

Apache Planning Area

Background

The Apache Planning Area is located in the east central portion of the State. The Planning Area encompasses two Indian reservations – the White Mountain Apache Tribe of the Fort Apache Reservation and the San Carlos Apache Reservation. Lands within the Planning Area are located within portions of Navajo, Apache, Gila, Greenlee, Graham, and Pinal counties. The Apache Planning Area contains portions of three watersheds: the Salt, Upper Gila, and Middle Gila river watersheds. The Planning Area includes portions of seven groundwater basins: Bonita Creek, Morenci, Safford, Aravaipa, Dripping Springs Wash, Lower San Pedro, and Salt River. The primary communities on tribal lands are Whiteriver, Cibeqe, McNary, Hon-dah, San Carlos, and Peridot.



Nearly all of the land within this Planning Area is under tribal ownership (*see Figure P.A.1-1*). White Mountain Apache lands within the Planning Area total approximately 2,866 square miles, while the San Carlos Apache lands encompass about 2,500 square miles. The lands are sparsely populated and primary land uses are domestic, commercial, recreation, timber, livestock grazing, farming, and mining.

Water Supply Conditions

Groundwater

The majority of the Planning Area falls within the Transition Zone Physiographic Province. The mountainous terrain of this region have aquifers that consist of relatively thin alluvial aquifers, and in fractured crystalline, sedimentary, and volcanic rock. A unique geographic feature of the Planning Area is the Mogollon Rim, an escarpment that defines the southern boundary of the Colorado Plateau. A small portion of the southern extent of the Planning Area is within the Basin and Range Physiographic Province, which is characterized by northwest-southeast trending mountain ranges separated by broad alluvial valleys.

No groundwater level data are currently available to ADWR within the Apache Planning Area (*see Figure P.A.1-2*). As a result, no water level trend analysis could be performed within the Planning Area. Groundwater quality information is also generally not available to ADWR.

Surface Water

The Salt River is the primary surface water drainage for the Salt River watershed portion of the Planning Area. It is also the largest tributary to the Gila River, joining the Gila southwest of Phoenix. Its headwaters are the White and Black rivers where winter snow accumulation is critical to downstream supplies. There are many perennial streams in this watershed. Surface water from the watershed flows into Theodore Roosevelt Lake, then is subsequently released to three other downstream reservoirs for use on SRP member lands in the Phoenix area.

Within the Upper Gila River watershed, the primary surface water drainage is the Gila River, predominantly an intermittent stream in the Planning Area (*see Figure P.A.1-3*). The San Carlos River is

the primary tributary to the Gila within the Planning Area. The largest reservoir in the Planning Area, San Carlos Reservoir, was created by the construction of Coolidge Dam in 1929. In addition to the Dam's flood control function, the water impounded and released from San Carlos Reservoir provides hydroelectric generation, irrigation, and recreational uses.

There are currently a total of 29 streamgauge stations in the Planning Area, 11 of which are currently active. Of this total, 25 stations are located in the Salt River watershed and only four are located in the Middle Gila River Watershed. Maximum annual flows were 1,732,915 acre-feet and 1,459,907 acre-feet on the Gila River at Calva and Salt River near Chrystile stations, respectively. Both of these flows occurred in 1993 during a major flood.

Reclaimed Water

There are five wastewater treatment plants (WWTP) identified on tribal lands within the Apache Planning Area with three facilities reporting evaporation ponds as the disposal method. Given proximity to the lagoon-based WWTP, reuse through center pivot irrigation appears to be the practiced at the plant servicing San Carlos and Peridot.

Ecological Resources

There are multiple ecological resources within the Planning Area (see *Figure P.A.1-3*). Critical habitat has been designated for the Mexican Spotted Owl, Southwestern Willow Flycatcher, Razorback Sucker, and Loach Minnow. The Apache Trout is one of only two trout native to Arizona. Once nearing extinction, a recovery program has restored Apache Trout to much of their historic range in the White Mountains on the White Mountain Apache Reservation and Apache-Sitgreaves National Forest. In addition, portions of the Black and Salt Rivers and other tributary streams in the White Mountains have mapped riparian areas. Riparian areas have also been mapped along the San Carlos River in the Safford Basin.

