EXECUTIVE SUMMARY

INTRODUCTION

The Bureau of Reclamation (Reclamation) has developed this planning report and final environmental impact statement (PR/FEIS) pursuant to Public Law (P.L.) 92-199 and the general authority to conduct water resources planning under the Reclamation Act of 1902 and all acts amendatory thereof and supplementary thereto. This document was undertaken to provide a discussion on (1) various ways to provide a municipal and industrial (M&I) water supply to the Navajo Nation, city of Gallup, and the Jicarilla Apache Nation and (2) the associated potential environmental impacts and costs of such an endeavor.

The Navajo-Gallup Water Supply Project (proposed project) authorization was included in the recently enacted Omnibus Public Land Management Act of 2009, Title X, Part III (P.L. 111-11, March 30, 2009). The act authorizes the Secretary of the Interior (Secretary) to:

1. Construct, operate, and maintain the proposed project

2. Allocate the capacity of the proposed project among the Navajo Nation, Jicarilla Apache Nation, and the city of Gallup

3. Enter into proposed project repayment contracts with the city of Gallup and the Jicarilla Apache Nation

In general, the Secretary, acting through the Commissioner of Reclamation, is authorized to design, construct, operate, and maintain the proposed project in substantial accordance with the preferred alternative in the draft environmental impact statement.

The Omnibus Public Land Management Act of 2009 (P.L. 111-11) approved, ratified, and confirmed the San Juan River Basin in New Mexico Navajo Nation Water Rights Settlement Agreement (Navajo Settlement Agreement) under Title X, Part IV of the act. This PR/FEIS does not analyze the Navajo Settlement Agreement; however, the act requires that all proposed project features shall be completed no later than December 31, 2024. Under the act, the Secretary shall execute an agreement consistent with the provisions of the act by December 31, 2010.

The cost analysis contained in this PR/FEIS is based on an appraisal level of analysis. The cost estimate of the preferred alternative identified in this report reflects prices as of January 2007 and is known as Reclamation's April 2007 construction cost estimate.

PURPOSE AND NEED

The proposed project is to provide long-term (year 2040) supply, treatment, and transmission of M&I water to the Navajo Nation, the Jicarilla Apache Nation, and the city of Gallup, New Mexico.

A long-term sustainable water supply is needed for the area to support current and future populations. The proposed project would be designed to serve a future population of approximately 250,000 people by the year 2040. Existing groundwater supplies are dwindling, have limited capacity, and are of poor quality. More than 40 percent of Navajo households rely on water hauling to meet daily water needs. The city of Gallup's groundwater levels have dropped approximately 200 feet over the past 10 years, and the supply is not expected to meet current water demands within the decade. The Jicarilla Apache people are currently not able to live and work outside the Town of Dulce on the reservation because of a lack of water supply (Reclamation, 2001).

THE NAVAJO-GALLUP WATER SUPPLY PROJECT

The proposed project would convey a reliable M&I water supply to the eastern section of the Navajo Nation, the southwestern part of the Jicarilla Apache Nation, and the city of Gallup via diversions from the San Juan River in northern New Mexico. The Navajo Nation, city of Gallup, and the Jicarilla Apache Nation are part of the project steering committee that assisted in preparation of portions of this document.

Navajo Nation communities and the city of Gallup rely on a rapidly depleting groundwater supply that is inadequate to meet present needs and anticipated growth. Other water sources are needed to meet current and future M&I demands of more than 43 Navajo chapters, including the communities of Fort Defiance and Window Rock in Arizona, the city of Gallup, and the Teepee Junction area of the Jicarilla Apache Nation.

The proposed project is designed to divert a total of 37,764 acre-feet of water per year from the San Juan River, with a resulting depletion of 35,893 acre-feet, based on 2040 projected population with a demand rate of 160 gallons per capita per day (gpcd). The Cutter diversion would require 4,645 acre-feet per year with no return flow to the San Juan River. The PNM diversion would take the remaining 33,119 acre-feet of diversion, with an average return flow of 1,871 acre-feet. Based on the expected populations in the year 2040, the proposed project would serve approximately 203,000 people in 43 chapters in the Navajo Nation, 1,300 people in the Jicarilla Apache Nation, and approximately 47,000 people in the city of Gallup.

