

Towns and communities in New Mexico in the immediate study area include Farmington at the confluence of the San Juan and Animas Rivers; Bloomfield, Blanco, and Archuleta upstream; and Fruitland and Shiprock downstream from Farmington. Bluff and Mexican Hat, Utah, are located on the lower reaches of the San Juan River. Energy development, agriculture, power production, tourism, and recreation are important industries in the area. In particular, agriculture, power production, and recreation are closely related to Navajo Reservoir and its operations and resulting flow patterns in the San Juan River.

The frontispiece map shows the general project area. In the text and on the following map (figure III-1), the river is demarcated with river mile (RM) designations, starting with RM 0 at Paiute Farms and ending with RM 225 at Navajo Dam. In addition, the map identifies the approximate location of gaging stations and primary locations along the San Juan River.

III. Affected Resources

WATER USES AND WATER RESOURCES



This section addresses the potential impacts to water rights and water supplies that could result from actions associated with the modified operations of Navajo Dam and Reservoir under the alternatives considered.

Issue: How would the No Action and action alternatives affect water rights, riverflows, reservoir levels, and water use?

Overview

Scope

The scope includes Navajo Reservoir and the San Juan River to Lake Powell.

Summary of Impacts

No Action Alternative: Would not directly impact senior water rights.¹ However, there could be adverse impacts to some existing and future water development, including current or future uses for which water rights and environmental clearances² are in place, because the Flow Recommendations³ would not be met.

¹ These water rights are senior to Navajo Reservoir storage permits.

² Primarily compliance with the Endangered Species Act.

³ *Flow Recommendations for the San Juan River* (Flow Recommendations) (Holden, 1999).

