SUPPLY & DEMAND

2025

SAN SIMON WASH

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2025 SUPPLY AND DEMAND ASSESSMENT
SAN SIMON WASH BASIN

1 INTRODUCTION

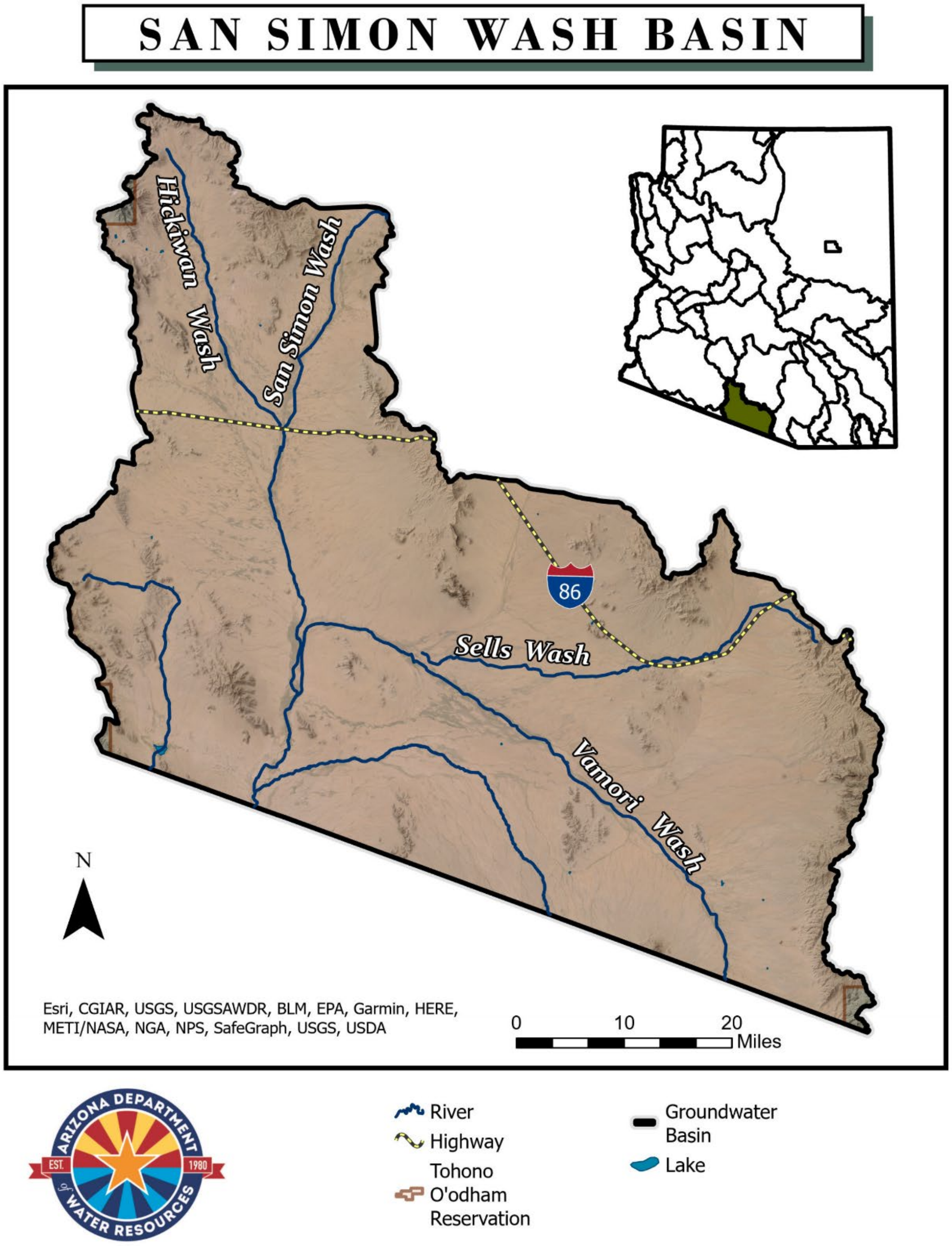

Figure 1. Map of the San Simon Wash Basin.

1.1 REPORT BACKGROUND AND PURPOSE

Preparing the Supply and Demand Reports (SDRs) is a duty of the Director of the Arizona Department of Water Resources (ADWR) required by statute, as stated in Arizona Revised Statutes (A.R.S.) § 45-105(B)(14).[1] Beginning in 2023, the Director must ensure that a water supply and demand assessment for at least six of Arizona's fifty-one groundwater basins are prepared and issued by December 1st of each year.

Although similar assessments have been completed periodically, 2023 was the first time ADWR was allocated dedicated funding and staff to conduct assessments of all of Arizona's groundwater basins on a recurring cycle. By the end of 2027, ADWR will complete assessments for all 51 groundwater basins throughout the state, and each basin will be reassessed at least every five years. The SDRs may be used to inform the Water Infrastructure Finance Authority on funding decisions in the future (see A.R.S. § 49-1304(A)(14)[2]). The SDRs may also be used as a planning tool for water resource management by ADWR, policymakers, community members, and other interested stakeholders.

The basins and subbasins assessed in 2025 include Aravaipa Canyon, Bill Williams (Alamo Reservoir, Burro Creek, Clara Peak, Santa Maria, and Skull Valley Subbasins), Bonita Creek, Coconino Plateau, Dripping Springs Wash, Duncan Valley, Hualapai Valley, Little Colorado River Plateau, Morenci, Sacramento Valley, Safford (San Carlos Valley, Gila Valley, and San Simon Valley Subbasins), Salt River (Black River, White River, Salt River Canyon, and Salt River Lakes Subbasins), and San Simon Wash.

