and court-approved settlement agreements, compliance with which now consumes nearly the entire listing program budget. This leaves the Service with little ability to prioritize its activities to direct scarce listing resources to the listing program actions with the most biologically urgent species conservation needs.

The consequence of the critical habitat litigation activity is that limited listing funds are used to defend active lawsuits, to respond to Notices of Intent (NOIs) to sue relative to critical habitat, and to comply with the growing number of adverse court orders. As a result, listing petition responses, the Service's own proposals to list critically imperiled species, and final listing determinations on existing proposals are all significantly delayed.

The accelerated schedules of court-ordered designations have left the Service with almost no ability to provide for adequate public participation or to ensure a defect-free rulemaking process before making decisions on listing and critical habitat proposals due to the risks associated with noncompliance with judicially imposed deadlines. This in turn fosters a second round of litigation in which those who fear adverse impacts from critical habitat designations challenge those designations. The cycle of litigation appears endless, is very expensive, and in the final analysis provides little additional protection to listed species.

The costs resulting from the designation include legal costs, the cost of preparation and publication of the designation, the analysis of the economic effects and the cost of requesting and responding to public comment, and in some cases the costs of compliance with the National Environmental Policy Act (NEPA). None of these costs result in any benefit to the species that is not already afforded by the protections of the Act enumerated earlier, and they directly reduce the funds available for direct and tangible conservation actions.

Background

It is our intent to discuss only those topics directly relevant to the designation of critical habitat in this proposed rule. For more information on the spikedace and loach minnow, refer to the final designation of critical habitat for the spikedace and loach minnow published in the **Federal Register** on April 25, 2000 (65 FR 24328).

Previous Federal Actions

On September 20, 1999, the United States District Court for the District of New Mexico, *Southwest Center for Biological Diversity* v. *Clark*, CIV 98–0769 M/JHG, ordered us to finalize a designation of critical habitat for the spikedace and loach minnow by February 17, 2000. On October 6, 1999, the court amended the order to require us to propose a critical habitat determination rather than requiring a final designation. We published our proposed rule to designate critical habitat in the **Federal Register** on December 10, 1999 (64 FR 69324). On December 22, 1999, the court extended the deadline to complete our determination until April 21, 2000. We published a final critical habitat designation on April 25, 2000 (65 FR 24329).

In *New Mexico Cattle Growers' Association and Coalition of Arizona/New Mexico Counties for Stable Economic Growth* v. *United States Fish and Wildlife Service*, CIV 02–0199 JB/LCS (D.N.M), the Plaintiffs challenged the April 25, 2000, critical habitat designation for the spikedace and loach minnow because the economic analysis had been prepared using the same methods which the Tenth Circuit had held to be invalid. The Center for Biological Diversity joined the lawsuit as a Defendant-Intervenor. The Service agreed to a voluntary vacatur of the critical habitat designation, except for the Tonto Creek Complex. On August 31, 2004, the United States District Court for the District of New Mexico set aside the April 25, 2000, critical habitat designation in its entirety and remanded it to the Service for preparation of a new proposed and final designation.

Critical Habitat

Critical habitat is defined in section 3 of the Act as—(i) the specific areas within the geographical area occupied by a species, at the time it is listed in accordance with the Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) that may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species. ''Conservation'' means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the Act is no longer necessary.

Critical habitat receives protection under section 7 of the Act through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a Federal agency. Section 7 requires consultation on Federal actions that are likely to result in the destruction or adverse modification of critical habitat. The designation of critical habitat does not affect land ownership or establish a refuge, wilderness, reserve, preserve, or other conservation area. Such designation does not allow government or public access to private lands.

To be included in a critical habitat designation, the habitat within the area occupied by the species must first have features that are essential to the conservation of the species. Critical habitat designations identify, to the extent known, using the best scientific data available, habitat areas that provide essential life cycle needs of the species (i.e., areas on which are found the primary constituent elements, as defined at 50 CFR 424.12(b)).

Habitat occupied at the time of listing may be included in critical habitat only if the essential features therein may require special management or protection. When the best available scientific data do not demonstrate that the conservation needs of the species so require, we will not designate critical habitat in areas outside the geographical area occupied by the species at the time of listing. An area currently occupied by the species but that was not known to be occupied at the time of listing will likely be essential to the conservation of the species and, therefore, included in the critical habitat designation.

The Service's Policy on Information Standards Under the Endangered Species Act, published in the **Federal Register** on July 1, 1994 (59 FR 34271), and Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658) and the associated Information Quality Guidelines issued by the Service provide criteria, establish procedures, and provide guidance to ensure that decisions made by the Service represent the best scientific data available. They require Service biologists to the extent consistent with the Act and with the use of the best scientific data available, to use primary and original sources of information as the basis for recommendations to designate critical habitat. When determining which areas are critical habitat, a primary source of information is generally the listing package for the species. Additional information sources include the recovery plan for the species, articles in peer-reviewed journals, conservation plans developed by States and counties, scientific status surveys and studies, biological assessments, or other unpublished materials and expert opinion or personal knowledge. All information is used in accordance with the provisions of Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Pub. L. 106–554; H.R. 5658) and the associated Information Quality Guidelines issued by the Service.

Section 4 of the Act requires that we designate critical habitat on the basis of the best scientific data available. Habitat is often dynamic, and species may move from one area to another over time. Furthermore, we recognize that designation of critical habitat may not include all of the habitat areas that may eventually be determined to be necessary for the recovery of the species. For these reasons, critical habitat designations do not signal that habitat outside the designation is unimportant or may not be required for recovery.

Areas that support populations, but are outside the critical habitat designation, will continue to be subject to conservation actions implemented under section 7(a)(1) of the Act and to the regulatory protections afforded by the section 7(a)(2) jeopardy standard, as determined on the basis of the best available information at the time of the action. Federally funded or permitted projects affecting listed species outside their designated critical habitat areas may still result in jeopardy findings in some cases. Similarly, critical habitat designations made on the basis of the best available information at the time of designation will not control the direction and substance of future recovery plans, habitat conservation plans, or other species conservation planning efforts if new information available to these planning efforts calls for a different outcome.

Methods

In determining areas that contain features essential to the conservation of spikedace and the loach minnow, we used the best scientific data available. We have reviewed the overall approach to the conservation of these species compiled in their respective recovery plans (USFWS 1991a, 1991b) and undertaken by local, State, Federal, and Tribal agencies, and private and non-governmental organizations operating within the species' range since their listing in 1986.

We have also reviewed available information that pertains to the habitat requirements of these species. The material included data in reports submitted during section 7 consultations and by biologists holding section 10(a)(1)(A) recovery permits; research published in peer-reviewed articles, agency reports, and databases; and regional Geographic Information System (GIS) coverages and habitat models.

Primary Constituent Elements

In accordance with section 3(5)(A)(i) of the Act and regulations at 50 CFR 424.12, in determining which areas to propose as critical habitat, we are required to base critical habitat determinations on the best scientific data available and to consider those physical and biological features (i.e., primary constituent elements (PCEs)) that are essential to the conservation of the species and that may require special management considerations or protection. These features include but are not limited to: Space for individual and population growth and for normal behavior; food, water, air, light, minerals or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, or rearing of offspring; and habitats that are protected from disturbance or are representative of the historical, geographical, and ecological distributions of a species.

Each of the areas designated in this rule have been determined to contain sufficient PCEs to provide for one or more of the life history functions of spikedace or loach minnow. In some cases, the PCEs exist as a result of ongoing Federal actions. As a result, ongoing Federal actions at the time of designation will be included in the baseline in any consultation conducted subsequent to this designation.

We determined the primary constituent elements for spikedace and loach minnow from studies on their habitat requirements and population biology including, but not limited to, Barber et al. 1970, Minckley 1973, Anderson 1978, Barber and Minckley 1983, Turner and Taffanelli 1983, Barrett et al. 1985, Propst et al. 1986, Service 1989, Hardy et al. 1990, Douglas et al. 1994, Stefferud and Rinne 1996, and Velasco 1997.

Lateral Extent

The areas proposed for designation as critical habitat are designed to provide sufficient riverine and associated floodplain area for breeding, non-breeding, and dispersing adult spikedace and loach minnow, as well as for the habitat needs of juvenile and larval stages of these fishes. In general, the constituent elements of critical habitat for spikedace and loach minnow include the riverine ecosystem formed by the wetted channel and the adjacent floodplains within 300 lateral feet on either side of bankfull stage. Spikedace and loach minnow use the riverine ecosystem for feeding, sheltering, and cover while breeding and migrating. This proposal takes into account the naturally dynamic nature of riverine systems and floodplains (including riparian and adjacent upland areas) that are an integral part of the stream ecosystem. For example, riparian areas are seasonally flooded habitats (i.e., wetlands) that are major contributors to a variety of vital functions within the associated stream channel (Federal Interagency Stream Restoration Working Group 1998, Brinson et al. 1981). They are responsible for energy and nutrient cycling, filtering runoff, absorbing and gradually releasing floodwaters, recharging groundwater, maintaining streamflows, protecting stream banks from erosion, and providing shade and cover for fish and other aquatic species. Healthy riparian and adjacent upland areas help ensure water courses maintain the habitat components essential to aquatic species (e.g., see FS 1979; Middle Rio Grande Biological Interagency Team 1993; Briggs 1996), including the spikedace and loach minnow. Habitat quality within the mainstem river channels in the historical range of the spikedace and loach minnow is intrinsically related to the character of the floodplain and the associated tributaries, side channels, and backwater habitats that contribute to the key habitat features (e.g., substrate, water quality, and water quantity) in these reaches. We believe a relatively intact riparian area, along with periodic flooding in a relatively natural pattern, is important in maintaining the stream conditions necessary for long-term conservation of the spikedace and loach minnow.

The lateral extent of streams was set at 300 ft (91.4 m) to either side of bankfull stage to accommodate stream meandering and high flows, and in order to ensure adequate protection of riparian zones adjacent to stream channels. Bankfull stage is defined as the discharge at which channel maintenance is the most effective, or the upper level of the range of channel-forming flows which transport the bulk of the available sediment over time. Bankfull stage is generally considered to be that level of stream discharge reached just before flows spill out onto the adjacent floodplain. The discharge that occurs at bankfull stage, in combination with the range of flows that occur over a length of time, govern the shape and size of the river channel (Rosgen 1996, Leopold 1997).

The use of bankfull stage and 300 ft (91.4 m) on either side recognizes the naturally dynamic nature of riverine systems and recognizes that floodplains are an integral part of the stream ecosystem. The use of bankfull stage and 300 ft (91.4 m) on either side of a tributary also is an area that contains the features essential to the conservation of the species. A relatively intact floodplain, along with the periodic flooding in a relatively natural pattern, is an important element in the long-term survival and recovery of spikedace and loach minnow. The riparian areas encompassed in the 300 lateral feet (91.4 m) to either side of bankfull stage play an important role in overall stream health, in that they function as the floodplain and dissipate stream energies associated with high flows (BLM 1990). This is further discussed below in the ''Proposed Critical Habitat'' section of the rule.

Spikedace

The specific primary constituent elements required of spikedace habitat are derived from the biological needs of the spikedace as described below.

Space for Individual and Population Growth and Normal Behavior

Streams in the Southwestern United States have a wide fluctuation in flows and resulting habitat conditions at different times of the year. Spikedace persist in these varying conditions and, as discussed below, several studies have documented habitat conditions at occupied sites.

Habitat Preferences

Spikedace have differing habitat requirements through their various life stages. Generally, adult spikedace prefer intermediate-sized streams with moderate to swift currents over sand, gravel, and cobble substrates (*i.e.* stream bottoms). Preferred water depths are less than 11.8 in (30 cm) (Barber and Minckley 1966, Minckley 1973, Anderson 1978, Rinne and Kroeger 1988, Hardy 1990, Sublette *et al.* 1990, Rinne 1991, Rinne 1999a). As discussed below, larval and juvenile spikedace occupy different habitats than adults.

Flow Velocities. Studies have been completed on the Gila River, Aravaipa Creek, and the Verde River. Measured flows in habitat occupied by adult spikedace ranged from 23.3 to 59.5 cm/second (9.2–23.4 in/second) (Barber and Minckley 1966, Hardy 1990, Propst *et al.* 1986, Rinne 1991, Rinne 1991a, Rinne and Kroeger 1988, Schreiber 1978). Studies on the Gila River indicated that juvenile spikedace occupy areas with velocities of approximately 16.8 cm/second (6.6 in/second) while larval spikedace were found in velocities of 8.4 cm/second (3.3 in/second) (Propst *et al.* 1986).

Flow velocities in occupied habitats vary by season as well. During the warm season (June–November), spikedace on the Gila River occupied areas with mean flow velocities of 19.3 in/second (49.1 cm/second) at one site, and 7.4 in/second (18.8 cm/second) at the second site. During the cold season (December–May), mean flow velocities at these same sites were 15.5 in/second (39.4 cm/second) and 8.4 in/second (21.4 cm/second). It is believed that spikedace seek areas in the stream that offer protection during periods of cooler temperatures to offset their decreased metabolic rates. Where water depth remains fairly constant throughout the year as at the first site, slower velocities provided habitats in portions of the stream with warmer temperatures. Where flow velocity remains fairly constant throughout the year, such as at the second site, shallower water provided habitats in portions of the stream with warmer temperatures (Propst *et al.* 1986).

Larval and juvenile spikedace occupy different habitats than adults, tending to occupy shallow, peripheral portions of streams in areas with slower currents (Anderson 1978, Propst *et al.* 1986). Once they emerge from the gravel of the spawning riffles, spikedace larvae disperse to stream margins where water velocity is very slow or still. Slightly larger larvae were most commonly associated with slow-velocity water near

stream margins in areas where water depth was less than 12.6 inches (32.0 cm) (Propst *et al.* 1986). Juvenile spikedace (those fish 1.0 to 1.4 in (25.4–35.6 mm) in length) occurred over a greater range of water velocities than larvae, but still in water depths of less than 12.6 in (32.0 cm). Juveniles and larvae are also occasionally found in quiet pools or backwaters lacking streamflow (Sublette *et al.* 1990).

Outside of the breeding season, adult spikedace primarily use riffle habitat (a shallow area in a streambed causing ripples) or quiet eddies (where the water moves in the opposite direction of water in the main channel or in circular patterns) downstream of those riffles. Eighty percent of the spikedace collected in a Verde River study used run and glide habitat. For this study, a glide was defined as a portion of the stream with a lower gradient (0.3 percent), versus a run which had a slightly steeper gradient (0.3–0.5 percent) (Rinne and Stefferud 1996). Spikedace on the Gila River were most commonly found in riffle areas of the stream with moderate to swift currents (Anderson 1978) and some run habitats (J.M. Montgomery 1985), as were spikedace in Aravaipa Creek (Barber and Minckley 1966).

Seasonal differences in habitats utilized have been noted in the upper Gila drainage, for both the winter and breeding seasons. For example, the spikedace was found to use shallower habitats at 6.6 in (<16.8 cm) in the winter, and deeper water at 6.6 to 12.6 in (16.8–32.0 cm) during warmer months (Propst *et al.* 1986, Sublette *et al.* 1990). During the breeding season, female and male spikedace become segregated, with females occupying deeper pools and eddies and males occupying riffles flowing over sand and gravel beds in water approximately 3.1 to 5.9 inches (7.9–15.0 cm) deep. Females then enter the riffles occupied by the males before ova are released into the water column (Barber *et al.* 1970).

As noted above, streams in the Southwestern United States have a wide fluctuation in flows and are periodically dewatered. While portions of stream segments included in this designation may experience dry periods, they are still considered essential because the spikedace is adapted to this environment and will use these areas as connective corridors between occupied or seasonally occupied habitat when they are wetted.

Substrates. Spikedace are known to occur in areas with low to moderate amounts of fine sediment and substrate embeddedness (filling in of spaces by fine sediments), which is essential for healthy development of eggs. Spawning has been observed in areas with sand and gravel beds and not in areas with fine sediment or substrate embeddedness, as described above. Additionally, low to moderate fine sediments ensure that eggs remain well-oxygenated and will not suffocate due to sediment deposition (Propst *et al.* 1986).

In the Verde River study, spikedace glide-run habitats were characterized by approximately 29 percent sand or fines (silty sand) (Rinne 2001). Spikedace numbers in the Verde River increased almost three times (from 18 to 52 individuals) when the fine component of the substrate decreased from about 27 percent down to 7 percent (Neary *et al.* 1996), indicating that spikedace prefer habitats with lower amounts of fines. Sand content in all glide-run spikedace habitats in the Verde and Gila Rivers in 2000 was 18 and 20 percent (Rinne 2001).

Larval spikedace substrate preferences are similar to those of adults. Sixty percent of spikedace larvae in the Gila River were found over sand-dominated substrates, while 18 percent were found over gravel and an additional 18 percent found over cobble-dominated substrates (Propst *et al.* 1986). While 45 percent of juvenile spikedace were found over sand substrates, an additional 45 percent of the juveniles were found over gravel substrates, with the remaining 9 percent associated with cobble-dominated substrates (Propst *et al.* 1986).

The degree of substrate embeddedness may also affect the prey base for spikedace. As discussed below, mayflies constitute a significant portion of the spikedace diet. Suitable habitat for the type of mayflies found in Aravaipa Creek includes pebbles or gravel for clinging. Excess sedimentation would cover or blanket smaller pebbles and gravel, resulting in a lack of suitable habitat for mayflies, and a subsequent decrease in available prey items for spikedace.

Flooding. Rainfall in the southwest is generally characterized as bimodal, with winter rains of longer duration and less intensity and summer rains of shorter duration and higher intensity. Periodic flooding appear to benefit spikedace in three ways: (1) Removing excess sediment from some portions of the stream; (2) removing nonnative fish species from a given area; and (3) increasing prey species diversity.

Flooding in Aravaipa Creek has resulted in the transport of heavier loads of sediments such as cobble, gravel, and sand that deposited where the stream widens, gradient flattens, and velocity and turbulence decrease. Dams formed by such deposition can temporarily cause water to back up and break into braids downstream of the dam. The braided areas provide excellent nurseries for larval and juvenile fishes (Velasco 1997).

On the Gila River in New Mexico, flows fluctuate seasonally with snowmelt causing spring pulses and occasional floods, and late-summer or monsoonal rains producing floods of varying intensity and duration. These high flows benefit essential spikedace spawning and foraging habitat (Propst *et al.* 1986) as described above. Peak floods can modify channel morphology and sort and rearrange stream bed materials (Stefferud and Rinne 1996).

Floods likely also benefit native fish by breaking up embedded bottom materials (Mueller 1984). A study of the Verde River analyzed the effects of flooding in 1993 and 1995, finding that these floods had notable effects on both native and nonnative fish species. Among other effects, the floods either stimulated spawning or enhanced recruitment of three of the native species, and may have eliminated one of the nonnative fish species (Rinne and Stefferud 1997).

Flooding, as part of a natural hydrograph, temporarily removes nonnative fish species, which are not adapted to flooding. Thus flooding consequently removes the competitive pressures of nonnative fish species on native fish species which persist following the flood. A study on the differential responses of native and nonnative fishes in seven unregulated and three regulated streams or stream reaches that were sampled before and after major flooding noted that fish faunas of canyon-bound reaches of unregulated streams invariably shifted from a mixture of native and nonnative fish species to predominantly, and in some cases exclusively, native forms after large floods. Samples from regulated systems indicated relatively few or no changes in species composition due to releases from upstream dams at low, controlled volumes. However, during emergency releases, effects to nonnative fish species were similar to those seen with flooding on unregulated systems (Minckley and Meffe 1987).

The onset of flooding also corresponds with an increased diversity of food items for spikedace. Reductions in the mainstream invertebrates, such as mayflies, cause the fish to expand its food base in an opportunistic manner. In addition, inflowing flood waters carry terrestrial invertebrates, such as ants, bees, and wasps (Hymenopterans), into

aquatic areas (Barber and Minckley 1983).

Stream Gradient. Spikedace occupy streams with low to moderate gradients (Propst *et al.* 1986, Stefferud and Rinne 1996, Sublette *et al.* 1999). Specific gradient data are generally lacking, but the gradient of occupied portions of Aravaipa Creek varied between approximately 0.3 to < 1.0 percent (Barber *et al.* 1970, Rinne and Kroeger 1988, Rinne and Stefferud 1996). Smaller, younger spikedace are generally found in quiet water along pool margins over soft, fine-grained bottoms (USFWS 1991a). Juveniles and larvae tend to occupy the margins of the stream adjacent to riffle habitats (Propst *et al.* 1986), and are also known to use backwater areas (Sublette *et al.* 1990).

Habitat Protected From Disturbance or Representative of the Historic Geographical and Ecological Distribution of a Species

Nonnative fish species. One of the primary reasons for the decline of native species is the presence of nonnative fishes introduced accidentally or for sport, forage, or bait. Fish evolution in the arid American west is linked to disruptive geologic and climatic events which acted in concert over evolutionary time to decrease the availability and reliability of aquatic ecosystems. The fragmentation and reduction of aquatic ecosystems resulted in a fish fauna that was both diminished and restricted to the arid west. Lacking exposure to a wider range of species, western species seem to lack the competitive abilities and predator defenses developed by fishes from regions where more species are present (Douglas *et al.* 1994).

The effects of nonnative fish competition on spikedace can be classified as either interference or exploitive. Interference competition occurs when individuals directly affect others, such as by fighting or preying upon them. Exploitive competition occurs when individuals affect others indirectly, such as through use of common resources (Douglas *et al.* 1994). Competition with regards to actual space is generally considered interference competition (Schoener 1983).

The effects of nonnative fish preying on natives such as spikedace would be classified as interference competition. There is circumstantial evidence of the negative impacts of nonnative predators on native fishes for several stream reaches. Channel catfish, flathead catfish, and smallmouth bass all prey on native fishes, as evidenced by prey remains of native fishes in the stomachs of these predatory species (Propst *et al.* 1986). Smallmouth bass, rainbow trout, brown trout, and channel catfish became common in the Gila River above Turkey Creek and the three forks of the Gila River. In 1949, 52 spikedace were collected at Red Rock while channel catfish composed only 1.65 percent of the 607 fish collected. However, in 1977, only six spikedace were located at the same site, and the percentage of channel catfish had risen to 14.5 percent of 169 fish collected. The decline of spikedace and the increase of channel catfish is likely related (Anderson 1978).

Similar interactions between native and nonnative fishes were observed for the upper reaches of the East Fork of the Gila River. In this system, native fish were limited, with spikedace being rare or absent, while nonnative channel catfish and smallmouth bass were moderately common prior to 1983 and 1984 floods. Post-1983 flooding, adult nonnative predators were generally absent and spikedace were collected in moderate numbers in 1985 (Propst *et al.* 1986).

