

Chapter 2. Proposed Action and Alternatives

INTRODUCTION

To expedite the recovery and conservation of native imperiled aquatic species in the Basin, USFWS proposes the action that it deems essential to the long-term conservation of each species. The proposed action should:

- address recovery needs throughout the species range,
- implement actions that would immediately improve species status,
- provide a cooperative mechanism for conflict resolution, and
- address historic resource issues associated with recovery efforts in the Basin.

Based on the informal comments received and the best scientific and commercial information available, alternatives being considered in this EA are:

- no action,
- the Preferred Alternative (i.e., the proposed VRRMRP), and
- the Basinwide Recovery Program.

Other alternatives were considered but not evaluated in depth. These alternatives, and the reasons they were not given further consideration, are discussed in “Alternatives Considered, but Not Evaluated in Depth”.

ALTERNATIVES UNDER CONSIDERATION

Alternative A: No Action

Under the No-Action Alternative, USFWS and other DOI agencies would not formalize participation in any federal, state, and local process that would coordinate, direct, and fund recovery actions for imperiled fish in the Basin. USFWS would continue the current level of protection and recovery actions that are provided for under ESA. These actions are generally in association with Section 7 consultations, recovery team efforts, activities funded through Section 6 agreements with state wildlife agencies, and prohibition of take according to Section 9 of ESA. Other actions would not be readily funded, and any recovery actions implemented would not be based on a cooperative

process. In addition, recovery actions would not be evaluated at regular intervals, and no standard process would be used to determine whether the actions were effective in accomplishing recovery.

The level of protection and the degree to which recovery efforts have been implemented through sections of ESA, as described above, have not significantly improved the status of the endangered fish in the Virgin River. A higher level of protection and greater recovery efforts may be needed to guard the fish species from extinction. However, pursuant to NEPA and its implementing regulations (40 CFR 1502.14), USFWS is required to consider the No-Action Alternative. All activities described above would be reviewed and conducted in accordance with federal and state law, including NEPA, ESA, the Fish and Wildlife Coordination Act, and the National Historic Preservation Act.

Regulatory Responsibilities

Federal Action Consultations. Formal Section 7 consultation would be required for any federal action that may affect listed species or critical habitat. Development proposals authorized, funded, or carried out by federal agencies would have to ensure that such actions likely would not jeopardize the species' existence or result in destruction or adverse modification of critical habitat. Section 7 consultations would be conducted consistent with federal law and regulations (50 CFR 402). If an action was likely to jeopardize listed species, USFWS would suggest RPAs to the action, if available. USFWS alternatives would be based on:

- the best scientific and commercial data available;
- an assessment of impacts expected from action construction and operation (including cumulative impacts); and
- the project's purpose, planned operation, and resources.

Alternatives would be developed on a case-by-case basis. They would address depletion impacts (e.g., flow reductions and corresponding changes in temperature, salinity, and turbidity) and nondepletion impacts (e.g., obstructions to migration routes, alteration of physical habitat, construction, inundation, or temperature modification from reservoir releases). Alternatives that would remove jeopardy may include:

- changing the timing, amount, or location of diversions;
- providing offsetting flows from reservoir reoperation or storage;
- building fish passage structures;

- conducting research studies to collect critical information on habitat requirements of endangered fish in affected reaches; and
- improving habitat.

However, even with these options, some projects may be proposed for which USFWS would be unable to develop RPAs.

Prohibition of Take. The woundfin and Virgin River chub would continue to be subject to the prohibition of take as described in ESA Section 9 and the regulations that implement it. Enforcement actions would be expected in cases where evidence clearly showed that take had occurred.

Recovery Efforts

USFWS would continue to update and revise the VRFRP with input from the VRFRT. Funding and implementation of recovery actions would continue at the current level, which has been determined to provide limited progress toward recovery. The high cost of many recovery actions tends to limit their implementation; actions are undertaken when there are sufficient funds. Efforts within the five major categories of efforts identified in the VRFRP would be expected to occur:

- Maintain and enhance native fish communities.
- Protect and enhance habitat for the native fish species.
- Establish additional fish populations.
- Determine ecological requirements.
- Develop educational programs and information.