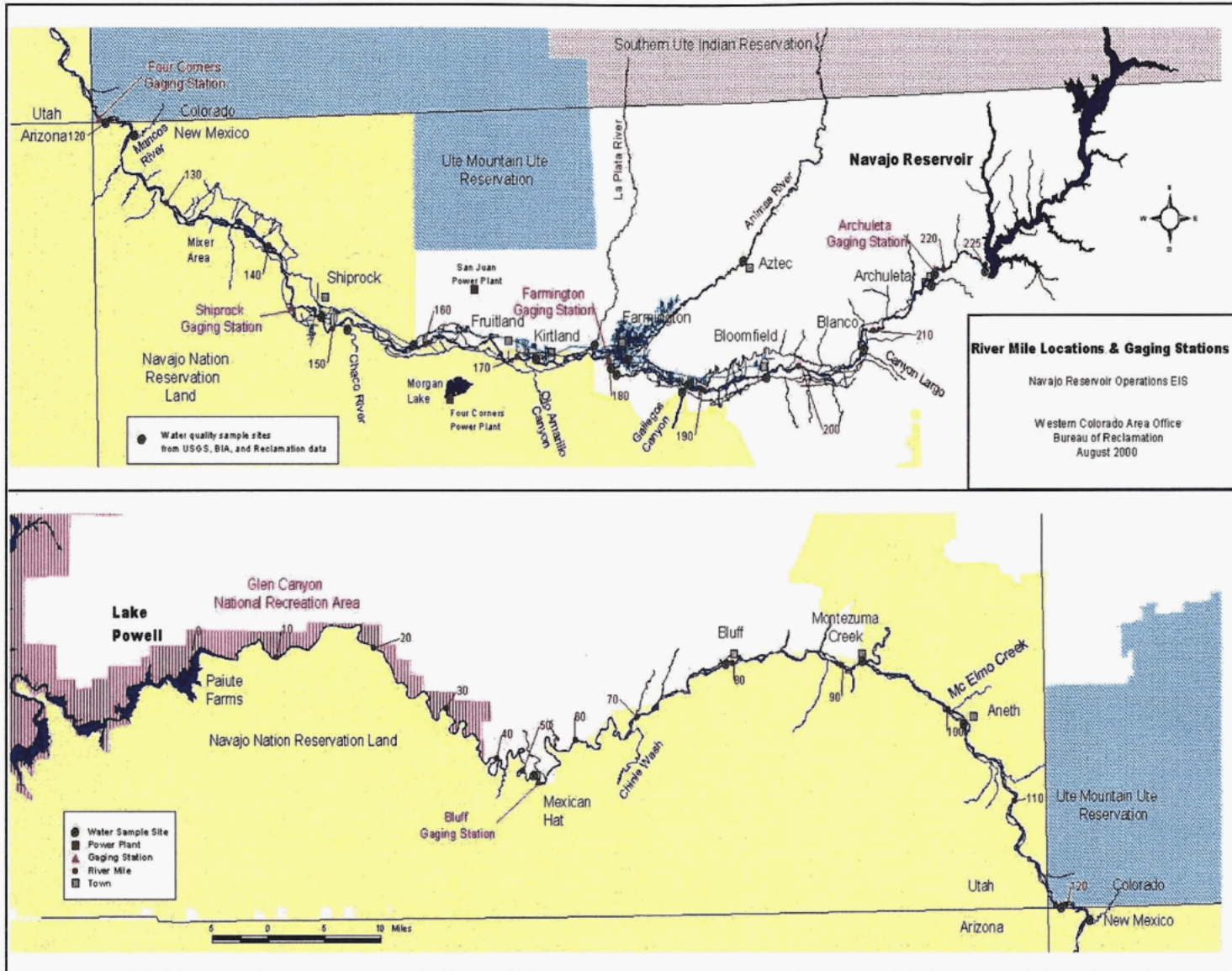


Figure III-1.—River mile locations and gaging stations.

250/5000 Alternative: Would meet the Flow Recommendations and downstream water right bypasses and allow the following: maintaining authorized purposes of the Navajo Unit, completion of the ALP Project; completion of NIIP; and support of the Jicarilla Apache Nation Navajo River Water Supply Project (JANNRWSP) and existing water contracts from Navajo Reservoir. In addition, this alternative provides the best opportunity for accomplishing future American Indian (Indian) and non-Indian water development. Impacts to diversion structures could occur with either high or low releases.

500/5000 Alternative: Would meet downstream senior water right deliveries. However, it could adversely impact future water development for which valid water rights and environmental clearances are in place; it does not fully meet the Flow Recommendations; and it limits the availability of water for future Indian and non-Indian water development. Impacts to diversion structures could occur with high releases.

Impact Indicators

Impacts to water resources are indicated by effects on the following: (1) senior water rights holders or contractors from the Navajo Reservoir supply; (2) existing water uses in the Basin; (3) identified future uses for which valid water rights and environmental clearances are in place; (4) meeting Flow Recommendations formulated by the San Juan River Basin Recovery Implementation Program (SJRBRIP) for conservation of endangered fish and designated critical habitat; (5) future water development, including the exercise of Indian water rights under the protection of the Department of the Interior; (6) the Upper Basin States' ability to develop and use their compact apportionment.

Affected Environment

Navajo Reservoir

Navajo Reservoir has a maximum content of 1,701,300 acre-feet as measured at the spillway crest (at elevation 6085 feet) with a corresponding water surface area of 15,610 acres. The inactive content, defined as the storage below the NIIP inlet works, is 661,800 acre-feet with a corresponding water surface elevation of 5990 feet.

San Juan River

The San Juan River below Navajo Dam is the largest river in the Basin and collects inflow from perennial tributaries—the Animas and Mancos Rivers—and other intermittent

tributaries such as the La Plata. Near Bluff, Utah, the San Juan River produces a long-term average natural flow⁴ of about 2 million acre-feet⁵ (MAF). The San Juan River above the Animas River confluence contributes about half this amount.

Mean annual runoff to the San Juan River at Farmington just downstream of its confluence with the Animas River is about 1.3 MAF under present depletion conditions. Near Bluff, Utah, mean annual runoff increases to about 1.4 MAF under present conditions. The increase is accounted for by tributary inflow below Farmington and irrigation return flow from NIIP and the Dolores Project.

As with the other rivers in the Basin, flow peaks in the springtime and remains low from summer to fall, punctuated by short-duration peaks resulting from storm events. The river is partially regulated by Navajo Dam, and its tributaries are substantially used for irrigation. Navajo Dam has tended to reduce peak spring flows and to supplement flows in other seasons since its operation began in 1962. Figure II-1 in chapter II depicts the San Juan River near Bluff, Utah, comparing pre-dam, post-dam, and natural flow mimicry (SJRBRIP test period flows).

Water Rights Background

American Indian (Indian) Trust Water Rights.—Indian trust water rights are under the protection of the Secretary of the Interior as ITAs, as discussed further in the ITA section of this chapter. Of note are unquantified water rights of the Navajo Nation⁶ and other water rights that have not obtained Endangered Species Act (ESA) clearance, such as portions of the Jicarilla Apache water rights settlement. Under various legal doctrines, including the reserved water rights doctrine (*Winters v. United States*) (below), the Navajo Nation claims sufficient water from the river necessary to create a permanent homeland for the Navajo people. The Ute Mountain Ute Tribe also has land in the San Juan Basin in New Mexico and has unquantified claims to the San Juan River in New Mexico. These claims are extensive and, if exercised, could place in conflict most of the water in the Basin. Among major treaties, water rights settlements, and other laws involving Indian water rights are the following:

- (1) Jicarilla Apache Tribe Water Rights Settlement Act (Public Law [P.L.] 102-441) of 1992, and the Contract Between the United States and the Jicarilla Apache Tribe, December 8, 1992.

⁴ Natural flow - Flows that would exist in the San Juan River excluding any human uses of the flows.

