

Project Narrative

In a separate file, please describe how your program meets one or more of the categories above and how it shows leadership or innovation in making our city and surrounding communities more sustainable. Specifically include information about how this program impacts the people who benefit from it, and how it can be adapted or continue to promote sustainability or resiliency into the future.

The Edwards Aquifer Protection Program

Texas has been blessed with one of the most prolific and abundant natural sources of water to be found anywhere in the world - the Edwards Aquifer. It is the source of the largest springs in Texas and the primary source of drinking water for more than 1.5 million San Antonians. The characteristics that make the Aquifer so productive — specifically, the ability to take in large amounts of water from the surface and transport them deep underground — also make it extremely vulnerable to degradation as pollutants carried in stormwater rapidly enter and travel through caves, fissures, and sinkholes in the Edwards karst limestone with little or no filtration. The Texas Commission on Environmental Quality (TCEQ) designated the Edwards Aquifer as the major aquifer in the state most vulnerable to pollution.

Approximately 1,250 square miles of Edwards Limestone is exposed at the ground surface and composes the Recharge Zone where water enters the Aquifer. Surface water from springs and streams originating on the Contributing Zone reaches the Recharge Zone where much of the flow sinks into the Edwards Limestone. Some water also enters the Edwards Aquifer through interformational flow (from rock formations adjacent to the Edwards Limestone) and from direct precipitation on the Recharge Zone.¹ This combination of size and fragility adds particular significance to efforts protecting the Edwards Aquifer.

Scientists who have devoted themselves to the study of karst formations aver that a key component lacking in protection of our local water resources is that these karst formations are little understood by the average practicing geologist, much less the general public. Hence, efforts to preserve water quality to the Edwards through regulation have been largely ineffective in providing permanent protection of the land that recharges the Aquifer. City of San Antonio water quality ordinances enacted in 1995 were largely ignored as claims of vested rights that exempted developments from regulation were still being validated as recently as 2015.

Inspired by New York City's successful 1993 effort to protect more than 477,000 acres or 40 percent of its watershed (Ninety percent of New York City's water supply system does not require filtration because of these protection efforts), advocates in San Antonio began to look at permanent protection through purchase of land as the most certain way to protect the primary source of San Antonio's water supply. In 2000 San Antonio voters approved Prop 3, which allocated 1/8-of-a-cent addition to the local

¹ <https://www.edwardsaquifer.org/science-maps/about-the-edwards-aquifer/>

sales tax in 2000 to collect \$45 million to purchase sensitive properties located over the Edwards Aquifer.

In 2005, 2010, and 2015 voters again approved 1/8-of-a-cent addition to the local sales tax to collect \$90 million for the purchase of sensitive properties and conservation easements on land located over the Edwards Aquifer. In 2015 an additional \$10 million was approved to fund research and model projects to determine how to best protect the highly urbanized portion of the Recharge Zone within San Antonio City Limits.

Careful consideration was given to the selection of appropriate properties for acquisition as part of the Edwards Protection Program (EAPP). A Scientific Evaluation Team (SET) consisting of aquifer experts convened to prioritize undeveloped properties based on their environmental characteristics in order to achieve maximum value for voter-approved dollars. The SET is comprised of scientific experts representing various disciplines from an assortment of agencies and institutions, including the Edwards Aquifer Authority, the U.S. Fish and Wildlife Service, the U.S. Geological Survey and the San Antonio Water System. The SET produced a GIS-based model to identify and rank sensitive properties for inclusion in the Edwards Aquifer Protection Program. The SET model serves as a decision-making tool for the program's Conservation Advisory Board (CAB) and Land Acquisition Team (LAT) to assist in identifying properties that may be considered for the conservation easement program. The model uses a variety of indicators to identify properties that contain unique and desirable features that warrant long term protection based on attributes that are valuable to enhancing water quality and quantity over sensitive areas of the Edwards Aquifer. The model utilizes multiple datasets that reflect the most current information regarding items such as: permeability of the Edwards limestone below the surface; the streams and creeks flowing over the surface; the types of plants present; and the adjacency to existing preserved open spaces.²

To date, more than 156,000 acres of land have been preserved through the EAPP. Following acquisition, the environmental characteristics of each of the protected properties are monitored and evaluated on an annual basis to ensure compliance with aquifer protection program guidelines and restrictions.

Benefits to the Community

The EAPP has been recognized nationally and internationally as a successful and equitable method of paying rural landowners for ecological services that benefit a large urban population.

In that San Antonio Water System (SAWS) relies on the Edwards Aquifer for 80% of its current water supply, all citizens benefit from efforts to maintain the high quality of Edwards water. Due to the high quality of this source, SAWS has had the luxury of

² <https://www.sanantonio.gov/EdwardsAquifer/About>

drilling Edwards wells as needed to serve the City with water that requires no pre-treatment prior to distribution. Consequently, in the event that water from SAWS Edwards wells might fail to meet EPA standards, the cost of retroactively installing infrastructure to pretreat Edwards water to meet those standards would be in the billions of dollars. It is therefore incumbent on us to do all that we can to preserve this precious water resource.

Future of the Program

Combining all portions of the Recharge and Contributing zones that contribute to San Antonio's water supply, the total watershed geographically applicable to the EAPP is between 2.5 and 2.8 million acres. When viewed in this manner, the total protected area of the watershed as of the end of 2018 is about six percent, meaning that about 94% of this area remains unprotected. Much of the area in need of protection is within the Edwards Aquifer Contributing Zone. Land in this area proximal to San Antonio is rapidly being developed without adequate regulatory protection.

Given the popularity of the EAPP, which was approved by 78% of the voters in 2015³, we hope that San Antonio's City Council will reauthorize a vote on continuation of the Program in 2020.

³ <https://www.sacurrent.com/the-daily/archives/2015/05/09/voters-approve-conservation-plans-city-charter-amendments>