Maintain and Enhance Native Fish Communities. This category of VRFRP efforts would involve two general tasks. The first would be to monitor fish communities. The States of Utah and Nevada have developed programs to collect basic population monitoring information using funds authorized by provisions in ESA Section 6. These efforts would not change significantly under this alternative; limited recovery efforts would be funded at an average of \$30,000 per year for the next 10 years. USFWS's contribution, through its federal-aid-to-states program, presumably would continue at \$20,000 per year and the states' combined contributions would likely remain \$10,000 per year. As funds permit, data would be compiled in a centralized database for all parties to use when they evaluate species status and trends and develop specific recovery goals for listed fish species.

The second task in this category would be to eliminate non-native fish species. USFWS partially funded the attempt in 1987–1989 to eradicate the red shiner (*Cyprinella lutrensis*) between the Washington Fields diversion and the Utah/Arizona state line. Federal funds have not been available, however, to continue this effort. The State of Utah has taken actions to eliminate red shiner in some reaches of the Virgin River as part of its commitment to implement the spinedace

conservation agreement (Lentsch et al. 1995). However, the state is under no formal commitment to expand these efforts to assist in woundfin recovery through the species range.

Protect and Enhance Habitat for the Native Fish Species. Instream flow needed to preserve native fish would be determined. Implementation of actions to determine instream flow requirements has not taken place with federal funds. In the past, WCWCD has funded several studies to collect this information in an effort to define instream flow requirements. WCWCD, however, is under no formal commitment to continue these efforts, and these actions are not formally coordinated among the agencies.

Establish Additional Fish Populations. The goal would be to maintain appropriate broodstocks. USFWS has maintained woundfin in culture ponds at the Dexter, New Mexico, facility. These fish breed in the ponds and produce progeny on an annual basis. Some of the progeny have been stocked in the Virgin River in the State of Nevada for various studies. Under this alternative, this effort would be expected to continue at the current level.

Determine Ecological Requirements. USFWS would determine the effects of habitat conditions on various life stages. Studies to determine fish/habitat relationships have not generally taken place with federal funds. In the past, WCWCD and Southern Nevada Water Authority have funded several efforts to collect some of this information. These agencies, however, are under no formal commitment to continue these efforts, and these actions are not formally coordinated among all the resource agencies.

Develop Educational Programs and Information. The federal government has not yet developed such programs.

Alternative B: The Preferred Alternative—the Virgin River Resource Management and Recovery Program

Under the Preferred Alternative, USFWS and other DOI agencies would formalize participation in a federal, state, and local process that would coordinate, direct, and fund recovery actions for imperiled aquatic fish species in the Basin in Utah. This alternative would implement the proposed VRRMRP developed by the resource agencies in Utah (Utah Department of Natural Resources 1998).

The proposed VRMRRP's scope initially addresses only the Virgin River (including its 100-year floodplain) and its tributaries upstream of the Utah/Arizona state line. Program participants, however, would work with other federal, state, and local agencies in Arizona and Nevada to ensure their participation and to implement recovery and conservation efforts on a rangewide basis. The VRRMRP would work within the context of state water rights systems to:

- continue protection and recovery actions provided under ESA; and
- fund, enhance, and coordinate management efforts for recovery of endangered fish species (i.e., the woundfin and the Virgin River chub) and conservation of the Virgin spinedace, desert sucker, flannelmouth sucker, speckled dace, and southwestern toad so they would not require ESA protection in Utah.

This alternative would include ESA activities described under the No-Action Alternative, but it would create a mechanism to implement recovery actions. It would establish a process to ensure that appropriate actions were taken toward recovery of the two endangered species, conservation of three additional sensitive fish species, and conservation of one amphibian species in the Basin in Utah. A complete description of the process may be found in the VRRMRP Program Document (Program Document) (Utah Department of Natural Resources 1999). All actions described for the VRRMRP would be reviewed and implemented by the appropriate party in accordance with federal and state laws, including NEPA, ESA, the Fish and Wildlife Coordination Act, and the National Historic Preservation Act.