PLANNING PROCESS

Project planning has been intermittent over the past 40 years. Drawing from past analysis and projecting water needs and environmental conditions into the next 40 years has provided the basis for the planning work described in this report.

A project steering committee included representatives from the Navajo and Jicarilla Apache Nations, city of Gallup, State of New Mexico, Bureau of Indian Affairs (BIA), Indian Health Service (IHS), Navajo Tribal Utility Authority (NTUA), Northwest New Mexico Council of Governments, and Reclamation. The steering committee was formed in the early 1990s to guide the direction of this proposed project, provide technical analysis, support public involvement, provide political background, and conduct overall project coordination. Reclamation has provided planning, engineering, and environmental expertise to this committee.

Funding for project planning has mostly been through annual congressional write-in funds and cost sharing by the Navajo and Jicarilla Apache Nations and the city of Gallup. The level of analysis—appraisal versus feasibility level work—has been tailored to stay within the funds available.

To expedite planning and environmental steps, it was decided that this document would be a combined PR/FEIS. This document complies with the *Economic Principles and Guidelines for Water and Related Land Resources Implementation Studies* (*Principles and Guidelines*) and the National Environmental Policy Act (NEPA).

The NEPA process began with a Notice of Intent published in the *Federal Register* on March 27, 2000. Scoping meetings were held at five locations in April and May 2000: Crownpoint, Gallup, Shiprock, and Farmington, New Mexico; and Saint Michaels, Arizona. The Notice of Availability of the planning report and draft environmental impact statement (PR/DEIS) was published on March 30, 2007, in the *Federal Register*. The 90-day comment period was from March 30, 2007, to June 28, 2007. Public hearings were held at the same five locations as the scoping meetings in May and June 2007. The meetings were moderately attended, with a range of 15 to 50 people each. The most widespread comments indicated that there is a great need for a reliable M&I water supply throughout the proposed project area, that existing groundwater is in limited supply, and that the water is usually of poor quality.

In November 2007, several sections of the PR/DEIS were updated in a report entitled *Cost and Economic Update to 2007 Prices of the Planning Report and Draft Environmental Impact Statement*. All entities on the mailing list were either sent copies of the cost and economic update report or postcards notifying them of the report's availability. The updated cost and economic information is included in this PR/FEIS.

During the proposed project planning process, the Navajo and Jicarilla Apache Nations and the city of Gallup provided their current and projected population estimates and associated M&I water needs to year 2040. An estimated water use rate of 160 gallons per day per person was used for the proposed project design, as requested by the Navajo and Jicarilla Apache Nations.[1] It was assumed that available groundwater would continue to be used and that project water would meet the remaining need. The steering committee identified possible alternatives to meet current and future water needs. It was determined in all past studies, as well as in this study, that the San Juan River was the only sustainable source of water. Therefore, all the viable alternatives involved treating river water for use throughout the proposed project area.

It was determined that water conservation is currently well established in the proposed project area, and although additional conservation would reduce water use, it would not be enough to provide for future water needs. It was assumed that water conservation would continue with all project alternatives considered. Six physically different, viable alternatives were identified to bring San Juan River water to the proposed project area. All of the alternatives would provide the same quantity of treated water to the same delivery locations. The variables included where the water would be diverted and the location of the alternatives' facilities. Maximizing the use of existing facilities and information were important factors in the design of the alternatives. All of the alternatives use Navajo Reservoir and Navajo Indian Irrigation Project (NIIP) facilities to some extent and have the same Gallup Regional System supplying water to the city of Gallup and surrounding Navajo chapters.

[1] The city of Gallup uses 160 gpcd for current and future demand projections. The Navajo Tribal Utility Authority's current average water use rate is 100 gpcd.

Four of the alternatives obtain all of the water from Navajo Reservoir and the NIIP facilities:

- NIIP Moncisco Alternative
- NIIP Coury Lateral Alternative
- NIIP Cutter Alternative
- NIIP Amarillo Alternative

The other two alternatives have a San Juan River diversion in addition to the diversion from the NIIP:

- San Juan River Public Service Company of New Mexico (SJRPNM) Alternative
- San Juan River Infiltration Alternative

Table ES-1 shows the major features of each alternative.