Interference competition occurs with species such as red shiner. Red shiner appear to be particularly detrimental to spikedace because although spikedace and shiners are separated geographically (*i.e.*, allopatric), they occupy essentially the same habitat types. Where the two species are overlapping (*i.e.*, sympatric), there is evidence of displacement of spikedace to less suitable habitats (USFWS 1991a). This means that if red shiners are present, suitable habitat for spikedace is reduced. Range expansion and species recovery may then be curtailed.

One study focused on three stream reaches on the Gila River and Aravaipa Creek having only spikedace; one reach on the Verde River where spikedace and red shiner have co-occurred for three decades; and one reach on the Gila River where red shiner recently invaded areas and where spikedace had never been recorded. The study indicated that, for reaches where only spikedace were present, spikedace showed a preference for slower currents and smaller particles in the substrate than were generally available throughout the Gila River and Aravaipa Creek systems. For red shiner in the Verde River, the study showed that red shiner occupied waters that were generally slower and with smaller particle size in the substrate than were, on average, available in the system. The study concluded that, where the two species were caught together, habitats of spikedace were statistically indistinguishable from those occupied by red shiner. The study further concludes that spikedace, where co-occurring with red shiner, move into currents swifter than those selected when in isolation, while red shiner occupy the slower habitat, whether they are alone or with spikedace (Douglas *et al.* 1994).

Food

Food Items. Spikedace are active, highly mobile fish that visually inspect drifting materials both at the surface and within the water column. Gustatory inspection, or taking potential prey items into the mouth before either swallowing or rejecting it, is also common (Barber and Minckley 1983). Prey body size is small, typically ranging from 0.08 to 0.20 inches (2 to 5 mm) long (Anderson 1978).

Stomach content analysis of spikedace determined that mayflies, caddisflies, true flies, stoneflies, and dragonflies are all prey items for spikedace. In one Gila River study, the frequency of occurrence was 71 percent for mayflies, 34 percent for true flies, and 25 percent for caddisflies (Propst *et al.* 1986). A second Gila River study of five samples determined that the frequency of occurrence was 80 to 100 percent for mayflies, 23.1 and 56.8 percent for true flies, and 48 to 69.2 percent for caddisflies (Anderson 1978). At Aravaipa Creek, mayflies, caddisflies, true flies, stoneflies, and dragonflies were all prey items for spikedace, as were some winged insects and plant materials (Schreiber 1978).

At Aravaipa Creek, spikedace consumed a total of 36 different prey items (Barber and Minckley 1983). Mayflies constituted the majority of prey items, followed by true flies. Of the mayflies consumed, 36.5 percent were adults, while 33.3 percent were nymphs. Terrestrial invertebrates, including ants, wasps, and spiders, were also consumed, as were beetles, true bugs, caddisflies, and water fleas.

Spikedace diet varies seasonally (Barber and Minckley 1983). Mayflies dominated stomach contents in July, but declined in August and September, increasing in importance again between October and June. When mayflies were available in lower numbers, spikedace consumed a greater variety of foods, including true bugs, true flies, beetles, and spiders.

Spikedace diet varies with age class as well. Young spikedace, classified as < 0.9 in (22.9 mm) fed on a diversity of small-bodied invertebrates occurring in and on sediments along the margins of the creek. True flies were found most frequently, but water fleas and aerial adults of aquatic and terrestrial insects also provide significant parts of the diet. As juveniles grow and migrate into the

swifter currents of the channel, mayfly nymphs and adults increase in importance (Barber and Minckley 1983).

Spikedace are very dependent on aquatic insects for sustenance, and production of the aquatic insects consumed by spikedace occurs mainly in riffle habitats (Propst *et al.* 1986). As a result, habitat selection influences food items found in stomach content analyses. Spikedace in pools had eaten the least diverse foods while those from riffles contained a greater variety of taxa, indicating that the presence of riffles is essential to the survival of spikedace as riffles in good condition and abundance help to ensure that a sufficient number and variety of prey items will continue to be available (Barber and Minckley 1983).

Aquatic invertebrates that constitute the bulk of the spikedace diet have specific habitat parameters of their own. Mayflies, which constituted the largest percentage of prey items, spend their immature stages in fresh water. Mayfly nymphs occur in all types of fresh waters, wherever there is an abundance of oxygen, but they are most characteristic of shallow water. Mayflies found in spikedace stomach content analyses consisted of individuals from several genera, with individuals from the genus *Baetidae* constituting the highest percentage of prey from the mayfly order in the study by Schreiber (1978). *Baetidae* are free-ranging species of rapid waters that maintain themselves in currents by clinging to pebbles. Spikedace also consumed individuals from two other mayfly genera (*Heptageniidae* and *Ephemerellidae*), which are considered ''clinging species'' as they cling tightly to stones and other objects and may be found in greatest abundance in crevices and on the undersides of stones (Pennak 1978). The importance of gravel and cobble substrates is illustrated by the fact that these prey species, which make up the bulk of the spikedace diet, require these surfaces to persist.

Water Quality

Pollutants. Water with low levels of pollutants is essential for the maintenance of spikedace. Spikedace occur in areas where mining, agriculture, livestock operations, and road construction and use are prevalent. Various pollutants are associated with these types of activities. For spikedace, waters should have low levels of pollutants such as copper, arsenic, mercury and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels (D. Baker, USFWS, pers. comm. 2005). In addition, dissolved oxygen should be greater than 3 parts per million (ppm). If levels of dissolved oxygen are below 3 ppm, some stress may occur.

Fish kills have been documented in the San Francisco River (Rathbun 1969) and the San Pedro River (Eberhardt 1981), both of which are within the species' historical range. In both instances, leaching ponds associated with copper mines released waters into the streams, resulting in elevated levels of toxic chemicals. For the San Pedro River, this included elevated levels of iron, copper, manganese, and zinc. Both incidents resulted in die-offs of species inhabiting the streams. Eberhardt (1981) notes that no bottom-dwelling aquatic insects, live fish, or aquatic vegetation of any kind were found for a 60 mi (97 km) stretch of river in the area affected by the spill. Rathbun (1969) reported similar results for the San Francisco River. The possibility for similar accidents, or pollution from other sources, exists throughout these species ranges due to their proximity to mines, communities, agricultural areas, and major transportation routes.

Temperature. Temperatures of occupied spikedace habitat vary with time of year. In May, temperatures at Aravaipa Creek were uniformly 66.2 °F (19 ° C) (Barber *et al.* 1970). Summer temperatures remained at no more than 80.6 °F (27 °C) at Aravaipa Creek (Barber *et al.* 1970), and at a mean of 66.7 °F (19.3 °C) between June and November on the Gila River in the Forks area (at the Middle, West, and East Forks) and were at 69.4 °F (20.8 °C) in the Cliff-Gila Valley (Propst *et al.* 1986). Winter temperatures ranged between 69.1 °F (20.6 °C) in November down to 48.0 °F (8.9 °C) in December at Aravaipa Creek (Barber and Minckley 1966). The overall range represented by these measures is between 35–85 °F (1.7–29.4 °C).

Reproduction and Rearing of Offspring

As discussed above under flow velocities, spikedace use a variety of habitat types within the channel during their reproductive cycle and at various life stages. Although not typically associated with pools (Anderson 1978), pools are used by female spikedace during the breeding season while males remained in riffle habitats. Females leave the pools, generally on the downstream end of the riffle, and swim upstream to males in riffle habitat (Barber *et al.* 1970). Unlike loach minnow that deposit their eggs in a hole or depression, spikedace spawn in shallow riffles and broadcast their gametes (reproductive cells) into the water column. Spikedace eggs are adhesive and develop among the gravel and cobble of the riffles following spawning. Spawning in riffle habitat ensures that the eggs are well oxygenated and are not normally subject to suffocation by sediment deposition due to the swifter flows found in riffle habitats. However, after the eggs have adhered to the gravel and cobble substrate, excessive sedimentation could cause suffocation of the eggs (Propst *et al.* 1986 and Marsh 1991).

Primary Constituent Elements for the Spikedace

Based on our current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, we have determined that the primary constituent elements essential to the conservation of the spikedace are:

1. Permanent, flowing, water with low levels of pollutants, including:

a. Living areas for adult spikedace with slow to swift flow velocities between 20 and 60 cm/second (8–24 inches/second) in shallow water between approximately 10 cm (4 inches) to one meter (40 inches) with shear zones where rapid flow borders slower flow, areas of sheet flow (or smoother, less turbulent flow) at the upper ends of mid-channel sand/gravel bars, and eddies at downstream riffle edges;

b. Living areas for juvenile spikedace with slow to moderate water velocities of approximately 18 cm/second (8 inches/second) or higher in shallow water between approximately 3 cm (1.2 inches) to one meter (40 inches);

c. Living areas for larval spikedace with slow to moderate flow velocities of approximately 10 cm/second (4 inches/second) or higher in shallow water approximately 3 cm (1.2 inches) to one meter (40 inches).

d. Water with low levels of pollutants such as copper, arsenic, mercury and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels and with dissolved oxygen levels greater than 3 parts per million (ppm).

2. Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Suitable levels of embeddedness are generally maintained by a natural, unregulated hydrograph that allows for periodic flooding or, if flows are modified or regulated, a hydrograph that allows for adequate river functions, such as flows capable of transporting sediments.

3. Streams that have:

a. Low gradients of less than approximately 1.0 percent;

b. Water temperatures in the approximate range of 35–85° Fahrenheit (F) (1.7–29.4 °C) (with natural diurnal and seasonal variation);

c. Pool, riffle, run, and backwater components, and;

d. An abundant aquatic insect food base consisting of mayflies, true flies, and caddisflies, stoneflies, and dragonflies.

4. Habitat devoid of nonnative fish species detrimental to spikedace, or habitat in which detrimental nonnative fish are at levels which allow persistence of spikedace.

5. Areas within perennial, interrupted stream courses which are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

Each of the areas designated in this rule have been determined to contain sufficient PCEs to provide for one or more of the life history functions of the spikedace. In some cases, the PCEs exist as a result of ongoing Federal actions. As a result, ongoing Federal actions at the time of designation will be included in the baseline in any consultation conducted subsequent to this designation.

Loach Minnow

The specific primary constituent elements essential to the conservation of the loach minnow are derived from the biological requirements of the loach minnow, as described below.

Space for Individual and Population Growth and Normal Behavior

As noted for the spikedace above, streams in the Southwestern United States have a wide fluctuation in flows and resulting habitat conditions at different times of the year. Loach minnow persist in these varying conditions and, as discussed below, several studies have documented habitat conditions at occupied sites.

Habitat Preferences

Flow Velocities. Loach minnow live on the bottom of small to large rivers, preferring shallow, swift, and turbulent riffles, living and feeding among clean, loose, gravel-to-cobble substrates (Anderson and Turner 1977, Barber and Minckley 1966, Britt 1982, Lee *et al.* 1980, Marsh *et al.* 2003, Minckley 1981, USFWS 1991b, Velasco 1997). Loach minnow are sometimes associated with filamentous (threadlike) algae (Anderson and Turner 1977, Lee *et al.* 1980, Minckley 1981). Specific habitat usage varies with the life stage of the fish, as well as geographically. As noted below, researchers have documented a range of flows in occupied areas.

Flow rate studies have been completed on the Gila River, Tularosa River, San Francisco River, Aravaipa Creek, Deer Creek. Measured flows in habitat occupied by adult loach minnow ranged from 9.6 to 31.2 in/second (24.4 to 79.2 cm/second) (Barber and Minckley 1966, Propst *et al.* 1988, Propst and Bestgen 1991, Rinne 1989). There is geographic variation in flow velocities used by adult loach minnow. Adult loach minnow in the Gila River preferred velocities of 1.2 to 14.4 in/second (3.0 to 36.6 cm/second), while those in Aravaipa Creek preferred velocities of 15.6 to 20.4 in/second (39.6 to 51.8 cm/second). This may be due to the fact that there was considerably more water at slower velocities available to loach minnow in the Gila River, and that there was more and larger cobble substrate in the Gila River, which creates more habitat of slower velocities for loach minnow use (Turner and Tafanelli 1983).

Juvenile loach minnow generally occurred in areas where velocities were similar to those used by adults, but faster than those used by larvae. In the Gila, San Francisco, and Tularosa rivers, juveniles occupied areas with mean velocities ranging between 1.2–33.6 in/second (3.0 to 85.3 cm/second) (Propst *et al.* 1988, Propst and Bestgen 1991, Rinne 1989, Turner and Tafanelli 1983). Larval loach minnow move from spawning rocks to slower-velocity nursery areas after emergence, typically occupying areas with significantly slower velocities than juveniles and adults. Larval loach minnow in the Gila, San Francisco, and Tularosa rivers occupied areas that were shallower and significantly slower than areas where eggs were found (Propst *et al.* 1988, Propst and Bestgen 1991). In the Gila, San Francisco, and Tularosa rivers, and Aravaipa Creek, larval loach minnow occupied areas with flow velocities ranging from 3.6 to 19.2 in/second (9.1 to 48.8 cm/second).

Loach minnow prefer shallow, swift, and turbulent riffles. The use of riffle habitat has been documented in Aravaipa Creek (Barber and Minckley 1966, Rinne 1989, Velasco 1997, Vives and Minckley 1990), Eagle Creek (Marsh *et al.* 2003), Tularosa River (Propst *et al.* 1984), and the Gila and San Francisco rivers (Britt 1982, Propst and Bestgen 1991, Propst *et al.* 1984, Propst *et al.* 1988). Loach minnow also occur in stream segments that contain pool, riffle, and run habitats on the Blue, upper Gila, and San Francisco rivers (AGFD 1994, Bagley *et al.* 1995, Montgomery 1985).

The availability of pool and run habitats affects availability of prey species. While most of the food items of loach minnow are riffle species, two are not, including mayfly nymphs which, at times, made up 17% of the total food volume of loach minnow in a study at Aravaipa Creek (Schreiber 1978). The presence of a variety of habitat types is therefore important to the persistence of loach minnow in a stream, even while they are typically associated with riffles.

Substrates. Loach minnow in Aravaipa Creek occurred over a gravel-pebble substrate with materials between 3 to 16 mm (0.12 to 0.63 in) and, except in the summer, were associated with the larger sizes of available substrate. The use of larger substrates was disproportionately greater than expected based on overall availability of substrate size in the stream, indicating that loach minnow have a preference for the larger substrate and tend to use areas with that substrate over areas with smaller substrate (Rinne 1989). For portions of the upper Gila River occupied by loach minnow in 1999 and 2000, substrates were characterized by gravel-pebble and cobble substrates, with 70 percent of the sites having a gravel-pebble substrate, and 14 percent of the sites having cobble substrate (Rinne 2001).

Loach minnow in Aravaipa Creek and the Gila River appeared to prefer cobble and gravel, avoiding areas dominated by sand or finer gravel. This may be due to the fact that loach minnow maintain a relatively stationary position on the bottom of a stream in flowing water. An irregular bottom, such as that created by cobble or larger gravels, creates pockets of lower water velocities around larger rocks where loach minnow can remain stationary with less energy expenditure (Turner and Tafanelli 1983). In the Gila and San Francisco rivers, the majority of loach minnow captured occurred in the upstream portion of a riffle rather than in the central and lower depositional sections of the riffle. This is likely due to the availability of interstitial spaces in the cobble-rubble substrate, which became filled with sediment more quickly in the central and lower sections of a riffle section as suspended sediment begins to drop out (Propst *et al.* 1984).

Loach minnow use different substrates during different life stages. Embryos occurred primarily on large gravel to rubble, while larvae were found where substrate particles were smaller than that used by embryos. Juvenile fish occupy areas with substrates of larger particle size than larvae. Adults exhibited a narrower preference for substrates than did juveniles, and were most commonly

associated with gravel to cobble substrates (Propst and Bestgen 1991).

As noted above, streams in the Southwestern United States have a wide fluctuation in flows and are periodically dewatered. While portions of stream segments included in this designation may experience dry periods, they are still considered essential because the loach minnow is adapted to this changing environment and will use these areas as connective corridors between occupied or seasonally occupied habitat when they are wetted.

Flooding. Natural flows, including flooding, are part of an unregulated hydrograph and are important in maintaining loach minnow habitat. In areas where substantial diversions or impoundments have been constructed, loach minnow are less likely to occur. This is in part due to habitat changes caused by the construction, and in part due to the reduction of beneficial effects of flooding on loach minnow habitat. Flooding appears to positively affect loach minnow population dynamics by resulting in higher recruitment (reproduction and survival of young) and by decreasing the abundance of nonnative fishes.

The construction of water diversions, by increasing water depth, has reduced or eliminated riffle habitat in many stream reaches. In addition, loach minnow are generally absent in stream reaches affected by impoundments. While the specific factor responsible for this is not known, it is likely related to modification of thermal regimes, habitat, food base, or discharge patterns. Flooding also cleans, rearranges, and rehabilitates important riffle habitat (Propst et al. 1988).

Flooding allows for the scouring of sand and gravel in riffle areas, which reduces the degree of embeddedness of cobble and boulder substrates (Britt 1982). Prior to flooding, excessive sediment in the bedload is typically deposited at the downstream undersurfaces of cobble and boulder substrate components where flow velocities are lowest, and can result in a higher degree of embeddedness (Rinne 2001). Following flooding, cavities created under cobbles by scouring action of the flood waters provides enhanced spawning habitat for loach minnow.

Studies on the Gila, Tularosa, and San Francisco rivers, found that flooding is primarily a positive influence on native fish, and apparently had a positive influence on the relative abundance of loach minnow. Rather than following a typical pattern of winter mortality and population decline, high levels of recruitment occurred after the flood, and loach minnow relative abundance remained high through the next spring. Flooding has enhanced and enlarged loach minnow habitat, resulting in a greater survivorship of individuals through winter and spring (Propst et al. 1988). Similar results were observed on the Gila and San Francisco rivers following flooding in 1978 (Britt 1982).

Natural flooding may also reduce the negative impacts of nonnative fish species on loach minnow. During significant floods, nonnative species were either displaced or destroyed, while native species were able to maintain their position in or adjacent to channel habitats, persist in micro refuges or recolonize should they be displaced (Britt 1982, Minckley and Meffe 1987).

Stream Gradient. In addition to the availability of riffle habitat, gradient may influence the distribution and abundance of loach minnow. In studies of the San Francisco River, Gila River, Aravaipa Creek, and the Blue River found loach minnow occurred in stream reaches where the gradient was generally shallow, ranging from 0.3 to 2.2 percent (Bagley et al. 1995, Rinne 1989, Rinne 2001).

Habitat Protected From Disturbance or Representative of the Historic Geographical and Ecological Distribution of a Species

Nonnative fish species. As noted under the discussion of nonnative fish species in the spikedace primary constituent elements section above, nonnative fishes have been introduced for a variety of reasons, resulting in interference or exploitive competition. Interference competition, such as predation, may result from interactions between loach minnow and nonnative channel and flathead catfish. Omnivorous channel catfish of all sizes move into riffles to feed, preying on the same animals most important to loach minnows. Juvenile flathead catfish also feed in riffles in darkness. Flathead catfish are piscivorous, even when small. Loach minnow remains were found in the digestive tracts of channel catfish (Propst and Bestgen 1991, USFWS 1991b).

Interference competition, such as competition for actual resources (Schoener 1983), may occur between loach minnow and red shiner, as red shiner is the nonnative fish species most likely to occur along stream margins in places occupied by small loach minnow. Red shiners occur in all places known to be formerly occupied by loach minnow, and are absent or rare in places where loach minnow persists. Because of this, red shiner has often been implicated in the decline of loach minnow, as well as other native fishes. Loach minnow habitat is markedly different from that of the red shiner, so that interaction between the two species was unlikely to cause shifts in habitat use by loach minnow (Marsh et al. 1989). Studies indicate that, instead, red shiner move into voids left when native fishes such as loach minnow are extirpated due to habitat degradation in the area (Bestgen and Propst 1986).

Prior to 1960, the Glenwood-Pleasanton reach of the Gila River supported a native fish community of eight different species. Post-1960, four of these species became uncommon, and ultimately three of them were extirpated. In studies completed between 1961 and 1980, it was determined that loach minnow was less common than it had been, while diversity of the nonnative fish community had increased in comparison to the pre-1960 period. Following 1980, red shiner, fathead minnow, and channel catfish were all regularly collected. Drought and diversions for irrigation resulted in a decline in habitat quality, with canyon reaches retaining habitat components for native species. However, establishment of nonnative fishes in the canyon reaches then reduced the utility of these areas for native species (Propst et al. 1988).

Food

Food Items. Loach minnow are opportunistic, benthic insectivores that obtain their food from riffle-dwelling larval mayflies, black flies, and true flies, as well as from larvae of other aquatic insect groups such as caddisflies and stoneflies (USFWS 1991b). Loach minnow in the Gila, Tularosa, and San Francisco rivers consumed primarily true flies and mayflies, with mayfly nymphs being an important food item throughout the year. Mayfly naiads constituted the most important food item throughout the year for adults studied on the Gila and San Francisco Rivers, while true fly larvae were most common in the winter months (Propst et al. 1988, Propst and Bestgen 1991). In Aravaipa Creek, loach minnow consumed 11 different prey items, including mayflies, stoneflies, caddisflies, and true flies. Mayflies constituted the largest percentage of their diet during this study except in January, when true flies made up 54.3 percent of the total food volume (Schreiber 1978).

Loach minnow consume different prey items during their various life stages. Both larvae and juveniles primarily consumed true flies, which

constituted approximately 7 percent of their food items in one year, and 49 percent the following year. Mayfly nymphs were also an important dietary element at 14 percent and 31 percent in two different years. Few other aquatic macroinvertebrates (i.e. an invertebrate large enough to be seen) were consumed (Propst et al. 1988). In a second study, true fly larvae and mayfly naiads constituted the primary food of larval and juvenile loach minnow (Propst and Bestgen 1991).

Water Quality

Pollutants. Water with low levels of pollutants is essential for the maintenance of loach minnow. As with spikedace, loach minnow occur in areas where mining, agriculture, livestock operations, and road construction and use are prevalent. Various pollutants are associated with these types of activities. For loach minnow, waters should have low levels of pollutants such as copper, arsenic, mercury, and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels (D. Baker, USFWS, pers. comm. 2005). In addition, dissolved oxygen should be greater than 3 ppm.

