

## Chapter III

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# OPPORTUNITIES/RESOURCES AND CONSTRAINTS

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## INTRODUCTION

This chapter describes Navajo-Gallup Water Supply Project (proposed project) opportunities and constraints for meeting water demand needs identified in chapters I and II. Water supply options and limitations are also analyzed.

A primary project opportunity includes adequate San Juan River water supplies for project depletion without jeopardizing endangered fish and their habitat. Another opportunity includes the ability to acquire private water rights for the proposed project use that would remain within the State of New Mexico's Upper Colorado River Basin allocation. Other opportunities include possible use of water from the Navajo Indian Irrigation Project (NIIP), Jicarilla Apache Tribe Water Rights Settlement Act (Jicarilla Settlement Act) (Public Law [P.L.] 102-441, 106 Stat. 2237) of 1992, and the Arizona Upper Colorado River Basin Compact allocation.

Project constraints include the need for water contracts, a hydrologic determination of water availability in New Mexico for Navajo Reservoir, Endangered Species Act (ESA) compliance, restrictions on NIIP water use, and related limitations.

Water supply or resource constraints include the groundwater overdraft problem, lack of infrastructure, and the lack of groundwater on the Navajo Nation Reservation; unsustainable groundwater supplies in the city of Gallup; and the lack of adequate water supply infrastructure for development in the southwest part of the Jicarilla Apache Reservation.

## **PROPOSED PROJECT WATER OPPORTUNITIES/ RESOURCES AND ISSUES**

With more than 40 percent of the Navajo population lacking domestic water, and static water levels in the city of Gallup's well fields declining by hundreds of feet, the need for an alternate surface supply is clear. Numerous investigations have found that additional groundwater sources are inadequate and that they can only temporarily delay water supply shortfalls.

Sources of surface water that were considered for the proposed project demand within New Mexico include:

- (1) Acquisition of private water rights.
- (2) A San Juan River contract for water with the U.S. Department of the Interior (Interior).
- (3) A San Juan River contract for water from the Jicarilla Apache Nation.
- (4) NIIP water.
- (5) Navajo Nation non-NIIP water. Approximately 18 percent of the proposed project's water demand is in the Lower Colorado River Basin within the State of Arizona. In providing for Navajo Reservation, Window Rock, and Arizona area demands, the Navajo Nation is investigating water from three sources: the Central Arizona Project (CAP), Arizona Lower Basin, and Upper Basin Colorado River. Water from the three sources may be physically available to meet the proposed project's Arizona water demand, but legal and administrative issues are limiting constraints.

These water supply options are discussed in greater detail below. Additional text has been added to each option to illustrate how the recently enacted P.L. 111-11 and an executed settlement agreement may affect each option.

### **Proposed Project Water Supply in New Mexico**

#### ***Acquisition of Private Water Rights***

One option for providing a permanent water supply for the city of Gallup is to purchase private water rights from water users within the San Juan River Basin (Basin). Considering the potentially available water rights in the Basin, it is unlikely that the city's entire anticipated depletion of 7,500 acre-feet could be available from privately held

water rights that are currently being used. Only a portion could be feasibly available. Private water rights would have the advantage of being currently considered depleted in the baseline hydrology for endangered species consultation, could have a senior priority date, and would be within the State of New Mexico's water allocation within the Upper Colorado River Basin.

Disadvantages include not having a full water supply every year and not having reservoir storage. Depletions associated with these water rights would have to be transferred to the proposed project. It is very likely that these transfers would be protested by numerous parties within the Basin because of potential injury to use of their water or the welfare of the State. A final disadvantage is that private water rights within the Basin, even those purchased and administratively moved to the city of Gallup, might not be exempt from a priority call based upon federally reserved water right claims exerted by the Navajo Nation.

The New Mexico Interstate Stream Commission estimates that the alternative water supply provision of the settlement agreement between the Navajo Nation and the State of New Mexico reduces the likelihood of a priority call from 1 year out of 2 to 1 year out of 20.

