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U.S. Fish and Wildlife Service
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2-21-94-F-076

March 21, 1994

Mr. Humberto Hernandez
State Conservationist
Soil Conservation Service
3003 N. Central Avenue Suite 800
Phoenix, Arizona 85012-2945

Dear Mr. Hernandez:

This responds to your request of November 24, 1993 for formal section 7 consultation with the Fish and Wildlife Service (Service) pursuant to the Endangered Species Act (Act) of 1973, as amended, on specific actions under an Emergency Watershed Program (EWP) on the Gila River between San Jose and Geronimo, Graham County, Arizona. The species potentially affected by these actions is the endangered razorback sucker (Xyrauchen texanus) and its designated critical habitat. The final rule designating critical habitat was published March 15, 1994 in the Federal Register.

This biological opinion was prepared using information contained in the biological evaluation, other letters and documents exchanged between the Soil Conservation Service (SCS) and the Service, discussions with interested agencies, data in our files or in the published or grey literature, and other sources of information.

The 90-day consultation period began on November 24, 1993, the date your request was received by Ecological Services, Arizona State Office. Notice of that receipt was sent to you in a letter dated December 3, 1993.

BIOLOGICAL OPINION

It is the Service's biological opinion that the construction of the Emergency Watershed Program described in the biological evaluation is not likely to jeopardize the continued existence of the razorback sucker. Critical habitat is not likely to be destroyed or adversely modified by the proposed actions.

BACKGROUND INFORMATION

Consultation History

The SCS sent a package of information on the proposed project to the Service in July 1993. Many of the actions contained under the project did not qualify for emergency status that would allow the action to continue prior to the completion of the section 7 consultation.

The Service received the first biological evaluation for the proposed project (dated September 16, 1993) on September 23, 1993. The Service had several questions and disagreed with some conclusions in the evaluation. A meeting was scheduled on October 7, 1993 to discuss the actions included in this project and resolve any disagreements. Several actions were eliminated from the consultation by "no affect" determinations. Seven actions remained and were addressed in the biological evaluation of November 21, 1993.

Description of the Actions

The proposed Emergency Watershed Program project includes seven actions along the Gila River in Graham County, Arizona. All of the actions involve the repair of dikes on top of the existing river banks. No fill in front of the existing banks to recover land eroded by the high flows would be placed, although there may be some fill behind the dike. These dikes would not be armored or cemented and would be constructed from materials taken from the river bed. Gravel bars to be used for fill material are located within the floodplain. Riparian tree plantings are proposed in front of the dikes to protect them from future high flows. Each of the actions is briefly described below. Figures given in the descriptions are from materials distributed by SCS during the meeting on October 7, 1993 and in the biological evaluation.

1. Dennis Curtis property: This action would place an approximately 1350 foot dike along the edge of agricultural fields. The borrow area is 3.79 acres and is located immediately in front of the dike location. The dike will require 6111 cubic yards of fill, requiring a one foot cut in the borrow area.
2. Fred Prina property: This action would place an approximately 3340 foot dike along the edge of agricultural fields. The borrow area is immediately north of the dike location and is partially vegetated. The borrow area would be 4.82 acres in size. Removal of the 7800 cubic yards of material would require a cut of three feet.
3. Steve Daley property: This action involves two dikes at the edge of agricultural fields. The first is approximately 2093 feet long, the second approximately 577 feet. The partially vegetated borrow area is separated from the work area and is 5.51 acres. The project would require 8900 cubic yards of material and would necessitate a cut of three feet in the borrow area.
- 4&5. Jim Daley property: There are two separate actions on this property. The first involves an approximately 3710 foot dike with an 11.36 acre borrow area. This dike would require 18,300 cubic yards of material and would result in a three foot cut. The second involves three small dikes totalling approximately 1158 feet. The borrow area is

adjacent to the work site and would be 5.42 acres. These dikes would require 8750 cubic yards of material, resulting in a cut of 1.5 feet.

6. Albert and Lee Carpenter property: This action involves an approximately 3245 foot dike, a portion of which is along the edge of the present river channel. The borrow area is partially vegetated and would be 4.13 acres. The dike requires 6700 cubic yards and a 3 foot cut in the borrow area.
7. Nat Motes/Jay Layton properties: This action involves a continuous, approximately 1800 foot dike along the river. The partially vegetated borrow areas total 7.81 acres and provide 12,600 cubic yard of fill and have a 2 foot cut in the borrow area.

Description of the Project Area

In the project area, the Gila River floodplain has been somewhat constricted by a series of levees and dikes in front of developed agricultural lands and other facilities. The river still retains adequate floodplain to provide for riparian development and meandering at certain flow levels. The high water events of 1993 exceeded the capacity of the remaining floodplain, resulting in the reclamation of former floodplain lands through erosive action.