Fish kills associated with previous mining accidents are detailed under the spikedace PCEs above. These incidents occurred within the historical range of the loach minnow.

Temperatures. Loach minnow have a fairly narrow temperature tolerance, and their upstream distributional limits in some areas may be linked to low winter temperature (Propst *et al.* 1988). Suitable temperature regimes appear to be fairly consistent across geographic areas. Studies of Aravaipa Creek, East Fork White River, the San Francisco River and the Gila River determined that loach minnow were present in areas with water temperatures in the range of 48.2 to 71.6 °F (9 to 22 °C) (Britt 1982, Leon 1989, Propst *et al.* 1988, Propst and Bestgen 1991, Vives and Minckley 1990).

Reproduction and Rearing of Offspring

Habitat conditions needed for reproduction and rearing of offspring include appropriate flow velocities, substrates, sediment levels, and riffle availability. Loach minnow place eggs in areas with mean velocities ranging between 2.4 to 15.6 in/second (3.0 to 39.6 cm/second) in the Gila, San Francisco, and East Fork Gila rivers (Britt 1982, Propst *et al.* 1988, Propst and Bestgen 1991). Fungal infections developed on egg masses placed in slow-velocity waters of less than 2.4 in/second (6.2 cm/second) (Propst *et al.* 1988, Propst and Bestgen 1991). Once hatched, areas of slower flows appear important to larval loach minnow as they have been found in slower-velocity stream margins (Propst *et al.* 1988).

Substrate type is important to spawning as well. While loach minnow spawning occurs in the same riffle habitat that adults occupy, it is the substrate that determines its suitability for spawning. Eggs are deposited on the undersurface of rocks or cobbles. Rocks are generally flattened, have smooth surfaces, and are angular. Rocks which have eggs attached are generally embedded on their upstream side in the substrate. Eggs placed under rocks in the Gila River, San Francisco River, and Aravaipa Creek were placed on the underside of rocks in nest cavities formed by rocks of varying sizes (Britt 1982, Propst *et al.* 1988, Vives and Minckley 1990).

Loach minnow spawning is the life history stage most affected by sediment or fines (Vives and Minckley 1990). Because deposition of eggs occurs on the downstream undersurfaces of cobble and boulder substrate components, excessive fines in the bedload of a system can fill in the areas where eggs would otherwise be deposited, especially in areas of slower velocities.

Primary Constituent Elements for the Loach Minnow

Based on our current knowledge of the life history, biology, and ecology of the species and the requirements of the habitat to sustain the essential life history functions of the species, we have determined that the primary constituent elements essential to the conservation of the loach minnow are:

1. Permanent, flowing, water with low levels of pollutants, including:

a. Living areas for adult loach minnow with moderate to swift flow velocities between 9.0 to 32.0 in/second (24 to 80 cm/second) in shallow water between approximately 1.0 to 30 in (3 cm to 75 cm) with gravel, cobble, and rubble substrates;

b. Living areas for juvenile loach minnow with moderate to swift flow velocities between 1.0 to 34 in/second (3.0 to 85.0 cm/second) in shallow water between approximately 1.0 to 30 in (3 cm to 75 cm) with sand, gravel, cobble, and rubble substrates;

c. Living areas for larval loach minnow with slow to moderate velocities between 3.0 and 20.0 in/second (9.0 to 50.0 cm/second) in shallow water with sand, gravel, and cobble substrates and;

d. Spawning areas with slow to swift flow velocities in shallow water where cobble and rubble and the spaces between them are not filled in by fine dirt or sand.

e. Water with low levels of pollutants such as copper, arsenic, mercury and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels and with dissolved oxygen levels greater than 3 parts per million (ppm).

2. Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Suitable levels of embeddedness are generally maintained by a natural, unregulated hydrograph that allows for periodic flooding or, if flows are modified or regulated, a hydrograph that allows for adequate river functions, such as flows capable of transporting sediments.

3. Streams that have:

a. Low gradients of less than approximately 2.5 percent;

b. Water temperatures in the approximate range of 35–85° Fahrenheit (F) (1.7–29.4 °C) (with natural diurnal and seasonal variation);

c. Pool, riffle, run, and backwater components, and;

d. An abundant aquatic insect food base consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies.

4. Habitat devoid of nonnative fish species detrimental to loach minnow or habitat in which detrimental nonnative fish species are at levels which allow persistence of loach minnow.

5. Areas within perennial, interrupted stream courses which are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

Each of the areas designated in this rule have been determined to contain sufficient PCEs to provide for one or more of the life history functions of the loach minnow. In some cases, the PCEs exist as a result of ongoing Federal actions. As a result, ongoing Federal actions at the time of designation will be included in the baseline in any consultation conducted subsequent to this designation.

Criteria for Defining Critical Habitat

In proposing critical habitat for the spikedace and loach minnow, we reviewed historical and current occurrence data, information pertaining to habitat features for these species, rangewide recovery considerations such as genetic diversity and representation of all major portions of the species' historical ranges, scientific information on the biology and ecology of the two species, general conservation biology

principles, and information cited in the Recovery Plans for these two species. Of particular importance, we reviewed databases, published literature, and field notes to determine the historical and current occurrence data for the two species. The SONFishes Database (Arizona State University 2002) details occurrence records from the 1800s through 1999. The Heritage Database Management System (HDMS) (AGFD 2004) contains information for Arizona with some overlap of SONFishes records, as well as records from 1999 through 2004. Agency and researcher field notes and published literature contain additional information on completed surveys and species detections.

We are designating critical habitat on lands that we have determined are within the geographical range occupied by either, or in some cases both, the spikedace and loach minnow. We consider an area to be occupied by the spikedace or loach minnow if we have records to support occupancy within the last 10 years, or where the stream segment is directly connected to a segment with occupancy records from within the last 10 years (this is described within each unit description below). We chose 10 years because this would encompass three to four generations for both of these species. We believe this is a reasonable number based on the fact that both species are difficult to detect in surveys and many of the areas where they occur are remote and as a result there is not a high level of survey effort. All areas proposed have the features that are essential to the conservation of spikedace or loach minnow and are within the area historically occupied by these species and require special management consideration and protection.

We divided the overall historical range into five river complexes, and each critical habitat stream segment was derived from within these larger complexes. In this way, populations in mainstem tributaries may access a wider geographic area by moving into smaller tributaries, while populations in tributaries are afforded the ability to disperse to other tributaries via the mainstem river within that complex. Overall, the complexes proposed herein provide coverage throughout the historical range of the species, with exceptions for areas that were excluded for specific reasons, as detailed below (see ''Proposed Exclusions under Section 4(b)(2) of the Act'' section below). The proposed critical habitat designation constitutes our best assessment of areas that contain the features (PCEs) essential to the conservation of spikedace and loach minnow and that require special management or protection.

Segments were designated based on sufficient PCEs being present to support spikedace or loach minnow life processes. Some segments contain all PCEs and support multiple life processes, while other segments contain only a portion of the PCEs necessary to support the particular use of that habitat by spikedace or loach minnow. Where a subset of the PCEs are present (e.g., water temperature during spawning), only those PCEs present at designation will be protected.

A brief discussion of each area designated as critical habitat is provided in the unit descriptions below. Additional detailed documentation concerning these areas is contained in our supporting record for this rulemaking.

Special Management Considerations or Protections

When designating critical habitat, we assess whether the areas determined to be occupied at the time of listing and occupied after listing, contain the primary constituent elements essential to the conservation of the species that may require special management considerations or protection. We believe each area included in this final designation requires special management and protections as described in our unit descriptions and Table 1.

Special management considerations for each area will depend on the threats to the spikedace and/or loach minnow in that critical habitat area. For example, special management that addresses the threat of nonnative fish species could include efforts to remove nonnative fish species from a creek, via chemical compounds that kill fish (e.g. rhotenone) but otherwise do not harm the environment, and construction of fish barriers that prevent the upstream movement of nonnative fishes into spikedace or loach minnow habitat. Special management that addresses the threat of fire could include using prescribed fire to reduce fuel loads and prevent catastrophic wildfires, protecting the area from retardant application during the fire, salvaging individuals from populations that are threatened by wildfire, and protecting the stream from excessive ash and sediment through re-seeding or other means following the fire. On-going livestock grazing is only a threat to spikedace and loach minnow if not properly managed. Proper management may include the use of fencing, appropriate grazing systems, appropriate seasons of use, and other improvements to allotments such as new water tanks. With regard to water use, maintaining high quality and adequate quantities of water for all life stages of spikedace and loach minnow may involve special management actions such as retaining an adequate buffer of riparian vegetation to help filter out sediment and contaminants, and maintaining streamflow via sustainable levels of ground and surface water use. The construction of water diversions, by increasing water depth, has reduced or eliminated riffle habitat in many stream reaches. In addition, loach minnow are generally absent in stream reaches affected by impoundments. While the specific factor responsible for this is not known, it is likely related to modification of thermal regimes, habitat, food base, or discharge patterns. We have included below in our description of each of the critical habitat areas for the spikedace and loach minnow a description of the threats occurring in that area requiring special management or protections.

Proposed Critical Habitat Designation

We are proposing five complexes as critical habitat for the spikedace and loach minnow. Historically, the range of the spikedace included most of the Gila River Basin. The spikedace now occupies approximately 10 percent of its historical range. Current populations of spikedace are found in Graham, Pinal, and Yavapai counties in Arizona, and Grant, Catron, and Hidalgo counties, in New Mexico. Critical habitat vital to the conservation of loach minnow includes small to large perennial streams with shallow, turbulent riffles, primarily cobble substrate, and swift currents (Minckley 1973, Propst and Bestgen 1991, Rinne 1989, Propst et al. 1988). As with spikedace, the historical range of loach minnow encompassed most of the Gila River Basin. The loach minnow now occupies approximately 15 percent of its historical range, and is found in Graham, Greenlee, and Pinal counties in Arizona and Catron, Grant, and Hidalgo counties in New Mexico.

For each stream reach, the upstream and downstream boundaries are described below. Additionally, critical habitat includes the stream channels within the identified stream reaches and areas within these reaches potentially inundated during high flow events. As described in the ''Primary Constituent Elements'' section above, critical habitat includes the area of bankfull width plus 300 feet on either side of the banks. This 300-foot width defines the lateral extent of each area of critical habitat that contains sufficient PCEs to provide for

one or more of the life history functions of the spikedace and loach minnow.

We determined the 300-foot lateral extent for several reasons. First, the implementing regulations of the Act require that critical habitat be defined by reference points and lines as found on standard topographic maps of the area (50 CFR 424.12). Although we considered using the 100-year floodplain, as defined by the Federal Emergency Management Agency (FEMA), we found that it was not included on standard topographic maps, and the information was not readily available from FEMA or from the Army Corps of Engineers for the areas we are proposing to designate. We suspect this is related to the remoteness of many of the stream reaches where these species occur. Therefore, we selected the 300-foot lateral extent, rather than some other delineation, for three biological reasons: (1) The biological integrity and natural dynamics of the river system are maintained within this area (i.e., the floodplain and its riparian vegetation provide space for natural flooding patterns and latitude for necessary natural channel adjustments to maintain appropriate channel morphology and geometry, store water for slow release to maintain base flows, provide protected side channels and other protected areas, and allow the river to meander within its main channel in response to large flow events); (2) conservation of the adjacent riparian area also helps provide essential nutrient recharge and protection from sediment and pollutants; and (3) vegetated lateral zones are widely recognized as providing a variety of aquatic habitat functions and values (e.g., aquatic habitat for fish and other aquatic organisms, moderation of water temperature changes, and detritus for aquatic food webs) and help improve or maintain local water quality (see U.S. Army Corps of Engineers' final notice concerning Issuance and Modification of Nationwide Permits, March 9, 2000, 65 FR 12818–12899).

Among other things, the floodplain provides space for natural flooding patterns and latitude for necessary natural channel adjustments to maintain channel morphology and geometry. We believe a relatively intact riparian area, along with periodic flooding in a relatively natural pattern, are important in maintaining the stream conditions necessary for long-term survival and recovery of the spikedace and loach minnow.

Conservation of the river channel alone is not sufficient to ensure the survival and recovery of the spikedace and loach minnow. For the reasons discussed above, we believe the riparian corridors adjacent to the river channel provide an important function within the areas proposed for designation of critical habitat.

The proposed designation of critical habitat for both spikedace and loach minnow includes five complexes totaling approximately 803 miles (1024.7 km) of stream reaches (see Tables 1 and 2 below). The proposed critical habitat areas described below constitute our best assessment at this time of areas determined to be occupied at the time of listing, are considered to be within the geographical range occupied by either the spikedace or loach minnow, or have been determined to be occupied following the listing and are considered to contain features essential to the conservation of the spikedace or loach minnow. All areas proposed as critical habitat and areas proposed for exclusion contain sufficient PCEs to support one or more of the life history functions of the spikedace or loach minnow and are areas that may require special management and protection. Unless otherwise indicated, the following areas identified in Table 1 and in the unit descriptions below, are proposed for designation as critical habitat for both spikedace and loach minnow (see the ''Proposed Regulation Promulgation'' section of this rule below for exact descriptions and distances of boundaries). The proposal includes portions of 10 streams for spikedace and 23 streams for loach minnow; however, individual streams are not isolated, but are connected with others to form areas or ''complexes.''

TABLE 1.—LOCATIONS OF SPIKEDACE AND LOACH MINNOW STREAM SEGMENTS PROPOSED FOR CRITICAL HABITAT, THREATS TO THE SPECIES, STREAM SEGMENTS PROPOSED FOR EXCLUSION FROM CRITICAL HABITAT (I.E., EAGLE CREEK AND EAST FORK WHITE RIVER), LAST YEAR OF DOCUMENTED OCCUPANCY, AND SOURCE OF OCCUPANCY INFORMATION

Spikedace and/or loach minnow critical habitat areas	Threats	Last year occupancy confirmed	Critical habitat distance in miles (km)	Source
Complex 1—Verde River				
Verde River: Spikedace	Nonnative fish species, grazing, water diversions.	1999	106.5 mi (171.4 km)	HDMS, Rinne 2002, SONFishes.
Complex 2—Black River Complex				
Boneyard Creek: Loach minnow	Recreational pressures, nonnative fish species, recent fire and related retardant application, ash, and sediment.	1996	1.4 mi (2.3 km)	Service files, HDMS, SONFishes.
East Fork Black: Loach minnow	Recreational pressures, nonnative fish species, recent fire and related retardant application, ash, and sediment.	1996	5.5 mi (8.8 km)	Service files, HDMS, SONFishes.
North Fork East Fork Black:				

TABLE 1.—LOCATIONS OF SPIKEDACE AND LOACH MINNOW STREAM SEGMENTS PROPOSED FOR CRITICAL HABITAT, THREATS TO THE SPECIES, STREAM SEGMENTS PROPOSED FOR EXCLUSION FROM CRITICAL HABITAT (I.E., EAGLE CREEK AND EAST FORK WHITE RIVER), LAST YEAR OF DOCUMENTED OCCUPANCY, AND SOURCE OF OCCUPANCY INFORMATION—Continued

Spikedace and/or loach minnow critical habitat areas	Threats	Last year occupancy confirmed	Critical habitat distance in miles (km)	Source
Loach minnow	Recreational pressures, nonnative fish species, recent fire and related retardant application, ash, and sediment.	2004	11.2 mi (18.0 km)	Bagley et al. 1996, HDMS, SONFishes, M. Richardson, USFWS pers. comm. 2004.
East Fork White River:				
Loach minnow	Water diversions, recreation.	Currently occupied (proposed for exclusion).	12.5 mi (20.1 km)	HDMS, SONFishes.
Complex 3—Middle Gila/Lower San Pedro/Aravaipa Creek				
Aravaipa Creek:				
Spikedace	Fire, some recreational pressure, low nonnative pressures, water diversion.	2005	28.1 mi (45.3 km)	Rienthal 2005; HDMS, SONFishes, Service Files.
Loach minnow		2005		
Deer Creek:				
Loach minnow	Fire, some recreational pressure, low nonnative pressures.	2005	2.3 mi (3.6 km)	Rienthal 2005; HDMS, SONFishes, Service Files.
Turkey Creek:				
Loach minnow	Fire, some recreational pressure, low nonnative pressures.	2005	2.7 mi (4.3 km)	Rienthal 2005; HDMS, SONFishes, Service Files.
Gila River—Ashurst-Hayden Dam to San Pedro:				
Spikedace	Water diversions, grazing, nonnative fish species.	1991	39.0 mi (62.8 km)	HDMS, Jakle 1992, SONFishes.
San Pedro River: (lower):				
Spikedace	Water diversions, grazing, nonnative fish species, mining.	1996	13.4 mi (21.5 km)	Service files, HDMS, SONFishes.
Complex 4—San Francisco and Blue Rivers				
Eagle Creek:				
Spikedace	Grazing, nonnative fish species, water diversions, mining.	1989	45.3 mi (72.9 km)	Bagley and Marsh 1997, HDMS, Knowles 1994, Marsh et al. 2003, SONFishes, Service Files.
Loach minnow		1997 (a portion of Eagle Creek is proposed for exclusion)		
San Francisco River:				
Loach minnow	Grazing, water diversions, nonnative fish species, road construction.	2001	126.5 mi (203.5 km)	HDMS, SONFishes, Propst 2002.
Tularosas River:				
Loach minnow	Grazing, watershed disturbances.	2001	18.6 mi (30.0 km)	SONFishes, Propst 2002, USFWS 1983.
Frieborn Creek:				
Loach minnow	Unknown	1998	1.1 mi (1.8 km)	SONFishes.
Negrito Creek:				
Loach minnow	Grazing; watershed disturbances.	1998	4.2 miles (6.8 km)	D. Propst pers. com. 2005.
Whitewater Creek:				
Loach minnow	Grazing, watershed disturbances.	1984	1.1 mi (1.8 km)	Propst et al. 1988, SONFishes.
Blue River:				
Loach minnow	Water diversions; nonnative fish species, livestock grazing, road construction.	2004	51.1 miles (82.2 km)	Carter 2004, HDMS, SONFishes, Propst 2002, USFWS 1983.
Campbell Blue Creek:				
Loach minnow	Grazing, nonnative fish species.	2004	8.1 mi (13.1 km)	Carter 2004, HDMS, SONFishes.
Little Blue Creek:				
Loach minnow	Grazing, nonnative fish species.	1981	2.8 mi (4.5 km)	HDMS, SONFishes.

TABLE 1.—LOCATIONS OF SPIKEDACE AND LOACH MINNOW STREAM SEGMENTS PROPOSED FOR CRITICAL HABITAT, THREATS TO THE SPECIES, STREAM SEGMENTS PROPOSED FOR EXCLUSION FROM CRITICAL HABITAT (I.E., EAGLE CREEK AND EAST FORK WHITE RIVER), LAST YEAR OF DOCUMENTED OCCUPANCY, AND SOURCE OF OCCUPANCY INFORMATION—Continued

Spikedace and/or loach minnow critical habitat areas	Threats	Last year occupancy confirmed	Critical habitat distance in miles (km)	Source
Dry Blue Creek:				
Loach minnow	Grazing	1948	3.0 mi (4.8 km)	SONFishes.
Pace Creek:				
Loach minnow	Grazing, nonnative fish species.	1998	0.8 mi (1.2 km)	SONFishes.
Complex 5—Upper Gila River				
East Fork Gila River:				
Spikedace	Grazing, nonnative fish species.	2001	26.1 mi (42.0 km)	Propst 2002, Propst et al. 1998, SONFishes.
Loach minnow		2001		
Upper Gila River:				
Spikedace	Recreation, roads, grazing, nonnative fish species, water diversion.	2005	102.1 mi (164.3 km)	Propst 2002, Service 1983, SONFishes, Unpubl. data 2005.
Loach minnow		2005		
Middle Fork Gila River:				
Spikedace	Nonnative fish species, Grazing.	1995	7.7 mi (12.3 km)	Propst 2002, SONFishes.
Loach minnow		1998	11.9 mi (19.1 km)	
West Fork Gila River:				
Spikedace	Nonnative fish species, grazing, roads.	2005	7.7 miles (12.4 km)	Propst 2002, SONFishes, Unpubl. data 2005.
Loach minnow		2002		

Table 2 below provides approximate area (mi/km) determined to meet the definition of critical habitat for the spikedace and loach minnow and the areas proposed for exclusion from the final critical habitat designation by State.

TABLE 2.—APPROXIMATE PROPOSED CRITICAL HABITAT IN STREAM KILOMETERS (KM) AND MILES (MI) BY STATE AND LANDOWNER

Land owner	New Mexico mi (km)	Arizona mi (km)	Total mi (km)
Federal	198.50 (319.45)	167.71 (269.90)	366.21 (589.35)
Tribal	33.00 (53.11)	0 (0)	33.00 (53.11)
State	8.32 (13.39)	1.32 (2.12)	9.64 (15.51)
County	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Private	134.44 (216.36)	89.73 (144.40)	224.17 (360.76)
Total	374.26 (602.32)	258.75 (416.42)	633.01 (1018.74)

TABLE 3.—AREAS DETERMINED TO MEET THE DEFINITION OF CRITICAL HABITAT FOR THE SPIKEDACE AND LOACH MINNOW AND THE AREAS PROPOSED FOR EXCLUSION FROM THE FINAL CRITICAL HABITAT DESIGNATION [AC (HA)/MI (KM)]

State or geographic area	Meeting the definition of critical habitat area (miles/kilometers)	Area proposed for exclusion from the final critical habitat designation (acres/hectares)
Arizona	374.26 (602.32)	29.67 (47.76)
New Mexico	258.75 (416.42)	0 (0)
Total	633.01 (1018.74)	29.67 (47.76)

The approximate area encompassed within each proposed critical habitat unit is shown in Table 4.

TABLE 4.—CRITICAL HABITAT UNITS PROPOSED FOR THE SPIKEDACE AND LOACH MINNOW

[Area estimates reflect all land within critical habitat unit boundaries]

Critical habitat unit	Mi	Km
1. Verde River	106.53	171.44
2. Black River	30.58	49.21
3. Lower San Pedro/Gila River/Aravaipa Creek	85.46	137.53
4. Gila Box/San Francisco River	262.58	422.58
5. Upper Gila River	147.87	237.97
Total	633.01	1018.74

Complex 1—Verde River Complex—Yavapai County, Arizona

The Verde River Complex was occupied by spikedace at the time of listing, and is still considered to be occupied based on surveys documenting spikedace presence as recently as 1999. This complex was also historically occupied by loach minnow. At this time, the tributary streams of the Verde River are believed to be unoccupied by both species and are not being proposed as critical habitat. The Verde River Complex is unusual in that a relatively stable thermal and hydrologic regime is found in the upper river and in Fossil Creek, one of the tributaries to the Verde River. Also, spikedace in the Verde River are genetically (Tibbets 1993) and morphologically (Anderson and Hendrickson 1994) distinct from all other spikedace populations. The Verde River contains one or more of the primary constituent elements, including shear zones, sheet flow, and eddies, and an appropriate prey base. The continuing presence of spikedace and the existence of features that are essential to the conservation of the species create a high potential for restoration of loach minnow to the Verde River system. Threats to this critical habitat area requiring special management and protections include water diversions, grazing, and nonnative fish species (see Table 1 above).

