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In Reply Refer To:

AESO/SE
22410-2007-F-0042
CC2007253

January 8, 2008

Mr. David L. McKay
State Conservationist
Natural Resources Conservation Service
U.S. Courthouse – Federal Building
230 North First Avenue, Suite 509
Phoenix, Arizona 85003-1733

Dear Mr. McKay:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request was dated February 14, 2007, and received by us on February 16, 2007. At issue are impacts that may result from activities proposed under the Wildlife Habitat Incentives Program (WHIP) T4 Spring Pond Improvement, Santa Cruz County. You requested formal consultation on the endangered Gila chub (*Gila intermedia*).

This biological opinion is based on information provided in your letter, a biological assessment (BA) for the project (NRCS 2007), field investigations, our files, and other sources of information. Your letter dated December 18, 2007, changed the proposed action to remove fencing and off-site watering. Because of the change to the proposed action, the consultation period began on December 19, 2007, when we received your letter. References cited in this opinion are not a complete bibliography of all references available on the listed species evaluated, effects of the proposed action, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

CONSULTATION HISTORY

- 2003-2005. Various site visits to discuss conservation at T4 Spring.
- October 24, 2006. We submitted informal comments on a preliminary draft BA.
- February 16, 2007. We received your request for consultation and the BA for the project.

- March 22, 2007. We sent you the draft biological opinion.
- August 24, 2007. You agreed to our request to extend the consultation period to September 29, 2007.
- October 23, 2007. You agreed to our request to extend the consultation period to November 16, 2007.
- December 14, 2007. A meeting among the applicant, NRCS, and us was held to discuss the proposed action.
- December 19, 2007. We received your comments on the draft biological opinion and the change in the proposed action.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Using the WHIP, the Natural Resources Conservation Service (NRCS) is funding and constructing a fish barrier and associated improvements at the T4 Springs Pond (Figure 1). The WHIP contract is for five years, expiring September 30, 2011. The fish barrier will be a steel reinforced concrete drop-structure that is 20' wide (8' throat, 3' drop). The barrier construction will take 10 to 40 days. Construction is planned to start in 2008 or as soon as all permits are acquired. The barrier and diversion should be in place for decades. Concrete will be formed and poured in place. The associated improvements include:

- Enhance pond (remove sediment = 300 cubic yards); and
- Construct one, 250-foot long water spreader dike (for headcut).

Installation of the fish barrier will not change the size of T4 Spring Pond. The purpose of the project is to install a fish barrier to prevent nonindigenous aquatic species from traveling upstream into T4 Spring Pond and impacting the Gila chub. The associated improvements will protect the site and enhance habitat quality.

Conservation Measures

The NRCS will install a temporary cofferdam, made of local soil, which they will use to de-water the construction site during construction and to maintain the water level in the pond during construction. A small pipe (4-6") may be placed in the cofferdam to divert water through the existing dam to keep the construction site de-watered. NRCS will coordinate with the landowner, Arizona Game and Fish Department (AGFD), and us to temporarily move some Gila chub to a suitable backup location during construction. Movement of Gila chub from and back into the pond will be covered by a Section 10(a)(1)(A) Scientific Collection Permit and will be coordinated by the AGFD and us.

