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Memorandum

To: Regional Director, Region 2, Albuquerque, New Mexico

Through: Assistant Regional Director, Ecological Services, Region 2, Albuquerque, New Mexico
Denis Baker

From: Field Supervisor, Arizona Ecological Services Office, Phoenix, Arizona
[Signature]

Subject: Findings and Recommendations on Issuance of an Incidental Take Permit for the San Rafael Ranch Habitat Conservation Plan to the San Rafael Cattle Company in Santa Cruz County, Arizona (TE-12133A-0)

I. DESCRIPTION OF PROPOSAL

The San Rafael Cattle Company (Permittee) has applied to the U.S. Fish and Wildlife Service (Service), for an incidental take permit pursuant to section 10(a) of the Endangered Species Act of 1973, as amended (Act) (16 USC § 1531-1544). The requested permit, which is for 30 years, would authorize incidental take of the Sonoran tiger salamander (*Ambystoma mavortium stebbinsi*), northern Mexican gartersnake (*Thamnophis eques megalops*), and Gila chub (*Gila intermedia*), and listed under the Act. The permit would also cover one currently unlisted animal species and two endangered plant species. The permit would authorize incidental take of the candidate Huachuca springsnail (*Pyrgulopsis thompsoni*), if listed under the Act. Although take of plant species is not prohibited under the Act and therefore cannot be authorized under an incidental take permit, the endangered Huachuca water umbel (*Lilaeopsis schaffneriana* var. *recurva*) and its critical habitat, and the endangered Canelo Hills ladies'-tresses (*Spiranthes delitescens*) will be included on the permit in recognition of the conservation benefits provided to the species under the San Rafael Ranch Habitat Conservation Plan (SRRHCP).

The Service prepared a screening document for low-effect habitat conservation plan determinations in compliance with the Service's responsibility under the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321 *et seq*) to analyze the effects of the proposed action on the human environment. The Service determined that the proposed activities included in the Application and associated SRRHCP are categorically excluded from the requirement to prepare an environmental assessment or an environmental impact statement [516 DM 6 Appendix 1, 1.4C(1)] as discussed in the NEPA screening document and associated Environmental Action Statement (EAS).

The proposed action is the issuance of a permit under section 10(a)(1)(B) of the Act to authorize incidental take of the four animal species described above during implementation of covered activities related to livestock management by the San Rafael Cattle Company. These covered activities include: watering and grazing by cattle in stock tanks, springs, and riparian and upland habitats, including movement of cattle within and between pastures; maintenance of stock tanks, wells, waterlines, fences, roads and utility lines supporting these facilities; management of nonnative grasses and invasive shrubs; and various conservation measures. The proposed permit area is the San Rafael Ranch and grazing only on the San Rafael State Natural Area (Arizona State Parks), located in the San Rafael Valley of Santa Cruz County, Arizona. The primary purpose of the SRRHCP is to allow the Permittee to obtain incidental take authorization pursuant to the Act and to minimize and mitigate, to the greatest extent practicable, adverse effects to the covered species from activities authorized under the SRRHCP. The SRRHCP proposes to minimize and mitigate impacts, through numerous conservation measures, from any expected incidental take of the covered species.

Further, the permit and accompanying SRRHCP are designed to: 1) reduce conflicts between endangered or threatened species and economic activity, and (2) foster partnerships between the public and private sectors. Specifically, the goals and objectives of the SRRHCP are:

- A. Maintain the ecological health of the San Rafael Ranch, including soil stability, biotic integrity, and watershed function.
 - 1. Maintain riparian vegetation conditions and improve riparian habitat when opportunities and funding allow. Maintenance can include emergent vegetation control, maintaining water volume, or maintenance of livestock exclusion barriers. Improvements can include establishing emergent vegetation where none exists, increasing the volume of an aquatic site, or erecting livestock exclusion devices, where appropriate.
 - 2. Continue effective grazing management practices on the San Rafael Ranch that maintain and improve livestock performance and the overall health of the herd as well as the covered species' habitat.
- B. Ensure that covered ranch management activities are undertaken in a manner consistent with protection and enhancement of covered species and their habitats.
 - 1. Follow conservation measures to minimize impacts to covered species and their habitats.

C. Conserve and, where practicable, improve riparian, aquatic, and spring habitats that support covered species.

1. Maintain or improve water quantity, quality, and distribution for livestock and wildlife. Establish alternative water sources to the Santa Cruz River to provide livestock and wildlife access to water while protecting riparian habitat.