The landownership of this complex consists of large blocks of USFS lands in the upper and lower reaches, with significant areas of private ownership in the Verde Valley. There are also lands belonging to Arizona State Parks, Yavapai Apache Tribe, and the AGFD. The Verde River divides the west and east halves of the Prescott National Forest, and passes by or through the towns of Camp Verde, Middle Verde, Bridgeport, Cottonwood, and Clarkdale.

Verde River Complex—Spikedace Only—106.5 miles (171.4 km) of river extending from the confluence with Fossil Creek upstream to Sullivan Dam at Township 17 North, Range 2 West, section 15, including lands belonging to the Yavapai Apache Tribe. Sullivan Dam is at the upstream limit of perennial flow in the mainstem of the Verde River. Perennial flow results from a series of river-channel springs and from Granite Creek. The Verde River contains features essential to the conservation of the spikedace between its headwaters and Fossil Creek. These portions of the Verde River provide a relatively stable thermal and hydrologic regime suitable for spikedace. Below Fossil Creek, the Verde River has a larger flow and is thought to offer little suitable habitat for spikedace or loach minnow. However, this is historical range for both species, and comments on previous critical habitat designations from the U.S. Forest Service (USFS) indicated this stretch of the river may offer substantial value for spikedace and loach minnow recovery. We will continue to seek further information regarding the Verde River and its role in conservation for these two species and may consider designation of the Verde River below Fossil Creek in future potential revisions of critical habitat. We are working with the Yavapai Apache Tribe on the development of a management plan for their lands. On the basis of our partnership with the Tribe, and in anticipation of completion of a native fishes management plan, the portion of the Verde River belonging to the Yavapai Apache Tribe may be excluded from final critical habitat pursuant to section 4(b)(2) of the Act (see ''Relationship of Critical Habitat to Tribal Lands'' section below for additional information).

Complex 2—Black River Complex—Apache and Greenlee Counties, Arizona

The Salt River Sub-basin represents a significant portion of loach minnow historical range; however, loach minnow have been extirpated from all but a small portion of the Black and White Rivers. As the only remaining population of loach minnow on public lands in the Salt River Sub-basin, the Black River Complex is considered vital to the species.

We propose streams within this complex as critical habitat for loach minnow only. At this time, spikedace are not known to historically occupy areas at this elevation; however, the data on maximum elevation for spikedace are not definitive and if information becomes available that differs from that currently available, the Black River complex may be reevaluated for spikedace critical habitat designation in a future revision. Portions of the sub-basin are unsuitable, either because of topography or because of the presence of reservoirs, stream channel alteration by humans, or overwhelming nonnative fish populations. However other areas within the sub-basin remain suitable. Threats in this complex requiring special management include grazing, nonnative fish, recreation, and sedimentation resulting from a recent fire that destroyed vegetation (see Table 1). The ownership of this complex is predominantly USFS, with a few small areas of private land. All streams within the complex are within the boundaries of the Apache-Sitgreaves National Forest and include lands of the White Mountain Apache Tribe.

(1) East Fork Black River—Loach Minnow Only—5.5 miles (8.8 km) of river extending from the confluence with the West Fork Black River upstream to the confluence with Deer Creek. This area is considered occupied based on records from 1996, it is connected to the North Fork East Fork Black River with documented loach minnow records from 2004, and contains one or more of the primary constituent elements including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles).

(2) North Fork East Fork Black River—Loach Minnow Only—11.2 miles (18.0 km) of river extending from the confluence with Deer Creek upstream to the confluence with an unnamed tributary. This area is occupied by loach minnow based on surveys documenting presence of loach minnow as recently as 2004. Above the unnamed tributary, the

river has finer substrate and lacks riffle habitat, making it unsuitable for loach minnow.

(3) Boneyard Creek—Loach Minnow Only—1.4 miles (2.3 km) of creek extending from the confluence with the East Fork Black River upstream to the confluence with an unnamed tributary. Boneyard Creek contains one or more of the primary constituent elements, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). This area is considered to be occupied based on records from 1996; it is also connected to the North Fork East Fork Black River which has documented loach minnow records from 2004. This area represents part of the only occupied complex in the Salt River basin.

(4) East Fork White River—Loach Minnow Only—12.5 miles (20.1 km) of the East Fork White River extending from the confluence with the North Fork White River and the East Fork White River at Township 5 North, Range 22 East, section 35 upstream to Township 5 North, Range 23 East, southeast quarter of section 13. This area was occupied by loach minnow at the time of listing and is still considered occupied. This segment of the East Fork White River contains sufficient features to support one or more of the life history functions of the loach minnow. Threats in this segment requiring special management include water diversions and recreation. The entirety of this reach is located on lands belonging to the White Mountain Apache Tribe. A management plan for loach minnow has been in place on these lands since 2000. On the basis of this plan and our partnership with the White Mountain Apache Tribe, we are proposing to exclude this area from final critical habitat pursuant to section 4(b)(2) of the Act (see ''Relationship of Critical Habitat to Tribal Lands'' section below for additional information).

Complex 3—Middle Gila/Lower San Pedro/Aravaipa Creek Complex—Pinal and Graham Counties, Arizona

The portions of this complex being proposed for critical habitat are within the geographical range occupied by both spikedace and loach minnow and contain the features essential to the conservation of these species. Aravaipa Creek supports the largest remaining spikedace and loach minnow populations in Arizona. Threats in this complex requiring special management include water diversions, grazing, nonnative fish, recreation, and mining (see Table 1). This area includes extensive BLM land as well as extensive private land, some State of Arizona lands, and a small area of allotted land, used by the San Carlos Apache Tribe. The lower portions of the Gila River are BOR lands.

(1) Gila River—Spikedace Only—39.0 miles (62.8 km) of river extending from the Ashurst-Hayden Dam upstream to the confluence with the San Pedro River. Spikedace were located in the Gila River in 1991 (Jakle 1992), and the Gila River is connected with Araviapa Creek, which supports the largest remaining spikedace population. Those portions of the Gila River proposed for designation contain one or more of the primary constituent elements, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Above the confluence with the San Pedro River, flow in the Gila River is highly regulated by the San Carlos Dam and does not contain the features essential to the conservation of either species. Below the confluence, the input of the San Pedro provides a sufficiently unregulated hydrograph, which is a feature essential to the conservation of the spikedace. Threats in this area requiring special management include water diversions, grazing, and nonnative fish species. This river is part of the complex that contains the largest remaining population of spikedace and loach minnow and contains the features essential to the conservation of the species.

(2) Lower San Pedro River—Spikedace Only—13.4 miles (21.5 km) of river extending from the confluence with the Gila River upstream to the confluence with Aravaipa Creek. This area was occupied at the time of listing and is connected with Araviapa Creek, which supports the largest remaining spikedace population. This portion of the San Pedro River contains one or more of the primary constituent elements, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Existing flow in the river comes from surface and subsurface contributions from Aravaipa Creek. Threats in this area requiring special management include water diversions, nonnative fish, grazing, and mining. This river is part of the complex that contains the largest remaining population of spikedace and loach minnow and contains the features essential to the conservation of the species.

(3) Aravaipa Creek—28.1 miles (45.3 km) of creek extending from the confluence with the San Pedro River upstream to the confluence with Stowe Gulch, which is where the upstream limit of sufficient perennial flow ends for either species. Aravaipa Creek was occupied by both spikedace and loach minnow at the time of listing, and continues to support a substantial population of both species (Service files 2005). Aravaipa Creek contains one or more of the primary constituent elements, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats in this area requiring special management include water diversions, nonnative fish, and recreational pressures (see Table 1).

(4) Turkey Creek—Loach Minnow Only—2.7 miles (4.3 km) of creek extending from the confluence with Aravaipa Creek upstream to the confluence with Oak Grove Canyon. This creek was occupied at the time of listing and is currently occupied by loach minnow (Rienthal, University of Arizona, pers. comm. 2004). Turkey Creek contains one or more of the primary constituent elements, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management are generally the same for Aravaipa Creek, and include water diversions, nonnative fish, and recreational pressure (see Table 1). This creek is part of the complex that contains the largest remaining population of spikedace and loach minnow and contains the features essential to the conservation of the species.

(5) Deer Creek—Loach Minnow Only—2.3 miles (3.6 km) of creek extending from the confluence with Aravaipa Creek upstream to the boundary of the Aravaipa Wilderness. This stream was occupied at the time of listing and is currently occupied by loach minnow (Rienthal, University of Arizona, pers. comm. 2004). Deer Creek contains one or more of the primary constituent elements important to loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). The threats to loach minnow in this area are similar to those for Aravaipa Creek, including water diversions, nonnative fish, and recreation. This creek is part of the complex that contains the largest remaining population of spikedace and loach minnow and contains the features essential to the conservation of the species.

Complex 4—San Francisco and Blue Rivers Complex—Graham and Greenlee Counties, Arizona and Catron County, New Mexico

The streams in this complex are within the geographical range occupied by the loach minnow and/or the spikedace. The Blue River system and adjacent portions of the San Francisco River constitute the longest stretch of occupied loach minnow habitat unbroken by large areas of unsuitable habitat. Threats in this complex are described in the individual stream reaches below. This complex contains extensive USFS land, some BLM land, and scattered private, State of Arizona, and New Mexico Department of Game and Fish (NMDGF) lands.

(1) Eagle Creek—45.3 miles (72.9 km) of creek extending from the Phelps-Dodge Diversion Dam upstream to the confluence of Dry Prong and East Eagle Creeks, including lands of the San Carlos Apache Reservation. Eagle Creek was occupied by spikedace and loach minnow at the time of listing. The most current records of occupancy in Eagle Creek are 1987 for spikedace and 1997 for loach minnow. Eagle Creek contains one or more of the primary constituent elements important to spikedace and loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats within this area that require special management include water diversions, grazing, nonnative fish, and mining (see Table 1).

A section of Eagle Creek approximately 17.2 miles (27.7 km) long occurs on the San Carlos Apache Reservation. We have received a management plan from the San Carlos Apache Tribe addressing native fishes. On the basis of this plan and our partnership with the San Carlos Apache Tribe, we are proposing to exclude this area from final critical habitat pursuant to section 4(b)(2) of the Act (see ''Relationship of Critical Habitat to Tribal Lands'' section below for additional information).

(2) San Francisco River—Loach Minnow Only—126.5 miles (203.5 km) of river extending from the confluence with the Gila River upstream to the mouth of The Box, a canyon above the town of Reserve. Loach minnow occupied the San Francisco River at the time of listing and still occupy it presently (Propst 2002). The San Francisco River contains one or more of the primary constituent elements important to loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include water diversions, grazing, and nonnative fish species (see Table 1).

(3) Tularosa River—Loach Minnow Only—18.6 miles (30.0 km) of river extending from the confluence with the San Francisco River upstream to the town of Cruzville. Above Cruzville, the river does not contain the features essential to the conservation of the species because of the small size of the stream and a predominance of fine substrates. This area includes one or more of the primary constituent elements important to loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). The Tularosa River was occupied at the time of listing and is known to be currently occupied based on records as recent as 2001. Threats to the species and its habitat in this area that require special management include grazing and nonnative fish (see Table 1).

(4) Negrito Creek—Loach Minnow Only—4.2 miles (6.8 km) of creek extending from the confluence with the San Francisco River upstream to the confluence with Cerco Canyon. Above this area, the creek does not contain the features essential to the conservation of the species because of gradient and channel morphology. Negrito Creek has been occupied since listing, with the most recent record from 1998 (Service Files 2005). This area contains one or more of the primary constituent elements important to loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include grazing and nonnative fish (see Table 1). This stream contains the features essential to the conservation of the species and one of the few remaining populations of the species. The area is currently occupied, and it is directly connected to the Tularosa River, which is also occupied with records dating from 2001.

(5) Whitewater Creek—Loach Minnow Only—1.1 miles (1.8 km) of creek extending from the confluence with the San Francisco River upstream to the confluence with the Little Whitewater Creek. Upstream of this area the river does not contain the features essential to the conservation of the species because of gradient and channel changes that make the portion above Little Whitewater Creek unsuitable for loach minnow. Whitewater Creek was occupied at the time of listing, and is currently occupied as it is within an area connected with the San Francisco River where loach minnow records exist from 2001. This area does support one or more primary constituent elements for loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area include grazing and nonnative fish (see Table 1).

(6) Blue River—Loach Minnow Only—51.1 miles (82.2 km) of river extending from the confluence with the San Francisco River upstream to the confluence of Campbell Blue and Dry Blue Creeks. The Blue River was occupied at the time of listing and continues to be occupied by loach minnow (Carter 2004). The Blue River contains one or more of the primary constituent elements required by loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Planning is underway among several State and Federal agencies for reintroduction of native fishes, including spikedace, in the Blue River, and thus the Blue River may be considered for spikedace critical habitat in future revisions of the designation. Threats in this area include water diversions, grazing, nonnative fish, and roads (see Table 1).

(7) Campbell Blue Creek—Loach Minnow Only—8.1 miles (13.1 km) of creek extending from the confluence of Dry Blue and Campbell Blue Creeks upstream to the confluence with Coleman Canyon. Areas above Coleman Canyon do not contain the features essential to the conservation of the species because the creek changes and becomes steeper and rockier, making it unsuitable for spikedace or loach minnow. Campbell Blue Creek is currently occupied (Carter 2004) and supports one or more of the velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area include grazing and nonnative fish species (see Table 1).

(8) Dry Blue Creek—Loach Minnow Only—3.0 miles (4.8 km) of creek extending from the confluence with Campbell Blue Creek upstream to the confluence with Pace Creek. Dry Blue Creek has been occupied by loach minnow since listing and is connected with Campbell Blue Creek, which has documented loach minnow records as recent as 2004. This area also contains one or more of the primary constituent elements required by loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring

special management include grazing and nonnative fish species (see Table 1).

(9) Pace Creek—Loach Minnow Only—0.8 miles (1.2 km) of creek extending from the confluence with Dry Blue Creek upstream to a barrier falls. Pace Creek has been occupied by loach minnow since listing with the most recent record from 1998. This area also contains one or more of the primary constituent elements required by loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include grazing and nonnative fish species (see Table 1).

(10) Frieborn Creek—Loach Minnow Only—1.1 miles (1.8 km) of creek extending from the confluence with Dry Blue Creek upstream to an unnamed tributary. Frieborn Creek has been occupied by loach minnow since listing with the most recent record from 1998. This area also contains one or more of the primary constituent elements required by loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include grazing and nonnative fish species (see Table 1).

(11) Little Blue Creek—Loach Minnow Only—2.8 miles (4.5 km) of creek extending from the confluence with the Blue River upstream to the mouth of a canyon. Little Blue Creek was occupied at the time of listing and is connected with the Blue River, which has documented loach minnow records as recent as 2004. This area also contains one or more of the primary constituent elements required by loach minnow and is connected to the Blue River. Threats requiring special management in this area include grazing and nonnative fish (see Table 1).

Complex 5—Upper Gila River Complex—Grant, Catron, and Hidalgo counties, New Mexico

This complex is occupied by spikedace and loach minnow and contains the largest remaining populations of both species in New Mexico. It is considered to represent the ''core'' of what remains of these species. Threats requiring special management in this area are addressed in each of the individual stream segment descriptions below. The largest areas are on USFS land, with small private inholdings. There are large areas of private lands in the Cliff-Gila Valley, and the BLM administers significant stretches upstream of the Arizona/New Mexico border. There are also small areas of NMDGF, National Park Service, and State of New Mexico lands.

(1) Upper Gila River—102.1 miles (164.3 km) of river extending from the confluence with Moore Canyon (near the Arizona/New Mexico border) upstream to the confluence of the East and West Forks of the Gila River. The Gila River was occupied by spikedace and loach minnow at the time of listing and continues to be occupied by both species (Propst 2002, Propst et al. 1988, Rinne 1999b). The Gila River from its confluence with the West Fork Gila and East Fork Gila contains one or more primary constituent elements for spikedace and loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include water diversions, grazing, recreation, road construction, and nonnative fish species (see Table 1).

(2) East Fork Gila River—26.1 miles (42.0 km) of river extending from the confluence with the West Fork Gila River upstream to the confluence of Beaver and Taylor creeks. This area was occupied by both species at the time of listing and both species have been found there as recently as 2001 (Propst 2002). In addition, this area is connected to habitat currently occupied by spikedace and loach minnow on the West Fork of the Gila River. Portions of the East Fork Gila River contain one or more of the primary constituent elements required by spikedace and loach minnow including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include grazing and nonnative fish species (See Table 1).

(3) Middle Fork Gila River—Spikedace Only—7.7 miles (12.3 km) of river extending from the confluence with the West Fork Gila River upstream to the confluence with Big Bear Canyon. This area is currently occupied, and is connected to currently occupied habitat on the West Fork of the Gila River (Propst 2002). The Middle Fork Gila River contains one or more of the primary constituent elements required by spikedace, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include grazing and nonnative fish species (See Table 1).

(4) Middle Fork Gila River—Loach Minnow Only—11.9 miles (19.1 km) of river extending from the confluence with the West Fork Gila River upstream to the confluence with Brothers West Canyon. This area is currently occupied and is connected to currently occupied habitat on the West Fork of the Gila River. Portions of the Middle Fork Gila River contain one or more primary constituent elements required by loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Threats to this area requiring special management include grazing and nonnative fish species (See Table 1).

(5) West Fork Gila River—7.7 miles (12.4 km) of river extending from the confluence with the East Fork Gila River upstream to the confluence with EE Canyon. This lower portion of the West Fork was occupied by both spikedace and loach minnow at the time of listing and continues to be occupied by both species. This area contains one or more primary constituent elements required by spikedace and loach minnow, including sufficient flow velocities and appropriate gradients, substrates, depths, and habitat types (i.e., pools, riffles). Above EE Canyon, the river does not contain the features essential to the conservation of the species due to gradient and channel morphology. Threats to this area requiring special management include grazing and nonnative fish species (See Table 1).

Proposed Exclusions Under Section 4(b)(2) of the Act

Section 4(b)(2) of the Act states that critical habitat shall be designated, and revised, on the basis of the best available scientific data after taking into consideration the economic impact, national security impact, and any other relevant impact of specifying any particular area as critical habitat. An area may be excluded from critical habitat if it is determined that the benefits of exclusion outweigh the benefits of specifying a particular area as critical habitat, unless the failure to designate such area as critical habitat will result in the extinction of the species.

In our critical habitat designations, we use the provision outlined in section 4(b)(2) of the Act to evaluate those specific areas that contain the features essential to the conservation of the species to determine which areas to propose and subsequently finalize (i.e., designate) as critical habitat. On the basis of our preliminary evaluation, discussed in detail below, we are proposing to exclude certain lands from the designation of critical habitat for the spikedace and loach minnow. In the development of our final designation, we will incorporate or address any new

information received during the public comment periods, or from our evaluation of the potential economic and environmental impacts of this proposal. As such, we may revise this proposal to address new information and/or to exclude additional areas that may warrant exclusion pursuant to section 4(b)(2).

Areas excluded pursuant to section 4(b)(2) may include, but are not limited to, those covered by: (1) Legally operative Habitat Conservation Plans (HCPs) that cover the species and provide assurances that the conservation measures for the species will be implemented and effective; (2) draft HCPs that cover the species, have undergone public review and comment, and provide assurances that the conservation measures for the species will be implemented and effective (i.e., pending HCPs); (3) Tribal conservation plans that cover the species and provide assurances that the conservation measures for the species will be implemented and effective; (4) State conservation plans that provide assurances that the conservation measures for the species will be implemented and effective; and (5) National Wildlife Refuge System Comprehensive Conservation Plans (CCPs) that provide assurances that the conservation measures for the species will be implemented and effective.

Within the areas containing the features essential to the conservation of the species for spikedace and loach minnow in Arizona and New Mexico, there are Tribal lands; however, there are no lands owned by the Department of Defense, National Wildlife Refuges, or private lands with legally operative HCPs or draft HCPs. We have determined that the following tribes have lands containing features essential to the conservation of the spikedace and loach minnow: Yavapai Apache, San Carlos Apache, and White Mountain Apache. In making our final decision with regard to tribal lands, we will be considering several factors including our relationship with the Tribe or Nation and whether a management plan has been developed for the conservation of the spikedace and loach minnow on their lands. The White Mountain Apache completed a final management plan in 2000 that we have in our records and we have also received a final management plan from the San Carlos Apache Tribe. We are proposing to exclude lands of the San Carlos Apache Tribe and lands of the White Mountain Apache Tribe, as discussed in further detail below. We will continue to work with the Yavapai-Apache Nation during the comment period on the development of a management plan for their lands. We note that lands of the Yavapai-Apache Nation may be considered for exclusion in the final rule and that any exclusions made in the final rule will be the result of a reanalysis of any new information received.

General Principles of Section 7 Consultations Used in the 4(b)(2) Balancing Process

The most direct, and potentially largest, regulatory benefit of critical habitat is that federally authorized, funded, or carried out activities require consultation pursuant to section 7 of the Act to ensure that they are not likely to destroy or adversely modify critical habitat. There are two limitations to this regulatory effect. First, it only applies where there is a Federal nexus—if there is no Federal nexus, designation itself does not restrict actions that destroy or adversely modify critical habitat. Second, it only limits destruction or adverse modification. By its nature, the prohibition on adverse modification is designed to ensure those areas that contain the physical and biological features essential to the conservation of the species or unoccupied areas that are essential to the conservation of the species are not eroded. Critical habitat designation alone, however, does not require specific steps toward recovery.