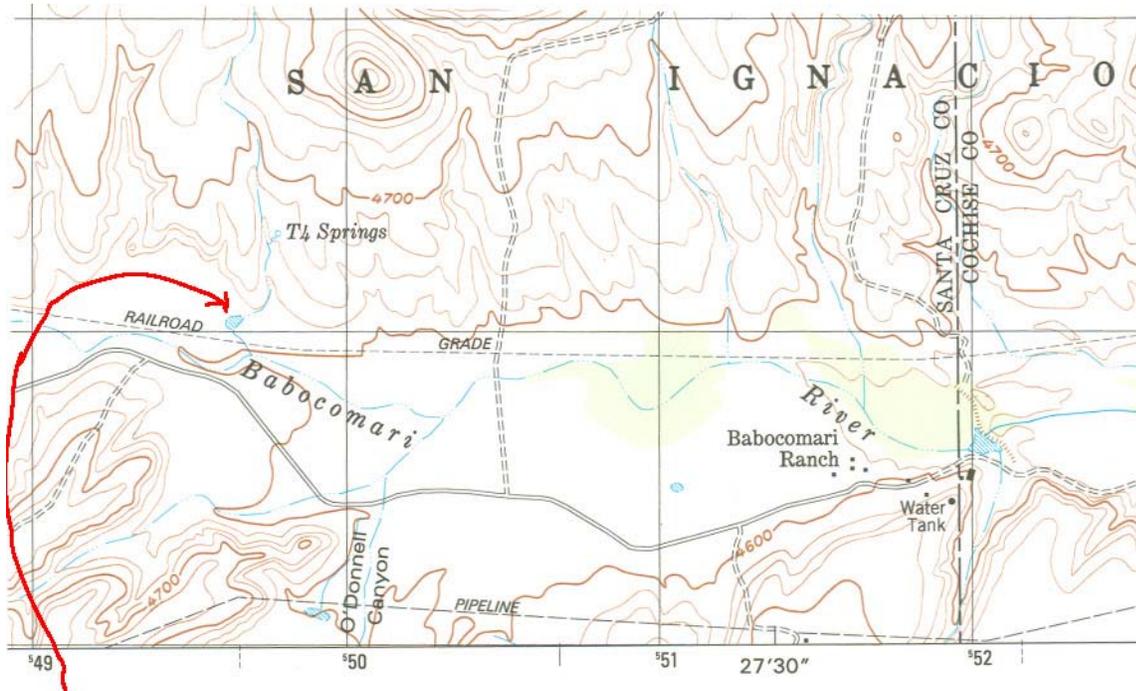


Figure 1. Map view of project site, T4 Springs, Arizona.

STATUS OF THE SPECIES

The Gila chub was listed as endangered with critical habitat in 2005 (USFWS 2005). Historically, Gila chub have been recorded from rivers, streams, and spring-fed tributaries throughout the Gila River basin in southwestern New Mexico, central and southeastern Arizona, and northern Sonora, Mexico (Miller and Lowe 1967, Rinne and Minckley 1970, Minckley 1973, Rinne 1976, DeMarais 1986, Weedman et al. 1996, Propst 1999). Today the Gila chub has been restricted to small, isolated populations scattered throughout its historical range. Life history information is in the status review (Weedman et al. 1996), the proposed rule (USFWS 2002), the final rule (USFWS 2005), and references cited there.

The Santa Cruz River has five tributaries with extant populations of Gila chub: Sabino Canyon, Bear Canyon, Romero Canyon (Pima County) and Sheehy Spring (Santa Cruz County) have unstable-threatened populations, and Cienega Creek (Pima and Santa Cruz counties) has the only known stable-secure population of Gila chub in existence. Cienega Creek has a second, small population north of Interstate 10 on Pima County's Cienega Creek Preserve.

The San Pedro River basin has three extant, stable-threatened populations in Redfield Canyon (Graham and Pima Counties), O'Donnell Creek (Santa Cruz County), and Bass Canyon (Graham and Cochise Counties). Turkey Creek, which previously had a Gila chub population, received fish originally from O'Donnell Creek in 2005. The status of the Gila chub in the Babocomari River (Santa Cruz and Cochise counties), is unknown, though they are still present at T4 Spring. The San Carlos River and the Blue River (Gila and Graham counties) are tributary to the Gila River. They are believed to have extant populations of Gila chub, but information is not available to us on the status of Gila chub in those drainages (Weedman et al. 1996, USFWS 2005).

In Mexico, recent surveys (2006) of Cienega los Fresnos and Cienega la Cienegita, adjacent to the Arroyo los Fresnos (tributary to the San Pedro River), within 1 mile of the Arizona-Mexico border (Varela-Romero et al. 1992) failed to detect Gila chub. The sites where Varela-Romero et al. 1992 found chub now contain green sunfish (*Lepomis cyanellus*) and black bullhead (*Amieurus natalis*). No Gila chub remain in the Mexican portion of the Santa Cruz River (Weedman et al. 1996, FWS files).