[1] Arizona Revised Statutes § 45-105(B)(14). https://www.azleg.gov/ars/45/00105.htm

[2] Arizona Revised Statutes § 49-1304(A)(14). https://www.azleg.gov/ars/49/01304.htm

1.2 PROCEDURE AND SCOPE

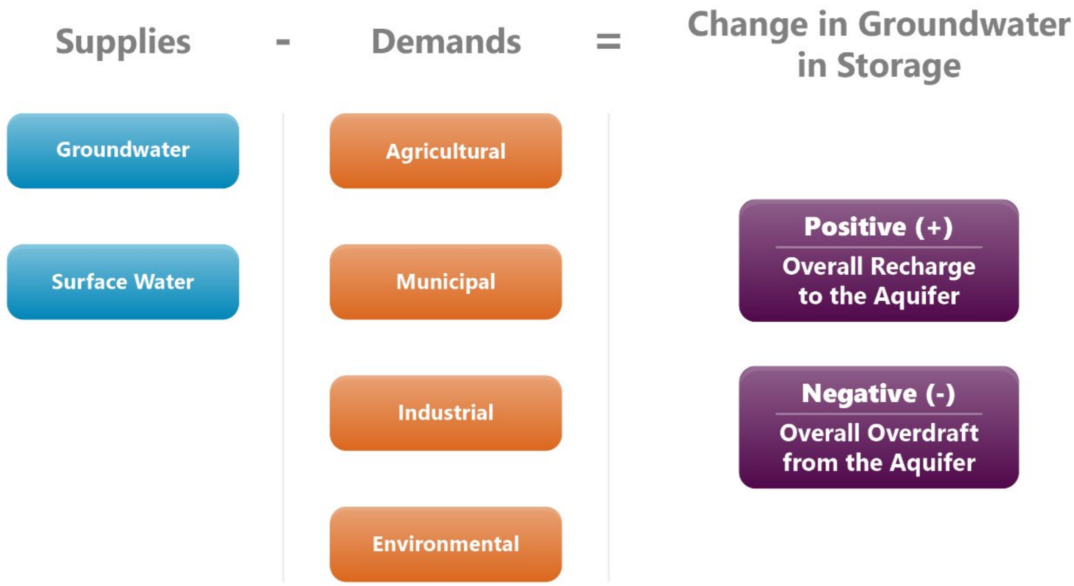

Figure 2. Depiction of the San Simon Wash basin water budget, including all available supplies and demands and how they contribute to changes in groundwater in storage

The SDRs are structured as water budgets, focusing on total inflows and outflows at the basin scale. The SDRs estimate the volumes of water demands from all uses (categorized into sectors of Agricultural, Industrial, Municipal, and Other) and the volumes of water supplies (Surface Water, Groundwater, Effluent, Incidental Recharge, Transportation Water, and Moved Water) available to meet those demands. The reports also include projected demands and supplies under various influences of future scenarios.

The SDRs are not groundwater flow models with finer geographic results. The development of regional groundwater flow models for each basin is an extensive technical process and is not feasible within the time constraints of this project. Outside of Arizona's regulated Active Management Areas (AMAs) and Irrigation Non-Expansion Areas (INAs), data is much more limited. In instances where data does exist, the data may be outdated or lack reliability. ADWR has endeavored to acquire local and specific data to generate the SDRs. However, when such information was not obtainable, staff utilized scientific literature estimates, averages, or assumptions to formulate water usage estimates.

The SDRs attempt to answer the following questions:

1. What is the estimated annual volume of water demand?
2. What is the estimated annual volume of available water supply?
3. Is there sufficient available water supply to balance water demand annually?

The water budget was calculated by subtracting the estimated annual demand from the estimated annual available supply. If demand exceeds supply in a year, the difference is subtracted from the estimated aquifer storage. If supply exceeds demand, the difference is added to estimated aquifer storage. In this manner, the process is like balancing a checkbook, totaling the credits and debits made to the account through the year to understand how much estimated groundwater is available in storage.

The SDRs are designed to be understandable to the general public. The Methods Appendix includes specific technical information and additional details regarding data and methods: [Methods Appendix]. Additional SDRs and an interactive dashboard are available for further information: [Dashboards].

1.3 METHODOLOGY AND LIMITATIONS

This study reviewed and compiled data for two primary purposes:

1. Estimate supply and demand volumes in the basin.
2. Project changes in supply and demand from possible future scenarios.

ADWR developed and compiled baseline data for the period from 1990 to 2024. Staff then developed scenarios based on the most likely impacts on water demands and supplies over 51 years (from 2025 to 2075), and then projections were generated from the baseline data. The results from these scenarios and the combined baseline data were used to estimate whether supply could meet demand each year from 1990 to 2075. ADWR independently developed both the supply and demand estimates.

Due to the limited reported water data available outside Arizona's AMAs and INAs, the supplies and demands outlined in the SDRs are estimates only. When available, ADWR used high-quality data from credible sources. Due to the need to focus staff bandwidth on developing initial methods for analysis of all 51 groundwater basins by the December 1, 2027, statutory deadline, outreach was limited to major water users in the basin. When data could not be obtained, research into existing literature and the use of representative data were necessary to develop estimates.

Please see the Methods Appendix for an in-depth discussion of the methodologies and assumptions ADWR applied to create each estimate: [Methods Appendix].

2 RESULTS

2.1 BASIN SUMMARY

The San Simon Wash Basin encompasses 2,284 square miles in the southern edge of the state and is characterized by plains and valleys bordered by mountain ranges, including the Ajo mountain range. The basin consists of the Quijotoa Valley in the northern portion of the basin, the Gu Oldak Valley in the center of the basin, and the Baboquivari Valley in the southeastern portion of the basin. The basin is comprised of the federally recognized Tohono O'odham Nation Indian Reservation (99.2%%), U.S. Bureau of Land Management (BLM) land (0.2%) and State Trust land (0.2%). The basin has an estimated population of 4,870 people, and 0.3% of the basin is privately owned. The San Simon Wash Basin contains one major aquifer that is basin fill. Previous storage estimates range from 6,700,000 to 45,000,000 acre-feet (AF) to a depth of 1,200 feet.[3] The San Simon Wash is the largest stream and runs north to south through the center of the basin.

