

Attachment F

PREFERRED ALTERNATIVE

OVERVIEW

This attachment presents details of the preferred alternative, the San Juan River Public Service of New Mexico (SJRPNM) Alternative. The description of the preferred alternative includes the system's configuration and associated considerations and features, including:

- Water supply and demand
- Physical description
- Water quality and treatment
- Land requirements, damages, and rights-of-way (ROW)
- Cultural resource issues
- Environmental mitigation
- Navajo-Gallup Water Supply Project (proposed project) construction, ownership, and operation, maintenance, and replacement (OM&R) costs
- Economic analysis
- Financial analysis

Figure F-1 is a map of the proposed project area showing project area landmarks and the SJRPNM Alternative facilities. 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, and then deliver it along Highway N36 and south to Navajo chapters along U.S. Highway 491 (shown in figure F-2). Water delivery would continue to the Navajo Nation Capital at Window Rock, Arizona, and to the city of Gallup, New Mexico. Another diversion

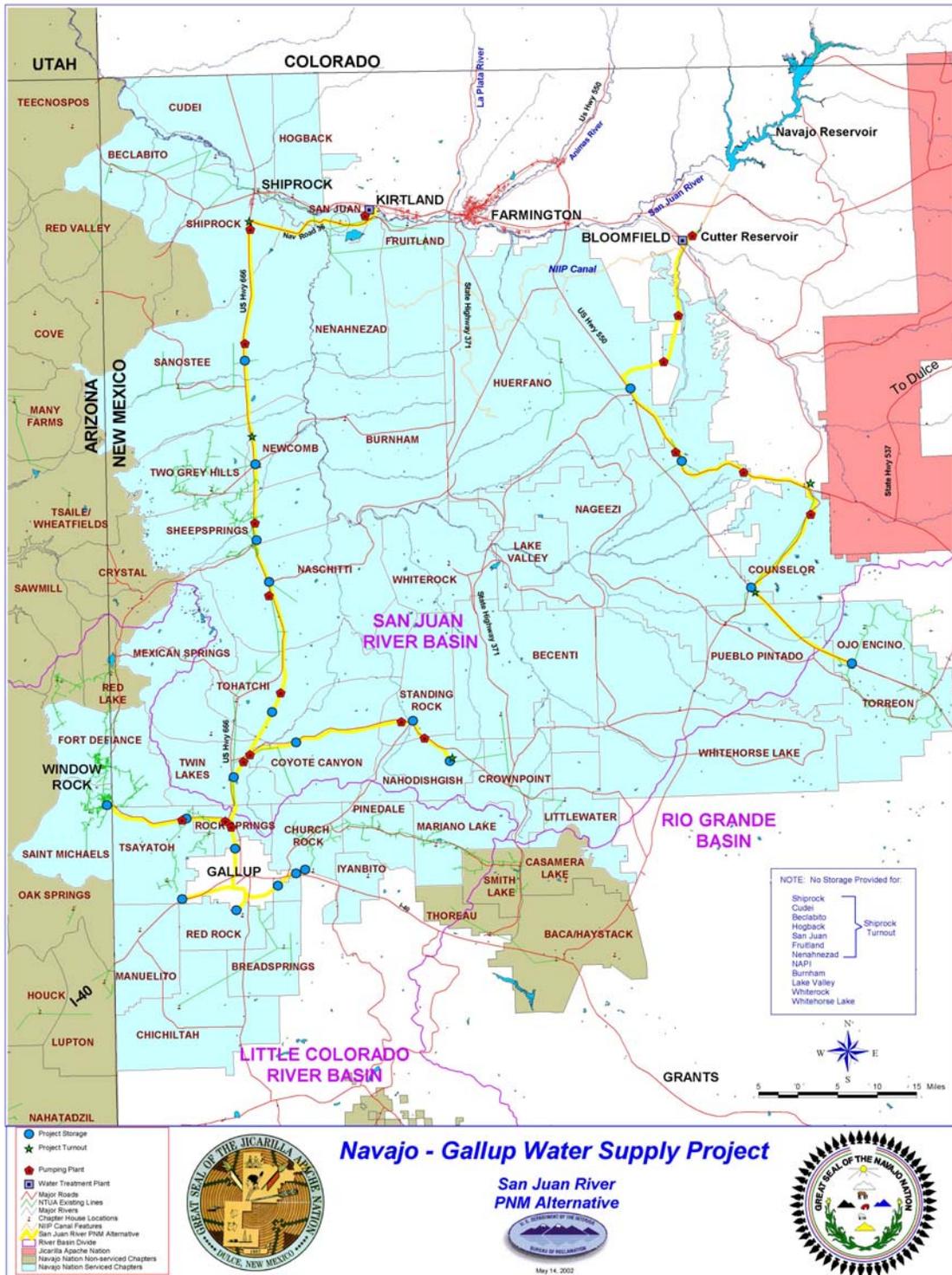


Figure F-1.—SJRPNM Alternative (preferred alternative).