Reestablishment of Gila chub has been attempted in six Arizona sites; four are believed to be extant. Lousy Canyon and Larry Creek are tributaries to the Agua Fria River and were stocked with 200 Gila chub from Silver Creek in July 1995. Romero Canyon and Bear Canyon in the Santa Catalina Mountains have Gila chub from Sabino Canyon. Gardner Canyon (Cochise County), was stocked from Turkey Creek (Santa Cruz County) with 150 Gila chub in 1988. In 1995, no Gila chub or any other fish were captured during surveys. Turkey Creek, which previously had a Gila chub population, received fish originally from O'Donnell Creek in 2005.

Threats include predation by and competition with nonnative organisms, including fish in the family Centrarchidae (*Micropterus* spp., *Lepomis* spp.), other fish species, bullfrogs (*Rana catesbeiana*), and crayfish (*Orconectes virilis*); disease; and habitat alteration, destruction, and fragmentation resulting from water diversions, dredging, recreation, roads, livestock grazing, changes in the natural flow pattern, mining, degraded water quality (including contaminants from mining activities and excessive sedimentation), and groundwater pumping (USFWS 2002, 2005). The impacts of nonnative species have been well documented (Hubbs 1955, Miller 1961, Minckley and Deacon 1968, Meffe 1985, Williams and Sada 1985, Moyle et al. 1986, Minckley and Deacon 1991, Ruppert et al. 1993). Dudley and Matter (2000) correlated green sunfish presence with Gila chub decline and found that even small green sunfish readily consume young-of-year Gila chub. Unmack et al. (2003) found that green sunfish presence was correlated with the absence of young-of-year Gila chub. The current status of the Gila chub is poor and declining.

For additional information about the Gila chub see Desert Fishes Team (2003), Minckley and DeMaris (2000), Propst (1999), Weedman et al. (1996), Rinne and Minckley (1991), DeMaris (1986), and Minckley (1985, 1973).

ENVIRONMENTAL BASELINE

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

The project area is where the proposed action will occur. The action area is that area in which effects of the action will occur. The project area and action area are the same for this proposed action. The T4 Spring Pond was built as a livestock water and has been grazed historically.

Livestock now graze the area seasonally. T4 Spring is about 1,000 ft from the T4 Spring Pond. The pond is about 300 feet upstream of the Babocomari River. Water occurs in the stream channel between the pond to the river, with the wetted area changing depending on environmental conditions. Flow rarely reaches the river. The Babocomari River is an ephemeral stream in this reach, but harbors nonindigenous aquatic species, including bullheads, green sunfish, western mosquitofish (*Gambusia affinis*), and probably others downstream of T4 Spring. Presently, nonindigenous aquatic species could move upstream to invade the T4 Spring Pond during high flow or extended flow events. The ecological/range site condition in the surrounding upland is good (similarity index is about 0.65).

With the arrival of Europeans, major alterations began in the Gila River Basin, including the Babocomari and T4 Spring. As a result of these changes, the riverine communities of the Gila Basin, including the Babocomari, became fragmented, and connectivity was substantially reduced. Populations of fish or other aquatic species eradicated by perturbation were not replaced by colonization. Habitat fragmentation contributes to the genetic isolation of populations. Population fragmentation can reduce genetic variation and viability. This, in turn, can increase the risk of extinction by reducing survival, reproduction, and dispersal. Isolation also precludes re-colonization should one or more populations be eliminated. When an inhospitable environment that imposes a high degree of threat on the remnant habitat surrounds isolated populations, these risks are compounded.

Improper grazing, mining, hay harvesting, timber harvest, fire suppression, and other activities in the nineteenth century led to widespread erosion and channel entrenchment throughout the southeastern Arizona streams and cienegas, including the action area, when above-average precipitation and flooding occurred in the late 1800s and early 1900s (Bryan 1925, Martin 1975, Hastings and Turner 1980, Dobyms 1981, Hendrickson and Minckley 1984, Sheridan 1986, Bahre 1991, Webb and Betancourt 1992, Hereford 1993). A major earthquake near Batepito, Sonora, about 40 miles south of the upper San Pedro Valley, resulted in land fissures, and changes in groundwater elevation and spring flow (Hereford 1993, Geraghty and Miller, Inc. 1995). These events contributed to long-term or permanent degradation and loss of cienega and riparian habitat

in the San Pedro basin and throughout southern Arizona and northern Mexico. The Babocomari Cienega persists today because of an erosion control structure constructed decades ago (Hendrickson and Minckley 1984).