Once consultation under section 7 of the Act is triggered, the process may conclude informally when the Service concurs in writing that the proposed Federal action is not likely to adversely affect the listed species or its critical habitat. However, if the Service determines through informal consultation that adverse impacts are likely to occur, then formal consultation would be initiated. Formal consultation concludes with a biological opinion issued by the Service on whether the proposed Federal action is likely to jeopardize the continued existence of a listed species or result in destruction or adverse modification of critical habitat, with separate analyses being made under both the jeopardy and the adverse modification standards. For critical habitat, a biological opinion that concludes in a determination of no destruction or adverse modification may contain discretionary conservation recommendations to minimize adverse effects to primary constituent elements, but it would not contain any mandatory reasonable and prudent measures or terms and conditions. Mandatory reasonable and prudent alternatives to the proposed Federal action would only be issued when the biological opinion results in a jeopardy or adverse modification conclusion.

We also note that for 30 years prior to the Ninth Circuit Court's decision in *Gifford Pinchot*, the Service equated the jeopardy standard with the standard for destruction or adverse modification of critical habitat. The Court ruled that the Service could no longer equate the two standards and that adverse modification evaluations require consideration of impacts on the recovery of species. Thus, under the *Gifford Pinchot* decision, critical habitat designations may provide greater benefits to the recovery of a species. However, we believe the conservation achieved through implementing management plans is typically greater than would be achieved through multiple site-by-site, project-by-project, section 7 consultations involving consideration of critical habitat. Management plans commit resources to implement long-term management and protection to particular habitat for at least one and possibly other listed or sensitive species. Section 7 consultations only commit Federal agencies to prevent adverse modification to critical habitat caused by the particular project, and they are not committed to provide conservation or long-term benefits to areas not affected by the proposed project. Thus, any management plan which considers enhancement or recovery as the management standard will always provide as much or more benefit than a consultation for critical habitat designation conducted under the standards required by the Ninth Circuit in the *Gifford Pinchot* decision.

The information provided in this section applies to all the discussions below that discuss the benefits of inclusion and exclusion of critical habitat in that it provides the framework for the consultation process.

Educational Benefits of Critical Habitat

A benefit of including lands in critical habitat is that the designation of critical habitat serves to educate landowners, State and local governments, and the public regarding the potential conservation value of an area. This helps focus and promote conservation efforts by other parties by clearly delineating areas of high conservation value for the spikedace and loach minnow. In general the educational benefit of a critical habitat designation always exists, although in some cases it may be redundant with other educational effects. For example, habitat conservation plans have significant public input and may largely duplicate the educational benefit of a critical habitat designation. This benefit is

closely related to a second, more indirect benefit: that designation of critical habitat would inform State agencies and local governments about areas that could be conserved under State laws or local ordinances.

However, we believe that there would be little additional informational benefit gained from the designation of critical habitat for the proposed exclusions discussed in this rule because these areas are included in this proposed rule as having essential spikedace and/or loach minnow features. Consequently, we believe that the informational benefits are already provided even though these areas are not designated as critical habitat.

The information provided in this section applies to all the discussions below that discuss the benefits of inclusion and exclusion of critical habitat.

Relationship of Critical Habitat to American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act—Proposed Exclusions Under Section 4(b)(2) of the Act

In accordance with the Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental Manual of the Department of the Interior (512 DM 2), we believe that fish, wildlife, and other natural resources on tribal lands are better managed under tribal authorities, policies, and programs than through Federal regulation wherever possible and practicable. Based on this philosophy, we believe that, in many cases, designation of tribal lands as critical habitat provides very little additional benefit to threatened and endangered species. Conversely, such designation is often viewed by tribes as an unwanted intrusion into tribal self governance, thus compromising the government-to-government relationship essential to achieving our mutual goals of managing for healthy ecosystems upon which the viability of threatened and endangered species populations depend.

San Carlos Apache Tribe

The San Carlos Apache Tribe has one stream within its tribal lands, Eagle Creek, that is known to be currently occupied by the spikedace and loach minnow and its tribal lands contain features that are essential to the conservation of the spikedace and loach minnow. The Tribe has completed and is implementing a Fisheries Management Plan (FMP) that includes specific management actions for the spikedace and loach minnow. In this proposed exclusion, we considered several factors, including our relationship with San Carlos Apache Tribe, and the degree to which the Tribe's FMP provides specific management for the spikedace and loach minnow. Tribal governments protect and manage their resources in the manner that is most beneficial to them. The San Carlos Apache Tribe exercises legislative, administrative, and judicial control over activities within the boundaries of its lands. Additionally, the Tribe has natural resource programs and staff and has enacted the FMP. In addition, as trustee for land held in trust by the United States for Indian Tribes, the Bureau of Indian Affairs (BIA) provides technical assistance to the San Carlos Apache Tribe on management planning and oversees a variety of programs on their lands. Spikedace and loach minnow conservation activities have been ongoing on San Carlos Apache tribal lands, and, prior to the completion of their FMP, their natural resource management was consistent with management of habitat for this species. The development and implementation of the efforts formalized in the San Carlos Apache Tribes FMP will continue with or without critical habitat designation.

The San Carlos Apache Tribe highly values its wildlife and natural resources, and is charged to preserve and protect these resources under the Tribal Constitution. Consequently, the Tribe has long worked to manage the habitat of wildlife on its tribal lands, including the habitat of endangered and threatened species. We understand that it is the Tribe's position that a designation of critical habitat on its lands improperly infringes upon its tribal sovereignty and the right to self-government.

The San Carlos Apache Tribes FMP provides assurances and a conservation benefit to the spikedace and loach minnow. Implementation of the FMP will result in protecting all known spikedace and loach minnow habitat on San Carlos Tribal Land and assures no net habitat loss or permanent modification will occur in the future. The purpose of the FMP includes the long-term conservation of native fishes, including the spikedace and loach minnow, on tribal lands. The FMP outlines actions to conserve, enhance, and restore spikedace and loach minnow habitat, including efforts to eliminate nonnative fishes from spikedace and loach minnow habitat. All habitat restoration activities (whether it is to rehabilitate or restore native plants) will be conducted under reasonable coordination with the Service. All reasonable measures will be taken to ensure that recreational activities do not result in a net habitat loss or permanent modification of the habitat. All reasonable measures will be taken to conduct livestock grazing activities in a manner that will ensure the conservation of spikedace and loach minnow habitat. Within funding limitations and under confidentiality guidelines established by the Tribe, the Tribe will cooperate with the Service to monitor and survey spikedace and loach minnow habitat, conduct research, perform habitat restoration, remove nonnative fish species, or conduct other beneficial spikedace and loach minnow management activities.

White Mountain Apache Tribe

The White Mountain Apache Tribe has one stream within its tribal lands, East Fork White River, that is known to be currently occupied by loach minnow and its tribal lands contain features that are essential to the conservation of the loach minnow. The White Mountain Apache Tribe currently has a management plan in place for loach minnow. The plan was completed in 2000 and provides for, among other conservation measures, inventory and monitoring, water quality protection ordinance, captive propagation, and relocation to minimize loss from catastrophic events such as fire and drought. Prior to and since the plan was developed, the Tribe has actively managed for loach minnow. In this proposed exclusion, we considered several factors, including our relationship with the White Mountain Apache Tribe, and the degree to which the Tribe's management plan provides specific management for the loach minnow. Tribal governments protect and manage their resources in the manner that is most beneficial to them. The White Mountain Apache Tribe exercises legislative, administrative, and judicial control over activities within the boundaries of its lands. Additionally, the Tribe has natural resource programs and staff and has been managing for the conservation of the loach minnow. In addition, as trustee for land held in trust by the United States for Indian Tribes, the Bureau of Indian Affairs (BIA) provides technical assistance to the White Mountain Apache Tribe on management

planning and oversees a variety of programs on their lands. The development and implementation of the efforts formalized in the management plan will continue with or without critical habitat designation.

The White Mountain Apache Tribe highly values its wildlife and natural resources, and is charged to preserve and protect these resources under the Tribal Constitution. Consequently, the Tribe has long worked to manage the habitat of wildlife on its tribal lands, including the habitat of endangered and threatened species. We understand that it is the Tribe's position that a designation of critical habitat on its lands improperly infringes upon its tribal sovereignty and the right to self-government.

Below we provide our combined preliminary benefits analysis for the proposed exclusion of the tribal lands of the San Carlos Apache Nation and the White Mountain Apache Nation.

(1) Benefits of Inclusion

Including lands of the San Carlos Apache Tribe and the White Mountain Apache Tribe in critical habitat would provide some additional benefit from section 7 consultation, because we could consult via the BIA on actions that could adversely affect critical habitat. Activities covered in previous consultations included livestock grazing, recreation, fish stocking, fire management, bank stabilization projects, and conservation measures that benefited spikedace and/or loach minnow. These included monitoring, fence repair (to exclude cattle from overusing and thereby damaging habitat), and education programs to inform the public of the need to avoid actions that damage habitat. However, we note that because the spikedace and loach minnow are listed species and are found on these Tribal lands, section 7 consultation under the jeopardy standard will still be required if Tribal or BIA activities would affect spikedace or loach minnow, regardless of whether these lands are included in the final critical habitat designation. As a result, we expect that inclusion of San Carlos Apache and White Mountain Apache tribal lands in the critical habitat designation would provide only that additional habitat protection accorded by critical habitat as discussed by the Ninth Circuit Court of Appeals in the Gifford Pinchot ruling discussed above.

Nevertheless, few additional benefits would be derived from including these Tribal Lands in a spikedace and loach minnow critical habitat designation beyond what will be achieved through the implementation of their management plans. As noted above, the primary regulatory benefit of any designated critical habitat is that federally funded or authorized activities in such habitat require consultation pursuant to section 7 of the Act. Such consultation would ensure that adequate protection is provided to avoid destruction or adverse modification of critical habitat. The Tribes of the San Carlos Apache and the White Mountain have already agreed under the terms of their management plans to protect spikedace and loach minnow habitat (PCEs), to ensure no net loss, to coordinate with the Service in order to prevent any habitat destruction, and to conduct activities consistent with the conservation of the spikedace and loach minnow and their PCEs.

As discussed above, we expect that little additional educational benefit would be derived from designating lands of the Tribes of the San Carlos Apache and the White Mountain Apache as critical habitat. The additional educational benefits that might arise from critical habitat designation are largely accomplished through the multiple notice and comments which accompany the development of this proposed critical habitat designation, as evidenced by the Tribes working with the Service to address habitat and conservation needs for the loach minnow. Additionally, we anticipate that the Tribes will continue to actively participate in working groups, and provide for the timely exchange of management information. The educational benefits important for the long-term survival and conservation of the spikedace and loach minnow are being realized without designating this area as critical habitat. Educational benefits will continue on these lands whether or not critical habitat is designated because the Tribes already recognizes the importance of those habitat areas to the spikedace and loach minnow.

Another possible benefit is the additional funding that may be generated for habitat restoration or improvement by having an area designated as critical habitat. In some instances, having an area designated as critical habitat may improve the ranking a project receives during evaluation for funding. The Tribes often require additional sources of funding in order to conduct wildlife-related activities. Therefore, having an area designated as critical habitat could improve the chances of the Tribes receiving funding for spikedace or loach minnow related projects. Additionally, occupancy by spikedace or loach minnow also provides benefits to be considered in evaluating funding proposals. Because there are areas of occupied habitat on these Tribal lands this may also help secure funding for management of these areas.

For these reasons, then, we believe that designation of critical habitat would provide some additional benefits.

(2) Benefits of the Proposed Exclusion

The benefits of excluding San Carlos Apache and White Mountain Apache Tribal lands from critical habitat include: (1) The advancement of our Federal Indian Trust obligations and our deference to Tribes to develop and implement tribal conservation and natural resource management plans for their lands and resources, which includes the spikedace and loach minnow and other Federal trust species; (2) the maintenance of effective working relationships to promote the conservation of the spikedace and loach minnow and their habitats; (3) the allowance for continued meaningful collaboration and cooperation on spikedace and loach minnow management and other resources of interest to the Federal government; and (4) the provision of conservation benefits to riparian ecosystems and a host of species, including the spikedace and loach minnow and their habitat, that might not otherwise occur.

During the development of the spikedace and loach minnow critical habitat proposal (and coordination for other critical habitat proposals), and other efforts such as conservation of native fish species in general, we have met and communicated with each of these Tribes to discuss how they might be affected by the regulations associated with spikedace and loach minnow conservation and the designation of critical habitat. As such, we established relationships with the San Carlos Apache and White Mountain Apache Tribes specific to spikedace and loach minnow conservation. As part of our relationship, we provided technical assistance to the Tribes to develop measures to conserve the spikedace and loach minnow and their habitat on their lands. These measures are contained within their management plans that we have in our supporting record. This proactive action was conducted in accordance with Secretarial Order 3206, ''American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act'' (June 5, 1997); the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951); Executive Order 13175; and the relevant provision of the Departmental

Manual of the Department of the Interior (512 DM 2). We believe that the San Carlos Apache and White Mountain Apache Tribes should be the governmental entity to manage and promote the conservation of the spikedace and loach minnow on their lands. During our communication with the Tribes, we recognized and endorsed their fundamental right to provide for tribal resource management activities, including those relating to riparian ecosystems.

The designation of critical habitat on these Tribal lands would be expected to adversely impact our working relationship with them. In fact, during our discussions with the Tribes, we were informed that critical habitat would be viewed as an intrusion on their sovereign abilities to manage natural resources in accordance with their own policies, customs, and laws. To this end, we found that the Tribes would prefer to work with us on a government-to-government basis. We view this as a substantial benefit.

In addition to management/conservation actions described for the conservation of the spikedace and loach minnow, we anticipate future management/conservation plans to include conservation efforts for other listed species and their habitat. We believe that many Tribes and Pueblos are willing to work cooperatively with us to benefit other listed species, but only if they view the relationship as mutually beneficial. Consequently, the development of future voluntary management actions for other listed species will likely be contingent upon whether the San Carlos Apache and White Mountain Apache Tribal lands are designated as critical habitat for the spikedace and loach minnow. Thus, the benefit of excluding these lands would be future conservation efforts that would benefit other listed species.

Another benefit of excluding these Tribal lands from the critical habitat designation includes relieving additional regulatory burden and costs associated with the preparation of portions of section 7 documents related to critical habitat. While the cost of adding these additional sections to assessments and consultations is relatively minor, there could be delays which can generate real costs to some project proponents. However, because in this case critical habitat is being proposed for exclusion in occupied areas already subject to section 7 consultation and a jeopardy analysis, it is anticipated this reduction would be minimal.

(3) Benefits of the Proposed Exclusion Outweigh the Benefits of Inclusion

We anticipate that our final decision will make the following determination, unless information submitted in response to the proposal causes us to reach a different conclusion.

We find that the benefits of designating critical habitat for the spikedace and loach minnow on these Tribals lands are small in comparison to the benefits of the proposed exclusion. Exclusion would enhance the partnership efforts focused on recovery of the spikedace and loach minnow within these river reaches. Excluding these areas also would reduce some of the administrative costs during consultation pursuant to section 7 of the Act.

(4) The Proposed Exclusion Will Not Result in Extinction of the Species

We anticipate that our final decision will make the following determination, unless information submitted in response to the proposal causes us to reach a different conclusion.

Because these river reaches on the tribal lands are occupied by the spikedace and loach minnow, which is protected from take under section 9 of the Act, any actions that might kill spikedace or loach minnow, including habitat modification that would cause death of either species, must either undergo a consultation with the Service under the requirements of section 7 of the Act or receive a permit from us under section 10 of the Act. Additionally, we believe that the proposed exclusion of these lands from critical habitat would not result in the extinction of the spikedace or loach minnow because their management plans specifically addresses conservation of these species. The tribal management plans outline actions to conserve, enhance, and restore spikedace and loach minnow habitat, including efforts to eliminate nonnative fishes from their habitat. Such efforts provide greater conservation benefit than would result from a designation of critical habitat. This is because section 7 consultations for critical habitat only consider listed species in the project area evaluated and Federal agencies are only committed to prevent adverse modification to critical habitat caused by the particular project and are not committed to provide conservation or long-term benefits to areas not affected by the proposed project. Such efforts provide greater conservation benefit than would result for designation as critical habitat. As a result, there is no reason to believe that this proposed exclusion would result in extinction of the species.

Effect of Critical Habitat Designation

Section 7 Consultation

The regulatory effects of a critical habitat designation under the Act are triggered through the provisions of section 7, which applies only to activities conducted, authorized, or funded by a Federal agency (Federal actions). Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Individuals, organizations, States, local governments, and other non-Federal entities are affected by the designation of critical habitat only if their actions occur on Federal lands, require a Federal permit, license, or other authorization, or involve Federal funding.

Section 7(a)(2) of the Act requires Federal agencies, including the Service, to insure that their actions are not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. This requirement is met through section 7 consultation under the Act. Our regulations define ''jeopardize the continued existence of'' as to engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species (50 CFR 402.02). ''Destruction or adverse modification of designated critical habitat'' for this species would include habitat alterations that appreciably diminish the value of critical habitat by significantly affecting any of those physical or biological features that were the basis for determining the habitat to be critical.

Section 7(a)(4) of the Act requires Federal agencies to confer with us on any action that is likely to jeopardize the continued existence of a proposed species or result in destruction or adverse modification of proposed critical habitat. Conference reports provide conservation recommendations to assist Federal agencies in eliminating conflicts that may be caused by their proposed actions. The conservation measures in a conference report are advisory.

We may issue a formal conference report, if requested by the Federal action agency. Formal conference reports include an opinion that is prepared according to 50 CFR 402.14, as if the species was listed or critical habitat

designated. We may adopt the formal conference report as the biological opinion when the species is listed or critical habitat designated, if no substantial new information or changes in the action alter the content of the opinion (50 CFR 402.10(d)).

If a species is listed or critical habitat is designated, section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of such a species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency (action agency) must enter into consultation with us. Through this consultation, the Federal action agency would ensure that the permitted actions do not destroy or adversely modify critical habitat.

If we issue a biological opinion concluding that a project is likely to result in the destruction or adverse modification of critical habitat, we also provide ''reasonable and prudent alternatives'' to the project, if any are identifiable. Reasonable and prudent alternatives are defined at 50 CFR 402.02 as alternative actions identified during consultation that can be implemented in a manner consistent with the intended purpose of the action, that are consistent with the scope of the Federal agency's legal authority and jurisdiction, that are economically and technologically feasible, and that the Service's Regional Director believes would avoid the likelihood of jeopardizing the continued existence of listed species or resulting in the destruction or adverse modification of critical habitat. Reasonable and prudent alternatives can vary from slight project modifications to extensive redesign or relocation of the project. Costs associated with implementing a reasonable and prudent alternative are similarly variable.

Regulations at 50 CFR 402.16 require Federal agencies to reinitiate consultation on previously reviewed actions under certain circumstances, including instances where critical habitat is subsequently designated and the Federal agency has retained discretionary involvement or control over the action or such discretionary involvement or control is authorized by law. Consequently, some Federal agencies may request reinitiating of consultation or conference with us on actions for which formal consultation has been completed, if those actions may affect designated critical habitat, or adversely modify or destroy proposed critical habitat.

Federal activities that may affect spikedace or loach minnow or their critical habitat will require consultation under section 7. Activities on private, State, or county lands, or lands under local jurisdictions requiring a permit from a Federal agency, such as Federal Highway Administration or Federal Emergency Management Act funding, or a permit from the Corps under section 404 of the Clean Water Act, will continue to be subject to the section 7 consultation process. Federal actions not affecting listed species or critical habitat, and actions on non-Federal lands that are not federally funded, authorized, or permitted, do not require section 7 consultations.

Section 4(b)(8) of the Act requires us to evaluate briefly and describe, in any proposed or final regulation that designates critical habitat, those activities involving a Federal action that may adversely modify such habitat or that may be affected by such designation. Activities that may destroy or adversely modify critical habitat include those that alter the primary constituent elements to an extent that the value of critical habitat for both the survival and recovery of spikedace or loach minnow is appreciably reduced. We note that such activities may also jeopardize the continued existence of the species. Each of the specific areas designated in this rule as critical habitat for spikedace and loach minnow have been determined to contain sufficient PCEs to provide for one or more of the life history functions of spikedace and/or loach minnow. In some cases, the PCEs exist as a result of ongoing Federal actions. As a result, ongoing Federal actions at the time of designation will be included in the baseline in any consultation pursuant to section 7 of the Act conducted subsequent to this designation. Activities that, when carried out, funded, or authorized by a Federal agency and appreciably reduce the value of critical habitat for the survival and recovery of the spikedace or loach minnow may directly or indirectly destroy or adversely modify critical habitat include, but are not limited to: (1) Channelization, impoundment, road and bridge construction, deprivation of substrate source, destruction and alteration of riparian vegetation, reduction of available floodplain, removal of gravel or floodplain terrace materials, and excessive sedimentation from mining, livestock grazing, road construction, timber harvest, off-road vehicle use, and other watershed and floodplain disturbances; (2) any Federal activity that would significantly and detrimentally alter the water chemistry in any of the stream segments listed above could destroy or adversely modify the critical habitat of either or both species. Such activities include, but are not limited to, release of chemical or biological pollutants into the surface water or connected groundwater at a point source or by dispersed release (non-point source); (3) any Federal activity that would introduce, spread, or augment nonnative fish species could destroy or adversely modify the critical habitat of either or both species. Such activities include, but are not limited to, stocking for sport, aesthetics, biological control, or other purposes; construction and operation of canals; and interbasin water transfers.

The designation of critical habitat does not imply that lands outside of critical habitat do not play an important role in the conservation of spikedace and loach minnow. Federal activities outside of critical habitat are still subject to review under section 7 if they may affect spikedace or loach minnow. Prohibitions of Section 9 also continue to apply both inside and outside of designated critical habitat.

All lands proposed as critical habitat are within the geographical area occupied by the species and are necessary for the conservation of spikedace and loach minnow. Federal agencies already consult with us on actions that may affect spikedace or loach minnow to ensure that their actions do not jeopardize the continued existence of the species. Thus, we do not anticipate substantial additional regulatory protection will result from critical habitat designation.

If you have questions regarding whether specific activities will constitute destruction or adverse modification of critical habitat, contact the Supervisor of the appropriate Fish and Wildlife Service Ecological Services Office, as follows. For activities in Arizona, please contact the Arizona Ecological Services Office (see **ADDRESSES** section above). For activities in New Mexico, please contact the New Mexico Ecological Services Field Office at 2105 Osuna Road, NE, Albuquerque, New Mexico 87113 (telephone (505) 346–2525). Requests for copies of the regulations on listed wildlife and plants and inquiries about prohibitions and permits may be addressed to the U.S. Fish and Wildlife Service, Branch of Endangered Species, P.O. Box 1306, Albuquerque, New Mexico 87103–1306 (telephone (505) 248–6920; facsimile (505) 248–6922).