⁵ Natural flows data for the period 1929-93 were developed by Reclamation and used for the Animas-La Plata Project and development of the Flow Recommendations.

⁶ Water rights of the Navajo Nation may be quantified in part by the 2005 Settlement Agreement between the State of New Mexico and Navajo Nation, although the settlement must undergo a lengthy ratification process. The Navajo-Gallup Water Supply Project, currently (2005) under study, would be a key part of the settlement or a stand-alone project to supply domestic water primarily to underserved areas of the Navajo Nation and City of Gallup.

- (2) Treaty between the United States of America and the Navajo Tribe of Indians of 1849 (ratified by the Senate September 9, 1850; proclaimed by the President September 24, 1850; 9 Stat. 974), and Treaty between the United States of America and the Navajo Tribe of Indians (concluded June 1, 1868; ratification advised July 25, 1868; proclaimed August 12, 1868; 15 Stat. 667). In early January 2005, the Navajo Nation and the New Mexico Interstate Stream Commission approved a draft Navajo Nation Water Rights Settlement Agreement and plan on seeking authorization.
- (3) Colorado Ute Indian Water Rights Settlement Act of 1988 (P.L. 100-585) and Colorado Ute Settlement Act Amendments of 2000.
- (4) The Winters Doctrine (see ITA section), which, under a U.S. Supreme Court ruling, establishes that Indian reservations have the right to an amount of water necessary to satisfy the purposes of the reservation, with a water right priority date no later than the date of the creation of the reservation. Unlike other water rights under State law, Winters Doctrine rights are not lost through non-use.
- (5) Interstate compacts and related legislation.

Non-Indian Water Rights.—Non-Indian water rights in the Basin are administered by the States of Arizona, Colorado, New Mexico, and Utah according to State water law and to the interstate compacts that divide the use of the waters of the Colorado River and its tributaries among the Colorado River Basin States. The interstate compacts, or portions thereof, affecting the distribution of the waters in the Basin are listed and briefly summarized here.

- (1) *Colorado River Compact* – Divides the Colorado River Basin at Lee Ferry,⁷ Arizona into the Upper and Lower Basins, apportions to the Upper Basin the right to the beneficial consumptive use of 7.5 MAF per annum, and requires the States of the Upper Basin to not cause the flow at Lee Ferry to be depleted below a total of 75 MAF for any period of 10 consecutive years.
- (2) *Upper Colorado River Basin Compact* – Subject to the provisions and limitations contained in the Colorado River Compact, the Upper Colorado River Basin Compact, among other things, divides consumptive use, apportions to, and makes available for use each year by the Upper Basin States, amounts as follows:
 - Arizona – 50,000 acre-feet per annum and of the remaining amount available to the Upper Basin

⁷ Lee Ferry, as specified in the Colorado River Compact of 1922.

- Colorado – 51.75 percent
- New Mexico – 11.25 percent
- Utah – 23 percent
- Wyoming – 14 percent

Furthermore, the Upper Colorado River Basin Compact (Article XIV) apportions the water of the San Juan River and its tributaries in Colorado and New Mexico to and between the States of Colorado and New Mexico. In short, within the limitations described in Article XIV, the State of Colorado agrees to deliver to New Mexico from the San Juan River and its tributaries water sufficient to enable New Mexico to make full use of its Compact apportionment subject to satisfaction first of water uses made at the time the Compact was signed and water uses contemplated by water projects authorized at the time the Compact was signed.

- (3) *La Plata River Compact* – This compact divides the waters of the La Plata River between the States of Colorado and New Mexico. In short, each day during the period February 16 through November 30 of each year, Colorado is to deliver to New Mexico 100 cfs, or an amount equivalent to one half of the mean daily flow at the Hesperus Station⁸ for the preceding day, or the amount of water then needed for beneficial use in the State of New Mexico, whichever is less.
- (4) *Animas-La Plata Project Compact* – This compact states that the water rights to store and divert water for project use in New Mexico shall be of equal priority with those rights granted by the Colorado State courts for project water uses in Colorado.

New Mexico.—

New Mexico Water Law.—New Mexico water law is based on the prior appropriation doctrine. Basically, the first user (appropriator) in time has the priority to take and use water. The State Engineer has the primary responsibility for supervision, measurement, appropriation, administration, and record-keeping. The State courts have primary responsibility with respect to quantifying water rights when there is a general stream adjudication.

⁸ The index used to determine Colorado's delivery obligations is the Hesperus Station flow, which includes flow in the La Plata River at the Hesperus Gage plus current diversions from the La Plata River above the Hesperus Gage.

Navajo Nation and Jicarilla Apache Nation Uses.—For much of its course from Navajo Dam to Lake Powell, the San Juan River either flows through or forms the northern boundary of the Navajo Nation. The San Juan River represents a critical resource for the Navajo Nation. The Basin has not been fully adjudicated and the Navajo Nation reserved water rights in the Basin are addressed in a proposed water rights settlement that was approved by the New Mexico Interstate Stream Commission and the Navajo Nation. Impacts of alternatives on Navajo Nation water rights are discussed in the ITA section in this chapter.