### ***A San Juan River Water Contract with the U.S. Department of the Interior***

The city of Gallup has no water rights for San Juan River water, nor does it have any Navajo Reservoir water under contract. During the 1950s and 1960s, Gallup filed three Notices of Intent to divert water from the San Juan River. After the construction of Navajo Reservoir, the New Mexico State Engineer indicated that the city of Gallup would need a contract with the Secretary of the Interior (Secretary) for water. In 1966, a contract for 7,500 acre-feet of water was drafted and several meetings were held between the Bureau of Reclamation (Reclamation) and the city of Gallup to work out the details. That contract was never finalized. In 1967, the New Mexico Interstate Stream Commission recommended, and the Secretary granted, a temporary allocation to the city of Gallup of 7,500 acre-feet per year (AFY) through the year 2005. In the 1988 Hydrologic Determination, Reclamation identified 24,000 acre-feet of water in New Mexico and 7,000 acre-feet of water in Arizona that was temporarily available from the San Juan River for the proposed project through the year 2039. A letter (November 22, 2000) from Kelsey A. Begaye, President of the Navajo Nation, and John Peña, Mayor of the city of Gallup, to Eluid Martinez, Commissioner of Reclamation, and the project participants, requested separate water contracts from the Navajo Reservoir water supply (attachment G). The Navajo contract would be for 29,300 AFY and the city of Gallup contract would be for 7,500 AFY.

A letter (December 26, 2000) from the Commissioner of Reclamation and a letter (June 13, 2001) (attachment H) from the Upper Colorado Regional Director agree with

working toward water supply contracts from Navajo Reservoir. The letters identified the following unresolved issues that would have to be addressed before pursuing long-term water supply contracts:

- Hydrologic determination of water availability in New Mexico from Navajo Reservoir
- ESA compliance for any Federal action to contract and provide water
- National Environmental Policy Act (NEPA) compliance for the contracts and the proposed project to provide the water
- Colorado River Basin issues relating to diverting and depleting water in New Mexico and Arizona
- Congressional authorization of the construction and operation of the proposed project
- Congressional approval of long-term contracts from Navajo Reservoir
  - The Act of June 13, 1962 (76 Stat. 96, P.L. 87-483), authorizing the NIIP and the San Juan-Chama Project, provides in section 11 that the Secretary shall not enter into long-term contracts for the delivery of water from Navajo Reservoir until (1) it has been made certain by hydrologic determinations as to water availability, (2) such determinations have been submitted to Congress, and (3) Congress has approved such contracts. The act also authorized the Secretary to market water from Navajo Reservoir for other municipal and industrial (M&I) uses in New Mexico if it is determined on the basis of hydrologic investigation that such water is reasonably likely to be available.

A hydrologic investigation (hydrologic determination) was completed by Reclamation and a resolution dated June 9, 2006, was passed by the Upper Colorado River Commission (attachment E). The hydrologic determination was signed by the Secretary on June 8, 2007, and is included as attachment N. Projections by the State of New Mexico in May 2006 show the State not exceeding 642,400 AFY through 2060 with full development of this proposed project (table I-1). Based on the hydrologic determination, sufficient water is reasonably likely to be available within New Mexico's Upper Basin apportionment and from the Navajo Reservoir water supply for the Secretary to enter into a long-term water supply contract for the Navajo Nation's uses in New Mexico under the proposed project. There is no water anticipated to be available from New Mexico's Upper Basin apportionment and the Navajo Reservoir water supply

for a long-term contract between the city of Gallup and the Secretary. However, the city of Gallup may subcontract with the Navajo Nation or the Jicarilla Apache Nation, or both, for part of their Navajo Reservoir supply contract allocations.

*ESA Compliance.*—Formal section 7 (endangered species) consultation has been completed for construction, operation, and issuance of long-term water supply contracts for the proposed project. Reclamation, the action agency, submitted a biological assessment, which was accepted as complete, initiating formal consultation with the September 22, 2005, letter from the U.S. Fish and Wildlife Service (Service). The Service issued a final biological opinion on February 26, 2009 (volume II, appendix C, part III.)

A key element in the action to reduce impacts to the endangered fish on the San Juan River is a depletion guarantee provided by the Navajo Nation. The Navajo Nation offered to reduce its water depletion as necessary up to 20,782 AFY to alleviate impacts to the San Juan River Basin Recovery Implementation Program (SJRBRIP) that could be created by the full development of the proposed project. Such a depletion guarantee was developed by the Nation along with both Reclamation and the Service. Because it involves voluntary limitations on the Nation’s use of water as it regards potential effects to endangered species, and because Reclamation, as the action agency, is prepared to administer and operate the proposed project under such potential limitations, such a guarantee is entirely within the requirements of the ESA and the principles of the SJRBRIP. This is an example of other potential ways this proposed project might be constructed and operated under the rubric of the ESA and the SJRBRIP. An additional description of the Navajo Depletion Guarantee is provided in chapter VI.

*NEPA.*—This planning report and final environmental impact statement (PR/FEIS) covers NEPA compliance for construction and operation of the recommended alternative and required water supply contracts from Navajo Reservoir.

