United States Department of the Interior
U.S. Fish and Wildlife Service
2321 West Royal Palm Road, Suite 103
Phoenix, Arizona 85021
Telephone: (602) 242-0210 FAX: (602) 242-2513

AESO/SE
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August 17, 2004

Ms. Magalie R. Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, Northeast
Washington, D.C. 20426

Subject: Biological Opinion on Surrender of License, Childs-Irving Project, Arizona, Project No. 2069-007

Dear Ms. Salas:

Thank you for your request for formal consultation with the U.S. Fish and Wildlife Service pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. 1531-1544), as amended (Act). Your request for formal consultation was dated April 2, 2004, and received by us on April 5, 2004. This consultation concerns the possible effects of the proposed Surrender of License, Childs-Irving Hydroelectric Project, in portions of Gila and Yavapai Counties, Arizona, on the razorback sucker (*Xyrauchen texanus*) and its critical habitat, and critical habitat for the loach minnow (*Tiaroga cobitis*) and spikedace (*Meda fulgida*). In addition, the Federal Energy and Regulatory Commission (FERC) determined that the proposed action "may affect, but would not likely adversely affect" the bald eagle (*Haliaeetus leucocephalus*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax trillii extimus*), and Yuma clapper rail (*Rallus longirostris yumanensis*). Concurrences for these species are included in Appendix A.

This biological opinion is based on information provided in the March 26, 2004, Environmental Assessment (EA), formal correspondence, field visits, meeting notes and electronic mail transmissions, and other sources of information compiled on the proposed Surrender of License and Decommissioning. Literature cited in this biological opinion is not a complete bibliography of all literature available on the species of concern, or on other subjects considered in this opinion. A complete administrative record of this consultation is on file at this office.

Consultation History

The history of the consultation request includes any informal consultation, documentation of the date consultation was initiated, a chronology of subsequent requests for additional data, and other applicable past or current actions. The proposed action has been under discussion since the mid-1980s, and our files contain correspondence regarding this project dating back to 1989. We have summarized the extensive consultation history in Table 1.

Table 1. Summary of Consultation History

Date	*Event*
October 1989 – July 1997	The Arizona Public Service (APS), Forest Service, FERC, and Fish and Wildlife Service evaluated and discussed alternatives for maintaining the water diversion and releasing full flows into Fossil Creek. The administrative record includes meeting notes, correspondence, and conversations documenting this process.
August 21, 1997	FERC requested informal consultation on the effects of operating and maintaining the Childs-Irving Project on the bald eagle, American peregrine falcon, and the southwestern willow flycatcher and its critical habitat. A "no effect" determination was made for the razorback sucker, Colorado pikeminnow, and Arizona agave.
December 8, 1997	We concurred with FERC's determinations for the Colorado pikeminnow and the American peregrine falcon. We did not concur with FERC's determinations for the razorback sucker, southwestern willow flycatcher, bald eagle, and the Arizona agave. In addition, we requested that FERC and the Forest Service prepare a biological assessment/evaluation and initiate formal consultation on the project.
1997-1998	APS, FERC, and the Fish and Wildlife Service exchanged correspondence regarding the proposed action, additional information needed for consultation, updated listed species information, and approved survey protocols.

June 8, 1999	We encouraged FERC, the Forest Service, and APS to enter settlement negotiations regarding the decommissioning of the Childs-Irving Project.
2000	APS, FERC, and the Fish and Wildlife Service exchanged correspondence regarding the proposed settlement agreement.
September 15, 2000	APS submitted the "Offer of Settlement for License Surrender and Decommissioning of the Childs-Irving Hydropower Project, Fossil Creek, Arizona."
October 20, 2000	We submitted a letter to FERC expressing our support for the Settlement Agreement.
August 7, 2001	In a letter to FERC, we stated the following: 1) our support of the September 15, 2000, Settlement Agreement and our encouragement for FERC to accept it; 2) our recommendation to complete the native fish restoration project prior to return of full-flows; and, 3) our recommendation that FERC initiate section 7 consultation.
March 6, 2002	FERC held a teleconference to discuss the proposed schedule for finalizing APS's surrender application. We requested that FERC prepare a draft environmental assessment for public comment prior to completing the final document.
April 30, 2002	APS submitted an application to surrender their license and a Removal and Restoration Plan.
May 10, 2002	FERC requested comments on APS's Application for Surrender of License for the existing Childs-Irving Hydroelectric Project.
June 7, 2002	We submitted comments and recommendations regarding the Application for Surrender.
November 27, 2002	FERC requested comments on APS's submittal information for the Childs-Irving Project.

December 23, 2002	We submitted comments on the submittal package.
January 28, 2003	APS requested our review of the "Biological Assessment of Restoration Options for Fossil Creek" and the "Biological Review of Potential Species."
February 26, 2003	We submitted comments on the above two documents.
March 7, 2003	APS, the Fish and Wildlife Service, Arizona Game and Fish Department (AGFD), Forest Service, and Natural Resource Conservation Service met to discuss the proposed Stehr/Tremaine Lake mitigation.
June 4, 2003	FERC requested comments on the Draft Environmental Assessment for Surrender of License, Childs-Irving Project.
June 20, 2003	FERC requested formal consultation of the possible effects of the proposed Surrender of License on the razorback sucker, and critical habitat for the southwestern willow flycatcher, loach minnow, and spikedace.
July 2, 2003	We submitted comments on the Draft Environmental Assessment.
July 25, 2003	We requested additional information from FERC prior to initiation of formal consultation on the proposed project.
July 25, 2003	FERC held a teleconference to discuss stakeholder comments on the Draft Environmental Assessment.
August 1, 2003	APS, Forest Service, Northern Arizona University, Arizona Department of Environmental Quality, AGFD, and the Fish and Wildlife Service met to discuss the Fossil Springs dam removal.

April 2, 2004	FERC requested formal consultation due to the potential effects of the License Surrender and Decommissioning on the razorback sucker and its critical habitat, and loach minnow, spikedace, and southwestern willow flycatcher critical habitat. FERC also requested our concurrence that the proposed project "may affect, but will not adversely affect" the bald eagle, the Mexican spotted owl, the southwestern willow flycatcher, and Yuma clapper rail.
April 22, 2004	We acknowledged FERC's request for formal consultation. In that letter, we also explained that southwestern willow flycatcher critical habitat was set aside and FERC does not need to consult on the effects of the proposed project on critical habitat for that species.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

The Childs-Irving Project is a small hydroelectric operation located on Fossil Creek, a perennial tributary of the Verde River, 7 miles west of Strawberry, in Gila and Yavapai counties, Arizona. The project is located entirely on the Coconino (326.8 acres) and the Tonto (17.2 acres) National Forests. Perennial flows in Fossil Creek begin at Fossil Springs, where a series of springs and groundwater upwellings emerge over about a 1,000-foot-long reach of stream. The springs provide a constant base flow of approximately 43 cubic feet per second (cfs). The limestone aquifer that is the source of the water at Fossil Springs is supersaturated with calcium carbonate, which results in the formation of travertine deposits along the stream bed. Fossil Springs is located a short distance upstream from the Irving development and provides the primary water source for the hydroelectric project. Nearly all of the flow in Fossil Creek is diverted by the Fossil Springs diversion dam for power generation. The diversion dam itself was constructed in 1916 and the small reservoir impounded by the dam has since become nearly filled with sediments eroded from the watershed and trapped behind the dam.