2.2 SUPPLIES

2.2.1 Surface Water

ADWR examined all water sources defined as surface water in each basin. Surface water includes all water flowing in streams, canyons, ravines, or other natural channels, or in definite underground channels, whether perennial or intermittent, floodwater, wastewater, or surplus water, and of lakes, ponds, and springs discharging to the surface (A.R.S. § 45-141).[4] After examining these sources and deducting any existing surface water diversions (stockponds, reservoirs, and agricultural diversions) from the resulting volumes, ADWR generated a final estimate of the remaining water available for diversion or use. When possible, streamgage data were used to estimate surface water volumes. Where active streamgages were absent, which often applies to areas with intermittent and ephemeral streamflow, the Drainage-Area Ratio (DAR) method (see the Methods Appendix) was used to estimate surface water volume.

2.2.2 Groundwater

This report refers to the "inflow to" and "outflow from" the aquifer each year as groundwater. This volume is distinct from the volume of groundwater considered to be available in storage. "Inflow to" represents the annual recharge or replenishment of groundwater through processes such as the percolation of precipitation or surface water into the subsurface, which is observed through processes such as streamflow infiltration, groundwater inflow, and mountain-front recharge. "Outflow from," the movement of water leaving the system, is represented by such processes as baseflow and groundwater outflow. See the Methods Appendix for more information on how streamflow, baseflow, groundwater inflow/outflow, and mountain-front recharge estimates were obtained.

The total groundwater storage volume provided in this report reflects the volume of groundwater reasonably accessible at the average depth of the wells in the basin, rather than at the 1,200 feet groundwater storage depth used in previous ADWR reports. The water level falling below the basin's average well depth suggests that wells will have begun to go dry. Using this approach to estimate groundwater storage effectively illustrates the impact of declining water levels on the current existing infrastructure of property owners, residents, and other water users in each basin. Please note that this report does not address potential subsidence or permanent loss of aquifer storage that could occur if the estimated water volume in storage were to be removed from the basin. See the Methods Appendix for more information on how groundwater storage was estimated.

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[3] ADWR (2009). Arizona Water Atlas, Volume 7, Section 7.8, pg. 339, Table 7.8-5. https://infoshare.azwater.gov/docushare/dsweb/Get/Document-10432/Volume_7_final.pdf

[4] Arizona Revised Statutes § 45-141. https://www.azleg.gov/ars/45/00141.htm

2.2.3 Effluent

Effluent is defined as "water that has been collected in a sanitary sewer for subsequent treatment in a facility that is regulated pursuant to Title 49, Chapter 2."[5] ADWR used effluent data provided by the Arizona Department of Environmental Quality (ADEQ) to estimate the amounts of effluent available for reuse. These effluent estimates are based on effluent volumes produced from wastewater treatment plants designated for reuse. These volumes do not include wastewater discharged from the treatment plants. Effluent volumes also do not include septic tanks or other wastewater collection systems. Recharge from septic tanks is included in the Incidental Recharge estimation.

2.2.4 Incidental Recharge

Incidental recharge is defined as water from human use that replenishes groundwater supplies. Incidental recharge is associated with agricultural, industrial, and municipal water demands. ADWR used data derived from demand analyses to estimate incidental recharge volumes.

2.2.5 Transportation Water

Certain basins have been identified in A.R.S. Title 45, Chapter 2, Article 8.1[6] as basins from which groundwater may be withdrawn for transportation to an AMA. Where such transportation has been authorized, that groundwater is referred to as "Transportation Water" in this report.

2.2.6 Moved Water

Any water that crosses basin boundaries through artificial means and that does not fall under the Transportation Water definition is referred to as "Moved Water" in this report. Moved Water includes groundwater that is transported between basins that are not AMAs, pursuant to A.R.S. Title 45, Chapter 2, Article 8.[7]

2.3 SUPPLY RESULTS

This subsection contains ADWR's estimates of annual supplies available to the San Simon Wash Basin.

2.3.1 Surface Water

In the San Simon Wash Basin, ADWR identified the following surface water conveyances (USGS streamgages in parentheses):

- Ali Chuk Wash
- Ali Molina Wash
- Baboquivari Wash
- Big Wash

[5] Arizona Revised Statutes § 45-101(4). https://www.azleg.gov/ars/45/00101.htm

[6] Arizona Revised Statutes Title 45, Chapter 2, Article 8.1. https://www.azleg.gov/arsDetail/?title=45

[7] Arizona Revised Statutes Title 45, Chapter 2, Article 8. https://www.azleg.gov/arsDetail/?title=45

- Chukut Kuk Wash
- Chutum Vaya Wash
- Fresnal Wash
- Gu Vo Wash
- Hali Murk Wash
- Hickiwan Wash
- Pia Oik Wash
- San Simon Wash (09535100)
- Sells Wash
- Siovi Shuatak Wash
- Topawa Wash
- Vamori Wash (09535300, 09535295)

Currently, flows on the Vamori Wash are measured with a streamgage (09535300). Historically, flows were measured on the Vamori Wash and the San Simon Wash with streamgages (09535295, 09535100). ADWR did not identify any perennial streams in the San Simon Wash basin. For streams without streamgage data, the DAR method was applied to estimate streamflow volumes. The streamflow volume estimates provided in the table above are composites of the streamgage and DAR estimation methods.

Table 1. Estimated Surface Water Volumes in the San Simon Wash Basin for 1990-2024. (SDR 2025)

Basin	Streamflow Minimum	Streamflow Maximum	Average Streamflow (Streamgage Method)	Average Streamflow (DAR Method)	Total Average Streamflow	Median Streamflow
San Simon Wash	461 (2009)	28,653 (2003)	NA	9,302	9,302	6,678

All values are shown in AF.
Parentheses indicate the year streamflow volume was recorded.
NA, or Not Applicable, applies to fields without estimates.