Jicarilla Apache Nation water rights were approved by Congress in the 1992 Jicarilla Apache Tribe Water Rights Settlement Act. Impacts of alternatives on Jicarilla Apache Nation water rights are also discussed in the ITA section.

Water Permits Held by the United States.—In the early 1950s, planning for development of the water supply apportioned to New Mexico by the Upper Colorado River Basin Compact was concentrated on several major Federal projects that would put to use the undeveloped water available to New Mexico. The filing on water rights by private entities and subsequent related activities—coupled with the advanced planning for the Federal projects for which no water had been reserved by a water right filing—led the New Mexico Interstate Stream Commission to file several notices of intent to appropriate water in the San Juan River Basin which were later assigned to the Department of the Interior. Reclamation filed an additional notice of intent in 1957 for additional water to be provided from Navajo Reservoir. Reclamation filed an Application for Permit on File No. 2848 on February 20, 1958, and on File Nos. 2847, 2849, 2873, and 2917, which were treated as one combined filing on March 6, 1958. Table III-1 lists the New Mexico permits now held by Reclamation for water use in the Basin. Water uses by the San Juan-Chama Project, the NIIP, and under other contracts for the Navajo Reservoir supply must share shortages in the supply in accordance with P.L. 87-483.

Under contracts with the Secretary of the Interior, users and potential users of the Navajo Reservoir water supply include the Navajo Nation for use on the NIIP, the Jicarilla Apache Nation pursuant to the Jicarilla Apache Tribe Water Rights Settlement Act, the Public Service Company of New Mexico (PNM), the proposed Navajo-Gallup Water Supply Project (NGWSP), and several small-use contractors.

Other Water Rights on the Mainstem Downstream of Navajo Dam.— The San Juan River and its tributaries are the source from which New Mexico's entire Upper Colorado River Basin Compact apportionment is derived. There are numerous water rights in New Mexico on the San Juan River mainstem downstream of Navajo Dam. The water is used for municipal and industrial (M&I) purposes and irrigation. The water right holders between Navajo Dam and the confluence of the Animas River are being considered in this

Table III-1— New Mexico permits held by Reclamation¹

Office of State Engineer file numbers	Purpose	Diversion quantity (acre-feet/year)	Priority dates
2847	San Juan-Chama Project	235,000	6/17/55
2848	Hammond Project	23,000	6/17/55
2849	Navajo Indian Irrigation Project	630,000	6/17/55
2873	Navajo Reservoir evaporation loss	28,800	1/17/56
2883	Animas-La Plata Project	49,510	5/1/56
2917	Irrigation, domestic, industrial, mining, and power purposes	225,000	9/16/57
2847, 2849, 2873, and 2917 combined	(Purpose not listed by State of New Mexico)		3/6/58
3215	Municipal and industrial purposes (Note: permit is a direct flow right)	500 cfs	12/16/68

¹ The diversion numbers reflect only diversion values in the permits and do not reflect diversions that are actually taking place under the permits. Diversions under some of the permits are currently taking place, some permits are partially being used, and some permits are not presently being used.

final environmental impact statement (FEIS) as potentially most affected. The potential effects on the ability of the Southern Ute Indian Tribe, the Ute Mountain Ute Tribe, the Navajo Nation, and the Jicarilla Apache Nation to utilize their water rights are also discussed in the ITA section. Table III-2 shows a preliminary listing of the water rights between Navajo Dam and the confluence of the Animas River. It is anticipated that adjustments in determinations of water rights will occur when the New Mexico State Engineer further evaluates the rights as rights are transferred to other uses and points of diversion, and as the adjudication of water rights in the San Juan Basin in New Mexico proceeds.

Colorado.—Colorado water law is based on the prior appropriation doctrine, which states that the first appropriator in time has the first priority to take and apply water to beneficial use without waste. The right to divert the unappropriated waters of any natural stream to beneficial uses is never to be denied under Colorado's constitution; the Colorado water courts grant decrees to use water and set priorities. The Colorado State Engineer and the Division of Water Resources administer the water rights according to the priorities, measure flows, and record the use of water. Colorado's compact apportionment can be derived from sources other than the San Juan, including the Yampa, White, Colorado mainstem, Gunnison, and Dolores Rivers. Colorado has made no apportionment of use between these major basins within Colorado, which are currently administered independently of one

Table III-2—Preliminary list of San Juan River water rights between Navajo Dam and the Animas River confluence