*Colorado River Basin Issues in New Mexico and Arizona.*—The project proposes to divert water from the Upper Colorado River Basin out of the San Juan River in New Mexico. Approximately 39 percent (13,934 AFY) of the depleted water would be used in New Mexico’s Lower Colorado Basin. Approximately 18 percent of the depleted water would be used in Arizona’s Lower Colorado Basin. The Upper Colorado River Commission passed a resolution on June 19, 2003, in support of the diversion of water from the Upper Basin for use in the Lower Basin in New Mexico for the proposed project (attachment E). Public Law 111-11 (see attachment P) states that proposed project water shall not be delivered for use by any community of the Navajo Nation located in Arizona until the:

1. Navajo Nation and the State of Arizona have entered into a water rights settlement agreement approved by an Act of Congress that settles and waives the Navajo Nation's claims to water in the Lower Basin and the Little Colorado River Basin in the State of Arizona, including those of the United States on the Navajo Nation's behalf; and
2. Secretary and the Navajo Nation have entered into a Navajo Reservoir water supply delivery contract for the physical delivery and diversion of water via the proposed project from the San Juan River system to supply uses in the State of Arizona.

*Congressional Authorization of the Proposed Project.*—The 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 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.

Public Law 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.

*Congressional Approval of Long-Term Water Supply Contracts.*—Long-term water contracts for water from Navajo Reservoir require congressional authorization. Public Law 111-11, as mentioned above, includes authorization language for entering into long-term water supply contracts for water from Navajo Reservoir and the San Juan River. This includes water supply contracts between the Navajo Nation and the Secretary for the Nation's uses under the proposed project and any subcontract between the city of Gallup and the Navajo Nation for the city's uses under the project.

### ***Contract Water from the Jicarilla Apache Nation***

Under the 1992 Jicarilla Settlement Act and associated Federal contract, the Nation has the right to deplete 25,500 AFY from the Navajo Reservoir supply and the right to subcontract this water when it is not needed for on-reservation use. The Jicarilla Apache Nation is pursuing a variety of development options for using its San Juan River Basin depletions, including potential third-party contracts and on-reservation water projects.

The Jicarilla Apache Nation has a contract right to water under the Navajo Reservoir supply. The Secretary has already determined that sufficient water is available to fulfill the Jicarilla Settlement Act. While third-party contracts for Jicarilla Apache Nation water must be approved by the Secretary (through Reclamation), no further congressional action is necessary for subcontracting the use of its water. In addition, these depletions will be recognized in future hydrologic determinations.

### ***Navajo Indian Irrigation Project Water***

The NIIP was authorized in 1962 by P.L. 87-483. This law authorized the Secretary to construct, operate, and maintain the NIIP for the principal purpose of furnishing irrigation water to approximately 110,630 acres of land. The NIIP consists of the initial land development, water distribution system, water delivery, roads, and other infrastructure. In 1970, the Navajo Nation created the Navajo Agricultural Products Industry (NAPI) to run the agricultural business venture and take responsibility for operating the NIIP facilities.

The NIIP is approximately 70 percent complete, with 77,685 acres developed. Based on an average unit depletion of 2.44 acre-feet per acre, at full build-out, with all of the proposed project acreage irrigated, the NIIP would deplete approximately 270,000 AFY of San Juan River water. Based on current overall project irrigation efficiency, the NIIP would divert approximately 337,500 acre-feet of water (Bureau of Indian Affairs, 1999).

The NIIP, through the Bureau of Indian Affairs, consulted with the Service on approximately 270,000 acre-feet of depletion which, according to the Service, can be depleted without jeopardizing the endangered fish. However, the NIIP was only able to acquire the water it needs to complete Blocks 9, 10, and 11 by shifting more than 16,000 acre-feet of baseline depletions away from the Hogback and Fruitland irrigation projects. Even so, the NIIP's depletions may include two types of water that may, under certain circumstances, be available for municipal use: (1) unused NIIP water and (2) water made available by forbearing the use of NIIP irrigation water. These options, which would need to overcome considerable legal and political hurdles, are described in the following sections.

*Municipal Use of Unused NIIP Water.*—The authorized purposes of the NIIP facilities include conveying water for municipal, domestic, and industrial uses, and for other beneficial purposes. The Secretary is authorized to provide capacity for M&I water supplies or miscellaneous purposes over and above the diversion requirements for irrigation of the NIIP. However, the additional capacity needed would not be constructed and no appropriation of funds for such construction would be made until contracts have been executed that provide satisfactory assurance of repayment of all costs properly allocated.