Reductions in seasonal flows resulting from agricultural and other diversions have occurred for many years. During peak irrigation seasons, the amount of flow can be very low, and there are areas temporarily dewatered. Substrates range from cobble to gravel/sand and silt. In areas of the floodplain where the water table is high enough, stands of riparian vegetation, including native cottonwood (Populus sp.) and willow (Salix sp.) and introduced salt cedar (Tamarix sp.) may be found.

Water quality in the project area is monitored by U.S. Geological Survey at their gage stations at the head of the Safford Valley and at Calva. Water temperatures, especially in the summer, are high. Turbidity varies, with higher sediment loads carried during runoff events. Other parameters are also within acceptable levels.

Species Description

Minckley et al. (1991) summarizes the life history and status of the razorback sucker. Much of the information summarized under this heading is taken from this source. Please refer to that work for additional information on this species.

The razorback sucker is an endemic fish species of the Colorado River Basin. The monotypic species Xyrauchen was described based upon specimens from the Gila River near Fort Thomas (Kirsch 1888). Historically, large populations were found in the major tributaries of the Gila River subbasin (Bestgen 1990). In the Gila River, anecdotal records of the species from around the Safford area and as far upstream as Duncan exist. The species was last recorded from the Gila River in the mid-1900's. No individuals were captured during surveys in the 1970's (Minckley and Clarkson 1979). Efforts to reintroduce the razorback sucker to the Gila River began in 1981. These efforts have not been fully successful; however, the reintroduced fish were given full protection under the Act when the species was listed in 1991.

Razorback suckers use many types of habitats. They have been found in shallow backwater or shoreline areas, in eddies and pools, and in main channel habitats, all with varying depth and flow velocities. When flooded, floodplains are utilized for feeding and provide nursery areas. Spawning takes place over a variety of substrates, with shallow rocky or gravel bars often used. Depending upon water temperatures, the spawning period lasts from January or February to April or May.

Designated critical habitat for the razorback sucker in the project includes the Gila River and its 100-year floodplain. Areas within the floodplain that have been previously developed (for example, roads, farmland, and urbanized lands) are not likely to provide the constituent elements when flooded that define critical habitat. Such areas are not included in the designation.

Environmental Baseline

The environmental baseline serves to define the current status of the listed species and its habitat to provide a platform to assess the effects of the project now under consultation. While it is clearly focused on the conditions in the project area, it is important to include in this baseline the status of the listed species throughout its range. Any evaluation of the effects of a project must be made in context of overall species status and the effects to survival and recovery of the species from the project.

The environmental baseline is developed using past and present impacts of all Federal, State and private activities in the project area, the anticipated impacts of all proposed Federal projects or actions in the project area that have undergone formal or early section 7 consultation, and the effects of State and private activities which are contemporaneous with this consultation process. A summary of species status also becomes a part of the environmental baseline.

The razorback sucker was the first species in this reach of the Gila River to be listed under the Act. As a result, there is no background of previous consultations on Federal projects or actions to reference for this discussion. There was likely some Federal involvement in the past with some of the flood control structures (dikes and levees), through either section 404 of the Clean Water Act or Federal grant or assistance programs. There may be Federal programs that are connected to agricultural programs that are still in effect.

Private development has converted portions of the Gila River floodplain to agricultural and urban uses. Water is diverted from the river for agriculture, municipal and industrial purposes, with the remainder passing through the project area to meet the needs of Tribal (San Carlos Apache Tribe and Gila River Indian Community) and private (San Carlos Irrigation and Drainage District) water users. While components of the natural character of the river and its floodplain has been lost or degraded by these actions, considerable value remains for fish and wildlife resources. There is still an operational floodplain, and the lack of upstream dams allows the retention of portions of the natural hydrograph. Fish species native to the Colorado River Basin evolved under a regime of harsh physical conditions that exhibited wide seasonal and yearly differences. The physical changes to the Gila River made since the late 1800's have not been, by themselves, sufficient to eliminate habitat for native fish in the river.

The introduction of nonnative fish species has had a tremendous negative effect on populations of native fishes, including the razorback sucker. Predation on eggs, larvae and young fish has been observed and other forms of competition may also occur.