Ephemeral and intermittent surface water is estimated to contribute 6,678 AF to the supplies in the basin in a typical year. However, there are years with high or low surface water inflows. Due to the high flow years associated with floods, the average surface water supply in the basin is higher than the median of 6,678 AF per year.

Table 2. Estimated Surface Water Volumes Diverted for Use in the San Simon Wash Basin for 1990-2024. (SDR 2025)

Year	Diverted Streamflow
1990	1,915
2007	1,915
2024	1,915
Average Annual Diverted Streamflow from 1990-2024	1,915

All values are shown in AF.

The estimated surface water volumes were diverted from the San Simon Wash Basin for storage in reservoirs.

2.3.2 Groundwater

The following groundwater volumes were estimated in the San Simon Wash Basin:

Table 3. Estimated Streamflow Infiltration Volumes in the San Simon Wash Basin for 1990-2024. (SDR 2025)

Basin	Average Annual Streamflow Infiltration (Perennial)	Average Annual Streamflow Infiltration (Intermittent & Ephemeral)	Total Average Annual Streamflow Infiltration
San Simon Wash	NA	2,623	2,623

All values are shown in AF. NA, or Not Applicable, applies to fields without estimates.

- Streamflow Infiltration: Infiltration for perennial streams was not estimated due to ADWR not identifying any perennial streams in the basin. Infiltration for intermittent and ephemeral streams was estimated using infiltration rates from the United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) Soil Quality Indicators.[8] The predominant soil type was fine-silty.[9] The standard storm duration utilized was 1.5 hours.[10] Total streamflow infiltration peaked in 2014 at approximately 8,898 AF and estimated lowest volume in 2009 at 30 AF.

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[8] USDA NRCS. (2008). Soil Quality Indicators. United States Department of Agriculture Natural Resource Conservation Service. https://www.nrcs.usda.gov/sites/default/files/2022-10/Infiltration.pdf

[9] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture (NRCS, USDA). (2016). Web Soil Survey (STATSGO2). http://websoilsurvey.nrcs.usda.gov/

[10] Food and Agriculture Organization of the United Nations (FAO). (2024). Annex 2 Infiltration Rate and Infiltration Test. https://www.fao.org/4/s8684e/s8684e0a.htm

Table 4. Estimated Groundwater Volumes in the San Simon Wash Basin for 1990-2024. (SDR 2025)

Basin	Average Annual Baseflow	Average Annual Groundwater Inflow	Average Annual Groundwater Outflow	Average Annual Mountain-Front Recharge	Calculated Initial Groundwater Storage
San Simon Wash	-233	2,600	-210,400	280,071	2,765,261 (2024)

All values are shown in AF.
Negative numbers indicate demands or water flows leaving the basin.
Parentheses indicate the representative year chosen to calculate initial storage.

- Baseflow: ADWR estimated baseflow using the USGS Hydrologic Toolbox in ArcGIS.[11] Streamgage data were utilized when available. Any gaps in the data were filled using precipitation data from PRISM[12] and the USGS StreamStats website.[13]
- Groundwater Inflow/Outflow: Inter-basin underflow volumes were based on USGS predevelopment maps and scientific literature estimates.[14]
- Mountain-Front Recharge: The mountain-front recharge estimates were calculated using precipitation data, model data, scientific literature estimates for groundwater inflows/outflows,[15] and a water budget accounting for the inflows/outflows that affected the mountain-front recharge volume.
- Groundwater Storage: Storage was calculated using either a model data plus water budget method, if model data were available for the basin, or a GIS-based geological data non-model method, if model data were unavailable for the basin (Section 2.5.4, Methods Appendix). Initial groundwater storage was calculated using wells located within alluvial aquifer boundaries in the basin. A representative year was selected containing the most

[11] Barlow, P.M. et al. (2022). U.S. Geological Survey Hydrologic Toolbox — A graphical and mapping interface for analysis of hydrologic data: U.S. Geological Survey Techniques and Methods, book 4, chap. D3, 23 p. https://doi.org/10.3133/tm4D3

[12] PRISM Climate Group. (2024). 30-Year Normals [dataset] https://prism.oregonstate.edu/explorer/

[13] USGS. (n.d.-b). StreamStats [dataset]. https://www.usgs.gov/streamstats

[14] Tillman, F. et al. (2011). Water Availability and Use Pilot: Methods Development for a Regional Assessment of Groundwater Availability, Southwest Alluvial Basins, Arizona (Scientific Investigations Report 2011–5071). United States Geological Survey. https://media.kjzz.org/s3fs-public/field/docs/2011/09/21/sir2011-5071_text.pdf

[15] Tillman, F. et al. (2011). Water Availability and Use Pilot: Methods Development for a Regional Assessment of Groundwater Availability, Southwest Alluvial Basins, Arizona (Scientific Investigations Report 2011–5071). United States Geological Survey. https://media.kjzz.org/s3fs-public/field/docs/2011/09/21/sir2011-5071_text.pdf

water level measurements at those wells. If no representative year contained enough well measurements to calculate groundwater storage, which was the case with San Simon Wash Basin, a composite of all water level measurements from any year was utilized. The estimated storage volume was calculated to the basin's average well depth, 295 feet.

2.3.3 Effluent

None of the effluent produced in the San Simon Wash Basin has been allocated for reuse, so no effluent is categorized as a water supply.

2.3.4 Incidental Recharge

Sources of incidental recharge in the San Simon Wash Basin are agricultural, municipal, and industrial.

Table 5. Estimated Incidental Recharge Volumes in the San Simon Wash Basin for 1990-2024. (SDR 2025)

Sector	1990	2007	2024
Agricultural	1,220	36	37
Municipal	18	29	37
Industrial	6	5	5

All values are shown in AF.