Even if the Navajo Nation were willing to convert unused NIIP water from irrigation uses to municipal uses, under the present contract the Secretary is not authorized to deliver water for uses other than irrigation. The NIIP’s statutory authorization and the Navajo Nation’s contract with the Secretary allocate an average annual diversion of up to 508,000 acre-feet of water per year from the San Juan River for the principal purpose of furnishing NIIP irrigation water to approximately 110,630 acres of land. The Secretary has authority to contract for delivery of water from Navajo Reservoir provided that unreasonable shortages to the NIIP and the San Juan Chama Project are avoided.

A more critical issue is that the unused NIIP water is only temporarily available, perhaps for a 10- to 30-year period. The municipal demand, however, requires a long-term supply. Committing this water temporarily to non-NIIP municipal water demand would create significant disincentives for the completion of the NIIP, and it might eventually result in a conflict between irrigation and municipal uses. Even with these concerns, the unused NIIP water might allow the proposed project to proceed.

*A Forbearance Agreement for NIIP Water.*—Another water supply option is for the Navajo Nation to enter into a forbearance agreement to provide water for municipal needs. Unlike the “unused” water described in the previous section, under a forbearance agreement, the NIIP would forbear the use of a specific volume of water that it could otherwise make use of for a designated period of time. This foregone use might come at the expense of not irrigating a specific number of acres. Based on an average depletion of 2.44 acre-feet per acre, the city of Gallup water supply would require idling or fallowing approximately 3,000 acres, and the Navajo demand would require approximately 10,000 acres.

Instead of idling acreage, it might be possible to change the proposed crop mix to include crops that require less water or to underirrigate some of the irrigated crops in the current mix. However, these approaches would have agronomic impacts on the NIIP, including lower revenue, fewer jobs, and greater risk of crop failure. From the State of New Mexico’s perspective, agricultural water rights can only be transferred from irrigated land if the irrigated land is fallowed or dry-farmed.

In conclusion, although a relatively large amount of water under the NIIP has undergone section 7 consultations and other environmental compliance, forbearance agreements for NIIP water have to be developed around the current contractual constraints and without creating disincentives to the completion of the NIIP. However, this option might provide a bridge until broader water issues are resolved.

Public Law 111-11 provided amendments to the NIIP authorizing legislation (P.L. 87-483, as amended by P.L. 91-416) which, in addition to irrigation, allows the water diverted by the NIIP (the quantity of water necessary to supply an average depletion of 270,000 acre-feet per year) to be used within the area serviced by NIIP facilities for (1) aquaculture, (2) domestic, industrial, or commercial purposes relating to agriculture production and processing, (3) hydropower, and (4) the implementation of the alternative water source provisions described in subparagraph 9.2 of the settlement agreement executed under the Northwestern New Mexico Rural Water Projects Act (P.L. 111-11, title X, subtitle B).

The P.L. 111-11 amendments also state that NIIP water diverted may be transferred to areas located within or outside the area served by NIIP facilities, and within or outside the boundaries of the Navajo Nation, for beneficial use in accordance with the executed settlement agreement, settlement contract, and other applicable law. The Secretary may also use the capacity of the NIIP works to convey water supplies for the proposed project or other non-irrigation purposes described above. The Northwestern New Mexico Rural Water Project Act is included as attachment P (P.L. 111-11, title X, subtitle B).

### ***Other Navajo Nation Water***

One option to provide a water supply for the proposed project would be for the Navajo Nation to assume the responsibility for guaranteeing depletions out of water supplies allocated to the Navajo Nation, either through existing statutes or an eventual final settlement of the Navajo Nation's federally reserved water claims. Such an approach would not require the city of Gallup to deal directly with Basin interests and would provide the Navajo Nation the opportunity to redistribute its water resources consistent with its internal policies. The primary disadvantage with this approach is that the Navajo Nation has very limited non-NIIP water in the Basin with a quantified water right and with the potential for leasing to the city of Gallup. For instance, as a result of its section 7 consultation with the Service, unused water from the San Juan River irrigation projects has already been temporarily utilized by the NIIP to ensure that the NIIP's construction can continue. When this depletion is restored to the Shiprock irrigation projects, it may, under certain circumstances in the future, be available for the proposed project. However, utilizing Navajo Nation water to meet non-Navajo municipal demands raises issues that would need to be addressed.