User	Priority dates	Diversion right (cfs)
Citizens Ditch		
Bloomfield Irrigation District	1879, 1881, 1900 ² , 1907, 1920 ¹ , 1951, 1954, 10/24/55, 5/1/56 ¹ (ALP Project)	106
La Pumpa Ditch	1888	10
Jaquez Ditch	1878	12
City of Bloomfield		4
El Paso Natural Gas		2
Others not listed		2
Subtotal		136
Navajo Dam Water Users Association	5/1/56 ¹ (ALP Project), 1973	2
Turley-Manzanaras Ditch	1876	7
Hammond Canal	1944, 1947, 6/17/55 (Reclamation)	90
Giant Refinery	1881, 1907, 1947, 10/24/55, 5/1/56 ¹	2
Lee/Hammond Water Plant	1876 ¹ , 1881, 1896 ¹ , 1907, 1920 ¹ , 1930, 1945, 1947, 1953, 10/24/55, 5/1/56 ¹ (ALP Project)	3
City of Farmington	1907, 1947, 10/24/55/, 5/1/56 ¹ (ALP Project)	55
Subtotal		295

Notes: (1) Diversion rights and priority dates are preliminary and were obtained from the State of New Mexico, Office of the State Engineer, in a letter dated July 6, 2000, and March 13, 2003; (2) All priority dates are for the San Juan River unless otherwise indicated; and (3) ALP Project (under a Reclamation filing).

¹ Animas River priority date.

² Pine River priority date.

another. Colorado's compact apportionment is 3,079,125 acre-feet under the current hydrologic determination of 6.0 MAF of water available to the Upper Colorado River Basin. While Colorado does not concur with this determination, it has acquiesced to its use at the present time. Colorado monitors the overall consumptive use of Colorado River water and is presently using approximately 2.3 MAF on an average annual basis. Colorado has reached a comprehensive water rights settlement with the Colorado Ute Indian Tribes (Ute Mountain Ute and Southern Ute Indian Tribes). This settlement agreement provides the Tribes with water rights on every major tributary within Colorado that flows through the respective reservations as noted in table III-3. The consumptive use of water under the settlement agreement is charged against Colorado's compact apportionment.

Numerous water rights exist in Colorado on the San Juan River mainstem upstream of Navajo Dam and on tributaries to the San Juan River. The only water right in Colorado on the mainstem of the San Juan River below Navajo Dam belongs to the Ute Mountain Ute Tribe. The Colorado Ute Indian Water Rights Final Settlement Agreement gave the Ute Mountain Ute Tribe a reserved priority water right under Colorado law for a direct flow diversion of 1,600 acre-feet per annum (not to exceed a diversion rate of 10 cfs) from the mainstem in Colorado with a priority date of 1868. The settlement also addresses Colorado Ute Indian water rights on the following rivers: Mancos, Animas, Dolores, La Plata, Florida, Piedra, and the upper San Juan tributaries.

Arizona.—As stated above, the San Juan River either flows through or forms the northern boundary of the Navajo Nation. The mainstem of the San Juan River does not flow through Arizona; however, all tributaries in Arizona to the San Juan River are on the Navajo Nation Reservation Lands. Water rights for the Navajo Nation on the tributaries in Arizona have not been quantified. The Navajo Nation claims sufficient water from these tributaries necessary to create a permanent homeland for the Navajo people.

Arizona is provided an annual consumptive use of 50,000 acre-feet of water from the Upper Basin pursuant to its apportionment under the Upper Colorado River Basin Compact. Currently, the total consumptive use of water in the Upper Basin in Arizona is about 45,000 acre-feet per year. An existing contract between the Secretary of the Interior and the Navajo Power Plant effectively obligates through 2017 water not presently being consumed under the 50,000 acre-feet.

Utah.—In Utah, water law is also based on the prior appropriation doctrine and water use is managed in a manner similar to that of the State of Colorado.

In Utah, the San Juan River forms the northern boundary of Navajo Nation Reservation Lands. As noted above in the discussion of water rights in Arizona, the Navajo Nation claims sufficient water necessary to create a permanent homeland for the Navajo people.

A number of non-Indian water rights exist on the north side of the San Juan River and on tributaries that drain into the San Juan River from the north. The Colorado River Compact requires that uses in the Upper Basin be administered and flows be regulated in a manner sufficient to deliver to Lee Ferry from the Upper Colorado River and San Juan River Basins combined the volume of flow specified by the Compact, but it does not require that a specific flow volume necessarily be contributed by the San Juan River. The Glen Canyon

National Recreation Area may have an unquantified Federal reserved water right on the San Juan River arm of Lake Powell. This right would be junior to that for Navajo Reservoir and Reclamation has no obligation to deliver water for this right.⁹

Methodology

The following measures were used to evaluate the impacts to water rights and uses under the No Action, 250/5000, and 500/5000 Alternatives.