On September 15, 2000, APS and the intervenors in the relicensing process filed an Offer of Settlement (Settlement Agreement). The filing requested that FERC approve the surrender of the license to operate the hydroelectric project and included a proposed plan to remove facilities and restore the area. The Settlement Agreement states that APS will cease power generation and restore full-flows to Fossil Creek no later than December 31, 2004, and complete site restoration to the satisfaction of FERC and the Forest Service by December 31, 2009. Based on the proposed surrender of the project license and expected timeframe for the establishment of woody

riparian vegetation, the EA defines the temporal scope of the project to be ten years. The project area includes all of Fossil Creek, including all riparian and upland areas impacted by hydropower development, and the Verde River, upstream to the Childs Project.

Arizona Public Service's proposed Removal and Restoration Plan outlines the following actions: (1) removal of existing above-ground structures and equipment at the Fossil Springs diversion area; (2) removal of the Irving Development's steel flume and supporting wooden trestle, and elimination and restoration of the flume road between the Fossil Springs dam and the Irving powerhouse; (3) sealing of the Irving flume tunnel No. 1; (4) removal of the above-grade Hot Water Canyon siphon pipe, including the concrete inlet structure; (5) removal of the above-grade portion of the Irving penstock and concrete inlet structure; (6) removal of the Irving powerhouse and related equipment, fencing, power poles, wires, and transformers; (7) removal of all buildings at the Irving powerhouse site, including seven houses, a commissary building, maintenance shop, and sheds; (8) disconnection and burial of the Irving plant potable water system (per the direction of the Forest Service); (9) removal of the concrete forebay wing walls and 5-foot-high Fossil Creek diversion dam at the Irving powerplant; and (10) removal of the above-grade portions of the gravity conveyance system (consisting of concrete box flume sections, steel pipe sections, tunnel sections and steel flume sections supported on wooden trestles) between the Irving plant site and Stehr Lake.

Stehr Lake, a 23-acre off-stream impoundment that serves as a forebay for the pressure tunnel and steel pipe delivery system to the Childs plant, would be dewatered, the earthen embankments breached, and the lake area returned to natural vegetation. The Stehr Lake works would be removed and the pressure tunnel sealed off at both ends. A 1,394-foot-long reinforced concrete pressure pipe from the tunnel to the concrete surge tank would be sealed at both ends and left in place; the surge tank would be removed; and the 4,635-foot-long steel penstock with diameters ranging from 48 inches to 32 inches would be sealed at both ends and left in place. The Childs powerhouse would be left in place as an historic feature, after removal of all electrical, mechanical, and maintenance equipment. The Childs substation, located next to the powerhouse, would remain in service, with all poles, equipment, and wires not required for customer service removed.

The proposed action also includes removal of the Fossil Springs dam. APS will remove between the top 14 feet of the Fossil Springs dam and the entire dam depending upon the results of habitat development and sensitive species monitoring. The dam will be removed in 3-foot stages, beginning in September 2007, with work expected to last 12 to 16 weeks. The final decision on how much of the dam will be removed will be made by APS and the Forest Service based upon the results of the monitoring, which will occur from 2005 through 2007. To remove the dam, APS proposes to construct a diversion channel to convey the 43 cfs base flow around the work area during dam deconstruction and until natural high-flow events transport the reservoir sediments downstream. The sediment immediately behind the dam will be excavated to a stable working slope to allow for the removal of the concrete dam. Sediment mechanically removed from the stream bed will be dewatered and used as fill in the restoration of the Irving site.

Concrete removed from the dam will be disposed of in the Irving flume tunnel before sealing the tunnel entrance with concrete or placed in designated staging areas for later disposal.

Conservation Measures

Concurrently with the process of license surrender and decommissioning, the Bureau of Reclamation, Forest Service, Fish and Wildlife Service, and AGFD have been planning and are beginning to implement native fish restoration and barrier construction in Fossil Creek. Though this action is not directly part of the surrender and decommissioning process, we regard the license surrender/decommissioning and the restoration process as inextricably intertwined. Fulfillment of the potential for native fish recovery in Fossil Creek requires that 1) the Fossil Springs dam remain in place until the new barrier is constructed to prevent access by downstream non-native fishes and 2) the area between the barrier and the Fossil Springs dam is treated with piscicide to remove non-native fishes that have become established prior to the return of full-flows. FERC has concluded in the final EA that it would be beneficial to the existing native fish community not to return full flow to Fossil Creek or deconstruct the Fossil Springs dam until the proposed native fish restoration project is completed. This conservation measure will ensure that the native fish community benefits from the proposed license surrender and decommissioning.

Additional conservation measures include:

- Dispose of excess concrete residues in locations approved by the Forest Service;
- Control erosion and sedimentation during the removal of project facilities;
- Revegetate following removal of project facilities;
- Prevent the spread of noxious weeds through best management practices;
- Implement measures for the safe storage, handling, and disposal of petroleum and hazardous products as part of the proposed plan for removing the Fossil Springs dam;
- Install gates to allow bats continued access to tunnels, while preventing public access;
- Protect *Agave* plants;
- Monitor the development of riparian habitat and the presence, distribution, and abundance of special-status species downstream from Fossil Springs dam, and, if necessary, implement adaptive management measures;
- Restore Stehr Lake to its natural, pre-project condition after flows to the lake cease;

- Conduct breeding bird surveys for sensitive, candidate, and Forest Service management indicator species in the project area, and if nests are identified, establish breeding season buffers around nests during deconstruction activities;

- Salvage and transport any razorback suckers found in Stehr Lake;

- Ensure that the draining of Stehr Lake does not result in the transfer of non-native fish from the lake into Fossil Creek; and

- Leave selected project facilities in place as a part of a historical record of the area.

STATUS OF THE SPECIES

Razorback Sucker and Critical Habitat

We listed the razorback sucker as an endangered species on October 23, 1991 (USFWS 1991) and designated critical habitat on March 21, 1994 (USFWS 1994). The Razorback Sucker Recovery Plan was completed in 1998 (USFWS 1998) and recovery goals were updated in 2002 (USFWS 2002). Critical habitat includes portions of the Colorado, Duchesne, Green, Gunnison, San Juan, White, and Yampa rivers in the Upper Colorado River Basin, and the Colorado, Gila, Salt, and Verde rivers in the Lower Colorado River Basin.