- Agricultural Incidental Recharge: Agricultural incidental recharge depends on the total irrigation withdrawals and irrigation efficiency within a basin. The estimated volume of agricultural incidental recharge has decreased over the baseline period from 1,220 AF in 1990 to 37 AF in 2024. The sharp decline resulted from Papago Farms, the largest farmland area in the basin, ceasing operations in the mid-2000s.
- Municipal Incidental Recharge: Municipal incidental recharge is a byproduct of lost and unaccounted for (L&U) water from water providers and seepage from septic tanks. The estimated volume of municipal incidental recharge has gradually increased over the baseline period from 18 AF in 1990 to 37 AF in 2024.
- Industrial Incidental Recharge: Industrial incidental recharge occurs from the irrigation of turf facilities and is influenced by irrigation systems' total withdrawals and efficiency. The estimated volume of industrial incidental recharge has decreased slightly over the baseline period from 6 AF in 1990 to 5 AF in 2024.

2.3.5 Transportation Water

Certain basins have been identified in A.R.S. Title 45, Chapter 2, Article 8.1 as basins from which groundwater may be withdrawn for transportation to an AMA. Where such transportation has been authorized, that groundwater is referred to as "Transportation Water" in this report.

The San Simon Wash Basin was not identified as a transportation water basin.

2.3.6 Moved Water

Any water that crosses basin boundaries through artificial means and that does not fall under the Transportation Water definition is referred to as "Moved Water" in this report. Moved Water includes groundwater that is transported between basins that are not AMAs, pursuant to A.R.S. Title 45, Chapter 2, Article 8.

The San Simon Wash Basin was not identified as a basin with moved water.

2.4 DEMAND RESULTS

The Demand subsection contains ADWR's estimates of annual demands in the San Simon Wash Basin.

Table 6. Estimated Demand Volumes for the San Simon Wash Basin by Sector for 1990-2024. (SDR 2025)

Sector	Subsector/Water Type	Year		
		1990	2007	2024
Agricultural	Agriculture	-3,967	-114	-116
Municipal	Residential Provider	-106	-172	-215
	Residential Non-Provider	-13	-21	-27
	Non-Residential	-9	-14	-18
	L&U	-16	-26	-33
Industrial	Dairies	0	0	0
	Feedlots	0	0	0
	Grazing	-295	-295	-295
	Mining	0	0	0
	Power	0	0	0
	Sand and Gravel	0	0	0
	Turf	-45	-46	-42
	Other	0	0	0
Environmental	Riparian	-42,856	-42,856	-42,856

Negative numbers indicate demands or water flows leaving the basin—all values in AF.

2.4.1 Agricultural

Agricultural demand is water applied to two or more acres of land to produce plants or parts of plants for sale for human consumption or use as feed for livestock, range livestock, or poultry.

There are currently an estimated 159 acres of cultivated land within the San Simon Wash Basin. Cantaloupe, alfalfa, and pecans are the predominant crop types, accounting for 93% of the total acreage. All of the active farmland in the basin is flood irrigated.

During the baseline period, annual agricultural demand in the San Simon Wash Basin ranged from 3,400 to 4,400 AF until 2005 but dropped to less than 1,000 AF in 2006. Historical satellite imagery shows that over 2,000 acres at Papago Farms near the US-Mexico Border became inactive around this time. Agricultural demand has remained below 1,000 AF since 2006. Recent estimates using OpenET data range from 101 to 155 AF between 2016 and 2024.[16]

2.4.2 Municipal

Municipal demand is defined as the non-agricultural and non-industrial uses of water supplied by a city, town, private water company, irrigation district, domestic water improvement district, water cooperative, or private domestic well.

The San Simon Wash Basin has an estimated 4,870 residents, with no incorporated towns or other major developments. The San Simon Wash Basin lies within the boundaries of the Tohono O'odham Nation Reservation.

- Residential Provider: Residential provider use is supplied by a municipal provider, or a Community Water System (CWS) as defined in A.R.S. § 45-341.[17] The San Simon Wash Basin has approximately 4,334 residents served by a CWS. During the baseline period, residential provider water demand more than doubled, increasing at an average rate of 0.4 AF per year.
- Residential Non-Provider: Residential non-provider use is any residential water use that is not supplied by a municipal provider but rather by a non-public water system or domestic well. An estimated 536 residents in the basin rely on self-supplied water resources. Residential non-provider demand more than doubled from 1990 to 2024.
- Non-Residential: Non-residential use is defined as municipal water not used for residential purposes but instead used for commercial, institutional, recreational, or transitory uses. From 1990 to 2024, non-residential water usage in the basin expanded to twice the 1990 demand volume.
- Lost and Unaccounted for Water: Lost and Unaccounted for (L&U) water is defined as the total quantity of water from any source that enters a water distribution system minus the total amount of authorized deliveries from the distribution system during the calendar year. L&U does not account for water loss from a non-public water system or domestic well. Consistent with the overall increase in water demand across both residential provider and non-provider sectors, volumes of L&U water more than doubled during the baseline period, increasing at an average rate of 0.5 AF per year.

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[16] OpenET. (2025). https://etdata.org

[17] Arizona Revised Statutes § 45-341. https://www.azleg.gov/ars/45/00341.htm

2.4.3 Industrial

Industrial demand is water used by an industrial facility, such as a golf course, dairy, feedlot, power plant, mine, or paper mill.

The current industrial water demands in the San Simon Wash Basin come from grazing activities and the irrigation of turf facilities.

- Grazing: Grazing demand is defined as the water used to maintain stock ponds for the sole purpose of watering livestock. In the San Simon Wash Basin, there are an estimated 17,545 grazing cattle. Annual water use for grazing is estimated to be 295 AF.
- Turf: Turf demand is defined as the irrigation or maintenance of any area of landscaping that is not part of a private residence. From 1990 to 2024, the volume of water used for the irrigation of turf facilities did not change significantly. The average annual water demand for turf facilities over the baseline period was 45 AF.