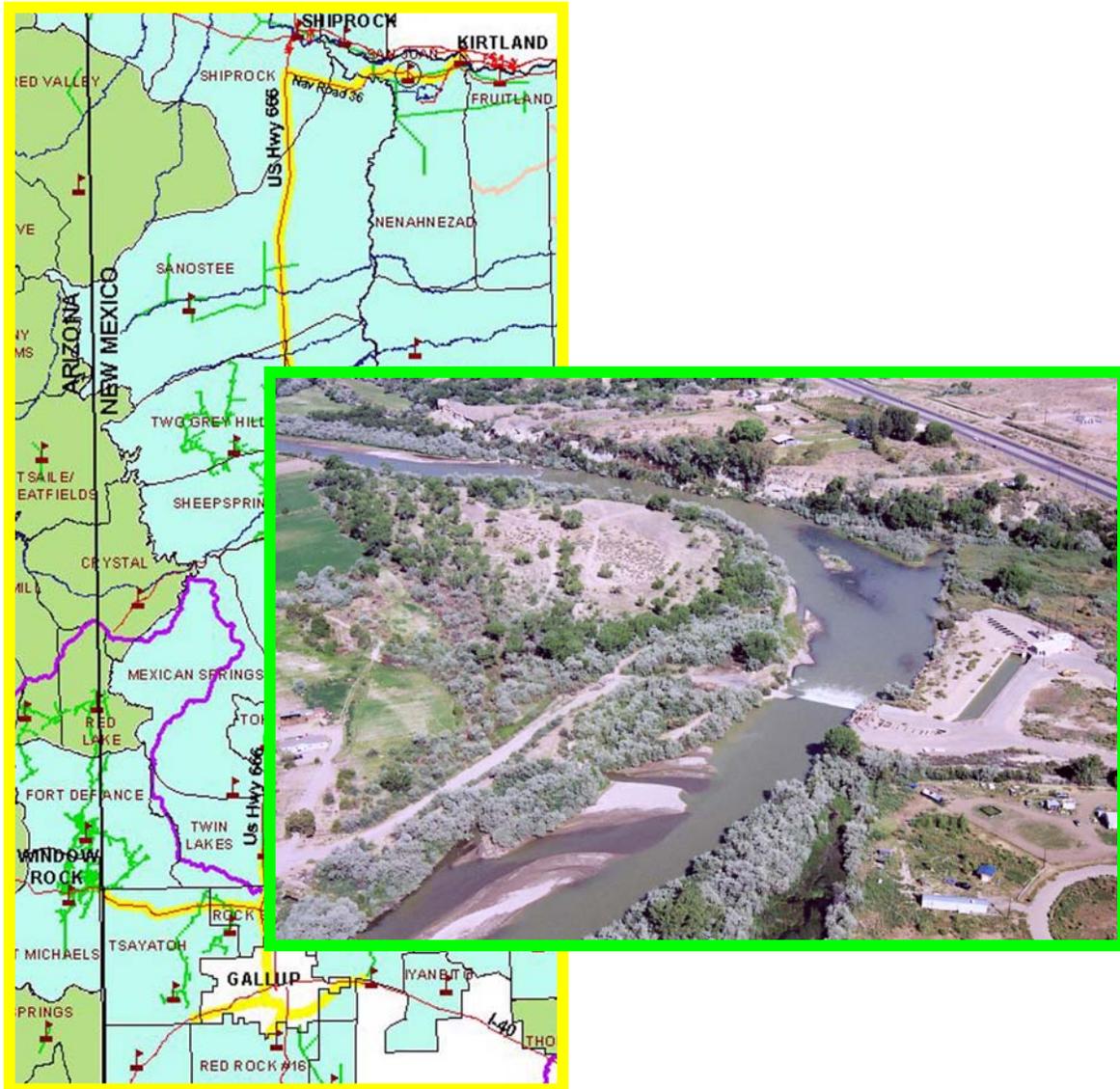


Figure F-2.—PNM diversion dam (project diversion point along the San Juan River).

would occur from Cutter Reservoir (figure F-3), an existing regulating reservoir on the Navajo Indian Irrigation Project (NIIP), conveying water to the eastern portion of the Navajo and the Jicarilla Apache Nations. The water would be provided to Window Rock, Arizona, and Crownpoint, New Mexico, through sublaterals. While basic design components were described in chapter IV, other components specific to the preferred alternative are described in this attachment.

TOTAL PROJECT WATER SUPPLY AND DEMAND

The proposed project is designed to divert a total of 37,764 acre-feet per year (AFY) from the San Juan River with a resulting depletion of 35,893 acre-feet to the San Juan River Basin, based on 2040 projected population with a demand rate of 160 gallons per capita per day (gpcd). The Cutter diversion would require 4,645 AFY with no return flow to the San Juan River. The PNM diversion would take the remaining 33,119 AFY of diversion, with an average return flow of 1,871 AFY. (The planned diversion and depletion by location is shown in table F-1).

It is assumed that the only return flow from the proposed project to the San Juan River would enter the river at the Shiprock waste water treatment plant. There may be some water delivery to users with individual septic systems in the Shiprock area, but the delivery is expected to be a small percentage of the total. All other deliveries would have similar losses, but the resulting return flow would be lost to evaporation or to recharging local groundwater aquifers. For water balance purposes, no return flow to the San Juan River from these other locations is expected or accounted for. Return flow to the Rio Grande or Little Colorado Rivers is highly unlikely, even though there would be discharge to the groundwater in these areas. Local groundwater storage space, together with local pumping, would limit the potential for surface discharge. Even if surface discharge does occur, the distance to the Rio Grande or Little Colorado Rivers is so great that it is unlikely that return flows would reach these rivers.

Deliveries typically vary depending on changes in demand, and the largest demand is in the summer months. The Shiprock water delivery pattern for March 1992 through February 1993, shown in table F-2, was used to determine average monthly deliveries, and return flows were assumed to follow the same distribution. The system would be designed to handle a 7-day peak demand for pumping plants and pipelines and is computed as 1.3 times the peak average monthly demand. Daily and diurnal demand peaking would be handled by the proposed project storage tanks.