Status of the species within the action area

Gila chub are present in the T4 Spring Pond, and probably in the spring-run channel. The population is not large. Mosquitofish and the native longfin dace (*Agosia chrysogaster*) have been recorded in T4 Spring. Livestock graze the area seasonally for. The pond is not protected with a fish barrier at this time.

EFFECTS OF THE PROPOSED ACTION

“Effects of the action” refer to the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action (50 CFR § 402.02). “Interrelated actions” are those that are part of a larger action and depend on the larger action for their justification. Interdependent actions are those that have no independent utility apart from the action under consideration (50 CFR § 402.02).

Installation of the fish barrier and removing sediment from T4 Spring Pond will have direct adverse effects to Gila chub. Construction of the cofferdam will also have direct effects.

The cofferdam will be constructed from on-site materials. Construction of the cofferdam will increase sedimentation during its installation and removal. Gila chub are not highly sensitive to sediment, and sediment suspended in the water should be transitory. Construction of the concrete fish barrier will occur after construction of the cofferdam.

If not properly sealed, the concrete used for the fish barrier can leach materials that are toxic to fish. Fresh concrete leaches salts, lime, catalysts, and potentially other toxic materials for up to nine months that are toxic to fish. Gila topminnow (*Poeciliopsis occidentalis*) and desert pupfish (*Cyprinodon macularius*) were killed by leachates from concrete fish ponds constructed at the Phoenix Zoo (M. Demlong, AGFD, Phoenix, pers. comm., 2000). Toxic conditions can remain for longer than nine months if petroleum sealers are used on the concrete to extend drying times. No such sealants are proposed. Two-part epoxy concrete sealants are available to prevent leaching of toxins into water; however, the sealant itself can be toxic unless approved for potable water use. The lengths of time necessary for leachates to move through or disperse from the system, or be diluted to the point where they no longer cause adverse effects are unknown.

Cumulative Effects

Cumulative effects are those impacts of future non-Federal (State, local government, and private) actions that are reasonably certain to occur in the project area. Future Federal actions will be subject to the consultation and conferencing requirements established in section 7 of the Act and, therefore, are not considered cumulative to the proposed project.

The Ranch Conservation Plan developed with NRCS should help minimize adverse cumulative effects at T4 Spring Pond. Prescribed grazing has been applied for many years and ecological site condition and range health continue to improve (NRCS files). Public access is highly restricted except for hunting as permitted by the Arizona Game and Fish Department.

CONCLUSION

After reviewing the current status of the Gila chub, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the project, as proposed, is not likely to jeopardize the continued existence of the Gila chub.

Critical habitat has been designated, but is outside the action area and thus will not be affected by the proposed action. Our rationale for this conclusion is summarized here.

- 1) Most of the impacts from the project will be transitory;
- 2) Both the short- and long-term effects have a small footprint;
- 3) The barrier will protect the site from invasion by nonindigenous aquatic species from the Babocomari River;
- 4) The proposed action should result in better habitat for the Gila chub; and
- 5) The proposed conservation measures will minimize effects to the species and its habitat.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. "Harm" is defined (50 CFR § 17.3) to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined (50 CFR § 17.3) as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Even though chub will be captured and moved from the pond, not all chub will be removed so take could occur to those fish that remain. The construction of the cofferdam, barrier, and water intake are likely to cause the loss of some Gila chub, and temporarily negatively affect the habitat to the point where the species may be harmed.