2.4.4 Environmental

Environmental demand is quantified within this report as evapotranspiration along streams, rivers, lakes, and drainage ways. The San Simon Wash Basin contains large riparian areas along San Simon Wash, Vamori Wash, and Chukut Kuk Wash. Additionally, the riparian demand values in the SDRs represent a high-end estimate of the potential water needs of riparian plants within a basin. In the absence of site-specific data, these estimates assume an average value for riparian plants' water needs, which does not consider local environmental conditions. Please see the Methods Appendix for an in-depth explanation of the methodologies.

- Annual net water requirements for the riparian plants are estimated to be 42,856 AF.

3 COMBINING SUPPLY AND DEMAND

The water budget in the San Simon Wash Basin shows a consistently negative trend over the baseline period, with supply remaining relatively constant with an average contribution of 33,414 AF per year. Demand values averaged 45,259 AF per year, with Environmental being the largest and comprising at least 90% of demand every year throughout the baseline period. Groundwater storage has decreased over time due to demand consistently exceeding supply in the basin.

Table 7. Summary of Total Estimated Demand and Supply Values from 1990-2024 in the San Simon Wash Basin. (SDR 2025)

	1990	2007	2024
Supply	33,818	32,888	32,909
Demand	-47,307	-43,545	-43,602
Balance	-13,489	-10,657	-10,693
Resulting Water Available in Storage	3,166,341	2,944,126	2,765,261

Negative numbers indicate demands or water flows leaving the basin—all values in AF.

4 RESULTS OF PROJECTION SCENARIOS

Staff developed scenarios based on the most likely impacts on water demands and supplies over 51 years (from 2025 to 2075). Projections were then generated from the baseline data.

The projection scenarios developed are:

- Status Quo: baseline volumes were carried forward through the projection period.
- Growth: volumes were assumed to increase within specific parameters throughout the projection period.
- Conservation: volumes were assumed to be influenced by specific conservation practices through the projection period.
- Technology: volumes were assumed to be influenced by technological advancements through the projection period.
- Climate: volumes were adjusted for three different climate scenarios, using a 1-degree Fahrenheit temperature increase in the mean annual temperature for the projection period, following a lower emissions pathway for Arizona; a 5-degree Fahrenheit temperature increase, following a medium emissions pathway; and a 10-degree Fahrenheit temperature increase, following a high emissions pathway.

4.1 SUPPLY PROJECTION RESULTS

4.1.1 Surface Water

For the Status Quo scenario, the estimated projected volume of surface water will remain constant until 2075.

Table 8. Estimated Surface Water Status Quo Projection Volumes for the San Simon Wash Basin for 2025-2075. (SDR 2025)

Basin	Volume
San Simon Wash	11,316

All values are shown in AF.

Due to ongoing projection scenario improvements, no other projection scenarios were applied to surface water for this report.

4.1.2 Groundwater Storage

For the Status Quo scenario, the estimated projected balance between Supply and Demand will remain constant at –9,696 AF through 2075.

Table 9. Estimated Groundwater Storage Status Quo Projection Volumes for the San Simon Wash Basin for 2025-2075. (SDR 2025)

Scenario	2025	2050	2075
Status Quo	2,755,565	2,513,154	2,270,743

All values are shown in AF.

Due to ongoing projection scenario improvements, no other projection scenarios were applied to groundwater storage for this report.

4.1.3 Effluent

In the San Simon Wash Basin, no effluent produced has been allocated for reuse. Therefore, no effluent is used as a water supply, and no supply projections were applied to the data.

4.1.4 Incidental Recharge

Table 10. Estimated Agricultural Incidental Recharge Projection Volumes for the San Simon Wash Basin for 2025-2075. (SDR 2025)

Sector	Scenario	2025	2050	2075
Agricultural	Status Quo	39	39	39
	Climate – Low	39	39	40
	Climate – Medium	39	40	42
	Climate - High	39	42	44
	Conservation	39	32	32
	Growth	39	13	4
	Technology	39	33	27

All values are shown in AF.

- Status Quo: The Status Quo scenario estimated projected volume will remain constant through 2075.
- Climate: The Climate scenario is expected to result in rising temperatures and increased evapotranspiration, leading to larger irrigation withdrawals. Incidental recharge would be expected to increase with irrigation withdrawals. The projected increase in incidental recharge is about 1.3% for a 1° F rise in average temperature, 6.5% for a 5° F rise, and 13.0% for a 10° F rise.
- Conservation: The Conservation scenario implements requirements similar to those found in the AMAs' 5th Management Plan. In this scenario, irrigation efficiency is expected to improve, which reduces the amount of incidental recharge from system losses. The reduction in agricultural incidental recharge is projected to be approximately 17% in the San Simon Wash Basin.
- Growth: The Growth scenario considers historical growth trends and the land available for potential agricultural growth. In this scenario, incidental recharge is assumed to increase proportionally to withdrawals. Remote sensing data shows an increasing trend in agricultural consumptive use in the basin from 2016 to 2023. If this trend continued to 2075, agricultural incidental recharge would decrease by 89%.
- Technology: Irrigation systems are assumed to be upgraded with available technology to reduce overall water use. As in the Conservation scenario, this results in lower incidental recharge due to reduced system losses. Technology improvements are projected to reduce agricultural incidental recharge in the San Simon Wash Basin by as much as 30%.

Table 11. Estimated Municipal Incidental Recharge Projection Volumes for the San Simon Wash Basin for 2025-2075. (SDR 2025)

Sector	Scenario	2025	2050	2075
Municipal	Status Quo	30	30	30
	Climate – Low	31	31	31
	Climate – Medium	31	31	31
	Climate - High	31	31	31
	Conservation	31	28	28
	Growth	31	40	46
	Technology	31	29	29

All values are shown in AF.

