2-21-00-F-145

BIOLOGICAL OPINION SUMMARY
Arizona Department of Transportation Safe Harbor Agreement

Date of opinion: September 1, 2000

Project: Arizona Department of Transportation Safe Harbor Agreement

Location: Maricopa County, and others, Arizona

Listed species affected: Endangered Gila topminnow (*Poeciliopsis o. occidentalis*) and endangered desert pupfish (*Cyprinodon macularius*)

Biological opinion: No Jeopardy

Incidental take statement:

Anticipated take: *Exceeding this level may require reinitiation of formal consultation.* Twelve actions were identified as potentially causing incidental take. The first seven actions could result in complete (100%) take of both Gila topminnow and desert pupfish in the retention basin. The last four management actions are not expected to result in complete take of either species. Isolated individuals could be taken during these routine activities. Take due to management action numbers 11 and 12 are unlikely. Complete take would occur if Item 12 occurred.

Reasonable and prudent measures: *Implementation of these measures through the terms and conditions is mandatory.*

1) Any incidental take of Gila topminnow or desert pupfish must be in compliance with all the terms and conditions of the section 10(a)(1)(A) incidental take permit proposed to be issued, including the provisions of the SHA.

Terms and conditions: *Terms and conditions implement reasonable and prudent measures and are mandatory requirements.*

1) A section 10(a)(1)(A) permit, as evaluated in this Biological Opinion, must be issued by the Service. 2) The SHA for the section 10(a)(1)(A) permit must be executed by the Service and the Applicant. 3) Information obtained from pertinent monitoring operations will be reported and made available to all partners. Reports will include information from population and take monitoring, incidental take, and all other actions undertaken to implement the SHA. Reports will be completed annually for the term of the permit. The report will include an account of incidental take, monitoring results, and management actions.

Conservation recommendations: *Implementation of conservation recommendations is discretionary.*

1) The Service should explore the possibility of working with other landowners to implement similar recovery actions (Recovery Plan tasks 1, 2, 5, 6 and 2, 5, 7).

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In Reply Refer To:
AESO/SE
2-21-00-F-145 September 1, 2000

Memorandum

To: Regional Director, Fish and Wildlife Service, Albuquerque, New Mexico (Attn:ARD-ES)

From: Field Supervisor

Subject: Intra-Service Biological Opinion Regarding the Proposed Issuance of an Incidental Take Permit (PRT-??????) under a Safe Harbor Agreement to the Arizona Department of Transportation, Arizona (2-21-00-F-145)

This memorandum represents our Biological Opinion (BO), furnished under Section 7 of the Endangered Species Act of 1973 (Act), as amended. The Federal action under consideration is the issuance of a permit authorizing the incidental take of the endangered Gila topminnow (*Poeciliopsis o. occidentalis*) and endangered desert pupfish (*Cyprinodon macularius*) under the authority of sections 10(a)(1)(A) and 10(a)(2) of the Act. The Arizona Department of Transportation (ADOT) has submitted an application for an incidental take permit under the Act to take the federally listed endangered Gila topminnow and endangered desert pupfish. Along with the application, the Applicant submitted a draft Safe Harbor Agreement (SHA) which has been reviewed for mitigation acceptability. The implementing regulations for section 10(a)(1)(A) of the Act, as provided for by 50 CFR 13 and 17, specify the criteria by which a permit allowing the incidental take of listed species following otherwise lawful activities may be obtained. The purpose and need for the section 10(a)(1)(A) permit is to ensure that incidental take resulting from the proposed management actions will be minimized and mitigated to the maximum extent practicable, and will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.

This biological opinion is based on information provided in the draft Safe Harbor Agreement, telephone conversations, field investigations, Service files, and other sources of information. References cited in this biological opinion are not a complete bibliography of all references available on the species of concern, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file in the Arizona Ecological Services Field Office.