D. Provide a regulatory framework and early agreement for conservation activities that may result in covered species occupying additional sites.

1. Where agreed to and practicable, work with the Service to increase the numbers and distribution of covered species, consistent with applicable recovery goals for the species.
2. Support non-native species removal programs for all riparian, aquatic, and spring habitats, including stock tanks, on the San Rafael Ranch, such as proposed by the Service for several tanks in the San Rafael Valley.

F. Create an environment of regulatory certainty that enables long-term business decisions regarding the San Rafael Ranch.

G. Maintain the discretion of the San Rafael Cattle company to manage the San Rafael Ranch in accordance with its economic interests while fulfilling species conservation objectives by acquiring a 10(a)(1)(B) permit.

With regard to projects that may occur within the permit area and involve a Federal nexus, the Federal action agency may need to address effects to threatened or endangered species covered by the SRRHCP. Implementation of the SRRHCP does not displace the requirement for Federal action agencies to consult with the Service under section 7 of the Endangered Species Act. The Federal action agency may voluntarily assist in the implementation of the SRRHCP as part of the conservation measures associated with the section 7 consultation and this may expedite their consultation, but there is no guarantee of such. Further, conservation measures or strategies in section 7 are not bound by those in the SRRHCP. For incidental take considerations under section 7, minimization of the level of take on the individuals affected is required. Proposed conservation measures to further the recovery of the species under review should be part of the action (discussion of the limits for minimization under section 7, and distinction from mitigation allowances under section 10, can be found in Section 2.1(C) of the Consultation Handbook, 1998).

The SRRHCP covers a total of 22,060 acres, including 18,375 acres of rangeland and 125 acres of irrigated pasture owned by the San Rafael Cattle Company. The SRRHCP also covers 3,560 acres of grazing preference on the Arizona State Parks, San Rafael State Natural Area, consistent with lease terms that may apply. It is anticipated that all habitats of covered species within the action area will be directly and indirectly affected by ranch management activities on the San Rafael Ranch over the 30 year permit period.

No permanent loss of habitat for any covered species is expected to occur as a result of implementation of the SRRHCP. A conservation plan has been developed to ensure this proposal minimizes and mitigates, to the maximum extent practicable, all incidental take of Gila chub, Sonoran tiger salamander, Huachuca springsnail, and northern Mexican gartersnake from activities that are authorized for incidental take through the SRRHCP. The following conservation measures will be implemented to avoid, minimize and mitigate effects to covered species under the SRRHCP. These measures include important monitoring and reporting requirements.

1. Implement rotational short duration grazing annually of the pasture containing Sheehy Spring, which provides habitat for four of the six covered species. The pasture is not grazed in some years.
2. Implement limited grazing of riparian pastures along the Santa Cruz River between November 1st through March 31st.
3. Manage water in stock tanks for use by covered species, as well as control of non-native invasive species.
4. Maintain stock tanks following guidelines developed in part from the Fish and Wildlife Service in the Sonora Tiger Salamander Recovery Plan (USFWS 2002a).
5. Maintain fences around all pastures to prevent access by cattle when pastures should not be grazed. Fences will also be maintained around some stock tanks to limit access by cattle.
6. Conduct brush and invasive plant management activities using best management practices to prevent associated sediments and herbicides from entering aquatic habitats (White 2007). Herbicides will not be used in habitats containing covered plant species.
7. Maintain and improve riparian condition through effective ranch management.
8. Personnel will not knowingly engage in the release of non-native fish, amphibian, or invertebrate species within the covered area.
9. Support and work with (as funding is available) partners as needed for non-native species removal actions.
10. As funding becomes available, work with partners to install enclosure fencing of stock tanks occupied by covered species and add drinkers for livestock use adjacent to these stock tanks.
11. Promote conservation and recovery of covered species by allowing establishment of new populations of covered species on the San Rafael Ranch.
12. Develop an oral and written educational program to provide information to those participating in and implementing the SRRHCP regarding the unique species and habitats found

on the SRR and make them aware of the conservation measures and programs being undertaken on the SRR that are related to the covered activities and species of the SRRHCP.