The proposed action would establish a multiagency cooperative effort intended to implement critical elements of the VSCA and VRFRP and coordinate and manage competing uses of land and water resources in Utah (Utah Department of Natural Resources 1998). Efforts to promote the recovery, conservation, and protection of native species and their habitats would be enhanced and the recreational and consumptive needs required for the growing human population would be balanced and accommodated. Specifically, the proposed VRRMRP is designed to implement conservation and recovery actions by:

- coordinating the implementation of actions outlined in the VRFRP, VSCA, and Virgin River Management Plan (VRMP) that are consistent with goals described in the Program Document (Utah Department of Natural Resources 1998);
- promoting the recovery of listed species, preventing the need for further listing, and generally improving habitat conditions for wildlife;
- taking an adaptive management approach through which biological information and data will be gathered, reviewed, and incorporated into the VRRMRP on an annual basis; and
- serving as a basis for determining whether sufficient recovery is being achieved to offset the effects of human population growth activities in the Basin.

Two goals have been defined for the proposed VRRMRP:

- Implement actions to promote the recovery, conservation, and protection of native species.
- Enhance the ability to provide adequate water supplies to sustain human needs.

These goals would be achieved through implementation of the Recovery Action Plan (Lentsch et al. 1998b), VRMP, and the recovery banking process outlined in the Program Document (Utah Department of Natural Resources 1998).

A critical element of the proposed VRRMRP is the establishment of a recovery bank. Such a bank would be established to promote species recovery and conservation, while allowing development of adequate water supplies to sustain human needs. The recovery bank is the principal mechanism for the VRRMRP to achieve its goals and to monitor progress toward recovery. The currency of the recovery bank is “recovery units”. The recovery banking process quantifies, allocates, and administers recovery units. A ledger would be used to record the current number of recovery units relative to baseline conditions and desired conditions for the VRRMRP.

Regulatory Responsibilities

Federal Action Consultations. Participants in the VRRMRP would design the program to fulfill federal, state, and local obligations under ESA Section 7 and to provide RPAs to actions deemed likely to jeopardize the existence of federally listed species in the Basin. Similarly, participants would design the program to provide RPAs to avoid the destruction or modification of critical habitat.

Biological Opinions. USFWS would consult on the effects of implementing the VRRMRP and would develop a biological opinion that would detail how the program would affect listed species or any designated critical habitat. The VRRMRP’s biological opinion would include an incidental take statement in compliance with ESA Section 7(b)(4). This consultation would have to be completed before the VRRMRP took effect. To ensure that the VRRMRP complied with Section 7 requirements, program decisions about recovery actions would have to comply with ESA requirements. USFWS also would consult on the effects of individual projects that applied to the VRRMRP. Each biological opinion would have its own Section 7 baseline, as defined in 50 CFR 402.02.

No action(s) in the proposed VRRMRP can be likely to violate Section 7. For VRRMRP recovery actions to comply with ESA, they would have to avoid the likelihood of jeopardy or adverse modification. Participants in the VRRMRP would have to recognize that in addition to their own alternatives, USFWS may recommend RPAs for the program or for individual projects to avoid violating Section 7.

The proposed VRRMRP and individual projects also must be designed to minimize the incidental take of federally listed species or species proposed for listing. Participants in the VRRMRP would recognize that USFWS may require that projects have continuing terms and conditions to minimize such impacts. Project proponents and their successors would have to comply with these terms and conditions to receive ongoing incidental take protection and avoid violating ESA.

Other Consultations. The VRRMRP would facilitate consultations on individual projects. The VRRMRP would become the RPA or the set of reasonable and prudent measures or terms and conditions that would be included in individual biological opinions. If necessary to comply with ESA requirements, the VRRMRP would be modified to reflect individual projects' site-specific conditions.

USFWS would notify participants in the VRRMRP if the VRRMRP might not serve as the RPA in a given situation, or if USFWS contemplated recommending site-specific requirements. Participants would work with USFWS to evaluate the situation and develop the most appropriate response to restore the VRRMRP as a reasonable alternative. If the VRRMRP could not be restored as the RPA, as a last resort USFWS would work with the lead agency, the project proponent, and technical experts to develop such an alternative.

Consultation would have to be reinitiated under the circumstances described in 50 CFR 1402.16. If consultation were reinitiated, the VRRMRP would be intended to implement any resulting RPAs, reasonable and prudent measures, or terms and conditions unless participants determined them to be inappropriate. If project proponents failed to accurately describe project components and operations in the application to the VRRMRP, or if they subsequently modified the project, they would assume all responsibility for reinitiation requirements.