The razorback sucker was once abundant in the Colorado River and its major tributaries throughout the Basin, occupying 3,500 miles of river in the United States and Mexico (USFWS 1993a). Records from the late 1800s and early 1900s indicate the species was abundant in the lower Colorado and Gila River drainages (Kirsch 1889, Gilbert and Scofield 1898, Minckley 1983, Bestgen 1990). Loss of habitat due to alteration of natural flows; changes to temperature and sediment regimes; and introduction of nonnative fishes that prey on razorback sucker eggs, fry, and juveniles are the primary threats to the species (USFWS 1991). Recruitment into the adult population has been virtually eliminated in most areas.

Since 1997, significant new information on recruitment into the wild razorback sucker population in Lake Mead indicates that some degree of successful recruitment is occurring (Holden *et al.* 2000). Recruitment has not been documented elsewhere in the species' remaining populations.

Adult razorback suckers use most of the available riverine habitats, although there may be an avoidance of whitewater type habitats. Main channel habitats used tend to be low velocity areas such as pools, eddies, nearshore runs, and channels associated with sand or gravel bars (Bestgen 1990). Razorback suckers also use backwaters, oxbows, sloughs, and flooded bottomlands adjacent to the main channel. From studies conducted in the Upper Colorado River basin, habitat selection by adult razorback suckers changes seasonally. Adults move into pools and slow eddies from November through April, use runs and backwaters during May, use backwaters, eddies, and flooded gravel pits during June, and use runs and pools from July

through October. In early spring, adults also may use flooded bottomlands. They use relatively shallow water (approximately 3 feet deep) during spring and deeper water (5 to 6 feet deep) during winter.

Data from radio-telemetered razorback suckers in the Verde River showed they used shallower and slower velocity waters than in the upper basin. They avoided areas less than 1.3 feet deep, but selected depths between 2.0 and 3.9 feet, which likely reflected a reduced availability of deeper waters compared to the larger upper basin rivers. However, use of slower velocities (mean of 0.1 feet per second) may have been an influence of rearing in hatchery ponds. Similar to the upper basin, razorback suckers were found most often in pools or runs over silt substrates, and avoided substrates of larger material (Clarkson *et al.* 1993).

Razorback suckers have been observed spawning along the shorelines of Lower Colorado River reservoirs. Razorback suckers spawn during the period January 1 to June 30 in relatively shallow water (3 to 15 feet deep) over mixed substrates that range from silt to cobble.

Habitat needs of larval and juvenile razorback sucker are reasonably well known. In reservoirs, larvae are found in shallow backwater coves or inlets (USFWS 1998). In riverine habitats, captures have involved backwaters, creek mouths, and wetlands. These environments provide quiet, warm water where there is a potential for increased food availability. During higher flows, flooded bottomland and tributary mouths may provide these types of habitats.

Razorback sucker diet varies depending on life stage, habitat, and food availability. Larvae feed mostly on phytoplankton and small zooplankton, and in riverine environments, on midge larvae. The diet of adults taken from riverine habitats consisted chiefly of immature mayflies, caddisflies, and midges, along with algae, detritus, and inorganic material (USFWS 1998).

The primary constituent elements identified in the final rule designating critical habitat (USFWS 1994) as necessary for the survival and recovery of the razorback sucker include, but are not limited to, the habitat components that provide the following:

Water: This includes a quantity of water of sufficient quality (i.e. temperature, dissolved oxygen, lack of contaminants, nutrients, turbidity, etc) that is delivered to a specific location in accordance with a hydrologic regime that is required for a particular life stage.

Physical Habitat: This includes areas of the Colorado River system that are inhabited or potentially habitable by fish for use for spawning, nursery, feeding, and rearing, or corridors between these areas. In addition to river channels, these areas also include bottomlands, side channels, secondary channels, oxbows, backwaters, and other areas in the 100-year flood plain, which when inundated provide spawning, nursery, feeding, and rearing habitats, or access to these habitats.

Biological Environment: Food supply, predation, and competition are important elements of the biological environment. Food supply is a function of nutrient supply, productivity, and

availability to each life stage of the species. Predation and competition, although considered normal components of this environment, are out of balance due to the introduced non-native fish species in many areas.

Loach Minnow and Spikedace Critical Habitat

The loach minnow was listed as a threatened species on October 28, 1986 (USFWS 1986a) and the spikedace was listed as a threatened species on July 1, 1986 (USFWS 1986b). We designated critical habitat for loach minnow and spikedace on April 25, 2000 (USFWS 2000). Critical habitat included portions of the Verde, Black, Middle Gila, San Pedro, San Francisco, Tularosa, Blue, and Upper Gila Rivers and Eagle, Bonita, Tonto, and Aravaipa creeks, and several tributaries of those streams, including approximately 4.7 miles of Fossil Creek. On June 1, 2004, the United States District Court for the District of New Mexico ruled in *New Mexico Cattle Growers Association, et al., vs. U.S. Fish and Wildlife Service, et al.*, that critical habitat for loach minnow and spikedace be vacated in its entirety. We have been directed by the Department of Justice to consider critical habitat to be in place until we receive Judge James Browning's decision in writing. Additionally, our Region 2 office has indicated that, following receipt of Judge Browning's written decision, we will need to wait an additional 60 days for the appeal period to terminate. Only after the end of that period and with no appeals would we be able to go forward under consultation for these species with no consideration of critical habitat.

It is our intention at this point to redesignate critical habitat for the loach minnow and spikedace, following completion of a new economic analysis. No official timeline has been determined for redesignation of critical habitat; however, our ability to complete the redesignation will be dependent on adequate funding. The Regional Office estimates that work on a proposed rule would begin in 2006 to 2007. Critical habitat will likely be redesignated during the life of this action.

The primary constituent elements identified in the final rule designating critical habitat (USFWS 2000) as necessary for the survival and recovery of the loach minnow include, but are not limited to, the habitat components that provide the following:

1. Permanent, flowing, unpolluted water.

2. Living areas for adult loach minnow with moderate to swift flow velocities in shallow water with gravel, cobble, and rubble substrates.

3. Living areas for juvenile loach minnow with moderate to swift flow velocities in shallow water with sand, gravel, cobble and rubble substrates.

4. Living areas for loach minnow fry with slow to moderate flow velocities in shallow water with sand, gravel, cobble substrates and abundant instream cover.

5. Spawning areas for loach minnow with slow to swift flow velocities in shallow water with uncemented cobble and rubble substrate.

6. Low amounts of fine sediment and substrate embeddedness.

7. Riffle, run, and backwater components present in aquatic habitat.

8. Low to moderate stream gradients.

9. Water temperatures in the approximate range of 1 to 30 degrees C (35 to 85 degrees F) with natural diurnal and seasonal variation.