13. Conduct compliance and effects monitoring by collecting information related to take including the specific action taken, the covered activity under which the specific action was taken, how many of each species were taken, and the extent of species' habitat affected.
14. The SRCC will meet annually with the Service to review terms and conditions of the permit and to determine compliance with the terms and conditions;
15. The SRCC will monitor its covered actions to determine if incidental take occurs. A report including the action, species, date, and any other pertinent information shall be included. The take report will include observations of individuals of covered species that may have been taken, and the measure of incidental take found in the BCO.
16. Conduct effectiveness monitoring through the establishment of permanent photo plots as specified in the SRRHCP. Photo monitoring will be designed to address habitat condition and changes in habitat availability. Photo plots will document the integrity of aquatic habitats, the integrity of fencing, vegetation cover, and presence of non-native species.
17. Meet with the USFWS annually to establish a plan for species monitoring. If adequate partner funding or personnel are not available for species monitoring, the SRCC will ensure that the monitoring is completed, as specified in the SRRHCP.
18. As per regulation, the SRRHCP includes an adaptive management strategy, funding mechanisms, reports, and procedures to address changed and unforeseen circumstances.
19. The incidental take statements require that livestock forage utilization be tracked by the SRCC. The SRCC already tracks utilization by pasture under their grazing plan written with the natural Resources Conservation Service.

The costs of implementation of the SRRHCP fall into four categories: monitoring, maintenance and improvement of water sources, education, and report preparation. The San Rafael Ranch will provide funding and labor related to maintenance of water sources, and will implement take minimization and measures as committed to in the SRRHCP. The San Rafael Ranch also will fund photo plot monitoring and development of an education program to be used for keeping employees and users of the ranch informed of the species protected under the SRRHCP. Funding of species monitoring will be borne by SRRCC when the partners do not do the monitoring. Also, annual reporting as required under the SRRHCP will be funded by the San Rafael Cattle Company.

It is anticipated the conditions identified under the proposed action will have no impacts to threatened Mexican spotted owl (*Strix occidentalis lucida*) or endangered Mexican gray wolf (*Canis lupus baileyi*), and will avoid impacts to the nonessential experimental population of northern aplomado falcon (*Falco femoralis septentrionalis*), endangered lesser long-nosed bat (*Leptonycteris curasoae yerbabuena*), endangered ocelot (*Leopardus [=Felis] pardalis*),

threatened western yellow-billed cuckoo, and endangered jaguar (*Panthera onca*). In addition, impacts to Gila topminnow (*Poeciliopsis occidentalis occidentalis*) and Chiricahua leopard frog (*Lithobates chiricahuensis*) are discussed under the Biological Opinions for the issuance of enhancement of survival permits under section 10 (a)(1)(A) of the Act to the Arizona Game and Fish Department (AGFD) in association with statewide Safe Harbor Agreements (02-21-03-F-0499, August 30, 2005 for Gila topminnow and 02-21-03-F-0083 and September 27, 2006 for Chiricahua leopard frog). Therefore, no incidental take will be authorized for Mexican spotted owl, Mexican gray wolf, northern aplomado falcon, lesser long-nosed bat, ocelot, jaguar, Gila topminnow, or Chiricahua leopard frog under the ITP associated with the SRRHCP.

Analysis of Effects

The SRRHCP was determined to be a low effect HCP under the Service's policy and NEPA. The effects of the proposed action on the affected species are fully analyzed in the Service's biological opinion for the proposed action, which is incorporated by reference. The proposed permit area has been evaluated for the federally listed threatened and endangered species discussed under Section 3 of the SRRHCP.

Implementation of the SRRHCP may result in incidental take of Gila chub, Sonoran tiger salamander, Huachuca springsnail, and northern Mexican gartersnake in the form of direct mortality, harm, and harassment. It is anticipated that through the implementation of the SRRHCP minimization measures, the level of incidental take would be minimal and limited in time and scope. Adverse effects are not expected to affect these covered species at a population level, although some individuals will be lost. Long-term beneficial effects of the SRRHCP are also expected in the form of recovery of the watershed that the covered species inhabit, and through the potential for species-specific conservation actions to occur (e.g. stocking Gila chub into a stock tank).

The SRRHCP addresses habitat-related impacts associated with covered activities. The range of habitat impacts include those involving that limited amount of species habitat that might be temporarily adversely affected by linear facility and stock tank maintenance activities, as well as mechanical control of nonnative plants; those involving the more extensive, but still temporary, adverse habitat effects of livestock watering and grazing in stock tanks, and riparian and upland habitats, including moving livestock between pastures; and those involving the potentially more significant, but unlikely and unplanned, adverse effects of chemical control of invasive plants on covered species habitats if herbicides inadvertently get into such areas. Of these effects, those resulting from linear facility and stock tank maintenance activities, as well as mechanical control of nonnative plants would be so minor as to be negligible; those resulting from livestock watering and grazing in stock tanks and riparian habitats, including moving livestock between pastures would be transitory; and those resulting from inadvertent entry of herbicides into riparian areas or stock tanks would be addressed if they do occur as Changed Circumstances.