BIOLOGICAL AND CONFERENCE OPINION

DESCRIPTION OF PROPOSED ACTION

The proposed action is the issuance of a section 10(a)(1)(A) permit to the Arizona Department of Transportation by the Service for the endangered Gila topminnow and desert pupfish. The purpose of the proposed action is to authorize incidental take, including possible habitat modification on lands controlled by ADOT. A complete description of the proposed action and the mitigation measures is included in the SHA (Sowka 2000).

The Applicant is requesting a permit to stock Gila topminnow and desert pupfish in ADOT retention basins and other habitats located within the historic ranges of these species in Arizona. ADOT requests permission to stock topminnow and pupfish to aid in recovery of these fishes and to evaluate the use and effectiveness of these species in controlling mosquitos.

Beginning in April 2000, retention basins targeted for stocking of topminnow and pupfish will be sampled by qualified personnel and nonnative fishes inhabiting these basins will be removed. Basins will be sampled for several weeks to determine the effectiveness of removal efforts. When sites are determined to be free of nonnative fishes, topminnow, pupfish, or both species will be stocked by the Arizona Game and Fish Department (AGFD) in cooperation with the Service. Appropriate genetic stocks of both species will be selected and obtained by AGFD and the Service. Depending on effectiveness of nonnative fish eradication efforts, topminnow and pupfish should be stocked into the Baseline/Hardy Road Retention Basin in 2000.

ADOT will provide and maintain refugium sites for Gila topminnow and desert pupfish; these stocked populations could act as sources of fish for future reintroduction efforts, genetic exchange with existing populations, or for supplemental stocking efforts. ADOT is currently working to convert retention basins to "natural" wetland areas for the benefit of native wildlife. Native vegetation will be encouraged and added to retention basins, while nonnative species will be removed when possible. These actions should improve habitat for topminnow and pupfish, as well as other native species living in or frequenting ADOT retention basins.

ADOT will monitor populations of topminnow and pupfish stocked in waters controlled by ADOT, and will make these sites available for individuals, agencies, and groups wishing to conduct research on topminnow and pupfish. ADOT will advise AGFD and USFWS of any significant changes in stocked populations and, when possible, will advise both agencies of potential management actions which could result in significant take of fishes. Efforts will be made to recover individuals of both species before implementation of such management actions.

The proposed mitigation includes advance scheduling and notification of management activities provided to the Natural Resources Section of ADOT and then provided to the Service. Activities which are expected to result in major siltation or contamination of sites can be delayed until the fish can be safely removed and temporarily housed in aquaria, fish farms (i.e., circular holding

tanks)(Soderberg et al. 1993), or small wading pools (W. L. Minckley, pers. comm.). If activities are going to require long-term removal of fish, arrangements can be made to house them at alternative locations.

All actions at these sites can be mitigated by taking extreme care while performing them. Students, volunteers, and staff working in or around sites will be supervised at all times by an ADOT employee, and instruction on proper safeguards will be provided to all personnel prior to initiating work in or around occupied habitat.

Monitoring of incidental take, species populations, and habitats is an integral part of the SHA. Monitoring is shared among the various partners, but the ultimate responsibility for monitoring lies with the Permittee. The Service has identified the action area as State Land controlled by ADOT, including, but not limited to, retention basins, water treatment facilities, springs, marshes, streams, and ponds.

STATUS OF THE SPECIES

Gila topminnow

The Gila topminnow was listed as endangered in 1967 without critical habitat (USFWS 1967). Only Gila topminnow populations in the United States, and not in Mexico, are listed under the Act. The reasons for decline of this fish include past dewatering of rivers, springs and marshlands, impoundment, channelization, diversion, regulation of flow, land management practices that promote erosion and arroyo formation, and the introduction of predacious and competing nonnative fishes (Miller 1961, Minckley 1985). Other listed fish suffer from the same impacts (Moyle and Williams 1990). Life history information can be found in the 1984 recovery plan (USFWS 1984), the Draft Revised Gila topminnow Recovery Plan (Weedman 1998), and references cited in the plans.