Table ES-1.—General summary of components

Component	NIIP Moncisco Alternative	NIIP Coury Lateral Alternative	NIIP Cutter Alternative	NIIP Amarillo Alternative	SJRPNM Alternative	San Juan River Infiltration Alternative
River intake					1	
Infiltration wells						26 (year 2040)
River pumping plant					1	
Treatment plants	1	1	1	2	2	2
Forebay tanks	12	8	11	17	19	20
Pumping plants	12	8	11	17	20	20
Regulating tanks	5	5	5	6	5	5
Community storage tanks	20	20	20	20	20	20
Feet of pipeline	1,361,954	1,389,378	1,466,248	1,286,082	1,237,792	1,189,145
Miles of pipeline	258	263	278	244	234	225
Gallup Regional System						
Pumping plants	4	4	4	4	4	4
Community storage tanks	5	5	5	5	5	5
Feet of pipeline	171,923	171,923	171,923	171,923	171,923	171,923
Miles of pipeline	32.6	32.6	32.6	32.6	32.6	32.6

ALTERNATIVE SCREENING PROCESS

The six viable alternatives were compared using nine factors derived from the four accounts described in the *Principles and Guidelines*. The SJRPNM Alternative surfaced as the highest-ranked (best) alternative considering all of the factors. When considering only environmental factors, the SJRPNM Alternative again ranked the highest (least environmentally impacting). When considering only capital and annual operation, maintenance, and replacement (OM&R) costs as measured by present worth, the SJRPNM Alternative was least costly assuming Colorado River Storage Project (CRSP) power rates. When locally available power rates from the NTUA were used, the NIIP Amarillo Alternative was the least costly.

A detailed analysis of environmental impacts associated with the SJRPNM and NIIP Amarillo Alternatives and the No Action Alternative was completed in this document. This analysis concluded that the SJRPNM Alternative would have fewer impacts to most resource factors compared to the other alternatives. For this reason, the SJRPNM Alternative has been identified as the preferred alternative considering all the factors and resources evaluated.

PREFERRED ALTERNATIVE

The SJRPNM Alternative would divert water from the San Juan River downstream of Fruitland, New Mexico, just above the existing Public Service Company of New Mexico (PNM) diversion structure, treat the water to drinking water standards, and then deliver it along Highway N36 and south to Navajo chapters along U.S. Highway 491. Water would be provided to Window Rock, Arizona, and Crownpoint, New Mexico, through sublaterals. Water would also be provided to the city of Gallup, New Mexico, through the Gallup Regional System. Another diversion would originate at Cutter Reservoir, an existing regulating reservoir on the NIIP, and would convey water to the eastern portion of the Navajo and Jicarilla Apache Nations.

The construction cost of this alternative is estimated to be $864,400,000 (Reclamation, April 2007 cost estimate, table ES-2). The annual OM&R costs for the preferred alternative are projected as shown in table ES-3.

The appraisal-level design and cost estimate was done by Reclamation's Technical Service Center. The design and cost estimate was peer reviewed by an independent engineering consulting firm, Boyle Engineering. Revisions were made to the estimate based on the review, and the contingency factor was increased. This estimate represents the level at which this project could be constructed with January 2007 price levels. This assumes that no unknown factors were encountered or changes made.

Table ES-2.—Preferred alternative cost estimate

Feature	Reclamation April 2007[1] cost estimate ($)
Pipelines	202,546,620
Pumping plants	28,355,000
Water treatment plants	53,673,055
Tanks and air chambers	85,575,000
Transmission lines	26,677,200
Turnout structure	1,707,380
Gallup Regional System	25,754,500
Subtotal	424,288,755
Mobilization (5%)	21,000,000
Unlisted items (10%)	44,711,245
Subtotal	490,000,0000
Contingencies (22.5%)	110,000,000
Subtotal (field costs)	600,000,000
Noncontract costs (27%)	162,000,000
Subtotal	762,000,000
New Mexico taxes on field costs (estimated at 6%)	36,000,000
Navajo Nation taxes on field costs, excluding Gallup Regional System field cost of $30 million (estimated at 3%)	16,900,000
Subtotal	814,900,000
Land, relocation, and damage[2]	9,000,000
Cultural resource mitigation	34,500,000
Environmental mitigation	6,000,000
Total project cost	864,400,000