- Researching the number of water rights and quantifying the amounts of water associated with each water right.
- Researching available water diversion records and determining possible impacts due to changes in flows in the San Juan River resulting from changes in the operation of Navajo Reservoir.
- Examining and comparing a hydrologic model output for each alternative to historical flows to determine possible variations in flow from the future operation of Navajo Reservoir and the way in which these variations may affect water use.
- Observing actual operations of the diversion structures during the Summer Low Flow Test conducted from July 9 to July 15, 2001 (Reclamation, 2002b). Operations of diversion structures under high flow (5,000 cfs) conditions were observed during the Navajo Reservoir spring releases of 1998 (see the “Diversion Structures” section of this chapter).

Impact Indicators

Impacts to water resources are indicated by effects on the following: (1) senior water right holders or contractors from the Navajo Reservoir supply; (2) existing water uses in the Basin; (3) identified future uses for which valid water rights and environmental clearances are in place; (4) meeting Flow Recommendations formulated by the SJRBRIP for conservation of endangered fish and designated critical habitat (figure III-2); (5) future water development, including the exercise of Indian water rights under the protection of the Department of the Interior; (6) the Upper Basin States’ ability to develop and use their compact apportionment.

⁹ Personal communication between National Park Service and Reclamation, February 6, 2002.

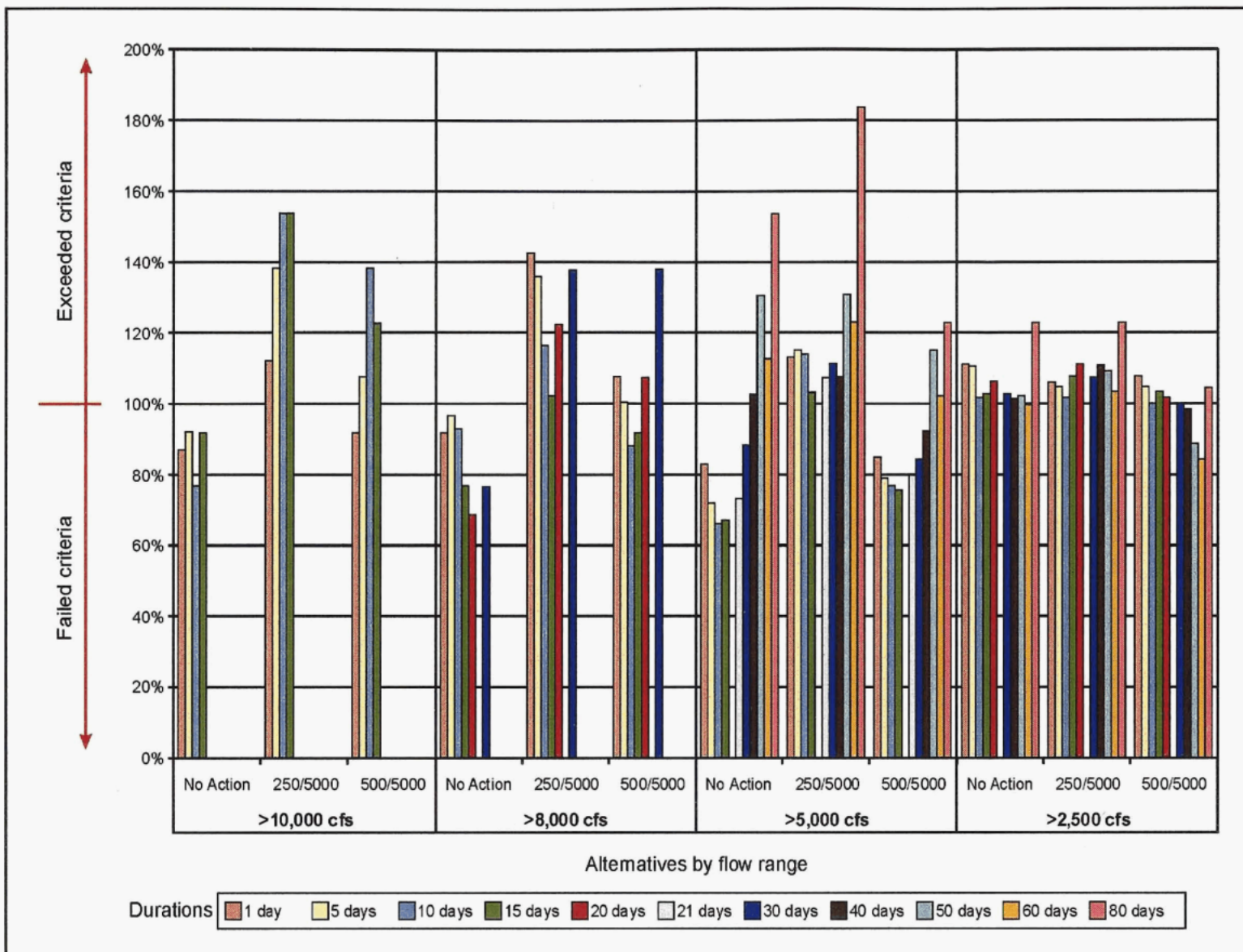


Figure III-2.—Degree to which viable alternatives meet Flow Recommendations.