10. Abundant aquatic insect food base.

11. Periodic natural flooding.

12. A natural unregulated hydrograph or, if flows are modified or regulated, then a hydrograph that demonstrates an ability to support a native fish community.

13. Habitat devoid of non-native aquatic species detrimental to loach minnow or habitat in which detrimental non-native species are at levels which allow the persistence of loach minnow.

The primary constituent elements identified in the final rule (USFWS 2000) as necessary for the survival and recovery of the spikedace include, but are not limited to, the habitat components that provide the following:

1. Permanent, flowing, unpolluted water.

2. Living areas for adult spikedace with slow to swift flow velocities in shallow water with shear zones where rapid flow borders slower flow, areas of sheet flow at the upper ends of mid-channel sand/gravel bars, and eddies at downstreatm riffle edges.

3. Living areas for juvenile spikedace with slow to moderate flow velocities in shallow water with moderate amounts of instream cover.

4. Living areas for larval spikedace with slow to moderate flow velocities in shallow water with abundant instream cover.

5. Sand, gravel, and cobble substrates with low to moderate amounts of fine sediment and substrate embeddedness.

6. Pool, riffle, run, and backwater components present in the aquatic habitat.

7. Low stream gradient.

8. Water temperatures in the approximate range of 1 to 30 degrees C (35 to 85 degrees F) with natural diurnal and seasonal variation.

9. Abundant aquatic insect food base.

10. Periodic natural flooding.

11. A natural unregulated hydrograph or, if flows are modified or regulated, then a hydrograph that demonstrates an ability to support a native fish community.

12. Habitat devoid of non-native aquatic species detrimental to spikedace or habitat in which detrimental non-native species are at levels which allow the persistence of loach minnow.

The appropriate and desirable levels of these factors may vary seasonally and are highly influenced by site-specific circumstances. Therefore, assessment of the presence/absence, level, or value of the constituent elements must include consideration of the season of concern and the characteristics of the specific location. The constituent elements are not independent of each other and must be assessed holistically, as a functioning system, rather than individually. In addition, the constituent elements need to be assessed in relation to larger habitat factors, such as watershed, floodplain, and streambank conditions, stream channel geomorphology, riparian vegetation, hydrologic patterns, and overall aquatic faunal community structure.

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 to provide a platform from which to assess the effects of the action now under consultation.

Therefore, we are defining the action area as the entirety of Fossil Creek, from Fossil Springs down to the confluence with the Verde River, and the Verde River, approximately 3.5 miles upstream of the confluence, to just above the Childs Development and approximately 1 mile downstream of the confluence. The action area includes the 100-year floodplain of the Verde River and Fossil Creek, the entire length of the flume, Stehr Lake, and any other structures and/or development (e.g., Fossil Springs Dam, Irving Diversion, roads, the flume, etc.) associated with the Childs-Irving Hydroelectric Project, as described in the EA.

A. Status of the species within the action area

Razorback Sucker and Critical Habitat

Recent and historical data indicates that razorback sucker may not be found in the upper reaches of Fossil Creek. According to AGFD records, 10,000 razorback suckers (average length 3.0 inches) were stocked into lower Fossil Creek on October 5, 1988. The species was found above the dam in 1990 (Barrett and Maughan 1995); however, only 16 of the 10,000 fish originally stocked were observed. Fossil Creek has been intensively surveyed downstream of the Fossil Springs dam by multiple groups using multiple techniques since 1996 (e.g., electrofishing, trammel netting, fall fish counts, and snorkel surveys). Considering that most of the creek below the Fossil Springs dam is clear and flows are less than five cfs, the probability of detecting razorback suckers, if present, is relatively high. However, these surveys did not detect the presence of any razorback suckers downstream of the dam.

Above the Fossil Springs dam, absence cannot be inferred due to the limited effectiveness of backpack electrofishing in deep pool habitat and the instream habitat complexity above the dam. While snorkling surveys and trammel netting have been conducted above the dam, they were done sporadically and for short time periods (Pam Sponholtz, pers. comm., 2003). In summary, the favorable habitat conditions such as pools, increased volume of flow, and the absence of non-native fishes suggests that razorback suckers could be present and that surveys above the dam have not been intensive enough to infer absence.

In 1999, the AGFD collected two razorback suckers from Stehr Lake (the fish were collected on October 13, 1999, and released back in to Stehr Lake). These fish either entered the lake through the flume, or more likely, were released into Stehr Lake. On September 6-7, 2000, the AGFD captured ten razorback suckers from Stehr Lake using trammel nets. On April 27-28, 2004, the AGFD, Fish and Wildlife Service, Bureau of Reclamation, and others conducted a salvage operation to capture and remove razorback suckers from Stehr Lake. Arizona Public Service was conducting maintenance operations, and voluntarily lowered the level of Stehr Lake. A total of six razorback suckers were caught using trammel nets. All captured razorback suckers (from both salvage operations) were measured for length and weight, PIT tagged, and released into the Verde River at Childs. The AGFD, Fish and Wildlife Service, Bureau of Reclamation, and others expect to conduct another salvage operation prior to the final drying of Stehr Lake.

Razorback suckers were extirpated from the Verde River drainage by the 1950s. A reintroduction program was initiated in the Verde in 1981, and now its annual goal is to stock 2,000 large (> 300 millimeters in length) individuals into the Verde River system (Jahrke and Clark 1999). Since 1994, approximately 19,367 large individuals have been stocked into the Verde River at Childs. Annual monitoring has found a steady increase in the number of razorback suckers recaptured, and has documented survival over several years (Jahrke and Clark 1999, Weedman 2001, Weedman 2002). Biologists have located some fish in spawning condition, but have not documented any evidence of reproduction or recruitment. Threats to the

species in the Verde River include potential habitat loss from urban development and water withdrawals in the watershed, and competition and predation by non-native fish species.

We designated the Verde River, within the river's 100-year floodplain, from about Perkinsville downstream to Horseshoe dam as critical habitat for the razorback sucker. The area includes the Verde River at its confluence with Fossil Creek at the Childs powerhouse and all of the Verde River between those two points. The 100-year floodplain of the Verde River includes the Childs tailrace. Congress designated a portion of the Verde River as a National Wild and Scenic River through the Arizona Wilderness Act of 1984 (P.L. 98-406). The Scenic River area begins near Beasley Flat and runs to the boundary of the Mazatzal Wilderness (18.8 miles). The portion of critical habitat within the action area lies within the Scenic portion of the river and is managed by the Coconino and Tonto National Forests. All elements of critical habitat for the razorback sucker are considered to be present within the Verde Wild and Scenic River. However, critical habitat in this area contains an abundance of non-native fish species, which adversely impact sucker reproduction and recruitment. There is also a threat of potential habitat loss from urban development and water withdrawals in the watershed above designated critical habitat.