[1] The cost analysis contained in this PR/FEIS is at an appraisal level using January 2007 prices, and it was completed before project authorization (P.L. 111-11) was enacted. Public Law 111-11 authorizes $870 million of appropriations, plus indexing, for the proposed project. It also limits the Secretary to not more than 2 percent of construction costs for cultural resource mitigation costs. This limitation would reduce the above costs by $17.5 million. The proposed project is now authorized, and more refined construction cost estimates will be prepared in the future with more detailed design data. Therefore, for this PR/FEIS, previously developed cost estimates will be used (the change described above is within the range of accuracy for the total cost estimate and the effort required to make numerous, small revisions is not warranted at this level of study).

[2] The estimate includes right-of-way (ROW) costs for the San Juan Treatment Plant only; should it be determined that additional ROW needs to be included, additional funds will be necessary.

Table ES-3.—Yearly OM&R costs ($) (SJRPNM Alternative)

Item	San Juan Lateral	Cutter Lateral	Gallup Regional System
NTUA power costs (relift pumping plant)	4,962,000	597,000	82,000
CRSP power costs (relift pumping plant)	1,841,000	221,000	31,000
NTUA power costs (booster pumping plant)	215,000	35,000	
CRSP power costs (booster pumping plant)	80,000	13,000	—
Relift pumping plant OM&R	3,170,000	1,245,000	723,000
Booster pumping plant OM&R	78,000	12,000	
Canal OM&R	—	35,000	—
NTUA power cost water treatment plant	511,000	63,000	—
CRSP power cost water treatment plant	187,000	22,000	—
Water treatment OM&R	2,605,000	$1,064,000	—
NTUA water treatment, miscellaneous 10%	312,000	$113,000	
CRSP water treatment, miscellaneous 10%	279,000	$109,000	
Power transmission OM&R	350,000	Included in San Juan Lateral	
Pipeline OM&R	801,000	187,000	57,000
Total NTUA	13,004,000	3,351,000	862,000
Total CRSP	9,391,000	2,908,000	811,000

Notes: (1) CRSP rate is 10.43 mils per kilowatthour and demand charge of $4.43 per kilowatt per month.
(2) CRSP total project power cost is $2,395,000.
(3) NTUA rate is 20 mils per kilowatthour and demand charge of $16.50 per kilowatt per month.
(4) NTUA total project power cost is $6,465,000.
(5) Cost reflects April 2007 project cost estimate with January 2007 price level.

WATER SUPPLY

Water for the Navajo Nation's use in New Mexico would be supplied from the State of New Mexico's Upper Basin apportionment, and water for the Navajo Nation use in Arizona would be supplied from the consumptive use apportionments made to the State of Arizona by compact or decree. Navajo Nation uses by the proposed project in both

States must be serviced through long-term water supply contracts between the Secretary and the Navajo Nation. The Secretary would make the water available for contract deliveries under existing New Mexico permits that the Secretary holds.

Jicarilla Apache Nation water would come from Navajo Reservoir as part of the water obtained through the Jicarilla Apache Nation Water Right Settlement.[2] The Jicarilla Apache Nation has an existing water supply contract for this water. It is anticipated that the city of Gallup would contract through the Jicarilla Apache Nation and/or Navajo Nation for its water supply. A long-term water supply subcontract among the Jicarilla Apache Nation and/or Navajo Nation, the city of Gallup, and Reclamation would be needed to finalize this arrangement.

