

projected to increase, and noise from more visitors, recreational water vehicles, and traffic can be expected. Additional noise will occur from increasing oil and gas exploration wells and compressors. Long-term impacts to noise-sensitive areas have the potential to increase.

250/5000 Alternative (Preferred Alternative)

Impacts under the 250/5000 Alternative would be similar to those under the No Action Alternative.

500/5000 Alternative

Impacts under the 500/5000 Alternative would be similar to those under the No Action Alternative.



IV. Summary and Other Considerations

Introduction

The Council on Environmental Quality regulations for implementing NEPA require the determination of short- and long-term impacts, direct and indirect impacts, irreversible and irretrievable commitments of resources, and unavoidable adverse impacts. The regulations also call for the consideration of the relationship of the proposed action and its impacts to other projects and activities in the area. The relationship can be direct, indirect, or cumulative in nature. Connected actions are those actions which are interrelated with the proposed action; cumulative actions are those actions, which, when viewed with other proposed actions, have cumulatively significant impacts; and related actions are those actions which, when viewed with other proposed actions, have similarities to the proposed action that provide a basis for evaluation together, such as common timing or geography.

Short-term impacts of the proposed action would not be considered adverse; there is no construction associated with the project and short-term impacts are most often related to

construction activities. In addition, some flexibility in reservoir releases exists, because water for present or future development is not currently being used. In the long term, flexibility will diminish; in drought years, flexibility may not exist at all.

The action alternatives would result in major long-term changes in release patterns from Navajo Reservoir and associated impacts would be long-term. Thus, changes to resources such as the trout fishery, hydropower, and recreation, discussed previously in this chapter, are considered long-term impacts. These changes are not necessarily irreversible or irretrievable and future efforts or changes in the status of the endangered fish may refine them. Physical or economical constraints, which might occur with a major construction project and that reduce the practicability of reversing a decision or proposed action, are not present on this project. The proposed alternative provides the best opportunity for Indian water supplies to be protected and developed.

It is also possible that administrative, legislative or judicial interventions may be required to fully address the cumulative impacts to Tribal water rights, not just from the more immediate action of re-operating Navajo Dam and Reservoir, but from a variety of activities that have occurred in the Basin over the past 150 years.

Connected or related closely to new operations of Navajo Dam are water developments on the San Juan River or its tributaries. The ALP Project is an example of a connected action; the initial catalyst for considering a change in operation of Navajo Dam was the result of ESA consultation for the ALP Project. As a conservation measure under the ALP Project as now planned, Reclamation has committed to operate Navajo Dam to mimic the natural hydrograph of the San Juan River to benefit endangered fish and their habitat by following the Flow Recommendations (Holden, 1999) and subject to completion of the Navajo Reservoir Operations EIS and Record of Decision. In addition, the completion of NIIP is related to reoperation of Navajo Dam. The reoperation of Navajo Dam provides the basis for ESA compliance for NIIP's and other projects' completion. Impacts of NIIP are cumulative to Navajo Reservoir re-operation, and hydrology studies for this EIS have taken this relationship into account.

The operation of Navajo Dam and Reservoir to mimic the natural hydrograph on the San Juan River is a key element in the strategy to facilitate recovery of endangered fish species while providing the primary mechanism that allows ESA compliance for continued water development. Other elements of the SJRBRIP, such as providing fish passage and endangered fish stocking, are related to the reoperation of Navajo Dam and together are designed to assist in the recovery of the endangered fish.

The cumulative effects of projects such as the ALP Project, completion of NIIP, and other new or existing water uses, such as the Florida, Mancos, and Dolores Projects, have been built into the analysis of impacts in the EIS. Hydrologic analysis for this EIS has taken into account diversions and depletions from these projects, and streamflow and reservoir content changes with reoperation of Navajo reflect these diversions and depletions. Thus, impacts

to the trout fishery, irrigation diversions, recreation, hydropower, Indian Trust Assets, and other resources are based on foreseeable cumulative impacts. Table II-1 shows existing and future depletions that have been included in the hydrology analysis.

In addition, the EIS recognizes that additional depletions may occur in the future beyond those shown in table II-1. The proposed plan does not preclude future development of water, including possible future uses of Indian trust water, not listed in the table. The proposed plan is viewed as a key element in recovering endangered fish, which, in turn, can support future water development. Chapter II includes a section that discusses how these projects would be reviewed in terms of compliance with the ESA.

Resources Summary

Short-term impacts would not be considered adverse under the No Action, 250/5000, and 500/5000 Alternatives described in this EIS. The two action alternatives would result in major long-term changes in release patterns from Navajo Dam. These changes are not irreversible or irretrievable and SJRBRIP efforts may refine them. In addition, impacts may be reduced in the short term with the use of flexibility in reservoir releases, because water committed for present or future water development is not currently used.

The action alternatives, particularly the 250/5000 Alternative, would improve habitat conditions to help conserve endangered fish in the San Juan River in conjunction with other activities: fish passageways, nonnative fish control, and fish stocking. The 250/5000 Alternative and other SJRBRIP activities would support ESA clearance to complete water developments for the ALP Project, the NIIP (Blocks 9–11), NGWSP, JANNRWSP, and other unspecified minor depletions. This, in turn, would help meet Federal trust responsibilities to protect, maintain, and develop water uses under water rights reserved by or granted to American Indian Tribes or Tribal Nations.

Operational changes under the 250/5000 Alternative would have adverse impacts on an important trout fishery and associated uses and economic benefits. Other negative impacts would occur to water diversions, water quality, and hydropower production. More natural river flows under the action alternatives would benefit important riparian areas along the San Juan River.

Biodiversity

A change in biodiversity—variety of life forms—associated with the historical San Juan River occurred when Navajo Dam was constructed and placed into operation. The dam and reservoir physically altered the river and the surrounding terrain and modified the pattern of flows downstream. As is typical in connection with dams constructed in the southwest

United States, the San Juan River downstream of the dam became clearer due to sediment retained in the reservoir, and the water became colder, because it is released from a deep pool of water. Species of fish and other aquatic organisms, and those forms of life that existed along the river channel, were all affected to varying degrees. The conditions of the river immediately downstream of the dam became less favorable to the native fish species that live in warmer and turbid waters. The disruption of natural patterns of flow caused changes to the vegetation along the river banks by altering the previously established conditions under which the plants reproduced and were sustained.

In addition to the changes caused to the river by the dam, there were changes to how the lands in the area were used. Irrigation water provided by Navajo Dam enabled agriculture to be practiced on a large scale. That further affected the river and the native species dependent on the river both directly, through flow diversions, and indirectly, through changes in water quality, as a result of the water acquiring salts, pesticides, and fertilizers from the irrigated lands' return flows to the river. Also, over the last century, the river has experienced diversions for human consumption and use at towns and cities, resulting in a variety of return flows to the river, including industrial waste, stormwater runoff, and discharges from sewage treatment plants. Compounding these changes has been the appearance of non-native species of fish and plants, creating competition with native species.

The 250/5000 Alternative (Preferred Alternative) is expected to contribute to stabilizing native biodiversity in the San Juan River downstream of the dam. The Flow Recommendations criteria are intended to provide for restoration of more natural, pre-dam hydrologic and hydraulic conditions in the river downstream from Farmington and by so doing, to conserve the native razorback sucker and Colorado pikeminnow populations. It is expected that other species that are part of native biodiversity would also benefit.