The razorback sucker persists in the Colorado River Basin mostly in small, isolated populations. In the Upper Basin (Wyoming, Colorado, New Mexico and Utah), the species can still be found in small portions of the Yampa, Green, Colorado, and San Juan rivers. Recruitment to these populations is very low. Recent estimates indicate only a few thousand fish may be left, mostly old adults. The situation is much the same in the Lower Basin (Arizona, Nevada, and California). The razorback persists in natural populations in the Colorado River from the Grand Canyon to at least the Parker Division (below Parker Dam). This population is broken into four areas by the large dams on the lower Colorado River; Grand Canyon to Lake Mead, Lake Mohave, Lake Havasu, and Parker Dam downstream. Three of these isolated populations are small. The population in Lake Mohave, estimated at 25,000 individuals in 1993, is the largest remaining anywhere in the Colorado River Basin. Populations of razorback suckers have been introduced in the Gila, Salt and Verde Rivers of Arizona, however, these populations are very small and not self-sustaining.

As with the Upper Basin populations, there is limited recruitment in the Lower Basin populations, and old adults dominate. These fish are nearing senescence and rates of mortality are increasing. The decline in the size of the Lake Mohave population from an estimated 60,000 individuals in the late 1980's to an estimated 25,000 in 1993. Without active efforts to enhance recruitment, this species will very likely soon become extinct in the wild.

EFFECTS OF THE ACTION

Direct and Indirect Effects

Direct effects to the razorback sucker come from the disturbance of river channel substrates by construction of the dikes. Removal of material from the river channel will leave shallow (one to three feet deep) pits. A total of 42.84 acres of river channel will be used as borrow areas. Movements of construction equipment will cause surface disturbance to additional areas. Information on the project did not indicate that any of the borrow or work areas was in standing or running water area of the channel. Thus, immediate effects to sediment load, flow patterns, and direct disturbance to any fish in the areas of construction would not be likely. This would not be the case if any work is done in, or immediately adjacent to, water.

Removal of borrow material will result in a reconfiguration of the river channel. This may or may not have any affect to flow direction and speed during higher water events that cover the sites. Changes to local and downstream erosion and aggregation patterns may result. There is not sufficient hydrological information to define the extent of such potential changes. In addition, sediment loading may increase if the disturbed areas have more fine material than adjacent areas of the channel. Compression of substrates by heavy equipment may also affect turbidity and flows.

Depending upon the composition of the newly exposed substrate in the borrow pits, there may or may not be losses to gravel bar type habitats. If the material at the bottom of the pit is the same as was removed, this effect is minimized. The pits also create potential pools or

deeper habitats that may be used during high water events. The life span of these deeper habitats may be very short because of bedload movements during those times.

Consideration must also be given to the effects these potential physical changes may have on other organisms. Razorback suckers utilize both plankton and benthic invertebrates for food. Physical changes to the river that adversely affect these resources could affect razorback suckers in the area of disturbance.

By not placing fill to restore the pre-event bank location, the project allows these areas to return to the active floodplain. This provides additional area for natural river processes. The planting of appropriate riparian trees in the areas in front of the dikes also contributes to the restoration of floodplain values. This is especially important if riparian vegetation was lost in the borrow or construction areas.

By providing flood protection for existing agricultural fields and other facilities, the project makes a commitment to continue to exclude such areas from the floodplain. As noted earlier, the Gila River has lost portions of the 100-year floodplain to development. The 100-year floodplain is included in the critical habitat for the razorback sucker. Portions of the floodplain developed for agriculture or urban uses likely does not meet the criteria for critical habitat.

Effects to Survival and Recovery

Implementation of the proposed action causes a level of disturbance to the river channel habitats available to the razorback sucker. It also continues to exclude portions of the 100-year floodplain from natural river processes. It does allow some areas of the floodplain reclaimed by the river in 1993 to remain undeveloped and provides for the planting of appropriate riparian plant species. The magnitude of the disturbed area, compared to the extent of available habitats is small.

The Gila River is a very important component in the survival and eventual recovery of the razorback sucker. This species was once found in many different habitats throughout the Colorado River Basin. None of that historic habitat remains undisturbed, either physically or biologically. The specific characteristics of areas that will support recovered populations of razorback suckers is not known, thus the retention of a broad spectrum of riverine and reservoir habitats is critical. Continued alterations to the remaining natural features of these habitats that reduce their effectiveness to support the razorback sucker is not in the best interest of the recovery of this species.

Cumulative Effects

Cumulative effects are those effects of future State or private activities that have no Federal connection and that are reasonably certain to occur within the area of the Federal project subject to consultation.