Economic Analysis

An analysis of the economic impacts of proposing critical habitat for spikedace and loach minnow is being prepared. We will announce the availability of the draft economic analysis as soon as it is completed, at which time we will seek public review and comment. At that time, copies of the draft economic analysis will be available online at *http://www.fws.gov/arizonaes/* or by contacting the Arizona Ecological Services Fish and Wildlife Office directly (see **ADDRESSES** section above).

Peer Review

In accordance with our policy published on July 1, 1994 (59 FR 34270), we will solicit the expert opinions of at least three appropriate and independent specialists regarding this proposed rule. The purpose of such review is to ensure that our critical habitat designation is based on scientifically sound data, assumptions, and analyses. We will send these peer reviewers copies of this proposed rule immediately following publication in the **Federal Register**. We will invite these peer reviewers to comment, during the public comment period, on the specific assumptions and conclusions regarding the proposed designation of critical habitat.

We will consider all comments and information received during the comment period on this proposed rule as we prepare our final rulemaking. Accordingly, the final designation may differ from this proposal.

Public Hearings

The Act provides for one or more public hearings on this proposal, if requested. Requests must be received within 45 days of the date of publication of the proposal in the **Federal Register**. Such requests must be made in writing and be addressed to the Field Supervisor (see **ADDRESSES** section above). We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings in the **Federal Register** and local newspapers at least 15 days prior to the first hearing.

Clarity of the Rule

Executive Order 12866 requires each agency to write regulations and notices that are easy to understand. We invite your comments on how to make this proposed rule easier to understand, including answers to questions such as the following: (1) Are the requirements in the proposed rule clearly stated? (2) Does the proposed rule contain technical jargon that interferes with the clarity? (3) Does the format of the proposed rule (grouping and order of the sections, use of headings, paragraphing, etc.) aid or reduce its clarity? (4) Is the description of the notice in the **SUPPLEMENTARY INFORMATION** section of the preamble helpful in understanding the proposed rule? (5) What else could we do to make this proposed rule easier to understand?

Send a copy of any comments on how we could make this proposed rule easier to understand to: Office of Regulatory Affairs, Department of the Interior, Room 7229, 1849 C Street, NW., Washington, DC 20240. You may e-mail your comments to this address: *Exsec@ios.doi.gov.*

Required Determinations

Regulatory Planning and Review

In accordance with Executive Order 12866, this document is a significant rule in that it may raise novel legal and policy issues, but it is not anticipated to have an annual effect on the economy of $100 million or more or adversely affect the economy in a material way. Due to the timeline for publication in the **Federal Register**, the Office of Management and Budget (OMB) has not formally reviewed this rule. We are preparing a draft economic analysis of this proposed action. We will use this analysis to meet the requirement of section 4(b)(2) of the Act to determine the economic consequences of designating the specific areas as critical habitat. This economic analysis will also be used to determine compliance with Executive Order 12866, Regulatory Flexibility Act, Small Business Regulatory Enforcement Fairness Act, and Executive Order 12630.

This draft economic analysis will be made available for public review and comment before we finalize this designation. At that time, copies of the analysis will be available for downloading from the Arizona Ecological Services Office's Internet website at *http://arizonaes.fws.gov* or by contacting the Arizona Ecological Services Office directly (see **ADDRESSES** section).

Regulatory Flexibility Act (5 U.S.C. 601 et seq.)

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*, as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effects of the rule on small entities (i.e., small businesses, small organizations, and small government jurisdictions). However, no regulatory flexibility analysis is required if the head of the agency certifies the rule will not have a significant economic impact on a substantial number of small entities. The SBREFA amended the Regulatory Flexibility Act (RFA) to require Federal agencies to provide a statement of the factual basis for certifying that the rule will not have a significant economic impact on a substantial number of small entities.

At this time, the Service lacks the available economic information necessary to provide an adequate factual basis for the required RFA finding. Therefore, the RFA finding is deferred until completion of the draft economic analysis prepared pursuant to section 4(b)(2) of the ESA and E.O. 12866. This draft economic analysis will provide the required factual basis for the RFA finding. Upon completion of the draft economic analysis, the Service will publish a notice of availability of the draft economic analysis of the proposed designation and reopen the public comment period for the proposed designation for an additional 60 days. The Service will include with the notice of availability, as appropriate, an initial regulatory flexibility analysis or a certification that the rule will not have a significant economic impact on a substantial number of small entities accompanied by the factual basis for that determination. The Service has concluded that deferring the RFA finding until completion of the draft economic analysis is necessary to meet the purposes and requirements of the RFA. Deferring the RFA finding in this manner will ensure that the Service makes a sufficiently informed determination based on adequate economic information and provides the necessary opportunity for public comment.

Executive Order 13211

On May 18, 2001, the President issued an Executive Order (E.O. 13211) on regulations that significantly affect energy supply, distribution, and use. Executive Order 13211 requires agencies to prepare Statements of Energy Effects when undertaking certain actions. This proposed rule to designate critical habitat for the spikedace and loach minnow is considered a significant regulatory action under Executive Order 12866 as it may raise novel legal and policy issues. However, this designation is not expected to significantly affect energy supplies, distribution, or use because there are no pipelines,

distribution facilities, power grid stations, etc. within the boundaries of proposed critical habitat. Therefore, this action is not a significant energy action and no Statement of Energy Effects is required. We will, however, further evaluate this issue as we conduct our economic analysis and, as appropriate, review and revise this assessment as warranted.

Unfunded Mandates Reform Act (2 U.S.C. 1501 et seq.)

In accordance with the Unfunded Mandates Reform Act (2 U.S.C. 1501), the Service makes the following findings:

This rule will not produce a Federal mandate. In general, a Federal mandate is a provision in legislation, statute or regulation that would impose an enforceable duty upon State, local, tribal governments, or the private sector and includes both ''Federal intergovernmental mandates'' and ''Federal private sector mandates.'' These terms are defined in 2 U.S.C. 658(5)–(7). ''Federal intergovernmental mandate'' includes a regulation that ''would impose an enforceable duty upon State, local, or tribal governments'' with two exceptions. It excludes ''a condition of federal assistance.'' It also excludes ''a duty arising from participation in a voluntary Federal program,'' unless the regulation ''relates to a then-existing Federal program under which $500,000,000 or more is provided annually to State, local, and tribal governments under entitlement authority,'' if the provision would ''increase the stringency of conditions of assistance'' or ''place caps upon, or otherwise decrease, the Federal Government's responsibility to provide funding'' and the State, local, or tribal governments ''lack authority'' to adjust accordingly. (At the time of enactment, these entitlement programs were: Medicaid; AFDC work programs; Child Nutrition; Food Stamps; Social Services Block Grants; Vocational Rehabilitation State Grants; Foster Care, Adoption Assistance, and Independent Living; Family Support Welfare Services; and Child Support Enforcement.) ''Federal private sector mandate'' includes a regulation that ''would impose an enforceable duty upon the private sector, except (i) a condition of Federal assistance; or (ii) a duty arising from participation in a voluntary Federal program.''

The designation of critical habitat does not impose a legally binding duty on non-Federal government entities or private parties. Under the Act, the only regulatory effect is that Federal agencies must ensure that their actions do not destroy or adversely modify critical habitat under section 7. While non-Federal entities who receive Federal funding, assistance, or permits or who otherwise require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Furthermore, to the extent that non-Federal entities are indirectly impacted because they receive Federal assistance or participate in a voluntary Federal aid program, the Unfunded Mandates Reform Act would not apply; additionally, critical habitat would not shift the costs of the large entitlement programs listed above on to State governments. We will further evaluate this issue as we conduct our economic analysis and, as appropriate, review and revise this assessment as warranted.

Takings

In accordance with Executive Order 12630 (''Government Actions and Interference with Constitutionally Protected Private Property Rights''), this rule is not anticipated to have significant takings implications. A takings implication assessment is not required. As discussed above, the designation of critical habitat affects only Federal actions. Although private parties that receive Federal funding, assistance, or require approval or authorization from a Federal agency for an action may be indirectly impacted by the designation of critical habitat, the legally binding duty to avoid destruction or adverse modification of critical habitat rests squarely on the Federal agency. Due to current public knowledge of these species protections and the prohibition against take of these species both within and outside of the proposed areas, we do not anticipate that property values will be affected by the critical habitat designation. However, we have not yet completed the economic analysis for this proposed rule. Once the economic analysis is available, we will review and revise this preliminary assessment as warranted.

Federalism

In accordance with Executive Order 13132, this rule does not have significant Federalism effects. A Federalism assessment is not required. In keeping with Department of the Interior policies, we requested information from and coordinated development of this proposed critical habitat designation with appropriate State resource agencies in all affected states.

The proposed designation of critical habitat in areas currently occupied by spikedace or loach minnow imposes no additional significant restrictions beyond those currently in place and, therefore, has little incremental impact on State and local governments and their activities. The proposed designation of critical habitat may have some benefit to the State and local resource agencies in that the areas containing features essential to the conservation of this species are more clearly defined, and the primary constituent elements of the habitat necessary to the conservation of this species are specifically identified. While this definition and identification does not alter where and what federally sponsored activities may occur, it may assist local governments in long-range planning (rather than waiting for case-by-case section 7 consultations to occur).

Civil Justice Reform

In accordance with Executive Order 12988, the Department of the Interior's Office of the Solicitor has determined that this rule does not unduly burden the judicial system and does meet the requirements of sections 3(a) and 3(b)(2) of the Order. We are proposing to designate critical habitat in accordance with the provisions of the Endangered Species Act. The rule uses standard property descriptions and identifies the primary constituent elements within the designated areas to assist the public in understanding the habitat needs of spikedace and loach minnow.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This proposed rule does not contain new or revised information collection for which OMB approval is required under the Paperwork Reduction Act. Information collections associated with certain Act permits are covered by an existing OMB approval and are assigned clearance No. 1018–0094, Forms 3–200–55 and 3–200–56, with an expiration date of July 31, 2004. Detailed information for Act documentation appears at 50 CFR 17. This rule will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

It is our position that, outside the Tenth Circuit, we do not need to prepare environmental analyses as defined by the NEPA in connection with designating critical habitat under the Endangered Species Act of 1973, as amended. We published a notice outlining our reasons for this determination in the Federal Register on October 25, 1983 (48 FR 49244). This assertion was upheld in the courts of the Ninth Circuit (*Douglas County* v. *Babbitt,* 48 F.3d 1495 (9th Cir. Ore. 1995), cert. denied 116 S. Ct. 698 (1996)). However, when the range of the species includes States within the Tenth Circuit, such as that of the spikedace and loach minnow, pursuant to the Tenth Circuit ruling in *Catron County Board of Commissioners* v. *U.S. Fish and Wildlife Service,* 75 F.3d 1429 (10th Cir. 1996), we will undertake a NEPA analysis for critical habitat designation and notify the public of the availability of the draft environmental assessment for this proposal when it is finished.

Government-to-Government Relationship With Tribes

In accordance with the President's memorandum of April 29, 1994, ''Government-to-Government Relations with Native American Tribal Governments'' (59 FR 22951), Executive Order 13175, and the Department of the Interior's manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. We have determined that there are Tribal lands containing features essential for the conservation of spikedace and loach minnow and have sought government-to-government consultation with these Tribes. We will continue to seek consultation during the proposal portion of developing the final critical habitat designation.

References Cited

A complete list of all references cited herein, as well as others, is available upon request from the Arizona Ecological Services Office (see **ADDRESSES** section above).

Author

The primary authors of this notice are the Arizona Ecological Services Office staff (see **ADDRESSES** section above).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

2. Amend section § 17.95(e) by revising critical habitat for the loach minnow and the spikedace to read as follows:

§ 17.95 Critical habitat—fish and wildlife.

* * * * *

(e) *Fishes.*

* * * * *

Loach Minnow *(Tiaroga cobitis)*

(1) Critical habitat units are depicted for Apache, Graham, Greenlee, and Pinal Counties, Arizona; and Catron, Grant, and Hidalgo Counties, New Mexico, on the maps and as described below.

(2) Within these areas, the primary constituent elements of critical habitat for loach minnow are the following:

(i) Permanent, flowing, water with low levels of pollutants, including:

(A) Living areas for adult loach minnow with moderate to swift flow velocities between 9.0 to 32.0 in/second (24 to 80 cm/second) in shallow water between approximately 1.0 to 30 in (3 cm to 75 cm) with gravel, cobble, and rubble substrates;

(B) Living areas for juvenile loach minnow with moderate to swift flow velocities between 1.0 to 34 in/second (3.0 to 85.0 cm/second) in shallow water between approximately 1.0 to 30 in (3 cm to 75 cm) with sand, gravel, cobble, and rubble substrates;

(C) Living areas for larval loach minnow with slow to moderate velocities between 3.0 and 20.0 in/second (9.0 to 50.0 cm/second) in shallow water with sand, gravel, and cobble substrates;

(D) Spawning areas with slow to swift flow velocities in shallow water where cobble and rubble and the spaces between them are not filled in by fine dirt or sand; and

(E) Water with low levels of pollutants such as copper, arsenic, mercury, and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels and with dissolved oxygen levels greater than 3 parts per million (ppm).

(ii) Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Suitable levels of embeddedness are generally maintained by a natural, unregulated hydrograph that allows for periodic flooding or, if flows are modified or regulated, a hydrograph that allows for adequate river functions, such as flows capable of transporting sediments.

(iii) Streams that have:

(A) Low gradients of approximately 2.5 percent or less;

(B) Water temperatures in the approximate range of 35–85 °Fahrenheit (F) (1.7–29.4 °C) (with natural diurnal and seasonal variation);

(C) Pool, riffle, run, and backwater components; and

(D) An abundant aquatic insect food base consisting of mayflies, true flies, black flies, caddisflies, stoneflies, and dragonflies.

(iv) Habitat devoid of nonnative fish species detrimental to loach minnow or habitat in which detrimental nonnative fish species are at levels that allow persistence of loach minnow.

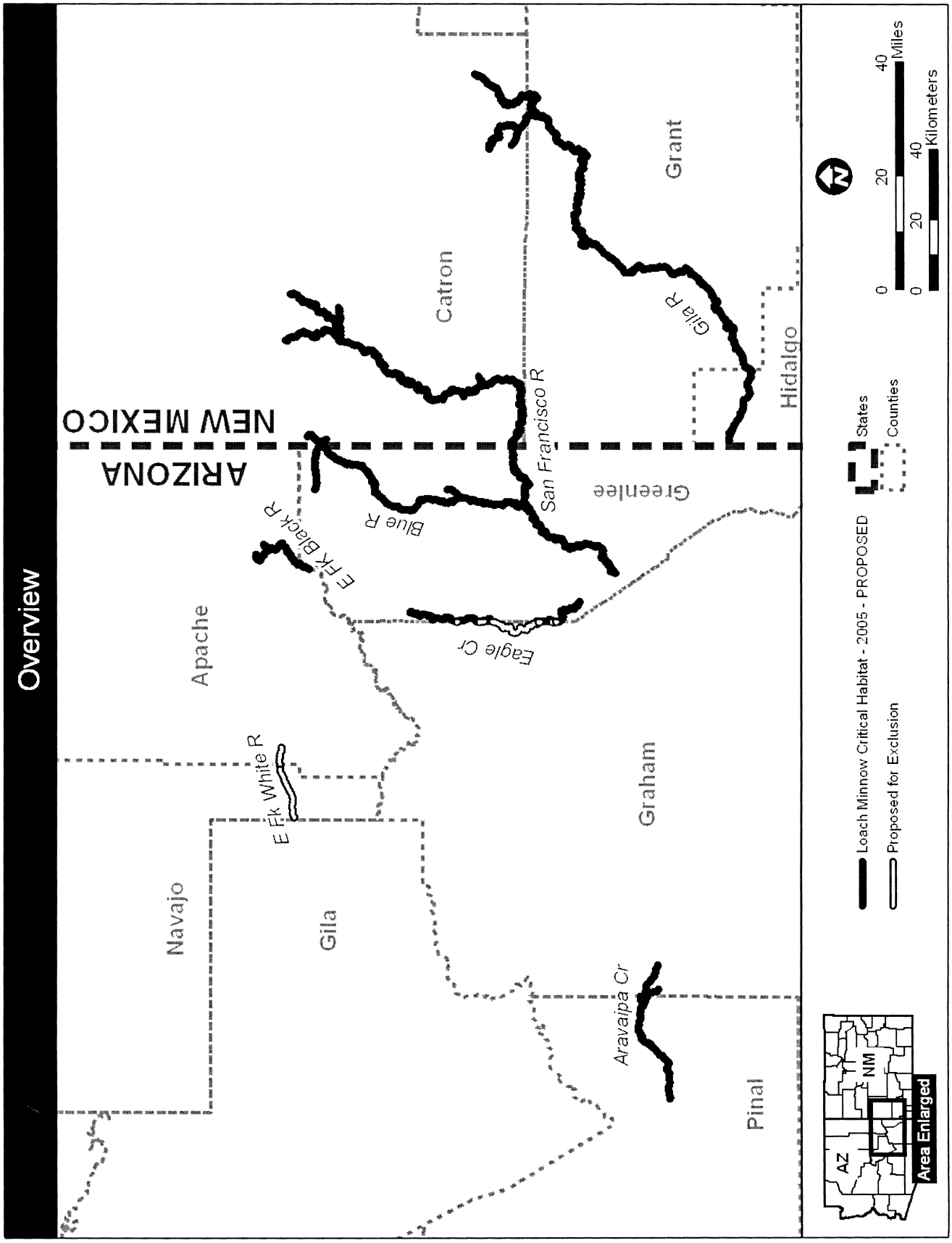
(v) Areas within perennial, interrupted stream courses that are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

(3) Each stream segment includes a lateral component that consists of 300 feet on either side of the stream channel measured from the stream edge at bank full discharge. This lateral component of critical habitat is intended as a surrogate for the 100-year floodplain.

(4) Critical Habitat Map Areas. Data layers defining map areas, and mapping of critical habitat areas, was done using Arc GIS and verifying with USGS 7.5′ quadrangles. Legal descriptions for New Mexico and Arizona are based on the Public Lands Survey System (PLSS). Within this system, all coordinates reported for New Mexico are in the New Mexico Principal Meridian (NMPM), while those in Arizona are in the Gila and Salt River Meridian (GSRM). Township has been abbreviated as ''T'', Range as ''R'', and section as ''sec.'' Where possible, the ending or starting points have been described to the nearest quarter-section, abbreviated as ''1/4''. Cardinal directions are also abbreviated (N = North, S = South, W = West, and E = East). All mileage calculations were performed using GIS.

(5) **Note:** Index map of critical habitat units for loach minnow (Map 1) follows:

BILLING CODE 4310–55–P



(6) Complex 2—Black River, Apache and Greenlee Counties, Arizona.

(i) East Fork Black River—5.5 miles (8.8 km) of river extending from the confluence with the West Fork Black River at Township 4 North, Range 28

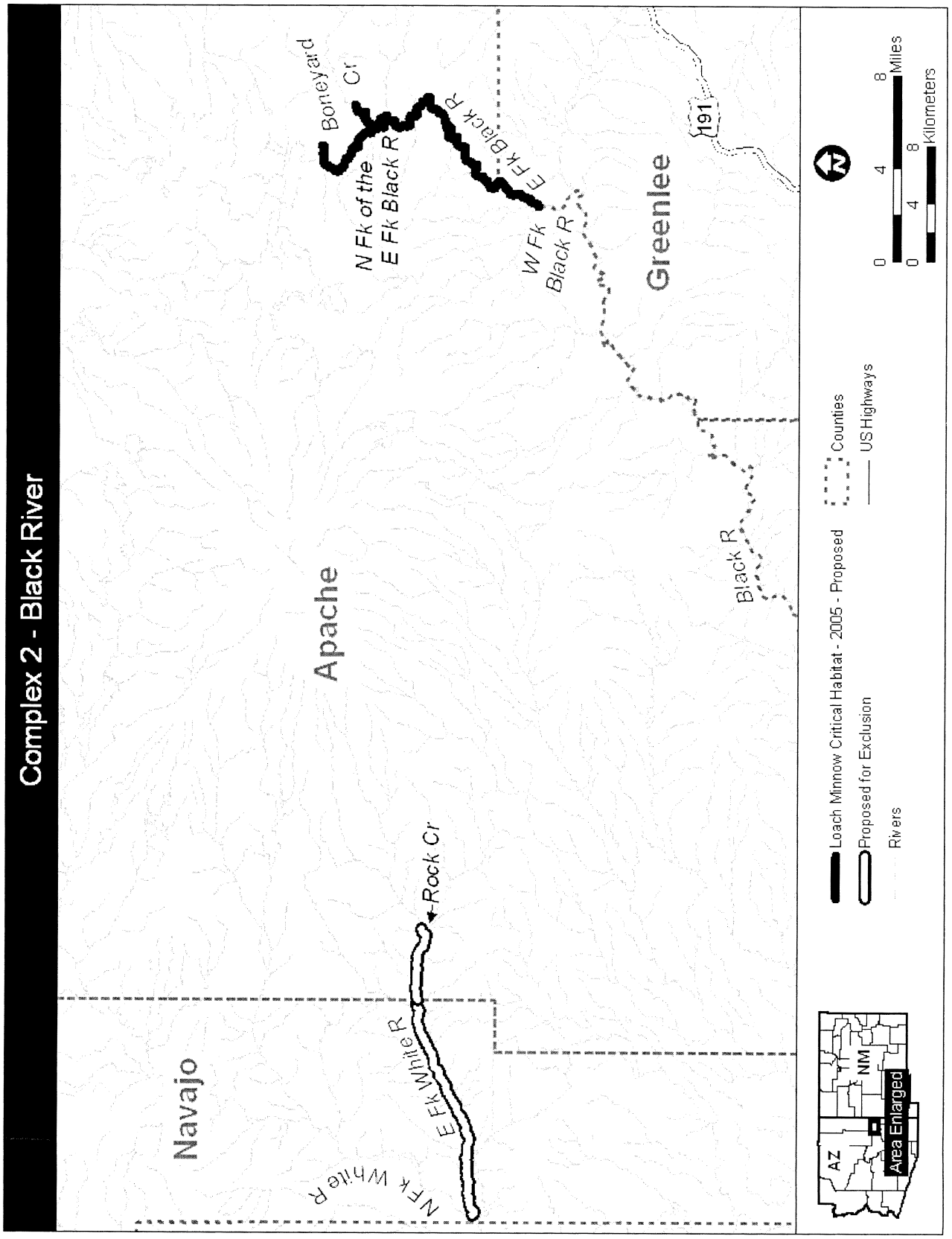
East, section 11 upstream to the confluence with Deer Creek at Township 5 North, Range 29 East, section 30. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest).