Loach minnow and Spikedace Critical Habitat

Approximately 4.7 miles of Fossil Creek, from the confluence with the Verde River upstream to the confluence with an unnamed tributary from the northwest, is designated critical habitat for the loach minnow and spikedace. In addition, the Verde River from the confluence of Fossil Creek upstream to Sullivan Dam is also designated critical habitat for these species. As with the razorback sucker, all elements of critical habitat for the loach minnow and spikedace occur within the designated critical habitat. However, the abundance of non-native fish within these areas and the impacts of past land management have resulted in habitats that do not currently support populations of loach minnow and spikedace.

B. Factors affecting the species' environment within the action area

As stated above, the razorback sucker, loach minnow, and spikedace have all declined in numbers or been extirpated from their historical range, largely due to the introduction and proliferation of non-native fish species such as flathead catfish, black bullhead, channel catfish, and carp through predation and competition for food and space. In addition, the potential and current loss of habitat due to urban development and water withdrawals in the Verde River watershed continue to threaten the existence of native aquatic and riparian-dependent species throughout the action area. The human population in and around the Verde River watershed has grown substantially in recent years, and use of the Verde River and/or its watershed for water, recreation, housing, industry, agriculture, and commercial purposes continues to increase as well.

EFFECTS OF THE 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 and interdependent with

that action, that will be added to the environmental baseline. 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. Indirect effects are those that are caused by the proposed action and are later in time, but are still reasonably certain to occur.

The direct and indirect effects of the proposed action include change in streamflow, which will affect vegetation, travertine formation and deposition, and recreation; sedimentation resulting from dam removal; effects associated with the removal of project structures, which include erosion, sedimentation, and the potential for hazardous materials to enter the creek; and the removal of Stehr Lake. We summarize the expected effects and evaluate the impacts to the razorback sucker and its critical habitat, and critical habitat for the loach minnow and spikedace. The native fish restoration project is an interrelated action that would not be occurring were it not for the proposed action, and the effects of this project on the affected listed species and critical habitat are also evaluated herein.

Change in Streamflow

The return of full flows to Fossil Creek will result in an increase in flows from 2 cfs to 43 cfs. The increased flow will result in an increase in the size of the wetted streambed. Effects from the increased flow will occur to the vegetation, travertine formation and deposition, aquatic species (native and non-native), and may indirectly affect recreation levels.

The effects to streamside riparian vegetation may occur over different timeframes. Over the short-term, the saturation tolerance of some existing vegetation along Fossil Creek would be exceeded and that vegetation may die. Over the long-term, the increase in the amount of water in the streambed may allow for riparian vegetation to grow farther from the water's edge in places, which may provide greater protection from high-flow events. However, the Fossil Creek canyon is fairly narrow and it is likely that the width of the riparian area will be constrained by geology, regardless of the increase in flows.

Higher flows in Fossil Creek will also result in increased travertine formation and deposition (Malusa 1997). The calcium carbonate precipitation that forms travertine is a combination of inorganic processes that are accelerated in the presence of algae. The process of travertine formation begins when water saturated with calcium carbonate and a relatively high concentration of carbon dioxide (compared to atmospheric concentrations) emerges from the limestone bedrock at Fossil Springs. As this water flows downstream, carbon dioxide gas is released and the pH increases, causing the calcium carbonate to precipitate and form travertine. Precipitation of travertine typically occurs at, or immediately below, areas of turbulence, where the greatest amount of carbon dioxide is released (Herman and Hubbard 1990). With lower flows, turbulence is more uniformly distributed in the stream, and consequently, travertine deposition is more uniform. In contrast, by increasing flow, turbulence would concentrate in areas with more pronounced slope changes and thus would precipitate more travertine in these more turbulent areas. However, in reality, the effect of increased flows on the size, shape, and

placement of travertine cannot be predicted exactly due to the dynamic nature of the system. This is especially true because as travertine develops, the structures themselves will change the streambed morphology.

The largest effect of the return of full flows is its profound positive effect on the restoration opportunities for native aquatic and riparian fauna and flora. The native fish fauna in most streams in Arizona has dwindled in abundance and diversity during the past century due to human activities, including damming and diversions of streams. Water is an ever-increasingly rare resource in the American Southwest. The proposed action will return full flows to Fossil Creek after almost 100 years. The overall effect will be positive as it should increase habitat complexity through increases in travertine formation and deposition. In addition, FERC and APS ensured that the proposed action would not result in harm to native aquatic species by including a conservation measure that ensures the multi-agency non-native fish removal and barrier construction would occur prior to the return of full flows and dam removal.

However, because water is such a rare resource in Arizona, the return of full flows is also expected to greatly increase recreation in Fossil Creek. Discontinuing the hydroelectric project and removing of most of the above-ground facilities should significantly increase public interest in the Fossil Creek area. Currently, this area is a popular destination for local residents from Pine and Strawberry and other surrounding areas. Recreational activities in the project area include swimming, hiking, camping, fishing, and wildlife viewing. Littering and impacts to vegetation are relatively prevalent at the current levels of recreation. However, new, year-round water-based recreation opportunities would be created and the resulting increase in travertine formation could create a series of relatively rare falls and pools that will attract visitors from around the state and the region.

Recreationists can degrade and destroy riparian habitat by trampling vegetation or by harvesting wood for campfires. These impacts can affect cover around important pool habitats. In addition, an increase in recreationists may result in decreased water quality resulting from human waste and littering.

Dam Removal

The proposed action also includes removal of the Fossil Springs dam. APS will remove between the top 14 feet and the entire dam depending upon the results of habitat development and sensitive species monitoring. The final decision will be made by the Forest Service and APS. The small (approximately 680-foot-long) reservoir created by the Fossil Springs diversion dam is almost completely filled with sediment. Lowering the dam by 14 feet or completely removing it will allow for the estimated 25,000 cubic yards of sediment to be transported as suspended sediment and bedload downstream during high flows. The EA (page 17) includes a table that estimates how much of the sediment wedge behind the dam would be transported downstream by a range of various-sized storm events for the 14-foot and total dam removal options. The sediment transport model APS used to make these estimates predicted that most of the eroded sediments will be deposited in the pools immediately below the diversion dam site. Ultimately,

multiple storm events will redistribute the sediments further downstream, along with the normal sediment yield of the watershed. The complete description of how the Fossil Springs dam will be removed is detailed in the EA (pages 23-25).

These effects would result in elevated suspended sediment concentrations and turbidity levels in Fossil Creek until a sufficient number and magnitude of high flow events occur to transport the fine-grained materials exposed by lowering the dam out of the creek. Impacts from full or partial dam removal will occur at high flows during the first year following dam deconstruction. Deposited sediment can adversely affect invertebrates (food source for native fish), and breeding and rearing habitat for native fish including razorback sucker, loach minnow, and spikedace, by filling the interstitial spaces. Suspended sediment can increase turbidity, causing reduced light penetration through the water, resulting in reduced photosynthesis. This can adversely affect the food available for all aquatic species. Increased suspended sediment can also affect fish by interfering with respiration and changing feeding behavior through visual impairment. APS's proposal to construct a stable diversion channel to route base flow around the exposed sediments should minimize elevated suspended sediment concentrations under base flow conditions. FERC also recommends that APS prepare and implement a plan to monitor suspended sediments in Fossil Creek and the Verde River.