The following take is anticipated as a result of the implementation of the SRRHCP:

Gila Chub

In the action area, the Gila chub is currently known to only occur in Sheehy Spring, but may be reestablished in the perennial portion of the Santa Cruz River, its tributaries, or stock tanks during the life of the SRRHCP. It is possible, that take of Gila chub in the form of harassment, harm, or killing could occur throughout the year. Take of Gila chub is anticipated to occur in the form of harm due to bank trampling and to diminished water quality resulting from increased sedimentation in livestock tanks and aquatic habitats via livestock trampling (increased turbidity) and defecation while grazing in occupied habitat. Livestock grazing of streamside vegetation may also decrease cover available to Gila chub to hide from predators and improper grazing can disrupt the invertebrate food assemblage; this may result in take from increased predation or decreased food availability in Sheehy Spring and along the Santa Cruz River. Maintenance of fences within riparian habitat along the Santa Cruz River may result in take through contact with equipment, or harm through the loss of habitat, if occupied by the Gila chub during the permit period. Take of Gila chub is also possible, although unlikely, in the form of harm or killing due to diminished water quality resulting from mechanical control of non-native grasses and invasive shrubs.

We recognize that providing a numerical estimate of incidental take is the preferred method of measuring take. For some animals this method is biologically defensible as the ecology of the animal lends itself to individuals being more detectible (e.g., long-lived, easier to find territorial species such as the desert tortoise). But for many other species, dead or impaired individuals are almost impossible to find (and are readily consumed by predators) and losses may be masked by seasonal fluctuations in environmental conditions, and the status of the species is changing over time through immigration, emigration, and natural loss or active creation of habitat through management. In addition, aquatic animals are often difficult to sample or even observe. Population levels of the covered species can be described with existing information and techniques. However, the level of effort required to determine population size and understand population dynamics of the covered species has not been expended on the San Rafael Ranch, and the effort is unlikely to occur. If we are unable to provide a reliable, predictive number of individuals at a site (particularly since it changes each year due to emigration, immigration, and mortality), it follows logically that we would be unable to provide a numerical estimate of the number of individuals incidentally taken as a result of the proposed action. Since we cannot estimate the number of individuals that will be incidentally taken for the reasons listed above, the USFWS is providing a mechanism to quantify when take would be considered to be exceeded as a result of implementing the proposed action.

Under the new regulations [50 CFR 402.12(i)(1)(i)] regarding the use of surrogate measures for incidental take, the Service must show a causal link between the surrogate and take of the listed species, explain why it is not practical to express the amount or extent of anticipated take or to monitor take-related impacts in terms of individuals of the listed species, and set a clear standard for determining when the level of anticipated take has been exceeded. For all covered species in the HCP we utilize a surrogate measure of incidental take. Grazing utilization of forage is the surrogate measure that we will use for determining incidental take of Gila chub.

Grazing utilization as measured on the SRR (NRCS 2001) follows the definition of Stoddart and Smith (1955:138): "Utilization of a (livestock) range means the degree to which animals have consumed the usable forage production expressed in percentage. This production should be

based on animal-months consumed compared to animal-months available when the range is correctly used.” Utilization is based on the production measured for the ranch management plan and how much forage may be consumed during one year in each pasture. The impacts of livestock grazing on ecosystems, watersheds, and on certain species have been thoroughly documented, and are summarized in the biological and conference opinion. Also, because grazing utilization is a long-standing and common measure of the impact of livestock (Smith et al. 2005), and utilization is already measured annually on the SRR, it is therefore an appropriate surrogate measure of incidental take. Utilization also provides a clear standard for when grazing is too heavy on the landscape. To summarize, it is very difficult to count individuals of covered species subject to incidental take, there is a demonstrated link between grazing utilization and impacts to the covered species and their habitats, and because grazing utilization is expressed as a percent of allowable use, that measure provides a clear standard for when incidental take may be exceeded.