(ii) North Fork East Fork Black River—11.2 miles (18.0 km) of river extending from the confluence with Deer Creek at Township 5 North, Range 29 East, section 30 upstream to the confluence with an unnamed tributary at Township 6 North, Range 29 East, section 30. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest).

(iii) Boneyard Creek—1.4 miles (2.3 km) of creek extending from the confluence with the East Fork Black River at Township 5 North, Range 29 East, section 5 upstream to the confluence with an unnamed tributary at Township 6 North, Range 29 East, section 32. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest).

(iv) **Note:** Map of Complex 2 of loach minnow critical habitat, Black River, (Map 2) follows:

BILLING CODE 4310–53–P



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(7) Complex 3—Middle Gila/Lower San Pedro/Aravaipa Creek, Pinal and Graham counties, Arizona.

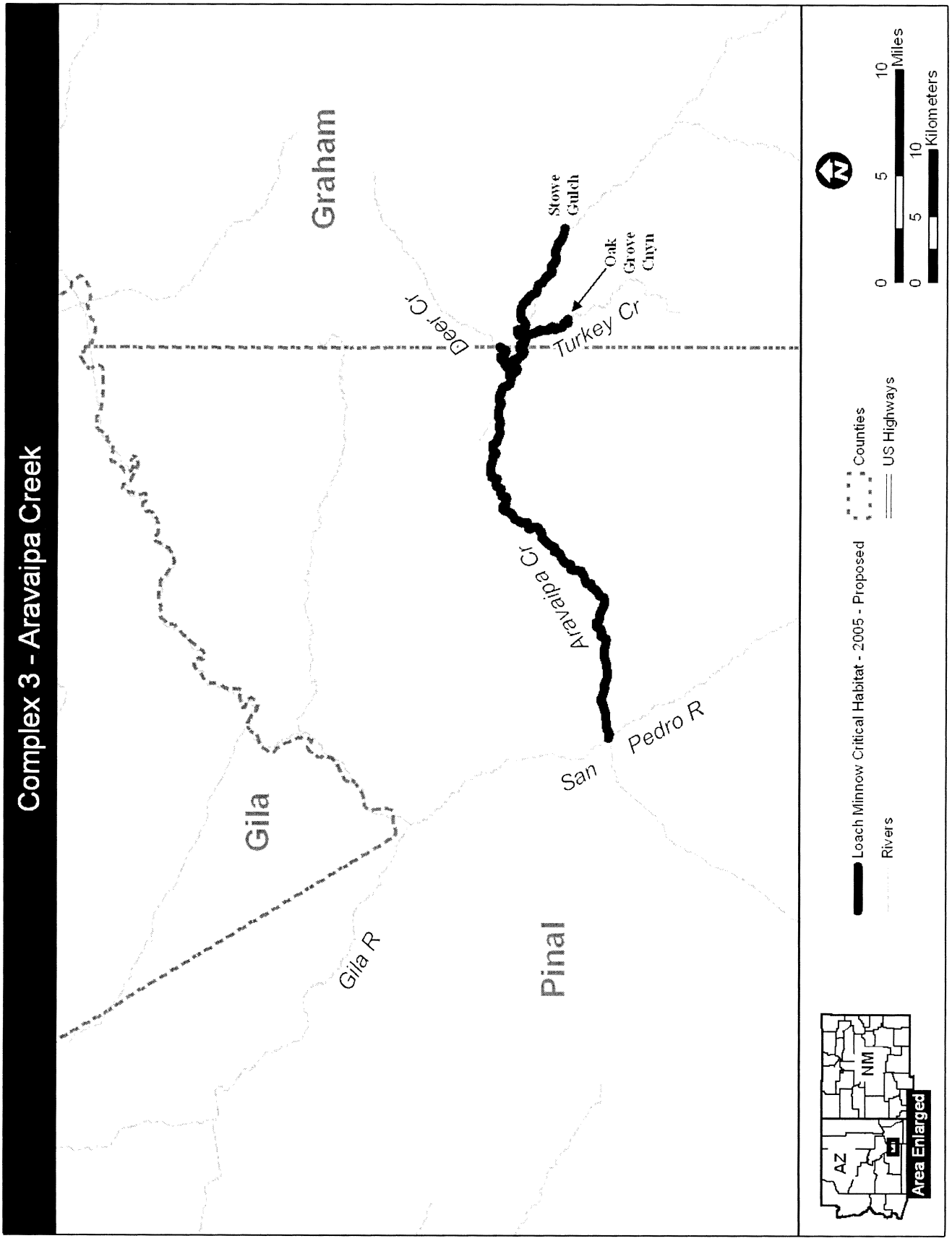
(i) Aravaipa Creek—28.1 miles (45.3 km) of creek extending from the confluence with the San Pedro River at Township 7 South, Range 16 East, section 9 upstream to the confluence with Stowe Gulch at Township 6 South, Range 19 East, section 35. Land ownership: Bureau of Land Management, Tribal, and State lands.

(ii) Turkey Creek—2.7 miles (4.3 km) of creek extending from the confluence with Aravaipa Creek at Township 6 North, Range 19 East, section 19 upstream to the confluence with Oak Grove Canyon at Township 6 South, Range 19 East, section 32. Land ownership: Bureau of Land Management.

(iii) Deer Creek—2.3 miles (3.6 km) of creek extending from the confluence with Aravaipa Creek at Township 6 South, Range 18 East, section 14 upstream to the boundary of the Aravaipa Wilderness at Township 6 South, Range 19 East, section 18. Land ownership: Bureau of Land Management.

(iv) **Note:** Map of Complex 3 for loach minnow critical habitat, Aravaipa Creek, (Map 3) follows:

BILLING CODE 4310–53–P



BILLING CODE 4310–53–C

(8) Complex 4—San Francisco and Blue Rivers, Pinal and Graham counties, Arizona and Catron County, New Mexico.

(i) Eagle Creek—45.3 miles (72.9 km) of creek extending from the Phelps-Dodge Diversion Dam at Township 4 South, Range 28 East, section 23 upstream to the confluence of Dry Prong and East Eagle Creeks at Township 1 North, Range 28 East, section 31. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest), Tribal (San Carlos) lands, and private.

(ii) San Francisco River—126.5 miles (203.5 km) of river extending from the confluence with the Gila River at Township 5 South, Range 29 East, section 28 upstream to the mouth of The Box, a canyon above the town of Reserve, at Township 6 South, Range 19 West, section 2. Land ownership: Bureau of Land Management, U.S. Forest Service (Apache-Sitgreaves National Forest), State, and private in Arizona, and U.S. Forest Service (Gila National Forest) and private in New Mexico.

(iii) Tularosa River—18.6 miles (30.0 km) of river extending from the confluence with the San Francisco River at Township 7 South, Range 19 West, section 23 upstream to the town of Cruzville at Township 6 South, Range 18 West, section 12. Land ownership: U.S. Forest Service (Gila National Forest) and private.

(iv) Negrito Creek—4.2 miles (6.8 km) of creek extending from the confluence with the San Francisco River at Township 7 South, Range 18 West, section 19 upstream to the confluence with Cerco Canyon at Township 7 South, Range 18 West, section 21. Land ownership: U.S. Forest Service (Gila National Forest), and private lands.

(v) Whitewater Creek—1.1 miles (1.8 km) of creek extending from the confluence with the San Francisco River at Township 11 South, Range 20 West, section 27 upstream to the confluence with the Little Whitewater Creek at Township 11 South, Range 20 West, section 23. Land ownership: private lands.

(vi) Blue River—51.1 miles (82.2 km) of river extending from the confluence with the San Francisco River at Township 2 South, Range 31 East, section 31upstream to the confluence of Campbell Blue and Dry Blue Creeks at Township 6 South, range 20 West, section 6. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest) and private lands in Arizona; U.S. Forest Service (Gila National Forest) in New Mexico.

(vii) Campbell Blue Creek—8.1 miles (13.1 km) of creek extending from the confluence of Dry Blue and Campbell Blue Creeks at Township 6 South, Range 20 West, section 6 in New Mexico upstream to the confluence with Coleman Canyon at Township 4 North, Range 31 East, section 32 in Arizona. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest) and private lands in Arizona; U.S. Forest Service (Gila National Forest) in New Mexico.

(viii) Dry Blue Creek—3.0 mile (4.8 km) of creek extending from the confluence with Campbell Blue Creek at Township 6 South, Range 20 West, section 6 upstream to the confluence with Pace Creek at Township 6 South, Range 21 West, section 28. Land ownership: U.S. Forest Service (Gila National Forest).

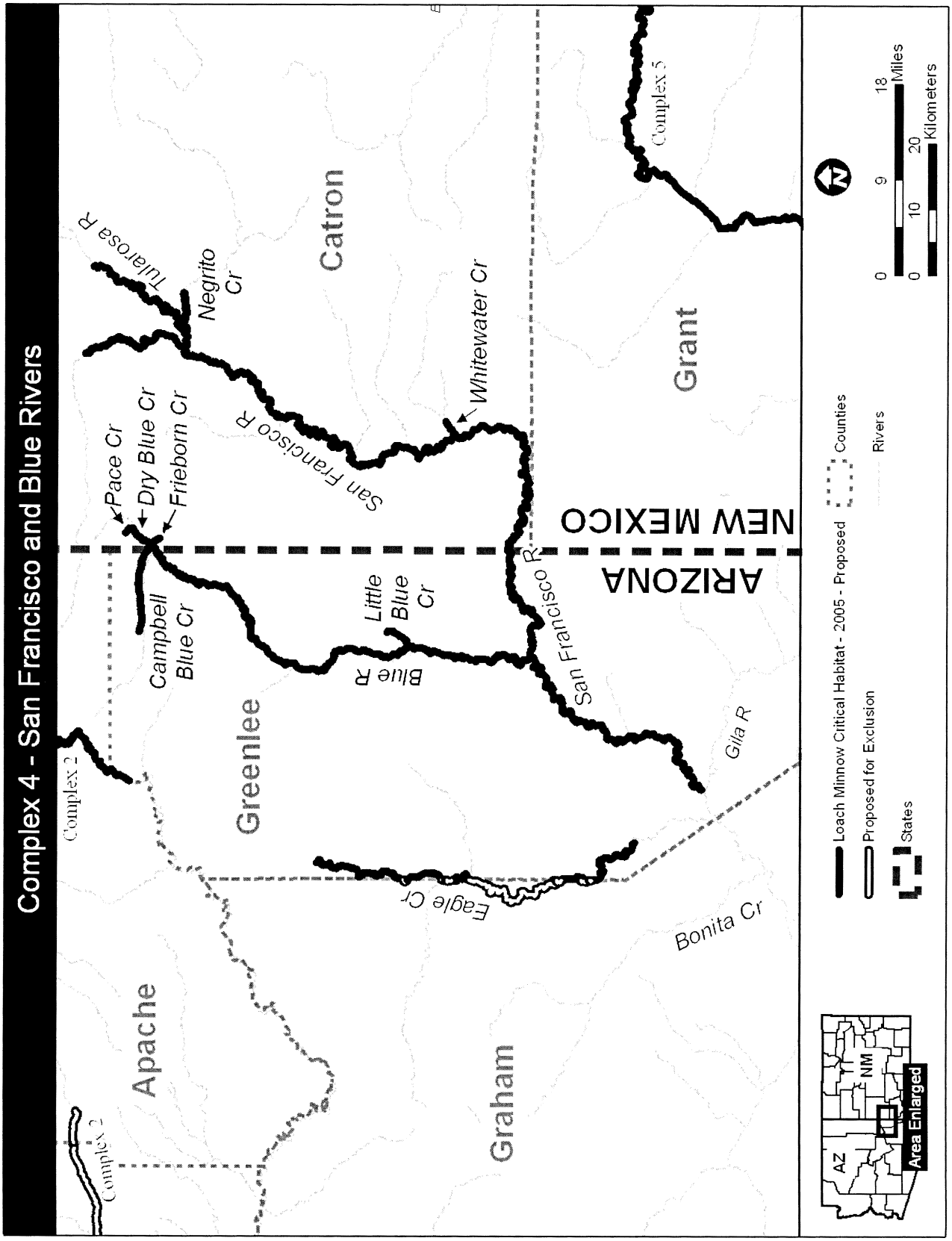
(ix) Pace Creek—0.8 mile (1.2 km) of creek extending from the confluence with Dry Blue Creek at Township 6 South, Range 21 West, section 28 upstream to a barrier falls at Township 6 South, Range 21 West, section 29. Land ownership: U.S. Forest Service (Gila National Forest).

(x) Frieborn Creek—1.1 miles (1.8 km) of creek extending from the confluence with Dry Blue Creek at Township 6 South, Range 20 West, section 6 upstream to an unnamed tributary at Township 6 South, range 20 West, section 8. Land ownership: U.S. Forest Service (Gila National Forest).

(xi) Little Blue Creek—2.8 miles (4.5 km) of creek extending from the confluence with the Blue River at Township 1 South, range 31 East, section 5 upstream to the mouth of a canyon at Township 1 North, Range 31 East, section 29. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest).

(xii) **Note:** Map of Complex 4 for loach minnow critical habitat, San Francisco and Blue Rivers, (Map 4) follows:

BILLING CODE 4310–55–P



BILLING CODE 4310–55–C

(9) Complex 5—Upper Gila River Complex, Catron, Grant, and Hidalgo counties, New Mexico

(i) Upper Gila River—102.1 miles (164.3 km) of river extending from the confluence with Moore Canyon (near the Arizona/New Mexico border) at Township 18 South, Range 21 West, section 32 upstream to the confluence of the East and West Forks of the Gila River at Township 13 South, Range 13 West, section 8. Land ownership: Bureau of Land Management, U.S. Forest Service (Gila National Forest), State, and private lands.

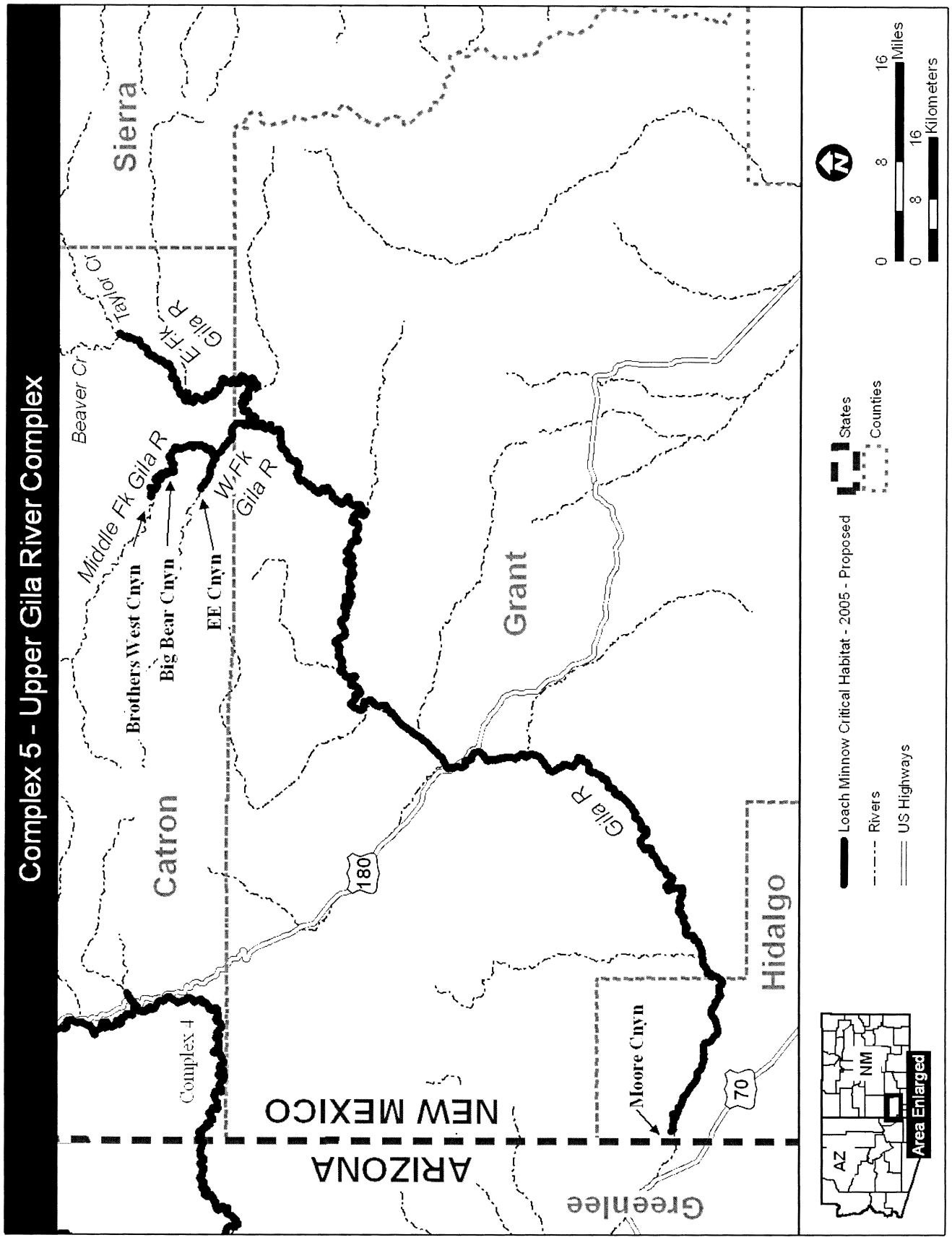
(ii) East Fork Gila River—26.1 miles (42.0 km) of river extending from the confluence with the West Fork Gila River at Township 11 South, Range 12 West, section 17 upstream to the confluence of Beaver and Taylor creeks at Township 13 South, Range 13 West, section 8. Land ownership: U.S. Forest Service (Gila National Forest) and private lands.

(iii) Middle Fork Gila River—11.9 miles (19.1 km) of river extending from the confluence with the West Fork Gila River at Township 12 South, Range 14 West, section 25 upstream to the confluence with Brothers West Canyon at Township 11 South, Range 14 West, section 33. Land ownership: U.S. Forest Service (Gila National Forest) and private lands.

(iv) West Fork Gila River—7.7 miles (12.4 km) of river extending from the confluence with the East Fork Gila River at Township 13 South, Range 13 West, section 8 upstream to the confluence with EE Canyon at Township 12 South, Range 14 West, section 22. Land ownership: U.S. Forest Service (Gila National Forest), National Park Service, and private lands.

(v) **Note:** Map of Complex 5 of loach minnow critical habitat, Upper Gila River Complex, (Map 5) follows:

BILLING CODE 4310–55–P



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Spikedace (*Meda fulgida*)

(1) Critical habitat units are depicted for Graham, Greenlee, Pinal, and Yavapai Counties, Arizona; and Catron, Grant, and Hidalgo Counties, New Mexico, on the maps and as described below.

(2) Within these areas, the primary constituent elements of critical habitat for spikedace are the following:

(i) Permanent, flowing, water with low levels of pollutants, including:

(A) Living areas for adult spikedace with slow to swift flow velocities between 20 and 60 cm/second (8–24 inches/second) in shallow water between approximately 10 cm (4 inches) to 1 meter (40 inches) with shear zones where rapid flow borders slower flow, areas of sheet flow (or smoother, less turbulent flow) at the upper ends of mid-channel sand/gravel bars, and eddies at downstream riffle edges;

(B) Living areas for juvenile spikedace with slow to moderate water velocities of approximately 18 cm/second (8 inches/second) or higher in shallow water between approximately 3 cm (1.2 inches) to 1 meter (40 inches);

(C) Living areas for larval spikedace with slow to moderate flow velocities of approximately 10 cm/second (4 inches/second) or higher in shallow water approximately 3 cm (1.2 inches) to 1 meter (40 inches) and;

(D) Water with low levels of pollutants such as copper, arsenic, mercury and cadmium; human and animal waste products; pesticides; suspended sediments; and gasoline or diesel fuels and with dissolved oxygen levels greater than 3 parts per million (ppm).

(ii) Sand, gravel, and cobble substrates with low or moderate amounts of fine sediment and substrate embeddedness. Suitable levels of embeddedness are generally maintained by a natural, unregulated hydrograph that allows for periodic flooding or, if flows are modified or regulated, a hydrograph that allows for adequate river functions, such as flows capable of transporting sediments.

(iii) Streams that have:

(A) Low gradients of approximately 1.0 percent or less;

(B) Water temperatures in the approximate range of 35–85 °Fahrenheit (F) (1.7–29.4 °C) (with natural diurnal and seasonal variation);

(C) Pool, riffle, run, and backwater components; and

(D) An abundant aquatic insect food base consisting of mayflies, true flies, caddisflies, stoneflies, and dragonflies.

(iv) Habitat devoid of nonnative fish species detrimental to spikedace, or habitat in which detrimental nonnative fish species are at levels that allow persistence of spikedace.