Determination of Sufficient Progress. To monitor the VRRMRP's effectiveness, USFWS would review all the relevant strategic and annual work plans, accomplishment reports, and assessment reports prepared for the VRRMRP and approved by the VRRMRP participants. USFWS would review the monitoring of recovery actions and the comparison of existing conditions to the baseline and desired conditions. It would determine whether the VRRMRP was making sufficient progress toward desired conditions throughout the Basin. Sufficient progress will have been made if the following conditions occur:

- there is a net gain in the Program's recovery bank ledger,
- the proposed VRRMRP has maintained the recovery actions, and
- the anticipated biological response has been obtained.

As long as sufficient progress was being made, the VRRMRP would serve as the RPA for recovery actions taken by the VRRMRP and other participating projects. If USFWS determined that progress had not been made, it would identify the deficiencies that the VRRMRP must rectify. If the VRRMRP failed to follow through, USFWS could reinitiate Section 7 consultation.

Prohibition of Take. The woundfin and Virgin River chub would continue to be subject to the prohibition of take as described in ESA Section 9 and the regulations that implement it. An enforcement action would be expected when a clear line of evidence was available to show that take had occurred.

Recovery Efforts

The specific recovery and conservation actions to be implemented by the proposed VRRMRP are described in detail in a recovery action plan (Lentsch et al. 1998b). This plan was developed by incorporating specific recovery actions identified and listed above for the VRFRP and the actions listed in the spinedace conservation agreement/strategy. By reference herein, the specific actions listed in this plan would be implemented by the VRRMRP. For the proposed VRRMRP's recovery efforts to be successful, the following nine objectives would need to be implemented:

- Develop a description of baseline and desired conditions for recovery.
- Provide and protect instream flows sufficient for conservation and recovery of native species.
- Protect and enhance aquatic, riparian, and 100-year-floodplain habitat.
- Protect and enhance native species communities.
- Establish and/or enhance populations of native species through stocking efforts.
- Determine ecological factors limiting abundance of native species.
- Monitor habitat conditions and populations of native species.
- Improve education and communication on resource issues.
- Implement a process to fund, manage, and expand recovery efforts.

The agencies that developed the proposed VRRMRP recommend that each objective be implemented fully. This means that the agencies would investigate all actions described in the VRRMRP and that the participants would implement those actions shown to be necessary and effective.

The proposed VRRMRP is a dynamic program. Although a variety of future actions are described, few are defined in detail; the majority are nonspecific with regard to location, degree, and timing of implementation. They would become specific only on an annual basis as the proposed VRRMRP's administration committee determined the most appropriate course of action. Site-specific NEPA documents would be completed as appropriate. The basic components that the VRRMRP would initiate immediately upon completion of this NEPA process are summarized below.

Coordination of Recovery Efforts

The VRRMRP would result in the immediate initiation of recovery actions. It would bring participants together in a coordinated and cooperative decision making process. It would also provide a mechanism to initiate development of a Basinwide recovery program.

A broad spectrum of resource management interests would participate in the VRRMRP. USFWS, BLM, NPS, UDNR, WCWCD, and the Grand Canyon Trust have all agreed to dedicate their efforts to ensure that the proposed VRRMRP is successful. These entities would have representatives on the administration committee and the technical committee as outlined in the VRRMRP's Program Document (Utah Department of Natural Resources 1999). The organizations recognize that other entities, governments, associations, and individuals have an interest in the Basin's aquatic resources and in the VRRMRP. Meaningful, constructive participation by such entities is encouraged as set forth in the Program Document (Utah Department of Natural Resources 1999). In addition, this participatory approach provides a mechanism to resolve conflicts associated with resource management and to address historic issues associated with recovery efforts in the Basin.

Funding and Management of Recovery Efforts

The VRRMRP would ensure that adequate funding is available to implement recovery actions. It would also create a management structure to ensure that recovery actions were implemented in a timely and efficient manner.