These areas are described further below, and are also arrayed in summary form under each alternative.

- (1) An underlying assumption in analysis of the impact to water resources was that there could be no adverse impact to existing active water uses in the Basin. All existing depletions are intended to be represented in the hydrology model used for analysis. Comparing the modeled depletions with and without implementing the action reveals differences among the alternatives.
- (2) Future uses with valid water rights and environmental clearances, when necessary, were handled in the same manner as existing active water uses using the same impact indicators.¹⁰
- (3) The Flow Recommendations provide flow criteria for the San Juan River below Farmington which, if met, are anticipated under the current status of knowledge to produce and maintain habitat needed to recover the two endangered fish species in the San Juan River. Flow statistics based on the modeled period of 1929-93 were compared to the Flow Recommendations criteria and Navajo Dam operations were adjusted until the Flow Recommendations could be met. Not meeting one or more of the flow criteria was considered to be an adverse impact to the endangered fish.
- (4) The following projects may be impacted by the alternatives: (1) Colorado Ute and Navajo Indian water uses pursuant to the 1988 Colorado Ute Settlement Act and the 2000 Settlement Act Amendments (which also authorize the ALP Project and its component Navajo Nation Municipal Pipeline); (2) Jicarilla Apache Nation water uses pursuant to the 1992 Jicarilla Apache Tribe Water Right Settlement Act; (3) completion of the NIIP; (4) development of a planned project that includes delivery of M&I water; (5) proposed irrigation rehabilitation (Shiprock irrigation projects) for the Navajo Nation; (6) the exercise of senior Indian water rights for uses without environmental clearance (more detail is provided in the ITA section in this chapter); and (7) Florida and Mancos water contracts.
- (5) The Upper Basin States' ability to fully develop and consistently use their compact apportionment was taken into consideration.

Impacts Analysis

No Action Alternative

Reservoir elevations for the No Action Alternative would generally be higher than those under the other alternatives because full NIIP acreage would not be irrigated and there

¹⁰ For example, completion of NIIP was modeled as a depletion for its full water rights acreage.

would be less demand on the reservoir. The No Action Alternative July through January releases are almost twice those of the other alternatives, while average releases for May are less than under the other alternatives. This is a function of increased releases from July through December to meet end-of-December storage targets and decreased releases in the spring as a result of not operating Navajo Dam to meet the Flow Recommendations.

The application of evaluation criteria (see the previous indicators discussion) disclosed the following impacts under the No Action Alternative:

- (1) Streamflows would generally follow the pattern observed historically during the 1973 to 1991 period, but would be modified to the extent that modeled water uses differ from historical water uses that actually occurred during that period. Streamflow could be developed for future uses within the limitations of State water laws, interstate agreements, and appropriate environmental compliance. On the San Juan River, future operations are expected to follow operations that occurred from the time the reservoir first filled in 1973 until 1991 when operations were modified to assist in the 7-year research period, as described in the Flow Recommendations. Unspecified current uses, such as NIIP (Blocks 1–6) and other existing Navajo Reservoir contract depletions, could be impacted.
- (2) Adverse impacts are anticipated to identified future uses for which valid water rights and environmental clearances are in place. If an alternative is selected that does not allow the Flow Recommendations to be met, and though the Flow Recommendations are only one component of the SJRBRIP, the U.S. Fish and Wildlife Service (Service) may decide that the SJRBRIP no longer provides a reasonable and prudent alternative (RPA) for existing and future depletions.

A failure to develop the ALP Project, to complete the NIIP, to continue the Jicarilla Apache Nation third-party water contracts with PNM and other Jicarilla water users, and to develop other water projects such as NGWSP could put future implementation of Indian water rights settlements in jeopardy, and consequently, cause presently used non-Indian water rights in the Basin, particularly in Colorado and New Mexico, to be at risk to Indian senior water rights claims.

- (3) Adverse impacts would be anticipated to the protection and recovery of endangered fish species because the Flow Recommendations would not be met.
 - (4) Adverse impacts to future development, including ITAs, is possible.
 - (5) Potential adverse impacts could occur to New Mexico and Colorado in using their remaining compact apportionments due to the likely reduced future water development.
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250/5000 Alternative (Preferred Alternative)

Under the 250/5000 Alternative, the spring releases from Navajo Dam would reach 5,000 cfs when sufficient water was available, and releases would be decreased to as low as 250 cfs¹¹ when necessary to provide the recommended flows through the critical habitat area and to conserve water. A 250 cfs release from Navajo Reservoir during the irrigation season would result in very low flows from below the Citizens Ditch diversion to the Animas River confluence due to irrigation diversions; however, during the Summer Low Flow Test, it was determined that a 250 cfs release would meet senior water rights. It should be noted that the Navajo Unit is not obligated to provide storage water to supplement the water supply of the senior rights. Reclamation would follow New Mexico State water law regarding downstream water rights. This alternative, by meeting the Flow Recommendations, provides the best opportunity for effectuating Indian water rights settlements and accomplishing future Indian and non-Indian water development. As discussed in chapter II, flexibility would be used to increase minimum releases above 250 cfs during the irrigation season; however, in the long term, 250 cfs releases would become more frequent but only as hydrologic conditions allowed releases to be lowered while still meeting base flows in the critical habitat.