We anticipate incidental take of the Gila chub will be difficult to detect for the following reasons: this species is small during all life stages, dead animals are difficult to find due to size of species and complexity of habitat, cause of death may be difficult to determine, dead or impaired individuals are almost impossible to find (and are readily consumed by predators), and losses may be masked by seasonal fluctuations in numbers or other causes (e.g., oxygen depletion for aquatic species). In addition, the species is small-bodied, well camouflaged, occurs under water of varying clarity, and thus individuals are difficult to detect, impaired individuals are difficult, if not impossible, to find, we do not know the number of Gila chub in the action area, and the number of chub likely vary dramatically over time due to unknown factors. Therefore, whether incidental take has exceeded the take authorized under the incidental take permit for covered actions will be determined indirectly based upon presence of livestock in habitat occupied by Gila chub as follows:

- a) In any pasture where Gila chub occur (Sheehy, Santa Cruz River, stock tanks), livestock grazing utilization may not exceed the allowable maximum by 50 percent in two successive years for any one pasture;

OR

- b) In all pastures where Gila chub occurs (Sheehy, Santa Cruz River, stock tanks), livestock grazing utilization may not exceed the allowable maximum by 25 percent in any year for 25 percent of the pastures with Gila chub. This measure does not apply if there are fewer than four pastures which contain Gila chub.

In addition, we anticipate incidental take in the form of injury or mortality as a result of chemical control of non-native grasses and invasive shrubs located in or immediately upstream of stock ponds or the Santa Cruz River, if occupied by the Gila chub during the permit period. Incidental take will be exceeded if standard operating procedures are not developed and incorporated into a work plan approved by the Service before application of chemicals in or adjacent to occupied habitat of Gila chub. The work plan shall be developed following the “Recommended Protection Measures for Pesticide Applications in Region 2 of the U. S. Fish and Wildlife Service” (White 2007), or the most current version of this document. The Service will approve or comment on the work plan within 30 days of receipt from the permittee.

Finally, we anticipate incidental take from stock pond excavation could result in up to 100% loss of the Gila chub in stock tanks that serve as reestablishment sites. Incidental take will be exceeded if more than one occupied stock pond is cleaned out in any given year without being restocked with Gila chub, if deemed suitable. If restocking is deemed undesirable by USFWS and AGFD, loss of that tank does not count towards an exceedance of incidental take.

Sonoran Tiger Salamander

Take of Sonoran tiger salamanders is anticipated to occur occasionally in the form of injury or mortality from trampling of adults, eggs, and metamorphs in stock ponds where cattle have access. Livestock grazing and watering in all stock tanks also may result in take in the form of harm and harassment to Sonoran tiger salamanders by the destruction or removal of aquatic or emergent vegetation, or shoreline vegetation. Movement of livestock between pastures and tanks, upland grazing, as well as facilities-maintenance activities may result in take in the form of harm or killing of Sonoran tiger salamanders from trampling of estivation habitat. Movement of livestock between pastures may also result in take in the form of harm or killing by increased potential for spread of chytridiomycosis. Take of Sonoran tiger salamanders is also possible, although unlikely, in the form of harm or killing due to diminished water quality resulting from mechanical control of non-native grasses and invasive shrubs.

We anticipate that incidental take of Sonoran tiger salamander resulting from livestock grazing and watering in occupied stock tanks, hay production, movement of livestock between pastures, facility maintenance, and mechanical brush control will be difficult to detect for the following reasons: the species is small and cryptic, remaining hidden within aquatic sites, subterranean burrows, and in moist refugia (e.g. downed logs) for much of its life; finding a dead or impaired specimen is unlikely; losses may be masked by seasonal fluctuations in numbers or other causes (e.g., oxygen depletion for aquatic species, transmission of disease by wildlife or humans). Identifying take as a result of livestock grazing and other causes is difficult to differentiate from loss by other means or reasons.

We recognize that providing a numerical estimate of incidental take is the preferred method of measuring take and that for some animals this method is biologically defensible as the ecology of the animal lends itself to individuals being more detectible (e.g., long-lived, territorial species such as the desert tortoise). Therefore, whether incidental take has exceeded the take authorized under the incidental take permit for livestock watering and grazing will be determined indirectly based upon the presence of livestock in habitat occupied by Sonoran tiger salamander as follows:

- a) livestock grazing utilization may not exceed the allowable maximum by 50 percent in two successive years for any one pasture;

OR

- b) livestock grazing utilization may not exceed the allowable maximum by 25 percent in any year for 25 percent of the pastures.