Gila topminnow are highly vulnerable to adverse effects from nonnative aquatic species (Johnson and Hubbs 1989). Predation and competition from nonnative fishes have been a major factor in their decline and continue to be a major threat to the remaining populations (Meffe et al. 1983, Meffe 1985, Brooks 1986, Marsh and Minckley 1990, Stefferud and Stefferud 1994, Weedman and Young 1997). The native fish fauna of the Gila basin and of the Colorado basin overall, was naturally depauperate and contained few fish that were predatory on or competitive with Gila topminnow (Carlson and Muth 1989). Thus Gila topminnow did not evolve mechanisms for protection against predation or competition and is predator- and competitor-naive. With the introduction of many predatory and competitive nonnative fish, frogs, crayfish, and other species, Gila topminnow could no longer survive in many of their former habitats, or the small pieces of those habitats that had not been lost to human alteration. Both large (Bestgen and Propst 1989) and small (Meffe et al. 1983) nonnative fish cause problems for Gila topminnow as can nonnative crayfish (Fernandez and Rosen 1996) and bullfrogs.

Gila topminnow was listed in 1967 as *Poeciliopsis occidentalis*. The species was later revised to include two subspecies, *P. o. occidentalis* and *P. o. sonoriensis* (Minckley 1969, 1973). *P. o. occidentalis* is known as the Gila topminnow, and *P. o. sonoriensis* is known as the Yaqui topminnow. *Poeciliopsis occidentalis*, including both subspecies, is collectively known as the Sonoran topminnow. Both subspecies are protected under the Act.

Historically, the Gila topminnow was abundant in the Gila River drainage and was one of the most common fishes of the Colorado River basin, particularly in the Santa Cruz system (Hubbs and Miller 1941). The range of Gila topminnow was reduced to only 15 naturally occurring populations. Presently, only 12 of the 15 recent natural Gila topminnow populations are considered extant (Table 24) (Weedman and Young 1997). Only three populations (Cienega Creek, Monkey Spring, Cottonwood Spring) have no nonnative fish present and therefore can be considered secure from nonnative fish threats. There have been at least 175 wild sites stocked with Gila topminnow, however, topminnow persists at only 18 of these localities. Of the 18, one site is outside topminnow historic range and four now contain nonnative fish (Weedman and Young 1997).

Historically, populations of Gila topminnow expanded in size and geographic range during wetter periods (when habitats were connected). These populations subsequently contracted and often disappeared during times of drought (Minckley 1999, Weedman 1998). Due to high reproductive potential and an adaptation to environmental extremes, numbers of individuals of both species will likely fluctuate over time after being introduced into the retention basin(s).

The status of the species is poor and declining. Gila topminnow has gone from being one of the most common fishes of the Gila basin to one that exists at not more than 30 localities (12 natural and 18 stocked). Many existing localities are small and highly threatened.

Federal actions have contributed to the degraded environmental baseline of the Gila topminnow. Federal actions requiring section 7 consultations affecting the National Forests, Bureau of Land Management public lands, and others in the Gila River basin have contributed to the lowered baseline. An indication of the poor environmental baseline of the Gila topminnow is that two previous formal consultations have resulted in jeopardy opinions. Other Federal actions, and non-federal actions that have not undergone section 7 consultation, also have unmitigated adverse effects that contribute to the degraded baseline.

Desert pupfish

The desert pupfish is in the family Cyprinodontidae. In Arizona, this family was historically represented by two recognized subspecies, (*Cyprinodon m. macularius)* and (*C. m. eremus)*, and an undescribed species, the Monkey Spring pupfish. The desert pupfish was listed as an endangered species with critical habitat on April 30, 1986 (USFWS 1986). Historical distribution of desert pupfish in Arizona included the Gila, San Pedro, Salt, and Santa Cruz Rivers, and likely the Hassayampa, Verde, and Aqua Fria Rivers, although collections are lacking

for the latter three. The desert pupfish is also found in the Lower Colorado River, Rio Sonoyta basin, Salton Sink basin, and Laguna Salada basin (Eigenmann and Eigenmann 1888, Garman 1895, Gilbert and Scofield 1898, Evermann 1916, Miller 1943, Minckley 1980, Black 1980, Turner 1983, Miller and Fuiman 1987). Historic collections occurred in Mexico in Baja California and Sonora and in the United States in California and Arizona.