It is anticipated that ongoing private activities in the project area will continue. There are repair activities to structures damaged by the high water that are out of the jurisdiction of the Corps of Engineers section 404 permit process. Diversion of water for agricultural and municipal and industrial purposes as well as maintenance of diversion structures will also

continue. The Service is not aware of any significant new private or State actions planned or proposed for the project area that would have new significant effects to the Gila River.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits the taking (harass, harm, pursue, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species without a special exemption. The concept of harm includes significant habitat modification and degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding or sheltering. Case law has affirmed that taking does harm to listed threatened species when there is definable injury or death to individuals. 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 taking within the bounds of the Act, provided such taking is in compliance with the incidental take statement provided in the biological opinion.

Since all of the project work will take place on dry land, the potential to take an individual razorback sucker is very slight. There will be effects to approximately 42 acres of floodplain habitat. These effects will likely be evident only in the short-term. Downstream effects of changes on aggregation or erosion are difficult to quantify, and it is equally difficult to determine if these changes would have any significant effect to razorback suckers or their habitat. This is true for the potential effects to food resources as well as physical habitat.

The Service has determined that the above effects do constitute a taking of razorback sucker habitat, acknowledging that the amount of this take is small and the certainty of its occurrence is unknown. However, to protect the Federal agency and the private parties involved in this project from inadvertent violations of section 9, the Service is providing an incidental take statement and reasonable and prudent measures for this project.

The measures described below are not discretionary and must be undertaken by the agency as part of the implementation on the proposed project or made a binding condition of any permit or other implementation document given to or developed by the applicant, as appropriate.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the incidental take documented in this biological opinion:

Efforts to minimize the amount of disturbance to the river channel during the construction of the actions contained in the project will be made.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the SCS and all involved private entities must comply with the following terms and conditions which implement the reasonable and prudent measure stated above.

The following terms and conditions will be implemented:

1. Construction will be accomplished using the least damaging equipment and techniques available.
2. Amount of floodplain disturbed by construction should be kept to the minimum needed to collect and transport the fill from the borrow area and to construct the dike. As much work as possible should take place out of the floodplain.
3. Once all needed fill material has been removed from the borrow areas, any steep or vertical cuts comprising the sides of the pit will be contoured to a gradual slope.
4. All riparian plantings will be done in such a way that additional surface disturbance is minimized.
5. Other sources of fill should be evaluated and used prior to fill being removed from the floodplain.

Reporting Requirements

At the completion of the project, the SCS shall provide to the Service a report on the construction activities, including information on the actual area disturbed and location and species of riparian vegetation planted.

CONSERVATION RECOMMENDATIONS

Sections 2(c) and 7 (a)(1) of the Act direct Federal agencies to use their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" has been defined as Service suggestions regarding discretionary agency activities to minimize or avoid adverse effects of a proposed project on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed project and do not necessarily represent complete fulfillment of the agency's section 7 (a)(1) responsibility for the species.

The Service recommends the following actions:

1. No borrow material for the proposed project be taken from the floodplain.
2. All dike construction activity take place on the field side of the dike, not the floodplain side.
3. The historic limits of the 100-year floodplain be determined and areas identified where efforts similar to the present project are likely to be needed in the event of another high water situation.

EFFECTS TO PROPOSED SPECIES AND CRITICAL HABITAT

This opinion has included an evaluation of the effects of the project on the critical habitat for the razorback sucker. Publication of a final rule designating critical habitat occurred on March 15, 1994. Provided that nothing has significantly changed in either the project or the status of the species, this opinion is sufficient to document effects to any designated critical habitat in the project area.

This opinion does not address any effects to the proposed endangered southwest willow flycatcher (Empidonax traillii extimus) or its proposed critical habitat. Please confer with the Service if effects to this species are anticipated.

CONCLUSION

This concludes formal section 7 consultation on the SCS EWP project on the Gila River between San Jose and Geronimo, Graham County, Arizona as described in your November 24, 1993 request. As required by CFR 402.16, reinitiation of formal consultation is required if: 1) the amount or extent of incidental take is exceeded, 2) new information reveals effects of the agency action that may impact 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 a listed species or critical habitat that was not considered in this opinion, or 4) a new species is listed or critical habitat designated that may be affected by the agency action.

The Service reminds SCS that the proposed project, as described, does not take place in the active channel of the Gila River and therefore there are no immediate direct effects to flowing or standing water. If this situation changes, and flowing or standing water would be affected, please contact the Service immediately as that circumstance is not covered by this opinion.

Thank you for assisting us in the conservation of endangered and threatened species. In future communications on this project, please refer to consultation number 2-21-94-F-076. If we may be of assistance, please contact Lesley Fitzpatrick or Tom Gatz.

Sincerely,

/s/ Sam F. Spiller
State Supervisor

cc: Chief, Fish and Wildlife Service, Arlington, Virginia (DES)
Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico
(AES)
Director, Arizona Game and Fish Department, Phoenix, Arizona

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