Water Demands

Table P.A. 1-1, below, presents the baseline and projected water demands for the Apache Planning Area. Agriculture is the largest water demand sector and is projected to remain constant at 23,860 acre-feet per year throughout the planning period. Municipal use is estimated to increase slightly, but will remain significantly less than agricultural use. Mining demands include water diversions for mines located in the adjacent Planning Area. Surface water from the Black River in the Salt River basin is diverted for use in the Upper Gila Planning Area pursuant to complex exchange agreements with the San Carlos Apache Tribe, SRP, CAP, and Freeport McMoRan (FMC). FMC diverts surface water from the Black River at the Black River Pump Station, transfers that water into the Eagle Creek drainage, and pumps it again for delivery and use at the Morenci Mine.

Characteristics Affecting Projected Water Demands and Supply Availability

Legal Availability

The right to use Gila River water is governed by the Globe Equity Decree. The U.S. District Court entered a consent decree in 1935, Globe Equity No. 59, for all diversions of the mainstem of the Gila River from the confluence with the Salt River to the headwaters in New Mexico. The Decree encompassed both the Gila River and San Carlos Apache reservations, and non-Indian landowners below and above Coolidge Dam. It awarded rights to use water on lands within the Gila River Indian Reservation with a priority date of "time immemorial" and also awarded rights to the San Carlos Apache Tribe with a priority date

of 1846. The Gila Water Commissioner is appointed by the US District Court to administer the Decree. Each year, the Commissioner issues a report on the distribution of waters of the Gila River.

Table P.A. 1-1. Projected Water Demands (in acre feet) – Apache Planning Area

Sector	2010	2035	2060
Agriculture	23,860	23,860	23,860
Dairy	0	0	0
Feedlot	0	0	0
Municipal	4,378	4,900	5,545
Other Industrial	0	0	0
Mining	2,565		
High		7,800	7,800
Low		8,300	2,600
Power Plants	0		
High		577	723
Low		420	502
Rock Production	315		
High		403	455
Low		168	190
Turf			
High	443	443	443
Low	232	232	232
Total (High)	31,561	37,982	38,826
Total (Low)	31,350	37,880	32,928

General Stream Adjudication

The general stream adjudications are judicial proceedings to determine or establish the extent and priority of water rights in the Gila and Little Colorado River systems. Over 84,000 claimants and water users are joined in the Gila River Adjudication that will result in the Superior Court issuing a comprehensive final decree of water rights. Until that process is complete, uncertainty regarding the extent and priority of water rights in this Planning Area will make it difficult to identify and implement strategies for meeting the projected water demands.

Indian Water Rights Claims

While one outstanding claim still remains – the San Carlos Apache Tribe’s on-reservation Gila River tributary claim, successful resolution of Indian water rights claims has significantly improved the water supply availability in this Planning Area.

The Arizona Water Rights Settlement Act of 2004 (P.L. 108-45) includes settlement of the Gila River Indian Community’s water rights claims in Title II of the Act. This settlement affects the volume and utilization of groundwater and surface water upstream from the Community in parts of the Planning Area.

In addition to the Arizona Water Settlement Act, the White Mountain Apache Tribe Water Rights Quantification Act (Act) has helped to clarify and will improve water supply availability in the Planning Area. The Act was introduced in 2009 to resolve the White Mountain Apache Tribe's water claims and provide a reliable drinking water supply to its members. In 2009, the Tribe and a number of other parties entered into an agreement quantifying the Tribe's rights in the Gila River and Little Colorado River Adjudication areas (Quantification Agreement). Federal legislation approving and authorizing the agreement was passed by Congress and signed into law on December 8, 2010.

Under the Quantification Agreement, the Tribe will be entitled to a depletion of 27,000 acre-feet of water per year (AFY) from the White River and other tributaries to the Salt River. The Tribe will receive an allocation of 25,000 acre-feet per year of non-Indian Agricultural (NIA) priority Central Arizona Project (CAP) water. All of this water shall be leased for 100 years by Phoenix area municipalities and the Central Arizona Groundwater Replenishment District (CAGR). Additionally, the US Bureau of Reclamation will construct the White Mountain Apache Tribe Rural Water System to divert, store and distribute water from the White River to the Tribe. The project includes a dam and storage reservoir (Miner Flat Dam and Reservoir). A portion of the impounded water will be treated and distributed for potable use at Whiteriver and other communities on the reservation.