Take in the form of injury and mortality is anticipated to occur as a result of periodic stock tank maintenance conducted following the guidelines in Appendix B of the SRRHCP that are based on the Sonoran Tiger Salamander Recovery Plan (USFWS 2002a) and the Chiricahua Leopard Frog Recovery Plan (USFWS 2007). Although salvage of salamanders may occur following these guidelines, small salamanders and salamander eggs that cannot be salvaged and are harmed or killed incidental to stock pond excavation will be difficult to detect. Based on past excavation of occupied stock ponds in the San Rafael Valley, we anticipate that each excavation will result in the following maximum incidental take when conducted following the guidelines in Appendix B of the SRRHCP: (1) loss of all eggs and small larvae (<1.18 in total length) that cannot be salvaged, (2) 50% mortality of salamanders from 1.18-4.33 inches in length, and (3) less than 10% mortality of salamanders over 4.33 inches total length. Salamanders over 4.33 inches in total length can be successfully salvaged and held in captivity or holding ponds. Take of salamanders from salvage operations via seining and other capture methods, as well as temporary holding of salamanders, will be authorized by a 10(a)(1)(A) recovery permit held by the USFWS, AGFD, or any other qualified and permitted entity approved by the permittee. Excavation of each stock pond may occur every 20 to 25 years, or no more than twice during the original permit period. Incidental take will be exceeded if any periodic stock maintenance is not conducted following Appendix B of the SRRHCP.

- If the Service and Department agree that a population is not necessary to maintain, maintenance of that tank does not count towards an exceedance of incidental take.

Take in the form of injury or mortality is anticipated to occur as a result of chemical control of non-native grasses and invasive shrubs located in or immediately upstream of occupied stock ponds or other habitats. Incidental take will be exceeded if standard operating procedures are not developed and incorporated into a work plan approved by the Service before application of pesticide in or adjacent to occupied habitat of the Sonoran tiger salamander. The work plan shall be developed following “Recommended Protection Measures for Pesticide Applications in Region 2 of the U. S. Fish and Wildlife Service” (White 2004), or the most current version of this document.

In no case is any salamander population on the San Rafael Ranch expected to be extirpated due to implementation of the SRRHCP. It is anticipated that over the period of the action the number of occupied stock tanks will remain stable at a minimum, while waxing and waning, and should increase as a result of implementation of conservation measures included in the SRRHCP.

Northern Mexican Gartersnake

Although trampling of northern Mexican gartersnakes is unlikely due to their ability to avoid livestock, the USFWS points out in its 12-month finding (73 FR 71788) that it could occur. The use and maintenance of stock tanks is covered by a 4(d) rule; thus, there is no incidental take from those actions. Thus, take of the northern Mexican gartersnake is anticipated to occur in the form of injury or mortality from possible trampling by cattle of juveniles or adults at occupied springs, riparian areas, or uplands, including debris piles or other cover used by snakes during cold periods. Livestock grazing in riparian vegetation may also decrease cover available to northern Mexican gartersnakes to hide from predators; this may result in take from increased

predation. Maintenance of fences within riparian habitat may result in take through crushing by equipment, or harm through the temporary loss of habitat.

We anticipate that incidental take of northern Mexican gartersnakes resulting from livestock grazing and watering in occupied aquatic habitats, movement of livestock between pastures, upland grazing, facility maintenance, and mechanical brush control will be difficult to detect and difficult to quantify for the following reasons: dead animals are difficult to find due to size of species and complexity of habitat, cause of death may be difficult to determine, and losses may be masked by seasonal fluctuations in numbers, or other causes (e.g., oxygen depletion for aquatic species). Further, the status of the species could change during the permit period due to immigration, emigration, and loss or creation of habitat. Maintenance of fences within riparian habitat along the Santa Cruz River and waterlines adjacent to stock tanks may result in take through contact with equipment, or harm through the loss of habitat, even though maintenance of range projects is largely beneficial in the long-term.

We recognize that providing a numerical estimate of incidental take is the preferred method of measuring take and that for some animals this method is biologically defensible as the ecology of the animal lends itself to individuals being more detectible (e.g., long-lived, territorial species such as the desert tortoise). Therefore, whether incidental take has exceeded the take authorized under the incidental take permit for livestock watering and grazing will be determined indirectly based upon the presence of livestock in habitat occupied by northern Mexican gartersnakes as follows:

- a) livestock grazing utilization may not exceed the allowable maximum by 50 percent in two successive years for any one pasture;

OR

- b) livestock grazing utilization may not exceed the allowable maximum by 25 percent in any year for 25 percent of all pastures.