The Navajo Nation is concerned that using other Navajo Nation water for temporary use for the proposed project might hinder other future Navajo water development. Even if other Navajo Nation water became available under favorable terms, it would not necessarily be less expensive than acquiring private water rights. Consequently, in the short term, this water option may not meet the city of Gallup's need to secure a long-term water supply. A Memorandum of Understanding dated October 2007 between the Navajo Nation and the city of Gallup addresses a potential water supply for the city of Gallup (attachment B).

## **Proposed Project Water Supply in Arizona**

### ***Central Arizona Project or Other Main Stem Arizona Lower Basin Colorado River Water***

Water allocated to the Lower Colorado River Basin might fit most readily into existing compact allocations for use in such Lower Basin areas as Window Rock, Arizona. The Arizona Water Settlements Act, which became law in December 2004, identified 6,411 acre-feet of CAP water for use by the Secretary in settlement of the Navajo Nation's water rights in Arizona. Other possibilities are to acquire non-CAP main stem water or lower priority non-municipal water.

Moving CAP water or other main stem Colorado River water would require an adequate accounting system to ensure that system gains and losses were accurately calculated and that other issues, such as lost power revenues and environmental impacts, were addressed.

### ***Arizona Upper Colorado River Basin Water***

The Upper Colorado River Basin Compact of 1948 provided Arizona 50,000 AFY of annual consumptive use from the Upper Basin. The 1988 Hydrologic Determination identified 7,000 acre-feet of water in the Upper Basin of Arizona for the Arizona portion of this project. Arizona's estimated water depletion in 2000 was 38,100 acre-feet (Reclamation, 2004). The *Colorado River System Consumptive Uses and Losses Report, 1996–2000* shows there is currently adequate water remaining in Arizona's Upper Basin apportionment to meet the proposed project's Arizona demand. Other demands for this water, such as the 950 acre-foot request by the Navajo Nation, and the 1,000 acre-foot request by the city of Page, Arizona, must be considered. The Navajo Generating Station has been fully developed and its water depletion is included in Arizona's annual consumptive use from the Upper Basin. An additional 5,400 acre-feet of depletion remains unused from the station's water supply contract from Lake Powell. The Navajo Nation and the State of Arizona will need to identify how the remaining unused water will be divided.

Public Law 111-11 (see attachment P) requires that water diverted by the proposed project in New Mexico be in accordance with an appropriate permit issued under New Mexico law for use in the State of Arizona within the Navajo Reservation in the Lower Basin, provided that any depletion from the diversion by the proposed project in New Mexico for use in Arizona shall be administered and accounted for as either:

1. A part of, and charge against the available consumptive use apportionment made to the State of Arizona by the Upper Colorado River Compact and Colorado River Compact, in which case any water diverted by the proposed project into the Lower Basin shall not be credited as water reaching Lee Ferry pursuant to the Colorado River Compact; or
2. Part of, or charged against the consumptive use apportionment made to the Lower Basin by the Colorado River Compact, in which case it shall be:
  - a. Part of the Colorado River water that is apportioned by the State of Arizona in the Consolidated Decree of the Supreme Court of the United States in *Arizona v. California* (547 U.S. 150) (as may be amended or supplemented)
  - b. Credited as water reaching Lee Ferry pursuant to the Colorado River Compact; and
  - c. Accounted for as water identified in the Arizona Water Settlement Act (118 Stat. 3478).

## **NAVAJO NATION**

### **Existing Opportunities/Resources**

Outside the San Juan River chapters in the northern part of the proposed project area, Navajo Nation communities in the region and the city of Gallup rely entirely on groundwater for their water supply. The public water systems in the proposed project service area derive water from a variety of groundwater sources ranging from shallow, unconfined aquifers to deep, confined aquifers, as shown in table III-1.

There were more than 50 public water supply systems in the proposed project area in 1996 (Navajo Nation Environmental Protection Agency), the largest of which was the Navajo Tribal Utility Authority, which operates more than 30 water systems in the area. The Navajo Department of Water Resources operates nine systems in the proposed project area. Descriptions of groundwater conditions in the subareas and constraints to the use of that groundwater are presented in detail in volume II, appendix A (Rodgers, 1993) (Navajo Nation Environmental Protection Agency, 1996).