Downstream Water Demands

This Planning Area contains a portion of the watershed that is essential to the Phoenix area - through the Salt River Project. Management of this watershed for forest health and water supply development is important to ensuring a secure water supply for central Arizona, while at the same time balancing the needs of the water users in this area.

Wildfire

There were several major wildfires either within or upstream of this Planning Area that has impacted water supplies in this area. The Rodeo-Chediski Fire in 2002 consumed about 462,600 acres, much of it in the north-central part of the Salt River Basin and most recently, the Wallow Fire burning 538,049 acres in the Apache-Sitgreaves National Forests in 2011, becoming Arizona's largest wildfire in recorded history.

In the Southwest, fire can be among the most significant watershed disturbance agents, particularly to peak stream flows. For example, in areas severely burned by the Rodeo-Chediski Fire, peak flows were as much as 2,350 times greater than the previously measured highest known post-fire peak flow in the Southwest. Increased peak flows can degrade stream channels and make them unstable, increase sediment production and cause flood damage (Neary and others, 2003). Wildfire and drought can result in vegetative changes in the Planning Area with implications for runoff, infiltration and downstream water supplies.

Protected Species and Habitat

The presence of a listed species may be a critical consideration in water resource management and supply development in a particular area.

Strategies for Meeting Future Water Demands

Implementation of Terms of Settlement Agreements and Resolution of Outstanding Water Rights Claims

The agreement struck with the White Mountain Apache Tribe will serve to provide the framework for water supply development for this community. Construction of the reservoir at Minor Flat, and the associated treatment and distribution works, will improve water service and reduce reliance on local groundwater on the White Mountain Apache Reservation.

Uncertainty regarding the fate of the San Carlos Apache Tribe and competing water uses and claims on the tributary water on the San Carlos Apache Reservation will likely impede the development of water supply projects for that portion of the Apache Planning Area. Resolution and settlement of these claims will be required to provide certainty as to available supplies and potential projects both on the San Carlos Reservation and for upstream and downstream users on the Gila River.

Constructive efforts to resolve the San Carlos Apache Tribe's claims, as well as the Gila River General Stream Adjudication, is essential to not only provide a secure water supply for water users in Arizona. A comprehensive focus on what is needed to complete the Adjudication is essential and could help provide guidance to ADWR so adequate funding can be identified and obtained to complete the necessary technical work to support completion of this process.

Reclaimed Water Reuse

Formal wastewater treatment works in the Apache Planning Area is largely conducted in lagoon-based wastewater treatment plants, with evaporation as the principal disposal practice. Increasing the utility of this resource would likely require upgrading wastewater treatment works throughout the Planning Area to produce reclaimed water of a quantity suitable for reuse or aquifer enhancement.

Watershed/Forest Management

Much of the Apache Planning Area drains to either the Salt or Gila River Systems. Like much of the State, past land use and fire suppression practices have resulted in compromised watershed conditions. Watershed management practices aimed at increasing watershed yield have been evaluated in Arizona showing opportunities for success. Due to the significant acreage of forested land in this area, continuation of this process, and implementation of safe and effective strategies, is important to water users within and outside of this Planning Area. Combining efforts with other management initiatives (such as the Four Forest Restoration Initiative) may be a cost-effective way to advance this option and provide multiple benefits to this Planning Area and those dependent on its resources. The Four Forest Restoration Initiative (4FRI) is a collaborative effort to restore forest ecosystems on portions of four National Forests - Coconino, Kaibab, Apache-Sitgreaves, and Tonto - along the Mogollon Rim in northern Arizona. The vision of 4FRI is restored forest ecosystems that support natural fire regimes, functioning populations of native plants and animals, and forests that pose little threat of destructive wildfire to thriving forest communities, as well as support sustainable forest industries that strengthen local economies while conserving natural resources and aesthetic values¹. Restoration of forest and range lands within the Planning Area may serve to improve grazing conditions, reduce wildfire threats, and provide increased water yields for local and downstream users.