- Status Quo: The Status Quo scenario estimated projected volume will remain constant through 2075.
- Climate: Under the Climate scenario, rising temperatures and increased evaporation rates are expected to increase water demands. However, in the San Simon Basin, where outdoor water use is negligible, demand is based solely on indoor water use and is therefore not anticipated to change for all scenarios.
- Conservation: Under the Conservation scenario, additional water-saving measures and requirements similar to those in the initial AMAs' 5th Management Plan are implemented. Incidental recharge is expected to decrease 10% by 2050 and remain constant thereafter.
- Growth: Under the Growth scenario, population projections produced by the Arizona Commerce Authority Office of Economic Opportunity (ACA OEO)[18] were used to estimate the growth in the basin. Due to anticipated population growth, incidental recharge will increase by 48% by 2075.
- Technology: The Technology scenario assumes widespread adoption of water monitoring technologies, such as advanced metering infrastructure (AMI) or home-based devices, with active leak detection and customer response. Estimated savings of 14,000 gallons per household per year reflect reductions from leaks and improved water use efficiency. This reduction is projected to result in a decrease in incidental recharge of six percent by 2050 and then remain constant.

[18] Arizona Commerce Authority (ACA). (2022a). Population Estimates. Arizona Commerce Authority. https://www.azcommerce.com/oeo/population/population-estimates/

Table 12. Estimated Industrial Incidental Recharge Projection Volumes for the San Simon Wash Basin for 2025-2075. (SDR 2025)

Sector	Scenario	2025	2050	2075
Industrial	Status Quo	5	5	5
	Climate – Low	5	5	5
	Climate – Medium	5	5	5
	Climate – High	5	5	5
	Conservation	5	5	5
	Growth	5	5	5
	Technology	5	5	5

All values are shown in AF.

- Status Quo: The Status Quo scenario estimated projected volume will remain constant through 2075.
- Climate: The Climate scenario assumes that rising temperatures will increase irrigation needs for turf, which in turn will increase incidental recharge. Changes to incidental recharge are expected to be negligible in all emission scenarios.
- Conservation: The Conservation scenario assumes that turf facilities will increase irrigation efficiency over time. Impacts to incidental recharge are expected to be negligible in this scenario.
- Growth: Status Quo projection volumes were applied in the absence of a defined Growth scenario.
- Technology: The Technology scenario assumes that eligible acres of natural turf will be replaced with synthetic turf. Synthetic turf requires less water to maintain than natural grass and reduces groundwater recharge. The Technology scenario is not anticipated to change the volume of industrial incidental recharge in the basin.

4.2 DEMAND PROJECTION RESULTS

4.2.1 Agricultural

Table 13. Estimated Projected Demand Volumes for the Agricultural Sector for the San Simon Wash Basin for 2025-2075. (SDR 2025)

Scenarios	Year		
	2025	2050	2075
Status Quo	-124	-124	-124
Climate - Low	-124	-125	-126
Climate – Medium	-124	-129	-133
Climate - High	-124	-133	-142
Conservation	-124	-118	-118
Growth	-124	-42	-14
Technology	-124	-119	-113

Negative numbers indicate demands or water flows leaving the basin—all values in AF.

- Status Quo: The Status Quo scenario estimated projected volume will remain constant through 2075.
- Climate: The Climate scenario is expected to result in rising temperatures and increased evapotranspiration, leading to increased irrigation withdrawals. Irrigation needs in the San Simon Wash Basin are estimated to increase by about one percent for a 1° F rise in average temperature, seven percent for a 5° F rise, and 14% for a 10° F rise.
- Conservation: The Conservation scenario implements requirements similar to those in the initial AMAs' 5th Management Plan. This would decrease irrigation withdrawals in the San Simon Wash Basin by an estimated five percent by improving overall irrigation efficiency.
- Growth: The Growth scenario considers historical growth trends and the land available for potential agricultural growth. Remote sensing data shows a slight decreasing trend in agricultural consumptive use in the basin from 2016 to 2023. Projecting this trend out to 2075 results in an 89% decrease in irrigation withdrawals. See Methods Appendix for more information.
- Technology: Irrigation systems are assumed to be upgraded with available technology to reduce overall water use. In the San Simon Wash Basin, technology upgrades may reduce irrigation withdrawals by approximately nine percent.

4.2.2 Municipal

Table 14. Estimated Projected Demand Volumes for the Municipal Sector for San Simon Wash Basin for 2025-2075. (SDR 2025)

	Residential Provider			Residential Non-Provider		
	2025	2050	2075	2025	2050	2075
Status Quo	-207	-207	-207	-26	-26	-26
Climate – Low	-215	-215	-215	-27	-27	-27
Climate – Medium	-215	-215	-215	-27	-27	-27
Climate - High	-215	-215	-215	-27	-27	-27
Conservation	-214	-198	-198	-26	-24	-24
Growth	-219	-280	-319	-27	-35	-39
Technology	-214	-200	-200	-26	-25	-25

Negative numbers indicate demands or water flows leaving the basin—all values in AF.

	Non-Residential			L&U		
	2025	2050	2075	2025	2050	2075
Status Quo	-18	-18	-18	-31	-31	-31
Climate – Low	-18	-18	-18	-48	-48	-48
Climate – Medium	-18	-18	-18	-48	-48	-48
Climate - High	-18	-18	-18	-48	-48	-48
Conservation	-18	-18	-18	-32	-22	-22
Growth	-18	-24	-27	-33	-42	-48
Technology	-18	-18	-18	-33	-31	-31

Negative numbers indicate demands or water flows leaving the basin—all values in AF.