Funding Recovery Efforts. The VRRMRP could cost more than \$14 million to implement (Utah Department of Natural Resources 1999). Some of these funds have been secured and are available for immediate use. The actions to reestablish population-maintenance flows to stream channels and eliminate non-native fish species, which would take place during the first 3–5 years of the VRRMRP, are projected to incur the greatest expense.

Participants intend to fund the VRRMRP with matching funds that would come from a variety of federal, state, and local sources. All funding commitments would be subject to approval and appropriations by the appropriate entities. A variety of sources would provide funding:

- *federal*—USFWS, BLM, land and water conservation funds, and the Natural Resource Conservation Service;
- *state*—direct appropriation of funds by the state legislatures, community impact boards, revolving funds for water resources, and state resource management agencies; and
- *local*—habitat conservation plans, water districts, cities and towns, county governments, and irrigation companies.

Participating agencies would provide in-kind contributions of personnel, field equipment, and supplies. Each agency would have specific responsibilities and proposed actions and commitments related to their in-kind contributions.

Managing and Directing Recovery Efforts. A program director's office would be established to ensure the timely and effective planning, implementation, and coordination of the VRRMRP. The administration committee would select the program director and oversee his or her general activities. The UDNR would oversee the program director office operations for the administration committee. The program director would:

- coordinate recovery activities by:
 - working with VRRMRP participants to plan, execute, and evaluate recovery efforts;
 - handling regulatory issues associated with the VRRMRP; and
 - recommending implementation priorities to the technical and administration committees;
- plan and evaluate the VRRMRP by:
 - reviewing and updating the recovery action plan and annual work plan for VRRMRP committee review;
 - helping the administration committee to recommend changes to the strategic plan and annual work plan;
 - soliciting proposals to implement the annual work plan;
 - compiling and distributing annual VRRMRP accomplishment reports; and
 - producing planning documents;
- manage VRRMRP finances by:
 - helping the administration committee to secure annual and long-term funding;
 - developing, revising, and maintaining the budget and monitoring and tracking expenses; and
 - developing and administering interagency agreements, cooperative agreements, and contracts necessary to implement the VRRMRP; and

- assist VRRMRP committee staff by:
 - providing additional staff support as necessary;
 - preparing and distributing agendas, meeting summaries, and other related documents;
 - maintaining an administrative record; and
 - compiling and distributing a calendar of important events;
- coordinate technical review by:
 - developing procedures to ensure independent peer review of the VRRMRP; and
 - keeping the administration committee informed about technical issues that require peer review; and
- expand the VRRMRP. Participants intend to discuss expansion of the VRRMRP with other federal, state, and local agencies in Arizona and Nevada. In the interim, the VRRMRP would help to implement rangewide recovery efforts that benefit the entire Basin.

Alternative C: Basinwide Recovery Program

Under Alternative C, USFWS and other DOI agencies would formalize participation in a federal, state, and local process that would coordinate, direct, and fund recovery actions for rare fish species throughout the Basin in Utah, Arizona, and Nevada. The Basinwide Recovery Program alternative would develop and implement a recovery program that would cover the entire geographical area of the Basin. This program would be a cooperative effort to:

- continue protection and recovery actions provided under ESA and
- fund, enhance, and coordinate management efforts for recovery of endangered fish species and conservation of native species.

This program would continue Section 7 consultation, enhance research efforts, and manage all native species that occupy habitat throughout the Basin so that they would not require ESA protection. It would include four major elements:

- continuation of regulatory responsibilities,
- implementation of recovery efforts of the Basinwide Recovery Program,
- development of a coordinated process, and
- funding and management of recovery activities.

Regulatory Responsibilities

Federal Action Consultations. The Basinwide Recovery Program would be intended to fulfill federal, state, and local obligations under ESA Section 7. It would also provide RPAs to actions deemed likely to jeopardize the continued existence of federally listed species in the Basin. Similarly, the Basinwide Recovery Program would provide RPAs to avoid the destruction or adverse modification of critical habitat. The issuance of biological opinions and the determination of sufficient progress presumably would be consistent with the process described above for the VRRMRP; however, the actions would apply to Basinwide activities.

Prohibition of Take. The woundfin and Virgin River chub would remain subject to the prohibition of take as described in ESA Section 9 and the regulations that implement it. An enforcement action would be expected when a clear line of evidence was available to show that take had occurred.