ECONOMIC AND FINANCIAL ANALYSIS

The economic analysis compares project benefits measured by willingness to pay and cost of alternative source of water to project cost. The benefit to cost ratio is 1.25, which represents a beneficial use of national resources. The financial analysis addresses the cost of project water delivered to the users. The levelized cost of project water to the user is estimated to be $7.57 per thousand gallons. This compares with $5.50 per thousand gallons for the Lewis and Clark Project and $8.30 per thousand gallons for the Rocky Boy's/North Central Montana Regional System, both of which are authorized Federal rural water projects. The analysis presented in this PR/FEIS is based on the identified preferred alternative.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

Positive impacts would occur from implementing the preferred alternative. The average flow in the San Juan River would be increased by approximately 5 cubic feet per second between Navajo Dam and the SJRPNM diversion to meet proposed project demands. This increase would also provide additional dilution for water quality improvement and would improve the habitat for fish (including the tailwater trout fishery). Indian Trust Assets could be put to use by providing the Navajo and Jicarilla Apache Nations a water supply system. The socioeconomic resources would be improved by providing up to 650 jobs during construction and boosting the income to the region. An M&I water supply would help boost the overall economic growth to the region.

[2] Jicarilla Apache Nation water rights were specified in the 1992 Jicarilla Apache Tribe Water Rights Settlement Act (P.L. 102-441).

Negative impacts associated with construction of such a large project are unavoidable. They consist of a permanent loss of 43 acres of vegetation and associated wildlife habitat, including 1.1 acres of permanent loss of wetlands. There would be potential entrainment losses at the PNM diversion for flannelmouth sucker and speckled dace larva. Forty-three acres of private and Navajo Nation lands would be converted to project use by the alternative. Six families who currently live on the private land would be relocated. There would be a temporary impact to grazing on Navajo Nation lands during construction.

Special status species would be impacted due to the potential entrainment losses at the SJRPNM diversion for Colorado pikeminnow, razorback sucker, and bluehead sucker. There are also potential negative impacts to the beautiful gilia and Mesa Verde cactus along the pipeline alignment.

Cultural resources could be potentially adversely impacted since there are an estimated 104 cultural resource sites within the area of potential effects. Approximately 90 sites could require treatment.

Mitigation measures addressing these potential impacts have been developed and are included in the preferred alternative design and cost estimate.

CONSULTATION AND COORDINATION

Reclamation, as the lead agency responsible for preparation of this PR/FEIS, used an interdisciplinary team to prepare the document in addition to representatives from the Navajo and Jicarilla Apache Nations and city of Gallup staff and consultants. In addition, the BIA, IHS, NTUA, State of New Mexico, and the Northwest New Mexico Council of Governments participated with the interdisciplinary team in preparing this document.

Reclamation and the U.S. Fish and Wildlife Service (Service) have consulted, both formally and informally, regarding potential impacts to special status species as a result of potential development and operation of the preferred alternative.

A biological assessment was developed by Reclamation, and the Service issued a biological opinion under the Endangered Species Act. In the biological opinion, the Service concluded that the proposed project, as described in the biological assessment and in this PR/FEIS, is not likely to jeopardize the continued existence of the Colorado pikeminnow or razorback sucker and is not likely to adversely modify their designated critical habitat. The biological opinion contains an incidental take statement for Colorado pikeminnow and razorback sucker larvae that may become entrained as a result of the

diversion from the San Juan River. Mesa Verde cactus also may be directly taken during the construction of project features. The biological opinion incorporates conservation measures to minimize impacts to Mesa Verde cactus.

The biological opinion incorporates a Navajo Depletion Guarantee, which limits new depletion associated with the project to 5,271 acre-feet at full development (see chapter VI and volume II, appendix C, part III). The biological opinion concludes that the 5,271 acre-feet of new depletions associated with the proposed project would not adversely impact the Colorado pikeminnow or razorback sucker. However, because larval fish may be lost due to the project diversions, the fish would be adversely affected. The biological opinion identifies the reasonable and prudent measure to be implemented by Reclamation and the San Juan River Basin Recovery Implementation Program to reduce incidental take of Colorado pikeminnow and razorback sucker. It also states that if reinitiation is required, the Service will follow the procedures regarding reinitiation of consultation pursuant to the "Principles for Conducting Endangered Species Act Section 7 Consultations on Water Development and Water Management Activities Affecting Endangered Fish Species in the San Juan River Basin" (see attachment O).

A Planning Aid Memorandum and Fish and Wildlife Coordination Act report have also been prepared by the Service, and the recommendations are included, where appropriate, in the preferred alternative plan (see volume II, appendix C, part III).