Livestock tanks may be occupied by the northern Mexican gartersnake during the permit period. There is no take associated with the normal use of stock ponds under the 4(d) rule. Take in the form of injury and mortality is anticipated to occur as a result of periodic stock tank maintenance conducted following the guidelines in Appendix B of the SRRHCP that are based on the Sonoran Tiger Salamander Recovery Plan (USFWS 2002a) and the Chiricahua Leopard Frog Recovery Plan (USFWS 2007). Although salvage of gartersnakes may occur, neonates and juveniles that cannot be salvaged and are harmed or killed incidental to stock pond excavation will be difficult to detect. Any salvage of gartersnakes before stock tank maintenance will be jointly determined by the Service and the Department and conducted within 30 days of scheduled maintenance of the stock tank. Removal of gartersnakes from salvage operations, as well as temporary holding of gartersnakes, will be authorized by a 10(a)(1)(A) recovery permit held by the USFWS or the AGFD. Excavation of each stock pond may occur every 20 to 25 years, or no more than twice during the permit period.

Finally, we anticipate incidental take in the form of injury or mortality as a result of chemical control of non-native grasses and invasive shrubs located in or immediately upstream of stock ponds, the Santa Cruz River, or other appropriate habitat. Incidental take will be exceeded if standard operating procedures are not developed separately into a work plan and approved by the Service before application of pesticides in or adjacent to occupied habitat of northern Mexican gartersnake. The work plan shall be developed following “Recommended Protection Measures for Pesticide Applications in Region 2 of the U. S. Fish and Wildlife Service” (White 2004), or the most current version of this document.

Huachuca Springsnail

In the action area, the Huachuca springsnail is known only from Sheehy Spring, and it is unlikely that this species will occur at other locations in the action area during the permit period. Therefore, take is anticipated to occur in the form of harassment, harm, or killing of eggs, velifer, or adult snails when this pasture is grazed. Take of Huachuca springsnail is also anticipated to occur in the form of harm due to habitat degradation from livestock trampling and defecation resulting in increased sedimentation and turbidity or disruption of forage availability in Sheehy Spring. Barbed-wire fences do not keep cattle where they are intended all of the time, so it is possible, although unlikely, that take of Huachuca springsnail as described above could occur at Sheehy Spring throughout the year. Take of Huachuca springsnail is also possible, although unlikely, in the form of harm or killing due to diminished water quality resulting from infrastructure maintenance or mechanical control of nonnative grasses and invasive shrubs. Mechanical control of blackberry at Sheehy Spring could also cause take through harassment, harm, or killing.

We anticipate incidental take of the Huachuca springsnail from the SRRHCP will be difficult to detect for the following reasons: (1) dead or impaired individuals are almost impossible to find (and are readily consumed by scavengers and predators) and losses may be masked by seasonal fluctuations in environmental conditions; (2) the status of the species will change over time through disease, natural population variation, natural habitat loss, or the active creation of habitat through management; and (3) the species is small-bodied, well camouflaged, and occurs under water of varying clarity.

We recognize that providing a numerical estimate of incidental take is the preferred method of measuring take and that for some animals this method is biologically defensible as the ecology of the animal lends itself to individuals being more detectible (e.g., long-lived, territorial species such as the desert tortoise). Therefore, whether incidental take has exceeded the take authorized under the incidental take permit for livestock watering and grazing will be determined indirectly based upon an incursion of livestock into habitat occupied by the Huachuca springsnail as follows:

- a) livestock grazing utilization may not exceed the allowable maximum by 50 percent in two successive years for any one pasture;

OR

- b) livestock grazing utilization may not exceed the allowable maximum by 25 percent in any year for 25 percent of the pastures.

Incidental take is not anticipated to occur as a result of chemical control of non-native grasses and invasive shrubs, as this action will not occur in the pasture containing Sheehy Spring.

II. PUBLIC COMMENT

Public notification of the availability of the Application, Draft SRRHCP, and Draft NEPA screening document was published in the Federal Register on November 12, 2015, initiating a 30-day public comment period. All concerned agencies and entities were provided a copy for review and comment upon request. Two comments on the SRRHCP or the screening document were received from the public, from the same individual. Two sets of comments on the SRRHCP were received from government agencies, the Arizona Game and Fish Department and Arizona State Parks.

Generally, the comments received from Arizona State Parks were related to unclear language in the SRRHCP of what covered actions might occur on the San Rafael State Natural Area, and how they might be reviewed and approved by Arizona State Parks. They requested many changes to the SRRHCP; the applicant has decided not to make any changes to the SRRHCP. Many of their concerns can be addressed through a lease agreement with SRR, and through their own HCP, should they choose to prepare one. Only the Service may approve permit changes such as transfers. The comments from the Arizona Game and Fish Department were not substantive, being largely laudatory of the applicant's conservation efforts. Arizona State Parks comment letter was also complimentary towards the applicant for working on a Habitat Conservation Plan.