The natural history of the desert pupfish is very similar to that described for the Gila topminnow. They occupied similar habitats, although the pupfish was not nearly as widespread. The desert pupfish also went through cycles of expansion and contraction of populations because of natural climatological variation (Weedman and Young 1997). Such a scenario would have led to panmixia among populations over a very large geographic area (USFWS 1993).

Thirteen natural populations persist; nine of these are in Mexico. Approximately 20 transplanted populations exist in the wild (USFWS 1993). One or more threats imperil most natural and transplanted populations. Since the 19th century, desert pupfish habitat has been steadily destroyed by streambank erosion, the construction of water impoundments that dewatered downstream habitat, excessive groundwater pumping, the application of pesticides to nearby agricultural areas, and the introduction of nonnative fish species. Nonnative bullfrogs (*Rana catesbeiana)* may also prove problematic in the management of desert pupfish. The bullfrog is an opportunistic omnivore with a diet throughout its range that includes fish (Cohen and Howard 1958, Clarkson and deVos 1986). There is also a concern that introduced saltcedar (*Tamarisk* spp.) next to pupfish habitat may cause a lack of water at critical times (Bolster 1990; R. Bransfield, pers. comm., 1999). The remaining populations continue to face these threats, and the Salton Sea area populations, in particular, are severely threatened.

Naturally occurring populations of desert pupfish are now restricted in Arizona to Quitobaquito Springs and in California to two streams tributary to, and a few shoreline pools and irrigation drains of, the Salton Sea. The species is found in Mexico at scattered localities along Rio Sonoyta, on the Colorado River Delta, and in the Laguna Salada basin. The Mexican government has also listed the species as endangered [Secretaria de Desarrollo Urbano y Ecologia (SEDUE) 1991]. Additional life history information can be found in the recovery plan (USFWS 1993) and other references cited there.

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 SHA covers State Land controlled by ADOT, including, but not limited to, retention basins, water treatment facilities, springs, marshes, streams, and ponds. At present, baselines for Gila topminnow and desert pupfish on ADOT properties statewide are zero. Since the habitats that

will be used for reestablishment are man-made, Gila topminnow and desert pupfish never occurred at these sites.

This proposal calls for Gila topminnow and desert pupfish to be introduced, or stocked, into the Baseline and Hardy Road (Kyrene) retention basin. As additional basins are identified for possible stocking, these basins will be surveyed to determine baseline conditions. Baseline conditions will be determined and agreed to in writing by both parties. As long as other sites that are chosen for reintroduction have a baseline of zero and their management is covered by the SHA and BO, the SHA and supporting documents will not be amended.

The first basin to be stocked is located in Maricopa County, Arizona, near the intersection of Baseline and Hardy Roads (T1N R4E). A comprehensive description of the known project area in Tempe, Arizona, and environmental baseline can be found in the SHA. The basin is totally fenced and locked, and consists of about 14.82 ha (36.63 ac). Approximate acreage at the bottom of the basin is 3.95 ha (9.75 ac). Basin habitat consists of a perennial channel of 578 m^2 (6225 ft^2), vegetated primarily with Gooding willow (*Salix gooddingii*), coyote willow (*Salix exigua*), and cottonwood (*Populus fremontii*).

Permanent water in the bottom of the basin acts as a breeding ground for mosquitoes, which are known to be a vector for encephalitis. Although mosquitofish (*Gambusia affinis*) currently inhabit the channel running through the basin, they have not been effective at controlling the mosquitoes. Additional treatment methods, such as spraying of pesticides, have been used.