The application of evaluation criteria (see the previous indicators discussion) disclosed the following impacts:

- (1) Potentially adverse impacts could occur to existing diversions in the San Juan River from Navajo Dam to Farmington, New Mexico, as a result of project operations that would reduce minimum releases from Navajo Dam to 250 cfs. A Summer Low Flow Test was conducted July 9 to July 16, 2001, to evaluate the effects of low summer flows on various resources. The Summer Low Flow Test indicated that senior water rights could be met, though inadequate diversion facilities may have contributed to some shortages. The ability to fully divert water at three diversions was adversely impacted during the test. (See “Diversion Structures” section in this chapter.)

During the Summer Low Flow Test, a minimum flow of 63 cfs was measured below the Hammond Diversion. Under actual conditions, flows could be higher or lower than flows measured due to variations in dam releases, side inflows, diversions, canal wastes, and weather conditions.

- (2) There would be no impact to existing water uses and future uses that have successfully completed ESA consultation.

¹¹ Except under extreme conditions, see chapter II, “Extreme Hydrological Conditions.”

- (3) Modeling has shown that the Flow Recommendations criteria for the two endangered fish species could be met and that existing and certain future water uses—the Jicarilla Apache Nation’s third-party water contract with PNM and the JANNRWSP, NIIP, and the ALP Project—would have an adequate water supply.
- (4) The best opportunity for future Basin water development including ITAs is implementation of the 250/5000 Alternative, because future water development could occur as the Basin works toward recovery of endangered fish.
- (5) This alternative would result in the least impact among the alternatives to New Mexico’s and Colorado’s abilities to use their compact apportionments, since future water development could occur and the Flow Recommendations would be met.

500/5000 Alternative

This alternative is similar to the 250/5000 Alternative, except that Navajo Dam releases would not fall below 500 cfs. There would be times (infrequent) when NIIP would not be able to divert due to low reservoir levels and the Flow Recommendations criteria would not be fully met. Because this alternative does not meet the Flow Recommendations, new ESA consultations on the ALP Project, NIIP (Blocks 9–11), and the Jicarilla Apache Nation third-party water contracts with PNM and others would be required and could impact the ability to implement future Indian water rights settlements; it could also result in risks to presently used non-Indian water rights.

While there may be no impacts to water rights along the San Juan River under the 500/5000 Alternative, there could be negative impacts to water rights in Colorado on the Animas, La Plata, and other rivers if completion and operation of the ALP Project is hindered by this alternative and if the Colorado Ute Tribes reinstate their claims to the waters of those rivers.

The application of evaluation criteria disclosed the following impacts:

- (1) Unspecified current water uses could be impacted if reconsultation under the ESA was required.
 - (2) Adverse impacts could occur to the ALP Project, completion of NIIP, Jicarilla Apache Nation third-party water contracts and projects, and 3,000 acre-feet per year of unspecified minor depletions.
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- (3) The Flow Recommendations would not be fully met as a result of operations that would increase minimum Navajo Reservoir releases from 250 cfs to 500 cfs. The target flow range (500 to 1,000 cfs) would be exceeded more frequently than under the 250/5000 Alternative, and hydrologic modeling suggests that the Flow Recommendations criteria for endangered fish flows during the spring peak period could not be met.
- (4) Potentially adverse impacts would occur to Indian and non-Indian water development. Projected shortages might suggest that no additional streamflow could be developed for future uses under the 500/5000 Alternative.
- (5) Potentially adverse impacts would occur to New Mexico's and Colorado's abilities to fully develop and consistently use their Colorado River Compact apportionments.

INDIAN TRUST ASSETS



This section addresses the potential impacts to Indian Trust Assets that could result from actions associated with the modified operations of Navajo Dam and Reservoir under the alternatives considered.

Issue: How would the No Action and action alternatives affect Indian Trust Assets?

Overview

Scope

The scope includes Indian trust water rights associated with Navajo Reservoir and the San Juan River and on surrounding trust/reservation lands of the Navajo and Jicarilla Apache Nations and the Ute Mountain Ute and Southern Ute Indian Tribes.

Summary of Impacts

No Action Alternative: Without ESA-related approval, future Indian water development projects in the Basin would probably not proceed as planned, and the development of several ongoing Indian water projects and settlements that have received environmental clearance could also be impacted.