Table III-1.—Proposed project service area municipal water production during 2005

Municipal subarea	Production (acre-feet)	Source aquifer
1. City of Gallup	3,460 (2006)	Gallup Sandstone Dakota-Westwater
1. Central	28	Alluvium Picture Cliffs Menefee
2. Crownpoint	439	Westwater Morrison Menefee Gallup Sandstone Point Lookout
3. Gallup area (Navajo land adjacent to the city of Gallup)	389	Gallup Sandstone Dakota-Westwater
4. Huerfano	88	Alluvium Ojo Alamo
5. Rock Springs	95	Gallup Sandstone
6. Route 491	767	Alluvium Morrison Menefee Point Lookout Gallup Sandstone Mesa Verde Dakota
7. San Juan River	2,181 (2004)	Surface Water
8. Torreon	166	Ojo Alamo
9. Window Rock	991	Alluvium De Chelly Gallup Sandstone Shinarump
10. Thoreau-Smith Lake	208	Glorieta
<b>Regional total</b>	<b>8,812</b>	

Source: Navajo Tribal Utility Authority and city of Gallup.

## **Constraints**

Most of the aquifers investigated are undesirable for additional long-term municipal development because of the harmful impacts of continued over-drafting of the groundwater. Continued over-drafting of the groundwater may:

- Lower the water levels in wells and increase pumping depths
- Reduce the yield of the well fields
- Reduce the quality of the water supply
- Increase capital and operating costs
- Deplete the groundwater available for a drought reserve
- Lower the water table in riparian areas
- Cause land subsidence

## **JICARILLA APACHE NATION**

### **Existing Opportunities/Resources**

The water resources of the Jicarilla Apache Nation are shaped in part by the Jicarilla Settlement Act (P.L. 102-441, 106 Stat. 2237). Through years of litigation and negotiation with the United States, the Jicarilla Settlement Act was passed into law in 1992.

Beginning in 1972, the Jicarilla Apache Tribal Council initiated efforts to address its future water right needs by filing a Federal lawsuit. The Jicarilla Settlement Act, the associated Federal contract, and the Partial Final Decree in the San Juan River adjudication entered in 1999 entitled the Jicarilla Apache Nation to a number of water rights, including the following:

- The right to divert up to 40,000 acre-feet and deplete up to 25,500 acre-feet from the Navajo Reservoir water supply under contract with the Secretary
- The right to deplete up to 6,500 acre-feet of water from the San Juan-Chama Project under contract with the Secretary
- Secured rights in Federal and State court to quantified historic and existing uses of water in both the San Juan and Rio Grande Basins

Part of these quantified historic and existing use rights are designated as 2,195 acre-foot depletions from the Basin for irrigation and domestic uses. An additional 2,187 acre-feet

of historic and existing uses, established for net evaporation on lakes and stock ponds, may be used for future domestic needs as determined by the Jicarilla Apache Nation. These water rights, as well as a substantial portion of its Federal contract water rights for future uses, are reflected in the environmental baseline established during the Animas-La Plata section 7 consultations under the ESA.

The proposed project's 1,200 acre-foot water demand for the Jicarilla Apache Nation would be met by delivery of a portion of their 25,500 acre-foot contract allocation from the Navajo Reservoir water supply as a result of the Jicarilla Settlement Act water rights and/or a portion of their unused historical rights. Contingent upon successful negotiation of a subcontract between the Jicarilla Apache Nation and the city of Gallup, the 7,500 acre-foot demand for the city would be met from deliveries from the Navajo Reservoir water supply under the Jicarilla Apache Nation's settlement contract. The Secretary would need to approve the subcontract.

## Constraints

One of the major impediments for development planning in the southwest part of the Jicarilla Apache Reservation has been a lack of a reliable, high-quality water supply.<sup>1</sup> Previous planning efforts have investigated the possibility of diverting water from the Navajo River to Heron Lake and pumping the Jicarilla Apache Nation's surface water rights by pipeline to points south for development purposes. However, pipeline projects from these sources to the Teepee Junction area are very costly and have not been pursued.

In addition, by providing leased water to the city of Gallup, revenues from this source would provide the funding necessary to pay for development and operations and maintenance costs associated with the Jicarilla Apache Nation's proportional share of these expenses. By participation in the proposed project, the Jicarilla Apache Nation may be able to realize its development goals with water delivered to the desired location in a relatively cost-efficient manner in partnership with the Navajo Nation and the city of Gallup.

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<sup>1</sup> Pockets of groundwater are available for small-scale development; however, treatment is required to provide water to drinking standards. For significant development, substantial groundwater mining would be necessary, making this source unreliable for the long term. Sustainable groundwater use can be obtained by dispersing the impacts to the aquifer(s), using small-volume wells, and using poorer quality water for stock operations, wildlife, other agricultural uses, and remote domestic supplies.

## CITY OF GALLUP

### Existing Opportunities/Resources

City of Gallup records for 2006 reported an average daily water production of 3.08 million gallons per day, or 3,460 AFY. The maximum daily use peaked at approximately 5.5 million gallons per day. Annual water demand has been decreasing over the past several years as a result of increased water conservation and management efforts, as shown in figure III-1.