Two other comments were received via e-mail from one individual. There were no comments that were specific to the SRRHCP, except for broad comments about the destructiveness of livestock grazing to ecosystems, endangered species, and the climate.

The Service believes these comments have been addressed as practicable and will be reasonably accommodated in the biological opinion on issuance of a permit, permit language, and minor revisions to the final SRRHCP and low effect screening document.

III. INCIDENTAL TAKE PERMIT CRITERIA – ANALYSIS AND FINDINGS

A. The taking of Gila chub, Sonoran tiger salamander, Huachuca springsnail, and northern Mexican gartersnake will be incidental to otherwise lawful activities. The covered ranch management activities are lawful, and the take of Gila chub, Sonoran tiger salamander, Huachuca springsnail, and northern Mexican gartersnake will be incidental to and not the purpose of the proposed activities.

B. The Applicant will, to the maximum extent practicable, minimize and mitigate for the effects of taking of covered animal species and the effects to other Covered Species that may occur within the Permit Area.

The Applicant has proposed conservation measures that will minimize to the maximum extent practicable all effects associated with the proposed covered activities. These are identified above, as well as in Section 5 of the SRRHCP. Any remaining effects will be mitigated to the maximum extent practicable. For a complete discussion on the proposed minimization and mitigation actions see Section 5 of the SRRHCP.

C. The taking will not appreciably reduce the likelihood that the Gila chub, Sonoran tiger salamander, Huachuca springsnail, or northern Mexican gartersnake will survive and recover in the wild.

The Act's legislative history establishes the intent of Congress that this issuance criteria be based on a finding of "not likely to jeopardize" under section 7(a)(2), (50 CFR 402.02). As a result, approval of the application has also been reviewed by the Service under section 7 of the Act. In a biological and conference opinion, which is incorporated by reference, the Service concluded that issuance of the permit to the Applicant would not likely jeopardize the continued existence of the Gila chub, Sonoran tiger salamander, Huachuca springsnail, or northern Mexican gartersnake.

D. Other measures, as required by the Director of the Service, have been met.

The SRRHCP incorporates all elements determined by the Service to be necessary for approval of the SRRHCP and issuance of the permit. The Service was extensively involved with the applicant in advising and reviewing the draft Habitat Conservation Plan.

E. Alternatives.

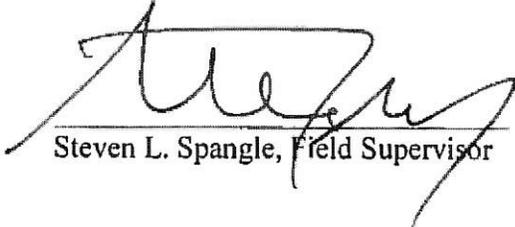
The SRRHCP identified a no action alternative and a preferred alternative. A description of the two alternatives is contained in Section 7 of the SRRHCP and the screening document for low-effect habitat conservation plan determinations in compliance with the Service's responsibility under the National Environmental Policy Act of 1969 (NEPA, 42 U.S.C. 4321 *et seq*).

IV. GENERAL CRITERIA AND DISQUALIFYING FACTORS – ANALYSIS AND FINDINGS

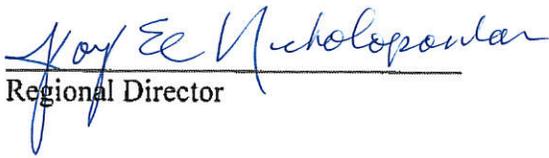
The Service has no evidence that the permit should be denied on the basis of the criteria and conditions set forth in 50 CFR 13.21(b)-(c). The Applicant has met the criteria for the issuance of the permit and there are no disqualifying factors that would prevent the permit from being issued under current regulations.

V. RECOMMENDATION ON PERMIT ISSUANCE

Based on the foregoing findings with respect to the proposed action, issuance of a permit to authorize incidental taking of the Gila chub, Sonoran tiger salamander, Huachuca water umbel, and northern Mexican gartersnake by San Rafael Cattle Company, in accordance with the SRRHCP, is recommended.


Steven L. Spangle, Field Supervisor

5/17/16
Date


Regional Director

11/7/16
Date