Recovery Efforts

USFWS would continue to update and revise the VRFRP. Under this alternative, USFWS would be able to fully fund the VRFRP. Implementation of these actions, however, would be delayed until the Basinwide Recovery Program was developed and finalized. Recovery team members and researchers have proposed to do all of the following:

- Maintain and enhance native fish communities,
- Protect and enhance habitat for the native fish,
- Establish additional fish populations within their historic range,
- Determine ecological requirements of native fish species, and
- Develop and offer educational programs and information.

A more detailed and site-specific recovery action plan, however, would need to be developed. This plan would include enough information that the actions could be implemented in an efficient and timely manner.

Coordination of Recovery Efforts

The Arizona, Nevada, and Utah resource agencies would need to develop a program similar to the VRRMRP (Utah Department of Natural Resources 1999) that would deal with Basinwide recovery issues. This Basinwide Recovery Program would be developed in cooperation with USFWS, BLM, NPS, the U.S. Bureau of Reclamation (Reclamation), local water management agencies, and environmental organizations.

The primary goals of the Basinwide Recovery Program would be the recovery, conservation, enhancement, and protection of native species and their habitat within the Basin. At the same time, the program would balance and accommodate the growing need for future water consumption by

industrial and municipal users. The resource agencies and other organizations would need to take the following steps to develop the program:

- identify participants,
- establish coordination and cooperation processes,
- identify which recovery actions to implement,
- create a conflict resolution process,
- determine funding mechanisms, and
- develop a management process.

Development of the Basinwide coordinated process would require at least 2–3 years.

Funding and Management of Program Activities

The Basinwide Recovery Program would implement actions that would result in the cost sharing of recovery actions. The Basinwide Recovery Program may cost as much as \$20 million. This program would bring participants together in a coordinated and cooperative decision making process. In addition, it would create a management structure to ensure that recovery actions were implemented in a timely, efficient manner.

COMPARISON OF ALTERNATIVES A, B, AND C

Table 2-1 summarizes the three alternatives. Several components of the three alternatives are similar, but there are also some major differences. These similarities and differences are described below. However, in general, Alternative A (no action) only provides preventive measures for the endangered fish. Alternative B (the proposed action) provides the same protective measures but immediately implements recovery actions for populations found in Utah. Alternative C (the Basinwide Recovery Program) includes protective measures and implements recovery actions for all populations in the Basin after a 2- to 3-year development period. Alternative B, the proposed action, meets all of the criteria established by the USFWS for selecting an action.

Similarities between the Alternatives

Regulatory Responsibilities

- *Listing:* The species would remain listed until the threats that warrant their listing had been removed.

- *Federal Action Consultations (Section 7):* Section 7 consultations would be conducted consistent with federal law and regulations (50 CFR 402).
- *Prohibition of Take:* The woundfin and Virgin River chub would be subject to the prohibition of take.

Recovery Efforts

- *Recovery Planning:* The recovery plan would be written and updated as needed.
- *Technical Advice:* Technical advice would be sought from experts.
- *Recovery Actions:* The recovery needs identified in the VRFRP would be used as a basis for management actions.
- *Geographical Area:* All alternatives apply to the entire Basin. Under Alternative B, however, initial efforts apply only to Utah.

Major Differences between the Alternatives

Regulatory Responsibilities

The major difference between the alternatives in this category pertains to federal action consultations under Section 7 and recovery action implementation. For Alternative A, specific actions must be identified for each project; for Alternatives B and C, the recovery programs could serve as RPAs for individual projects.

Recovery Efforts

- *Implementation of Recovery Actions:* Alternative B would immediately implement actions to improve the status of imperiled species. Alternative C would implement actions after a 3- to 5-year time period. Significant implementation of recovery actions would not be expected under Alternative A.
- *Time Frame:* Alternative A has no time frame because it is only a preventive measure. Alternative C's recovery time frame is longer than Alternative B's because it would take a few years to develop the program.
- *Assessment of Recovery Efforts:* For Alternative A, no annual assessment of progress toward recovery would be made; for Alternatives B and C, USFWS would assess progress annually.