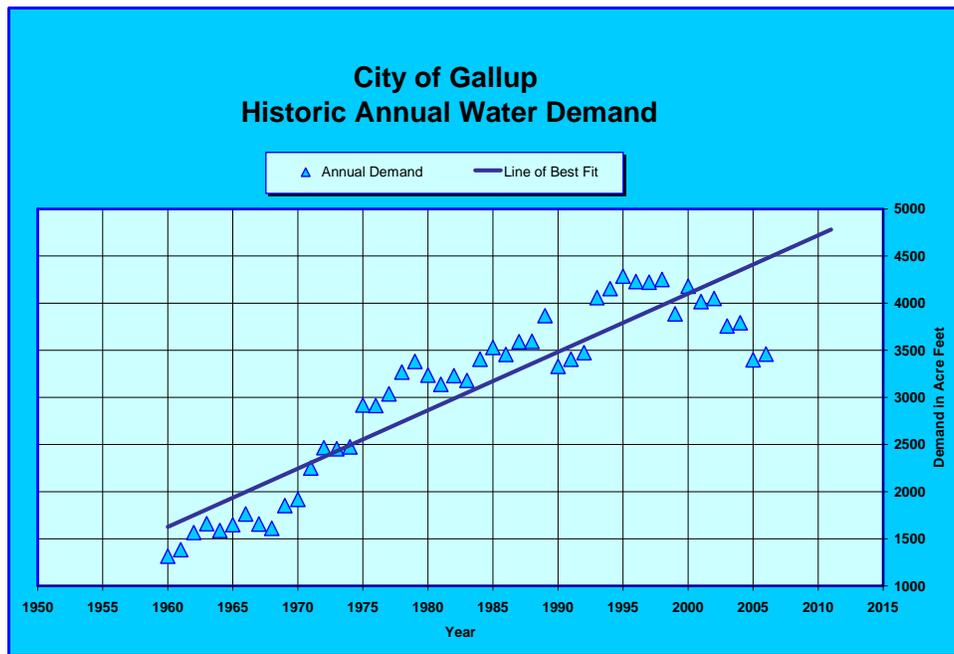


Figure III-1.—City of Gallup historic annual water demand.

The city of Gallup operated two well fields—the Santa Fe and the Ya-ta-hey. Historic water table data indicate that the static water level in its wells is declining at the average rate of 200 feet per 10 years (figure III-2). It is projected that in the next decade, current demands may not be met by the existing water supply.

In 1991, the city of Gallup's 40-year master water supply plan (Shomaker, Inc., 1991) identified two short-term alternatives, including the expansion of the Ya-ta-hey Well Field to the north and developing water in the Ciniza area to the east. Neither alternative is sustainable; however, plans are being developed to utilize those resources. The city of Gallup has also investigated new appropriations of San Andreas Glorietta water from an application acquired by the Plains Electric Generation and Transmission Cooperative (Plains Electric). Plains Electric Application Nos. G-22 through G-22-S-58 were