¹ <http://www.4fri.org/>

Increase Access to Locally Available Groundwater

ADWR believes that enhanced access to the groundwater resources within the Apache Planning Area can serve to meet current and projected water demands. Leveraging existing hydrogeologic information with additional studies, drilling and testing of wells, planning and development of water delivery and storage infrastructure, and monitoring and modeling will provide a basis for prudent use of this resource. Given the dispersed nature of the population throughout the planning area, this option will likely entail the development of many small to moderate scale production, transmission and distribution elements.

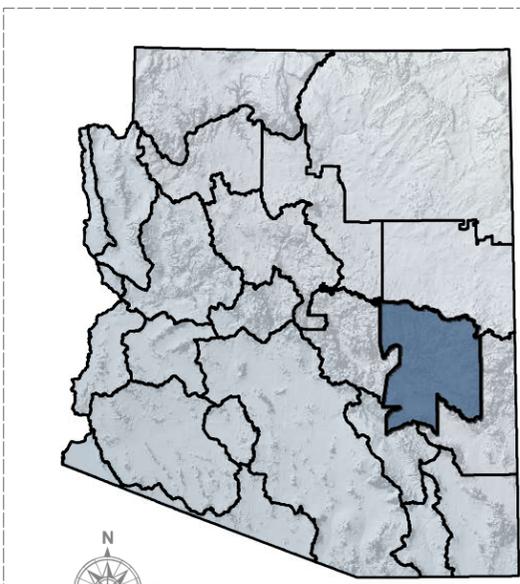
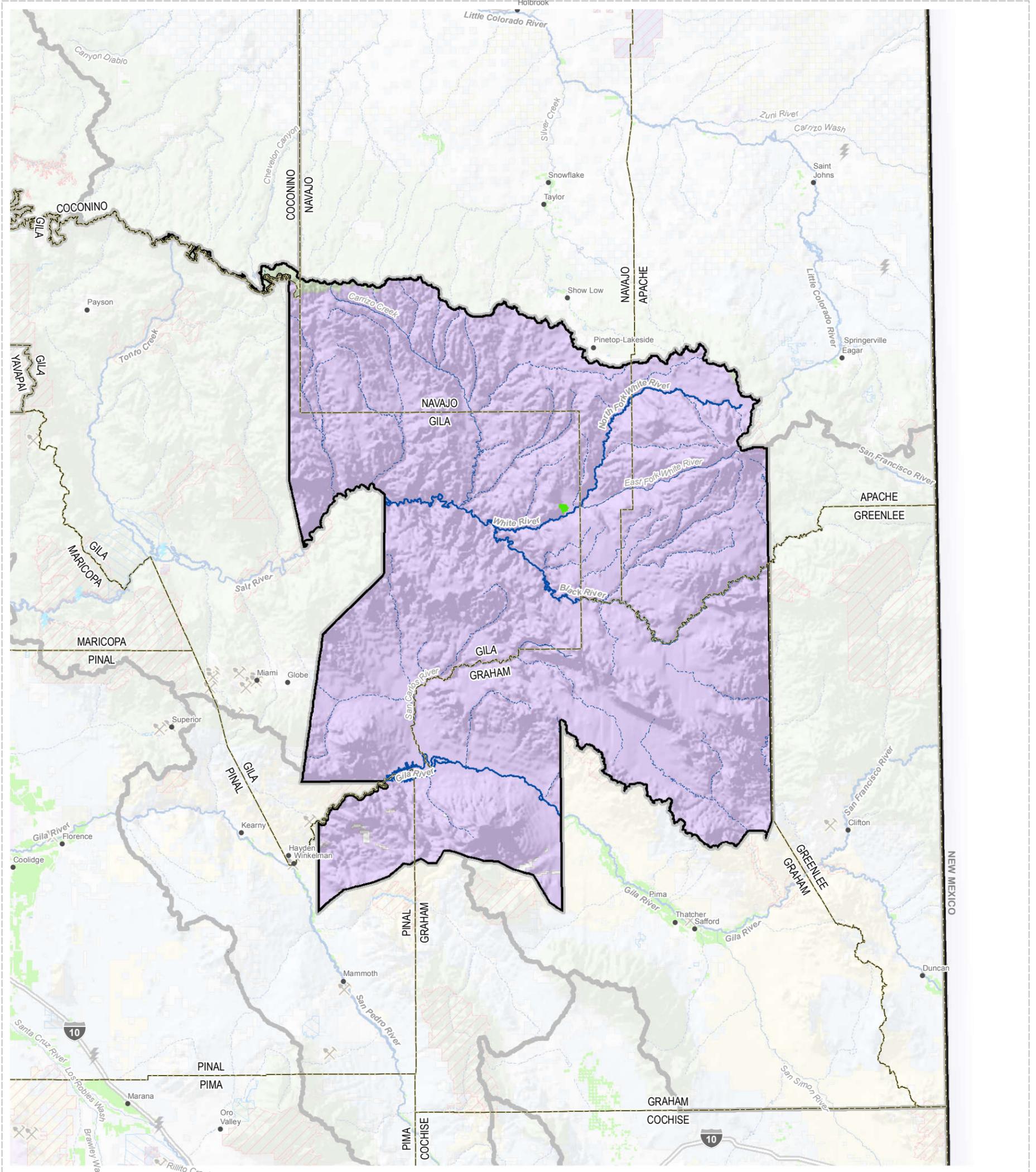
Expanded Monitoring and Data Collection & Groundwater System Analysis and Modeling