Coordination of Recovery Efforts

- *Participation:* Alternatives B and C are federal, state, and local programs that include cooperation from water development and environmental interests; Alternative A only provides for state and federal cooperation.
- *Conflict Resolution:* Alternatives B and C would provide a mechanism for conflict resolution. Alternative B, however, would implement the mechanism immediately. Alternative A has no formal conflict resolution mechanism.

Funding and Management

- *Average Annual Funding:* This area represents one of the major differences between the alternatives. Alternative A does not have adequate funding to implement actions; under Alternatives B and C, adequate funding is available from federal, state, and local agencies because of a cooperative process.
- *Program Management:* Under Alternatives B and C, a director's office would be established to ensure the timely and efficient implementation of recovery actions; under Alternative A, staff USFWS biologists would coordinate ESA issues.

ALTERNATIVES CONSIDERED, BUT NOT EVALUATED IN DEPTH

The following alternatives were considered but eliminated from further consideration because they were infeasible or did not accomplish the stated goals.

Single-Strategy Alternatives

The endangered fish recovery plans and the VRRMRP define recovery as maintaining and protecting self-sustaining populations of species and their natural habitats. Loss and deterioration of habitat, low population numbers, and threats from water development, non-native species, and incidental take by anglers all impede species recovery. Alternatives that address only one of these impacts would improve survival prospects but are unlikely to accomplish recovery of the fish species. Research must be conducted on threats to the species, and actions must be taken to counteract those threats if species recovery is to be successful. Appropriate actions include the following:

- securing habitat of adequate quality and quantity;
- enhancing population numbers; and
- reducing threats from water development and non-native species.

The Virgin River Resource Management and Recovery Program's strategies were evaluated and determined to be incapable of accomplishing recovery when conducted alone. Strategies that enhanced species population numbers would not accomplish recovery as long as sufficient habitat was not secured; similarly, strategies that concentrated on only securing sufficient instream flows would not accomplish recovery as long as populations were being decimated by factors unrelated to flow.

Federal Action Only

Under this scenario, USFWS would assert its authority by relying on federal supremacy powers, creating a potential conflict with state authority. Section 7 consultation would continue to avert jeopardy to the species. Future water development projects would be able to use flow alternatives to offset depletion impacts when there were jeopardy opinions.

However, some projects might be delayed if an irreversible or irretrievable commitment of resources could not be made before the federal government obtained compensatory instream flow rights. In addition, it might cost water developers more to offset depletion impacts under this scenario than under the Preferred Alternative (Alternative B) because Section 7 consultation would focus solely on offsetting project depletion impacts.

USFWS would unilaterally seek to acquire federal water rights, relying upon ESA Section 5 and the Supremacy Clause. USFWS could hold instream flow rights in the name of the federal government, but leave administration to the state. If the federal government asserted its Section 5 authority in this manner, the states could be expected to legally challenge the federal government; in addition, they could lobby Congress for legislative changes in ESA.

Finally, if USFWS found that take had occurred as defined by ESA Section 9, it could take unilateral federal action to control problem non-native species, regardless of state cooperation. This approach would be consistent with a scenario where USFWS would have 85 cfs released at the Quail Creek Diversion or with its assertion of an 86-cfs flow at the diversion as the baseline condition for the VRRMRP.

Asserting and implementing federal authority as described above would severely strain certain state-federal relationships. It would result in major confrontations between the affected states and the federal government about their respective authority over water management and fish and wildlife management. Finally, this alternative would not be in accord with congressional policy, stated in ESA, that the federal government is to cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species (Section 2(c)(2)). Therefore, this scenario was rejected.

Multistrategy Alternatives

Different strategies can be combined in various permutations to create multistrategy alternatives. However, to evaluate the relative efficacy of multistrategy alternatives in achieving recovery of rare fish species, further research must be conducted on topics such as:

- the species' habitat needs,
- river ecosystem dynamics,
- impacts of non-native fishes and sportfishing, and
- recovery techniques.

The Virgin River Resource Management and Recovery Program identifies reasonable measures based on existing knowledge that can be used to achieve recovery of the rare fish species. It provides a logical screening process to determine the best combination of recovery actions, thus maximizing recovery success and minimizing impacts on other resources.