Project Facility Removal

Short-term impacts from removal of project facilities include soil compaction and displacement from heavy equipment and soil erosion from land-disturbing activities. In addition, if the roads are left in place but not maintained, they could turn into channels for overland water flow. The roads could cause erosion and sedimentation into Fossil Creek. As discussed below, APS proposes to eliminate the Flume Road between the Fossil Springs diversion dam and the Irving Development. To reduce the potential for adverse erosion effects caused by abandonment of this and other roads no longer needed after project retirement, APS proposes to restore the roads by grading and revegetating them in accordance with their sediment and erosion control plan.

Removal of project facilities and road abandonment will require the use of heavy equipment. Chemical substances and residues from lubrication oils and hydraulic fluids may enter Fossil Creek through spills or leaks during use and maintenance of equipment. Chemical substances and hazardous wastes, depending on the substance and exposure, can adversely affect aquatic species. In addition, chemical substances are more readily taken up by aquatic species than terrestrial species due to the solubility of these hazardous chemicals in water (e.g., petroleum) (Malins and Ostrander 1993). APS has submitted a draft plan which proposes several measures to prevent spills during deconstruction activities. Minimization measures are summarized in the EA, including additional measures suggested by the Forest Service (page 26). FERC recommends that APS work with the Forest Service, Fish and Wildlife Service, Bureau of Reclamation, and AGFD to prepare and implement a plan that covers the storage and use of hazardous substances during deconstruction work.

Stehr Lake Removal

APS uses Stehr Lake as a regulating reservoir to maintain a 3-day supply of water for the Childs Development in the event that the Irving powerhouse or flume is closed for repairs. Through time, sediment accumulation and the growth of emergent vegetation has reduced the storage capacity of Stehr Lake to a little over a day's supply of water and its surface area from 25 surface acres of open water to 5 acres. The AGFD has stocked Stehr Lake with a variety of non-native fish species over the years. Presently, Stehr Lake provides a limited warm-water fishery for largemouth bass, channel catfish, common carp, yellow bullhead, and bluegill. These species maintain self-sustaining populations and are no longer stocked by AGFD. As stated in the Environmental Baseline, razorback suckers were stocked in and/or entered Stehr Lake through the flume. Salvage operations conducted to date have removed razorback suckers from the lake. As the lake is drawn down for the last time, AGFD will again lead the effort to salvage any remaining razorback suckers from the lake. In addition, APS will develop a detailed plan to prevent the spread of non-native fish during the draining of Stehr Lake.

Removal of the Flume Road

The proposed Removal and Restoration Plan requires the removal of the flume road between Irving and the Fossil Springs dam. Currently, this road is closed to public vehicular traffic but is used by hikers to access the Fossil Springs area. The surrender application and its Removal and Restoration Plan do not specify the disposition of the other project roads. FERC states in the EA that a requirement of the surrender application will be for APS to consult with the Forest Service to prepare a plan for the final disposition of all project roads and bridges, taking into account the Forest Service's land management objectives. This will be a critical step in the process, and with no final plan it is difficult to determine the potential effects of maintaining or closing specific roads and bridges.

Effects to the Razorback sucker and Critical Habitat

The proposed return of full flows to Fossil Creek will result in a corresponding reduction of approximately 43 cfs into a three-mile reach of the Verde River. The water will no longer enter the Verde River at Childs, but will enter at the confluence with Fossil Creek. Razorback suckers are known to occur in the Verde River in the vicinity of the Childs powerhouse. The powerhouse (water) discharge currently enhances flow in a three-mile reach of the Verde River that is designated critical habitat. Flows in this portion of the Verde River will be most affected by cessation of power generation at Childs during May through December, when the Childs discharge currently exceeds ten percent of the Verde River flow. In June, the month of lowest flows, the Childs discharge accounts for approximately 30% of the average flow in the Verde River. Razorback sucker spawning generally occurs January through April, when the overall Verde River flows are higher, so the reduction of flow in this section should not impact spawning. The 43-cfs discharge at Childs likely provides some additional habitat benefits for razorback sucker during low-flow periods in this three-mile segment; however, the existing

overall flow in the Verde River will not be reduced. APS proposes to leave the Childs tailrace intact, which will avoid any disturbance to the 100-year floodplain of the Verde River.

FERC also anticipates adverse effects to razorback sucker due to the loss of Stehr Lake and dam removal. Razorback suckers have been located on multiple occasions at Stehr Lake and the potential exists for fish to be present when Stehr Lake is dried. However, AGFD, the Fish and Wildlife Service, and Bureau of Reclamation will salvage razorback suckers from Stehr Lake prior to drying. FERC also anticipates that dam removal may adversely affect juvenile razorback suckers if they are washed downstream concurrently with sediment during high-flow events.

If razorback suckers occur above the Fossil Springs dam, they may benefit from the habitat complexity resulting from increased travertine formation and deposition that will occur following the return of full flows. In addition, the interrelated native fish restoration project will provide habitat free of non-native fish in 9.5 miles of Fossil Creek.

Effects to Loach Minnow and Spikedace Critical Habitat

Heavy sediment flow can adversely impact loach minnow and spikedace critical habitat, so FERC included an analysis of whether full or partial dam removal would adversely affect critical habitat in Fossil Creek. Following dam removal, FERC's analysis (EA, pages 61-62) indicates that sediments will be washed downstream over a number of years (absent an extreme storm event) and that the estimated load from the upstream watershed would be within the capacity of the downstream channel to transport sediment. Therefore, sedimentation from dam removal is expected to have minimal effects to critical habitat.

Critical habitat in the Verde River will be reduced by 43-cfs for the same three-mile stretch of river as discussed in the razorback sucker section. This may result in adverse effects during low flows within the three-mile stretch. However, as discussed above, the 43-cfs flow will not be removed from the Verde River, but will enter three miles below Childs, at the confluence with Fossil Creek.

Critical habitat for the loach minnow and spikedace will be enhanced by the return of full flows as additional habitat will be created. FERC expects riffle, run, and edgewater habitats to increase, along with the insect food base.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, tribal, 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 pursuant to section 7 of the Act.