- Status Quo: The Status Quo scenario estimated projected volume will remain constant through 2075.
- Climate: Under the Climate scenario, rising temperatures and increased evaporation rates are expected to increase water demands. In the San Simon Wash Basin, minimal outdoor water use will have negligible impact on total demand and is projected to remain steady based on indoor demands for all Climate scenarios.
- Conservation: Under the Conservation scenario, additional water-saving measures and requirements similar to those in the initial AMAs' 5th Management Plan are implemented. Residential provider and residential non-provider demands in the basin are projected to decrease by eight percent by 2050 and remain constant through 2075. Non-residential demand is expected to remain constant throughout the projection period. The total volume of L&U water is estimated to decline by 31% by 2050, after which values are expected to remain stable.

- Growth: Under the Growth scenario, population projections produced by the Arizona Commerce Authority Office of Economic Opportunity (ACA OEO)[18] were used to estimate the growth in the basin. Residential provider water demand is projected to increase 46% by 2075, comprising a 28% growth through 2050 followed by a 14% increase from 2050 to 2075. Residential non-provider demand is expected to follow a similar trajectory, with an overall projected 44% increase by 2075. Non-residential anticipated demand is projected to grow 50% by 2075. The total volume of L&U water is estimated to increase 46% by 2075.
- Technology: The Technology scenario assumes widespread adoption of water monitoring technologies, such as AMI or home-based devices, with active leak detection and customer response. Estimated savings of 14,000 gallons per household per year reflect reductions from leaks and improved water use efficiency. By 2050, residential provider demand is projected to decline by seven percent and stabilize through 2075. Following a similar pattern, residential non-provider demand decreases by four percent by 2050 and holds steady thereafter. Non-residential water demand is expected to remain constant throughout the projection period. The total volume of L&U water is estimated to decline by six percent by 2050, with no change observed in the second half of the projection period.

4.2.3 Industrial

Table 15. Estimated Projected Demand Volumes for the Industrial Sector for San Simon Wash Basin for 2025-2075. (SDR 2025)

	Grazing
Status Quo*	-295

** Status Quo projections were the only projection scenarios that were applied to the grazing subsector. Negative numbers indicate demands or water flows leaving the basin—all values in AF.*

Due to ongoing projection scenario improvements, no other projection scenarios were applied to the grazing subsector for this report.

	Turf		
	2025	2050	2075
Status Quo	-43	-43	-43
Climate – Low	-43	-43	-43
Climate – Medium	-43	-44	-46
Climate - High	-43	-46	-49
Conservation	-43	-41	-41
Growth			
Technology	-43	-43	-43

Status Quo projection values were applied in the absence of a defined scenario for a subsector.
This is indicated by a gray cell.
Negative numbers indicate demands or water flows leaving the basin—all values in AF.

- Status Quo: The Status Quo scenario estimated projected volume for grazing will remain constant through 2075.
- Climate
  - Turf: Increased temperatures and evapotranspiration are expected to raise overall turf irrigation requirements in the Climate scenarios. In the low emissions scenario, irrigation needs are not anticipated to increase. In the medium emissions and high emissions scenarios, irrigation is projected to increase by seven percent and 14%, respectively.
- Conservation
  - Turf: Under the Conservation scenario, increased irrigation efficiency requirements are expected to have a minor impact on total water use. With full implementation of the conservation measures, water use for turf facilities is projected to decrease by 2 AF, or five percent.
- Technology
  - Turf: The conversion of eligible natural turf acres to synthetic turf is projected to have a negligible impact on turf water demand.

4.2.4 Environmental

Table 16. Estimated Projected Environmental Demand Volumes for San Simon Wash Basin for 2025-2075. (SDR 2025)

	Environmental		
	2025	2050	2075
Status Quo	-42,856	-42,856	-42,856
Climate – Low	-42,856	-43,124	-43,380
Climate – Medium	-42,856	-43,680	-44,425
Climate - High	-42,856	-44,454	-45,798

Negative numbers indicate demands or water flows leaving the basin—all values in AF.

- Status Quo: The Status Quo scenario estimated projected volume will remain constant through 2075.
- Climate: The Climate scenarios for riparian use consider the impact of increased temperatures, increased evapotranspiration, and habitat transition. Under the set parameters of these scenarios, riparian use is expected to increase in the San Simon Wash Basin as the higher temperatures increase evapotranspiration from riparian plants. Riparian water use is estimated to increase by one percent in the low emissions scenario, four percent in the medium emissions scenario, and seven percent in the high emissions scenario.

5 CONCLUSION

A long-term imbalance between water supplies and demand in the San Simon Wash Basin has led to depletion in the amount of groundwater in storage through the entire baseline period. Demand exceeded supply values by an average of 11,845 AF, which led to groundwater storage decreasing from 3,166,341 AF in 1990 to 2,765,261 AF in 2024, a loss of approximately 400,000 AF. If groundwater levels were to drop below the basin's average well depth of 295 feet, approximately 50% of existing wells would become dry. The average recorded water level of wells in San Simon Wash Basin is 104 feet.

ADWR did not identify any perennial streams in the San Simon Wash Basin. Ephemeral and intermittent streamflow values covered a wide range throughout the period, from a minimum of 461 AF in 2009 to 28,653 AF in 2008. Mountain-front recharge was the largest contributor to supply values. Agricultural incidental recharge was another major contributor in the early part of the baseline period before largely decreasing after 2006.

Environmental demand was the highest throughout the baseline period, averaging 42,856 AF per year. Agricultural demand was highest in the first half of the period, averaging 3,892 AF per year until 2005. After 2006, Agricultural demand diminished to an average of 117 AF throughout the remainder of the baseline period due to the amount of irrigated acreage reducing from 2,200 acres to 160 acres. Residential provider demand values doubled during the baseline period, increasing from 105 AF in 1990 to 215 AF in 2024.

The San Simon Wash Basin continues to be in a negative balance due to consistent demand values exceeding available supplies.

5.1 ATTACHMENTS

- **Acronyms and Definitions**
- **References (Sources) – general**