Some mortality of Gila chub as a result of toxic leachates from the curing concrete is expected during a several month period after the concrete is poured. Again, the extent of take will depend in part on the conditions in the pond while the concrete is curing. It will also depend on resulting concentrations of leachates in stream and pond water and how Gila

chub will respond physiologically to those leachates. We are unable to precisely estimate take associated with concrete leachates because we cannot precisely predict conditions in the T4 Spring Pond during or after construction, or leachate concentrations in aquatic habitats and exactly how Gila chub will respond to those leachates physiologically. We anticipate that the following take could occur as a result of the proposed action:

1. Up to 20 Gila chub as a result of mortality or injury caused by toxic leachates from the fish barrier;
2. Up to 50 Gila chub from the construction of the cofferdam, barrier, and water intake through mortality, injury, and reduction of habitat.
3. Up to 20 Gila chub annually from the operation and maintenance of the screened pump.

Effect of Take

In this biological opinion, we find the anticipated level of take is not likely to jeopardize the continued existence of the endangered Gila chub.

Reasonable and Prudent Measures and Terms and Conditions

The following reasonable and prudent measures are necessary and appropriate to minimize take of the Gila chub. To be exempt from the prohibitions of section 9 of the Act, the NRCS must comply with the following terms and conditions, which implement the reasonable and prudent measures and monitoring requirements. These terms and conditions are non-discretionary.

1. Personnel education programs, defined construction areas, and well-defined operational procedures shall be implemented during construction.
 - a. The NRCS shall designate a field contact representative (FCR) who shall be responsible for overseeing compliance with these terms and conditions and proposed minimization measures, and shall also be responsible for coordinating compliance with us. The FCR shall have the authority and the responsibility to halt all project activities that are in violation of these terms and conditions. The FCR shall have a copy of the terms and conditions and proposed minimization measures of this biological opinion while on the work site.
 - b. Construction personnel shall be informed of terms and conditions and proposed minimization measures, and the need to comply with them.
2. The NRCS shall minimize fish mortality.
 - a. NRCS will work with the landowner to ensure that AGFD and FWS are granted timely access to the site to allow removal of as many Gila chub as possible from T4 Spring Pond before construction at the pond begins, and to allow release of Gila chub into the site after construction is complete.

- b. NRCS will ensure that only qualified fisheries biologists permitted by the FWS and AGFD will be granted access to capture and transport Gila chub to and from the site. Fish will be removed and held by AGFD and FWS, using appropriate methods, under the authority of their Section 10(a)(1)(A) and state permits.
 - c. To minimize the potential impact of concrete leachate from the fish barrier to Gila chub, after completion of the fish barrier the coffer dam will remain in place and the area between the barrier and the dam will be refilled with T4 water. After six months, individuals from a suitable surrogate fish species will be placed in escape-proof cages in T4 Spring Pond between the fish barrier and the coffer dam for one week to determine habitat suitability. Once it is determined the water is safe for Gila chub, the cofferdam can be removed and Gila chub can be repatriated.
3. The NRCS shall monitor implementation of the proposed action and any resulting incidental take and report to the FWS and AGFD the findings of that monitoring.
 - a. A brief written report shall be prepared by NRCS summarizing project implementation, observed take, and monitoring results. This report shall be submitted to the FWS within one year of completion of construction. The report shall also make recommendations, as needed, for modifying or refining these terms and conditions to enhance protection of the Gila chub or reduce needless hardship on the NRCS and the non-Federal sponsor. A final report shall be done at the end of the WHIP project (September 30, 2011), and include the items listed above.
 - b. The NRCS shall provide us copies of any reports regarding implementation of the proposed action. Estimates of take must be reported annually, until the final report required in 3b is completed.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. We recommend you implement the following conservation recommendations for the Gila chub:

- 1) Assist us in conserving and recovering the Gila chub; and
- 2) Assist the Ranch and us in developing a Habitat Conservation Plan, if the Ranch decides to pursue one.

REINITIATION NOTICE

This concludes formal consultation for the proposed WHIP T4 Springs Pond Improvement. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

We appreciate your efforts to conserve and recover the Gila chub. For further information please contact Doug Duncan (520) 670-6150 (x236) or Sherry Barrett (x223). Please refer to consultation number 22410-2007-F-0042, in future correspondence concerning this project.

Sincerely,

/s/Debra Bills for

Steven L. Spangle
Field Supervisor

cc: Assistant Field Supervisor, Fish and Wildlife Service, Tucson, AZ
Branch Chief, Habitat Branch, Arizona Game and Fish Department, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Tucson, AZ

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