Most of the ongoing activities that are cumulative to the proposed action are discussed in the environmental baseline section of this opinion. A significant portion of the Verde watershed is

privately owned. Ongoing activities on these private lands that would be cumulative to the proposed action include residential use and development, commercial development, gravel mining, road development, surface water diversion, stocking of non-native aquatic species, groundwater extraction, livestock grazing, and irrigated agriculture. These activities contributed significantly to the listing of the razorback sucker, loach minnow, and spikedace and continue to contribute to the degraded condition of stream channel and fish habitat in the Verde River. The Fossil Creek watershed is predominately managed by the Forest Service. However, there is a private in-holding along Fossil Creek. Though the impacts from this private property are minimal at this time, it is possible that ownership could change in the future. In addition, Gila County was interested in acquiring 10,000 acre-feet of water per year and hired a consultant in 2002 to study this proposal and its effects to aquatic species.

Conclusion

Razorback Sucker and Razorback Sucker Critical Habitat

After reviewing the current status of the razorback sucker and its designated critical habitat, the environmental baseline for the action area, the effects of the proposed project, and the cumulative effects, it is our biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of the razorback sucker, and is not likely to destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. The proposed action will improve habitat conditions for the razorback sucker in Fossil Creek through the return of full flows, which will result in increased habitat complexity due to increased travertine formation. In addition, because FERC and APS are returning full flows to Fossil Creek, a multi-agency native fish restoration project will result in the removal of non-native fish and barrier construction in Fossil Creek.

2. Potential adverse effects to the razorback sucker and its critical habitat resulting from reduction of flows in a three-mile stretch of critical habitat will not result in appreciable detrimental effects to the survival and recovery of the razorback suckers. A three-mile reach of critical habitat will receive reduced flows, as the 43-cfs flow that formerly entered the Verde River at the Childs powerhouse, will now enter the Verde River at the confluence with Fossil Creek. Existing inflows in the Verde River will not be reduced.

Loach minnow and Spikedace Critical Habitat

After reviewing the current status of loach minnow and spikedace designated critical habitat, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is our biological opinion that the action, as proposed, will not destroy or adversely modify designated critical habitat. We base our conclusion on the following:

1. Potential adverse effects to loach minnow and spikedace critical habitat resulting from the proposed action will not result in appreciable detrimental effects to the survival and recovery of the loach minnow or spikedace. A three-mile reach of critical habitat will receive reduced flows, as the 43-cfs flow that formerly entered the Verde River at the Childs powerhouse will now enter the Verde River at the confluence with Fossil Creek. Existing inflows in the Verde River will not be reduced.

2. Sedimentation resulting from dam removal is not expected to result in sediment flows greater than the annual average for the watershed upstream of the dam.

3. The proposed action will improve the primary constituent elements in Fossil Creek for loach minnow and spikedace by providing permanent, flowing, unpolluted water. The additional water will result in increased habitat complexity and an abundant aquatic insect food base. In addition, because FERC and APS are returning full flows to Fossil Creek, a multi-agency native fish restoration project will result in the removal of non-native fish and barrier construction. This action will allow for the future repatriation of these species to Fossil Creek.

The conclusions of this biological opinion are based on full implementation of the project as described in the Description of the Proposed Action section of this document, including any Conservation Measures that were incorporated into the project design.

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.

Extent of Take Anticipated

We do not anticipate that the proposed action will result in incidental take of razorback sucker. We base this conclusion on the following:

1. Currently, we cannot be reasonably certain that the razorback sucker occurs in Fossil Creek. Though we believe that there is potential for the sucker to occur above the Fossil Springs dam, surveys completed to date have not located the fish. Though FERC conservatively assesses potential effects to juvenile razorback suckers resulting from dam removal, we cannot be reasonably certain that if razorback sucker are present above the dam, that reproduction is occurring to produce juvenile razorback suckers. Therefore, we are not anticipating take of juvenile suckers from impacts associated with this project.

2. Razorback sucker salvage operations have and will occur prior to the drying of Stehr Lake under the authority of a 10(a)(1)(A) permit authorizing such take. We are reasonably certain that any razorback suckers currently occupying the lake will be salvaged and released into the Verde River at Childs, so that none will be incidentally taken during the proposed action.

We will not refer the incidental take of any migratory bird or bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 703-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

Disposition of Dead or Injured Listed Species

Upon locating a dead, injured, or sick listed species initial notification must be made to the FWS's Law Enforcement Office, 2450 W. Broadway Rd, Suite 113, Mesa, Arizona, 85202, telephone: 480/967-7900) within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph if possible, and any other pertinent information. The notification shall be sent to the Law Enforcement Office with a copy to this office. Care must be taken in handling sick or injured animals to ensure effective treatment and care and in handling dead specimens to preserve the biological material in the best possible state.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs 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. 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. We recommend that FERC and APS monitor the development of fish habitat following the return of full flows. This information will aid in determining whether full or partial dam removal should occur.

2. We recommend that the AGFD and Forest Service work with the Fish and Wildlife Service and the private landowner on Fossil Creek. This may entail providing funding assistance through the Landowner Incentive or Partners Programs and/or coordinating management of Fossil Creek with the landowner.

3. We recommend that FERC encourage APS and the Forest Service to include the Fish and Wildlife Service and AGFD in determination of project roads and bridges to maintain or close. In addition, we recommend that the Forest Service fund the completion of the Fossil Creek Management planning effort in order to aid in the effort to determine land management goals for Fossil Creek following license surrender and decommissioning.

In order for us to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, we request notification of the implementation of any conservation recommendations.

REINITIATION NOTICE

This concludes formal consultation on the action outlined in the request. 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.

The proposed action is the work of many people and agencies. However, we want to extend our appreciation to FERC and APS for making the license surrender and decommissioning of the Childs-Irving Project and the restoration of Fossil Creek a reality. In addition, we appreciate your efforts to identify and minimize effects to listed and sensitive species from this project. The proposed action will help to provide habitat for and aid in the recovery of many native fish species and we look forward to working with you to implement the proposed action.

For further information please contact Shaula Hedwall or Brenda Smith of our Flagstaff Suboffice at (928) 226-0614. Please refer to the consultation number 02-21-89-F-0214 in future correspondence concerning this project.

Sincerely,

/s/ Steven L. Spangle
Field Supervisor

cc: Regional Director, Fish and Wildlife Service, Albuquerque, NM (ARD-ES)
(Attn: Dean Watkins) (HC/EC)
Field Supervisor, Fish and Wildlife Service, Albuquerque, NM
Bob Broscheid, Habitat Branch, Arizona Game and Fish, Phoenix, AZ
Regional Supervisor, Arizona Game and Fish Department, Mesa, AZ
Regional Supervisor, Arizona Game and Fish Department, Flagstaff, AZ
Project Leader, Pinetop Fisheries Office, Pinetop, AZ
Regional Director, Forest Service, Albuquerque, NM (Attn: Amy Unthank)
Forest Supervisor, Coconino National Forest, Flagstaff, AZ
Forest Supervisor, Tonto National Forest, Flagstaff, AZ
District Ranger, Red Rock Ranger District, Coconino National Forest, Sedona, AZ
Jennifer Hill, Federal Energy Regulatory Commission, Washington, D.C.
Robert Clarkson, Bureau of Reclamation, Phoenix, AZ
Nick Svor, Arizona Public Service Company, Phoenix, AZ
Phil Smithers, Arizona Public Service Company, Phoenix, AZ

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APPENDIX A – CONCURRENCES

This appendix contains our written concurrence with your "may affect, not likely to adversely affect" determinations for the bald eagle, Mexican spotted owl, southwestern willow flycatcher, and Yuma clapper rail.