Effects of the Action

Issuance of a Section 10(a)(1)(A) enhancement of survival permit will contribute to the conservation and recovery of the Gila topminnow and desert pupfish. The overall effect of the proposed action should be beneficial, as the SHA is designed to provide a net conservation benefit for both species. The proposed action will provide level 3 populations of topminnow and pupfish, and can also serve as a source of fish for reestablishment efforts. The topminnow and pupfish can be used in genetic exchange between level 2 and level 3 populations. The sites can also provide for research and education. The proposed action is compatible with step-down objectives 1.1, 2.1, 2.2, 2.4, 2.6, 5, and 6 of the Draft Revised Gila topminnow Recovery Plan (Weedman 1998) and 2, 5, and 7 of the Desert Pupfish Recovery Plan (USFWS 1993).

The loss of individuals, or even entire populations of topminnow and pupfish in the basin(s) is possible, no impact on natural or reintroduced populations outside the basin is expected. Topminnow and pupfish will be removed from reestablishment sites before known management actions occur that might cause their extirpation. Populations in the basins can be reestablished as necessary and feasible. Fish stocked in the retention basin would be "surplus" or "back-up" fish, so loss of the populations would have no significant negative impact on the overall recovery of either species.

Management actions occurring at the site may cause negative on-site impacts. Those which may occur are anticipated to be minimized and mitigated by complete SHA implementation. Critical habitat will not be affected by the SHA. The only designated critical habitat for these two species in Arizona is for desert pupfish at Quitobaquito Spring. It is extremely unlikely that ADOT will ever have projects there.

CUMULATIVE EFFECTS

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

Other than those aspects of the present project delineated in the SHA (Section 1.07), there are no present and future projects, authorized or under review that are expected to contribute to any cumulative losses to the species of concern.

Summary

The environmental baseline shows that most project areas are highly modified and may include entirely human-made habitats. Most areas that may be used were never habitat for these two species. The current proposed site is a human-made habitat in a closed system. The sites to be used for reestablishment of Gila topminnow and desert pupfish will be within their historic range and within watersheds that they used to occupy.

CONCLUSION

On July 10, 2000, the Service completed examination of the permit application, SHA, and procedures for mitigating the permitted incidental take. After reviewing the status of the Gila topminnow and desert pupfish, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the issuance of a Section 10(a)(1)(A) permit for incidental take, as proposed, is not likely to jeopardize the continued existence of these species. No designated critical habitat is within the project area. This Biological Opinion is based on information provided by the Applicant and information from the Arizona Ecological Services Field Office.

We base our conclusion on the following:

1) the present project is judged to have a net positive cumulative impact on Gila topminnow and desert pupfish that may occur under current and future circumstances on ADOT lands; and

2) the SHA populations will serve as refugia for the species and as source populations for other efforts to reestablish these species into suitable habitats to achieve recovery goals.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation following section 4(d) of the Act, prohibit take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns, including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out 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 proposed action is not considered to be prohibited taking under the Act provided such taking is in compliance with this Incidental Take Statement.

The proposed ADOT SHA clearly identifies the conservation measures that will be implemented to provide a net conservation benefit to the affected listed species included in the permit by contributing to their recovery. The proposed SHA also clearly identifies the anticipated impacts to affected listed species likely to result from the proposed taking should the permittee return to the agreed upon baseline conditions. All conservation measures described in the proposed SHA and any section 10(a)(1)(A) permit or permits issued with respect to the proposed SHA, are hereby incorporated by reference as reasonable and prudent measures and terms and conditions within the Incidental Take Statement pursuant to 50 CFR §402.14(i). Such terms and conditions are non-discretionary and must be undertaken for the exemptions under section 10(a)(1)(A) and section 7(o)(2) of the Act to apply. If the permittee fails to adhere to these terms and conditions, the protective coverage of the section 10(a)(1)(A) permit and section 7(o)(2) may lapse. The amount or extent of incidental take anticipated under the proposed ADOT SHA, associated reporting requirements, and provisions for disposition of dead or injured animals are as described in the SHA and its accompanying section 10(a)(1)(A) permit.