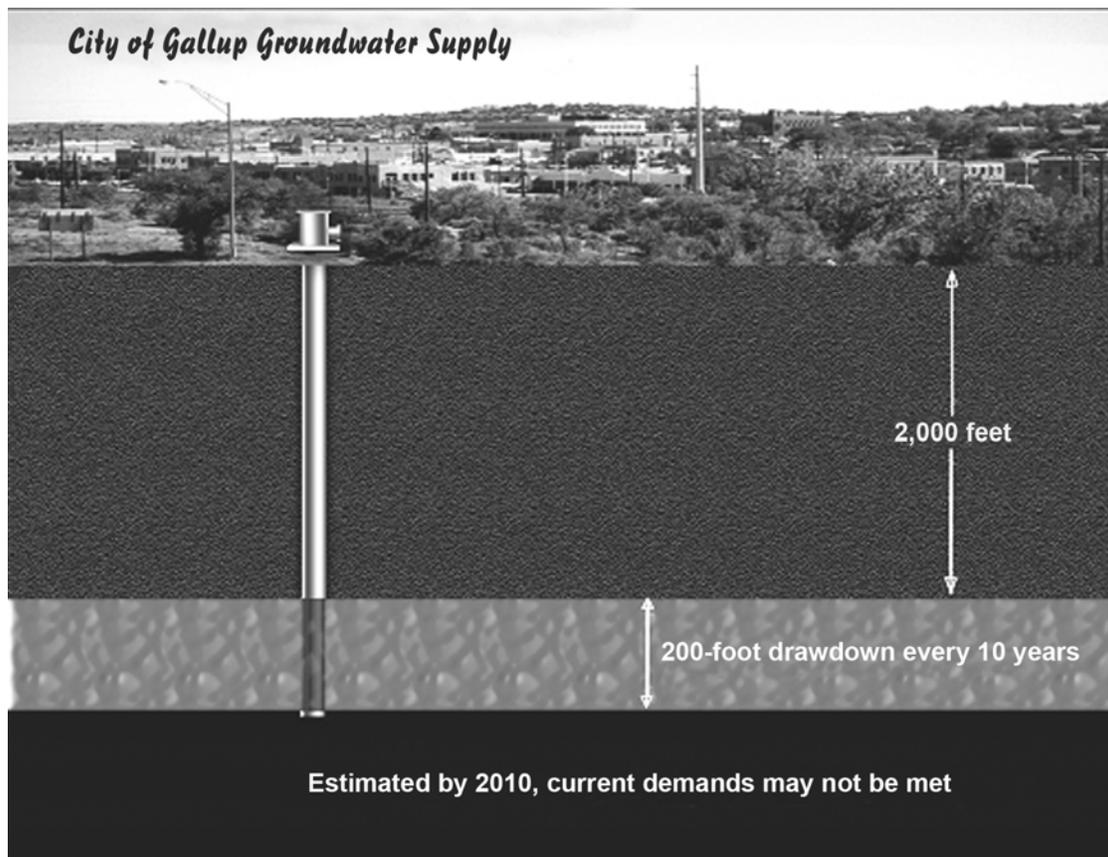


Figure III-2.—City of Gallup static water table.

intended to appropriate 7,000 acre-feet of water from wells located between Gallup and Grants for power generation. In 1982, the Office of the State Engineer issued an order limiting the maximum withdrawal of water under the permit to 5,000 AFY. In 1988, the application was broadened to expand the purpose and place of use to include the city of Gallup water service area, and Plains Electric was subsequently dismissed as a party after Gallup acquired the application. Numerous entities protested the application. The city of Gallup is developing a Plan of Replacement that is intended to address those objections.

Application No. G-22-PR has been amended once again to include southern chapters of the Navajo Nation. The Navajo Nation and the city of Gallup reached a settlement resolving the Navajo Nation's objections. Assuming other protests can be satisfactorily addressed, the "G-22" water supply may be able to provide a partial short-term water supply for the city of Gallup and the Navajo Nation until the proposed project is completed. In 1976, the U.S. Geological Survey completed groundwater investigations of the nearby Zuni Mountain and Malpais Region and the Westwater Canyon Aquifer in the vicinity of Church Rock. The results indicated that the groundwater resources of those areas are inadequate to meet the M&I needs for the city of Gallup. These findings

have been reiterated in numerous studies conducted since that time. In 1998, the city of Gallup collaborated with Reclamation and the Pueblos of Acoma and Laguna on an investigation of using existing de-watering wells at the inactive Mount Taylor Mine located near San Mateo, New Mexico. In a technical appraisal (Reclamation, 1999), Reclamation estimated that a 4,000 acre-foot yield is possible for a 40-year period. The water source is approximately 70 miles from the city of Gallup and 43 miles from the Pueblo of Laguna. The Mount Taylor Project would create large cones of depression that could trigger objections by local interests.<sup>2</sup> The Mount Taylor Project is not sustainable and does not meet the purpose and needs of the proposed project (Reclamation, 1999).

## Constraints

Based on the various water supply studies for the city of Gallup over the past several decades, it can be summarized that the groundwater sources cannot be expected to provide a truly permanent supply. A surface water supply should be sought. The San Juan River offers the best hope because of the reliability of the supply, and the potential for a very long life, and because it is the closest surface water source. The city currently has no surface water supply but is working with the Navajo and Jicarilla Apache Nations for a long-term supply contract.

The city of Gallup has a relatively low rate of water consumption at 154 gallons per capita per day and has recently instituted an inclined water rate structure to help reduce consumption. An extensive water education program is active throughout the city of Gallup. Most outdoor irrigation in the city is done with treated waste water from the city's municipal waste water system. The city is investigating the feasibility of treating municipal waste water for a broader range of reuse and possibly for drinking. Although there is still potential for more conservation, the obvious conservation methods are already in place.

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<sup>2</sup> Pumping from a well in a water table aquifer lowers the water table near the well, which is known as a cone of depression.