Bald eagle

The bald eagle south of the 40th parallel was listed as endangered under the Endangered Species Preservation Act of 1966, on March 11, 1967 (USFWS 1967), and was reclassified to threatened status on July 12, 1995 (USFWS 1995a). No critical habitat has been designated for this species. The bald eagle was proposed for delisting on July 6, 1999 (USFWS 1999). The bald eagle is a large bird of prey that historically ranged and nested throughout North America except extreme northern Alaska and Canada, and central and southern Mexico.

Most of Arizona's known breeding population nests on the Salt and Verde River drainages. The East Verde breeding area is the nearest breeding area to the project site and is located on the Verde River approximately three miles downstream of the confluence with Fossil Creek. Telemetry data collected during the 1987 breeding season showed that the East Verde male flew up the Verde River as far as Childs powerhouse and foraged in Fossil Creek a number of times in April of that year. In 1998, a active bald eagle nest was also located at the confluence of Cold Water Creek and the Verde River (approximately 0.6 mile north of the Childs powerhouse). This territory did not produce young in 1998.

Under the proposed action, Stehr Lake will dry. Fish and waterfowl will no longer be supported by Stehr Lake and thus the lake's potential as foraging habitat would be lost. In addition, water-dependent trees along the lake would probably die, resulting in the loss of potential nesting habitat. Bald eagles have never been observed at Stehr Lake, so the loss of potential foraging and nesting habitat is believed to be insignificant and discountable.

The transmission facilities included in the project license consist of a 63.1-mile-long-line connecting the Irving Development with the Childs Development and a 200-foot-long-line connecting the Childs step-up substation to the switchyard. APS proposes to remove the project transmission facilities, but would leave the Childs substation and those electrical system facilities required to continue serving customers. The removal of the project transmission facilities will decrease the risk of bald eagles colliding with power lines in the project area.

We concur with FERC's determination that the proposed action may affect, but will not likely adversely affect the bald eagle. We base this determination on the following:

1. The habitat at Stehr Lake is not bald eagle nesting habitat, so the loss is insignificant and discountable.

2. The loss of Stehr Lake as a foraging opportunity is insignificant and discountable. Foraging opportunities for bald eagles will be increased at Fossil Creek following the return of full flows.

3. The removal of project transmission lines will decrease the risk of bald eagle power line collision and electrocution.

Mexican spotted owl

The Mexican spotted owl was listed as a threatened species in 1993 (USFWS 1993b). The primary threats to the species were cited as even-aged timber harvest and the threat of catastrophic wildfire, although grazing, recreation, and other land uses were also mentioned as possible factors influencing the MSO population. We appointed the Mexican Spotted Owl Recovery Team in 1993, which produced the Recovery Plan for the Mexican Spotted Owl in 1995 (USFWS 1995b). A detailed account of the taxonomy, biology, and reproductive characteristics of the MSO is found in the Final Rule listing the MSO as a threatened species (U. S. Fish and Wildlife Service 1993b) and in the Recovery Plan (USFWS 1995b). The information provided in those documents is included herein by reference.

Three Mexican spotted owl protected activity centers (PACs) are located within the Coconino National Forest's Fossil Creek Planning Area. None of these three PACs are located within the project area. The Forest Service has not conducted surveys for Mexican spotted owls in the project area. However, the riparian habitat along Fossil Creek does not provide the density and structure needed to provide nesting and/or roosting habitat; and though the Fossil Springs area provides potentially suitable habitat, its small size most likely precludes its use by spotted owls.

We concur with FERC's determination that the proposed action may affect, but will not likely adversely affect the Mexican spotted owl. We base this determination on the following:

1. The project area does not provide nesting and/or roosting habitat Mexican spotted owls and, therefore, no habitat will be affected by the proposed action.

2. The proposed action will likely improve the density and structure of riparian habitat in Fossil Creek, where the width of the canyon permits.

Southwestern willow flycatcher

We listed the southwestern willow flycatcher as endangered, without critical habitat, on February 27, 1995 (USFWS 1995c). Critical habitat was later designated on July 22, 1997 (USFWS 1997a). A correction notice was published in the Federal Register on August 20, 1997 to clarify the lateral extent of the designation (USFWS 1997b). On May 11, 2001, the 10th circuit court of appeals set aside designated critical habitat in those states under the 10th circuit's jurisdiction (New Mexico). The Fish and Wildlife Service subsequently set aside critical habitat designated

for the southwestern willow flycatcher in all other states (California and Arizona) until it can re-assess the economic analysis.

The Forest Service has conducted limited surveys for the willow flycatcher in riparian habitat at Fossil Springs, along Fossil Creek four miles downstream of the springs, and at Stehr Lake. No willow flycatchers have been observed. APS also conducted willow flycatcher surveys after conducting habitat surveys in the vicinity of the project area. Three areas were identified as potential habitat; however protocol surveys did not locate any willow flycatchers.

We concur with FERC's determination that the proposed action may affect, but will not likely adversely affect the southwestern willow flycatcher. We base this determination on the following:

1. Surveys have not located any southwestern willow flycatchers in the project area.

2. The proposed action will likely improve the density and structure of riparian habitat in Fossil Creek, where the width of the canyon permits.

Yuma clapper rail

The Yuma clapper rail was listed as an endangered species on March 11, 1967 under endangered species legislation enacted in 1966 (Public Law 89-669). Only populations found in the United States were listed as endangered; those in Mexico were not listed under the 1966 law or the subsequent Endangered Species Act of 1973 (as amended). Critical habitat has not been designated for the Yuma clapper rail. The Yuma Clapper Rail Recovery Plan was issued in 1983 (USFWS 1983).

Stehr Lake is currently the only part of the project area that could provide marsh habitat for the Yuma clapper rail. Surveys conducted in 1998 did not detect any Yuma clapper rails. In the fall of 1997, observers recorded wintering calls from a Yuma clapper rail population (15 to 50 individuals) in Tavasci Marsh, east of the Verde River, near Clarkdale.

We concur with FERC's determination that the proposed action may affect, but will not likely adversely affect the Yuma clapper rail. We base this determination on the following:

1. Yuma clapper rails are not located within the project area.

2. Though drying of Stehr Lake will remove marsh habitat, the loss of this area is insignificant and discountable to the recovery and survival of the Yuma clapper rail.