Monitoring of water use within the Apache Planning Area is conducted by Tribal and Federal authorities. The monitoring and reporting is not consolidated within Arizona's statewide programs, such as the Community Water System Reports or ADWR's Groundwater Site Inventory (GWSI) program. Coordination of these data collection efforts would increase the utility of this data through integration and consistency of reporting across the State.

Metering and reporting across the Planning Area would serve to support and enhance analysis of current hydrologic conditions. Data collection is a crucial element of the development of groundwater models, which have proven to be invaluable tools throughout the State in developing more thorough understandings of hydrologic systems and evaluating future conditions and potential impacts of new uses and/or alternative water management strategies.

Exploration drilling and testing will increase knowledge and understanding of the local groundwater systems, in addition to increasing access to water supplies and mitigating local pumping impacts within the Planning Area.

NOTE: Because GIS data for this project were acquired from multiple sources employing different land base grids and varying accuracy standards, some inconsistencies were encountered. The user is responsible for understanding the accuracy limitations of GIS data layers and is responsible for the results of any application of the data for other than their intended purpose.



MAP LOCATION
(Planning Area Boundaries)

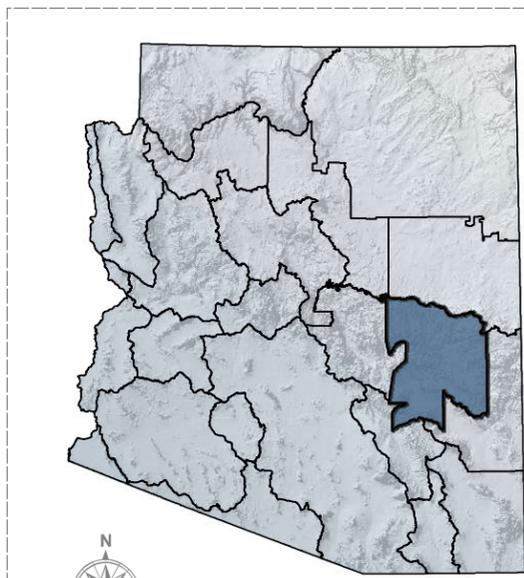
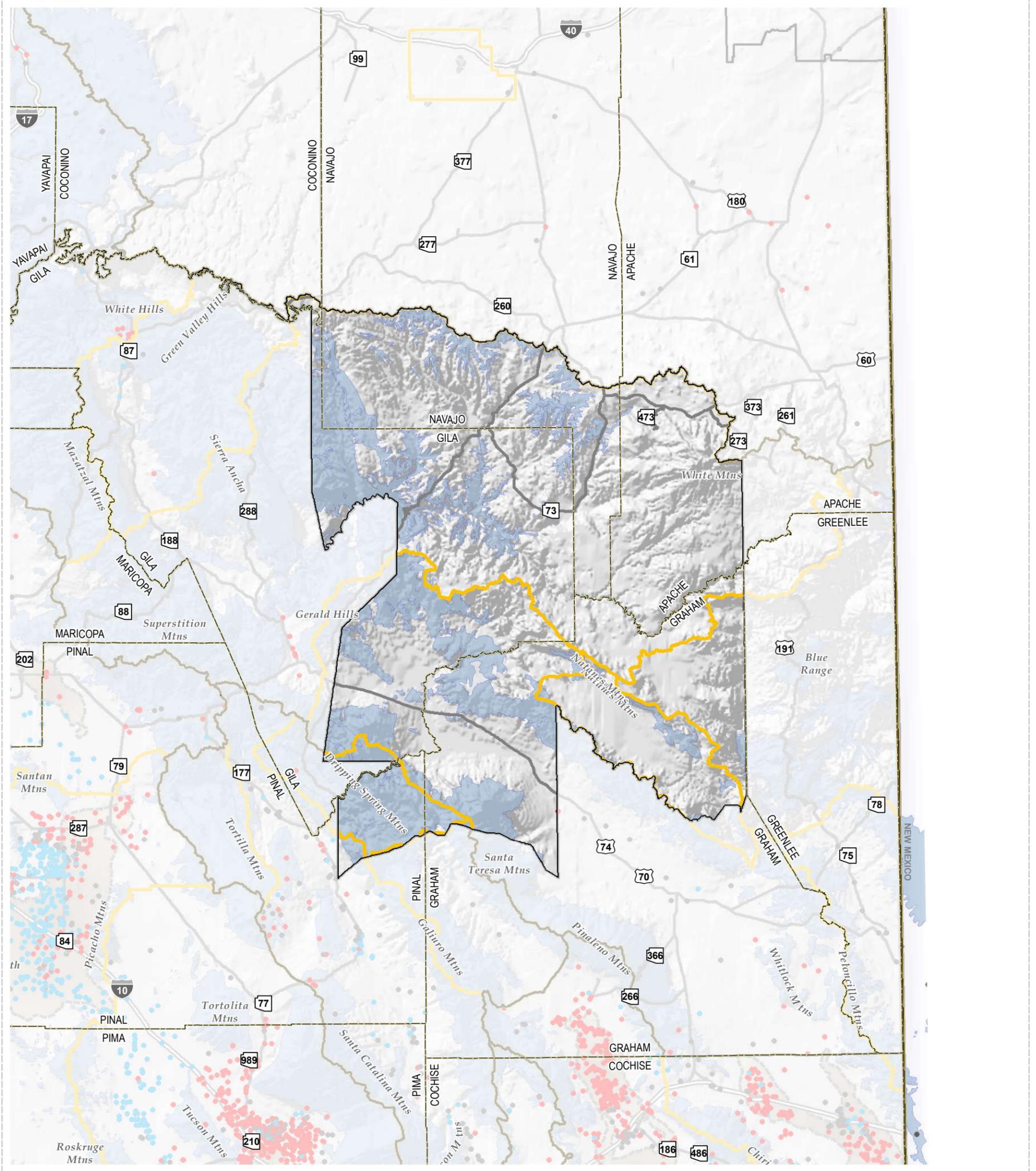
- Planning Area (ADWR)
- State (ALRIS)
- County (ALRIS)
- River or Stream (ASLD)
- Interstate (ADOT)
- Population Center (GNIS)
- Mine (ADMMR, ADWR)
- Hydroelectric Power Plant (ADEQ, ADWR)
- Thermoelectric Power Plant (ADEQ, ADWR)
- Agriculture (SWReGAP, 2004)
- Federal Conservation Land (USFS, BLM, NPS)
- State Managed Conservation Land (AZGFD, AZSP)
- BLM Land
- National Forest
- National Park
- Military Reserve
- Private and Other Land
- State Trust Land
- Tribal Land



Apache Land Ownership

Figure P.A.1-1

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MAP LOCATION
(Planning Area Boundaries)

- Planning Area (ADWR)
 - State (ALRIS)
 - County (ALRIS)
 - Groundwater Basin (ADWR)
 - Area of Active Land Subsidence (ADWR)
 - Hard Rock Geology (AZ Bureau of Mines, UofA)
 - Interstate (ADOT)
- Recent Water Level Change * (1990's through 2000's)
 - Minor WL Change +5' to -5'
 - Negative
 - Positive

* Data provided by ADWR



Figure P.A.1-2

Apache Groundwater Hydrology

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