AMOUNT OR EXTENT OF TAKE

Based on the proposed ADOT SHA and on the analysis of the effects of the proposed action provided above, the Service anticipates that take may occur as a result of the following proposed actions:

1. Earthwork around basins;
2. Removal of nonnative vegetation in basins;
3. Controlled burns or mowing to limit the extent of emergent vegetation in and around the basin (will not be performed in main channel areas);
4. Contamination of water inflow due to contaminated run-off from roadways;

5. Contamination of water in a channel during pesticide application (applied to nonnative vegetation or mosquito larvae);
6. Interruption of water inflow, either intentionally by ADOT or unintentionally due to extenuating circumstances, resulting in partial or complete drying of the channel;
7. Management actions to remove nonnative aquatic species;
8. Monitoring of topminnow and pupfish populations in basins;
9. Use of basins as "living laboratories" by students, faculty, or other authorized individuals;
10. Annual trash clean-ups at retention basins;
11. Operation of automatic pump (pump turns on when water level in basin reaches a specific level); and,
12. Basin removal.

In addition to the activities listed above, factors beyond ADOT's control could result in take of topminnow or pupfish. Examples of extenuating factors include, but are not limited to: invasion by nonnative species such as fishes, bullfrogs, and others, predation by native wildlife, interruption of water inflow resulting in complete drying of the stream channel, fire, drought, and flooding.

The SHA allows ADOT to bring the species baseline for both Gila topminnow and desert pupfish in reestablishment areas back down to zero. The first seven actions and action 12 listed above could result in complete (100%) take of both Gila topminnow and desert pupfish in the retention basin. Management actions 8 through 11 are not expected to result in complete take of either species. Individuals could be taken during these routine activities.

Finally, predation by nonnative fishes is unlikely to occur due to the protected nature of this basin. The possibility of invasion by other nonnative species (i.e., crayfish or bullfrogs) does exist, however, and could result in partial or complete take of both topminnow and pupfish. Take by birds or other animals inhabiting the basin is more difficult to ascertain. These forms of take are beyond the Applicant's control.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measure(s) are necessary and appropriate to minimize the incidental taking authorized by the section 10(a)(1)(A) permit:

Any incidental take of Gila topminnow or desert pupfish must be in compliance with all the terms and conditions of the section 10(a)(1)(A) incidental take permit proposed to be issued, including the provisions of the SHA.

TERMS AND CONDITIONS

To be exempt from the prohibitions of section 9 of Act, the following terms and conditions, which implement the reasonable and prudent measures described above, must be complied with. These terms and conditions are nondiscretionary.

1. A section 10(a)(1)(A) permit, as evaluated in this Biological Opinion, must be issued by the Service.

2. The SHA for the section 10(a)(1)(A) permit must be executed by the Service and the Applicant.

3. Information obtained from pertinent monitoring operations will be reported and made available to all partners. Reports will include information from population and take monitoring, incidental take, and all other actions undertaken to implement the SHA. Reports will be completed annually for the term of the permit. The report will include an account of incidental take, monitoring results, and management actions.

CONSERVATION RECOMMENDATIONS

Sections 2(c)(1) and 7(a)(1) of the Act direct 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.

1. The Service should explore the possibility of working with other landowners to implement similar recovery actions (revised draft Gila topminnow recovery plan tasks 1, 2, 5, and 6; desert pupfish recovery plan tasks 2, 5, and 7).

2. ADOT should consider screening, or another method, the intake for the overflow pump to minimize the potential loss of fish.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed issuance of a section 10(a)(1)(A) permit to allow incidental take of Gila topminnow and desert pupfish for management activities on ADOT lands. 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 maintained (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 later modified in a manner that causes an effect to the 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 action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation. In addition, the Service may need to publish an additional notice in the Federal Register, reissue an environmental assessment, and amend the permit.

If you have questions regarding this Biological Opinion or the Safe Harbor Agreement, please call Doug Duncan (520-670-4860) or Sherry Barrett (520-670-4617). Please refer to the consultation number 2-21-00-F-145 in future correspondence concerning this project.

/s/ David L. Harlow

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