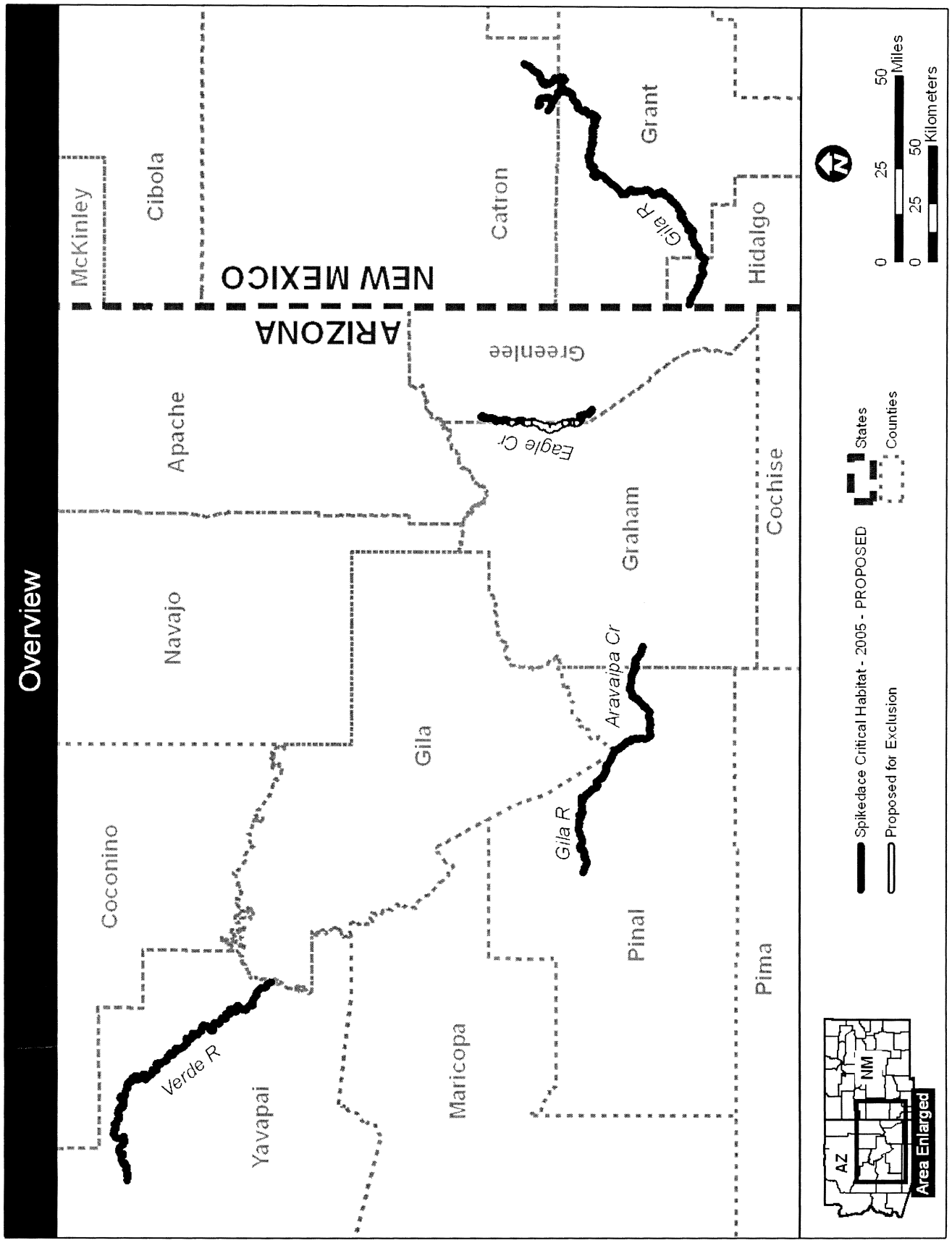
(v) Areas within perennial, interrupted stream courses that are periodically dewatered but that serve as connective corridors between occupied or seasonally occupied habitat and through which the species may move when the habitat is wetted.

(3) Each stream segment includes a lateral component that consists of 300 feet on either side of the stream channel measured from the stream edge at bank full discharge. This lateral component of critical habitat is intended as a surrogate for the 100-year floodplain.

(4) Critical Habitat Map Areas. Data layers defining map areas, and mapping of critical habitat areas, was done using Arc GIS and verifying with USGS 7.5′ quadrangles. Legal descriptions for New Mexico and Arizona are based on the Public Lands Survey System (PLSS). Within this system, all coordinates reported for New Mexico are in the New Mexico Principal Meridian (NMPM), while those in Arizona are in the Gila and Salt River Meridian (GSRM). Township has been abbreviated as ''T'', Range as ''R'', and section as ''sec.'' Where possible, the ending or starting points have been described to the nearest quarter-section, abbreviated as ''¼''. Cardinal directions are also abbreviated (N = North, S = South, W = West, and E = East). All mileage calculations were performed using GIS.

(5) **Note:** Index map of critical habitat units for spikedace (Map 1) follows:

BILLING CODE 4310–55–P



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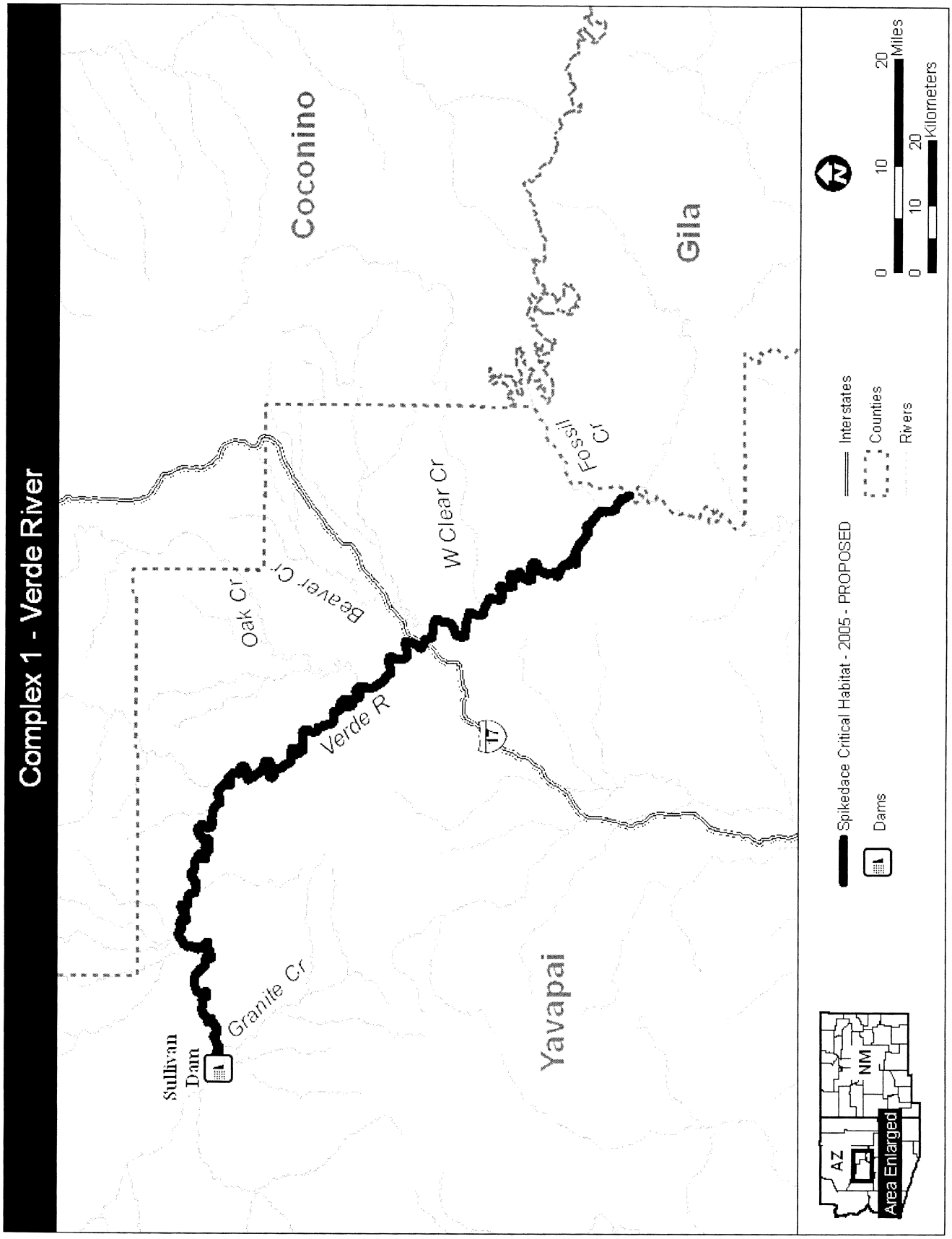
(6) Complex 1—Verde River, Yavapai County, Arizona.

(i) Verde River—106.5 miles (171.4 km) of river extending from the confluence with Fossil Creek at Township 11 North, Range 6 East, section 25 upstream 106.9 miles to Sullivan Dam at Township 17 North, Range 2 West, section 15. Land ownership: U.S. Forest Service (Prescott National Forest), Yavapai Apache Nation, State, and private.

(ii) **Note:** Map of Complex 1 of spikedace critical habitat, Verde River, (Map 2) follows:

BILLING CODE 4310–55–P



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(7) Complex 3—Middle Gila/Lower San Pedro/Aravaipa Creek, Pinal and Graham counties, Arizona.

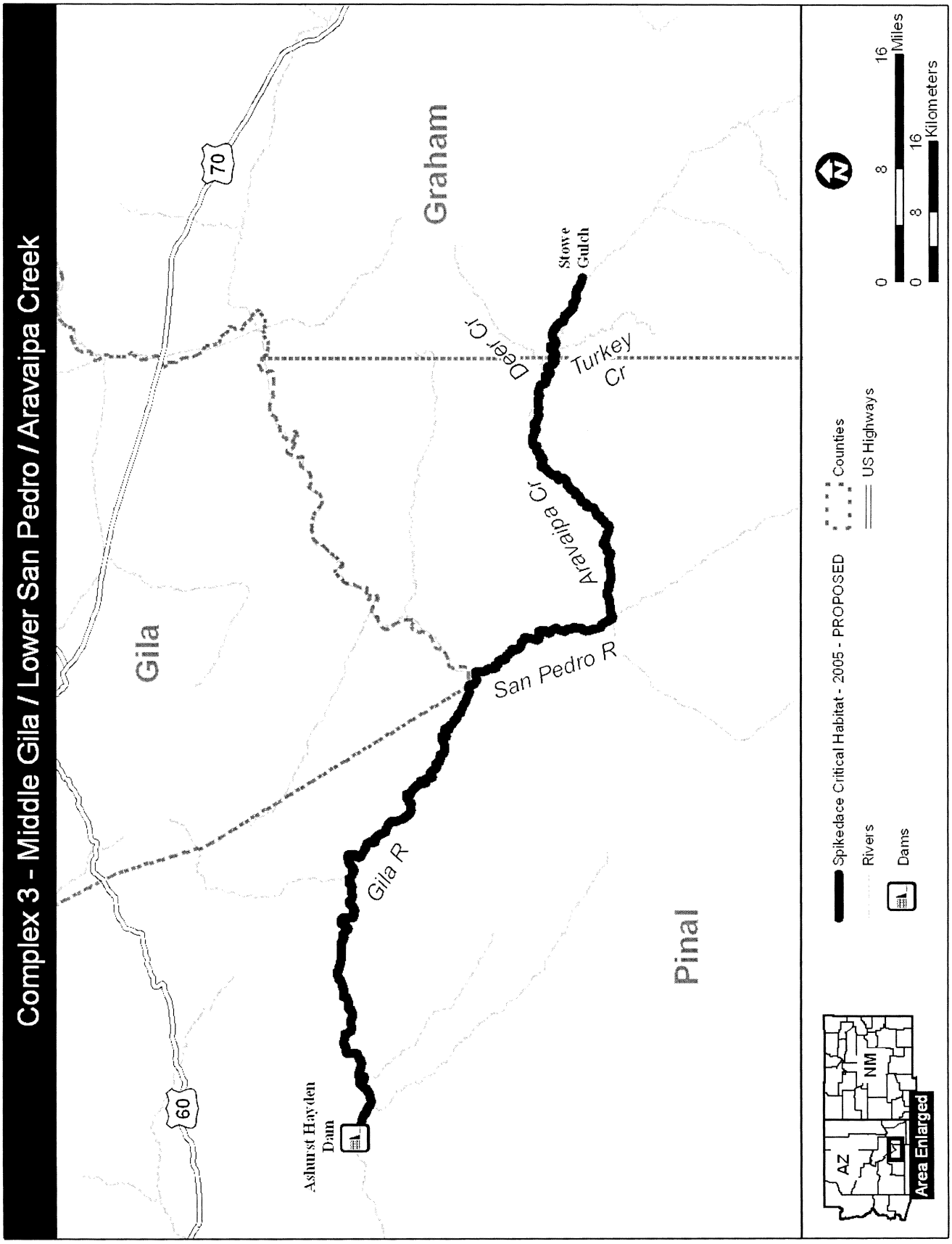
(i) Gila River—39.0 miles (62.8 km) of river extending from the Ashurst-Hayden Dam at Township 4 South, Range 11 East, section 8 upstream to the confluence with the San Pedro River at Township 5 South, Range 15 East, section 23. Land ownership: Bureau of Reclamation, Bureau of Land Management, State, and private.

(ii) Lower San Pedro River—13.4 miles (21.5 km) of river extending from the confluence with the Gila River at Township 5 South, Range 15 East, section 23 upstream to the confluence with Aravaipa Creek at Township 7 South, Range 16 East, section 9. Land ownership: Bureau of Land Management, Tribal, State, and private.

(iii) Aravaipa Creek—28.1 miles (45.3 km) of creek extending from the confluence with the San Pedro River at Township 7 South, Range 16 East, section 9 upstream to the confluence with Stowe Gulch at Township 6 South, Range 19 East, section 35. Land ownership: Bureau of Land Management, Tribal, and State lands.

(iv) **Note:** Map of Complex 3 of spikedace critical habitat, Middle Gila/Lower San Pedro/Aravaipa Creek, (Map 3) follows:

BILLING CODE 4310–55–P



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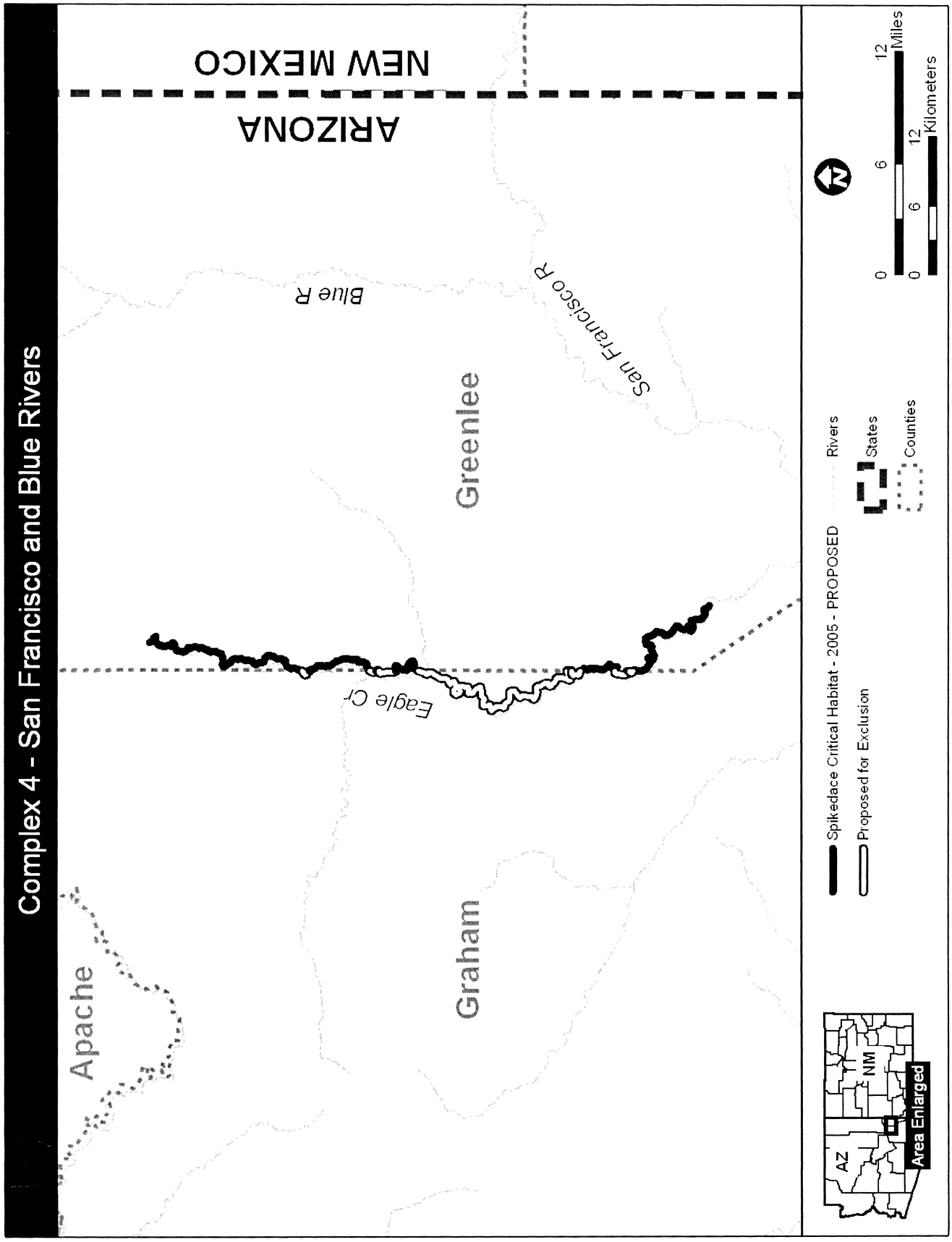
(8) Complex 4—San Francisco and Blue Rivers, Pinal and Graham counties, Arizona.

(i) Eagle Creek—45.3 miles (72.9 km) of creek extending from the Phelps-Dodge Diversion Dam at Township 4 South, Range 28 East, section 23 upstream to the confluence of Dry Prong and East Eagle Creeks at Township 1 North, Range 28 East, section 31. Land ownership: U.S. Forest Service (Apache-Sitgreaves National Forest), Tribal (San Carlos) lands, and private.

(ii) **Note:** Map of Complex 4 of spikedace critical habitat, San Francisco and Blue Rivers, (Map 4) follows:

BILLING CODE 4310–55–P



BILLING CODE 4310–55–C

(9) Complex 5—Upper Gila River Complex, Catron, Grant, and Hidalgo counties, New Mexico.

(i) Upper Gila River—102.1 miles (164.3 km) of river extending from the confluence with Moore Canyon (near the Arizona/New Mexico border) at Township 18 South, Range 21 West, section 32 upstream to the confluence of the East and West Forks of the Gila River at Township 13 South, Range 13 West, section 8. Land ownership: Bureau of Land Management, U.S. Forest Service (Gila National Forest), State, and private lands.

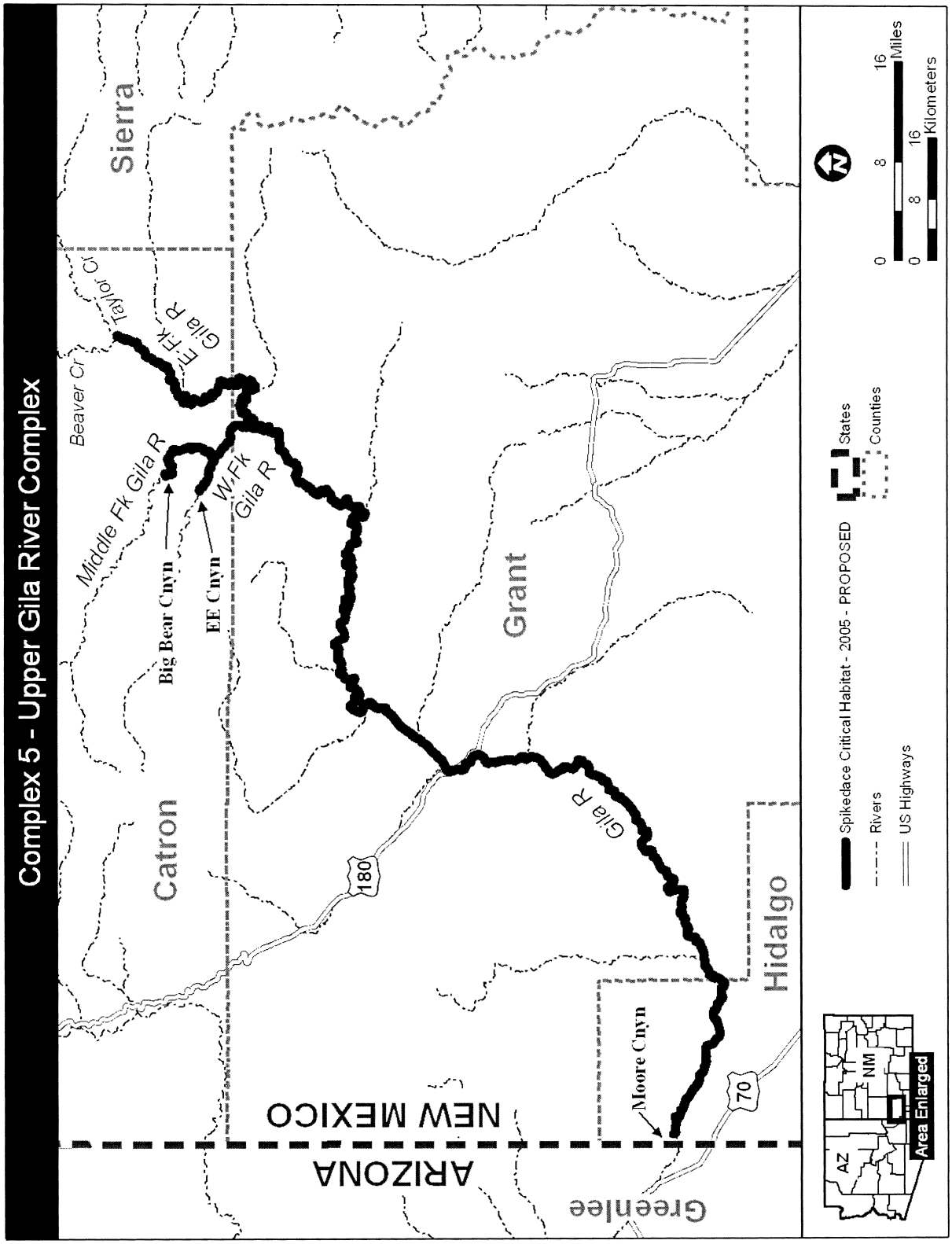
(ii) East Fork Gila River—26.1 miles (42.0 km) of river extending from the confluence with the West Fork Gila River at Township 11 South, Range 12 West, section 17 upstream to the confluence of Beaver and Taylor creeks at Township 13 South, Range 13 West, section 8. Land ownership: U.S. Forest Service (Gila National Forest) and private lands.

(iii) Middle Fork Gila River—7.7 miles (12.3 km) of river extending from the confluence with the West Fork Gila River at Township 11 South, Range 14 West, section 33 upstream to the confluence with Big Bear Canyon at Township 12 South, Range 14 West, section 25. Land ownership: U.S. Forest Service (Gila National Forest) and private lands.

(iv) West Fork Gila River—7.7 miles (12.4 km) of river extending from the confluence with the East Fork Gila River at Township 13 South, Range 13 West, section 8 upstream to the confluence with EE Canyon at Township 12 South, Range 14 West, section 22. Land ownership: U.S. Forest Service (Gila National Forest), National Park Service, and private lands.

(v) **Note:** Map of Complex 5 of spikedace critical habitat, Upper Gila River Complex, (Map 5) follows:

BILLING CODE 4310–55–P



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Dated: December 6, 2005.

Craig Manson,

Assistant Secretary for Fish and Wildlife and Parks.

[FR Doc. 05–23999 Filed 12–19–05; 8:45 am]

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