

#### Abstract

The San Antonio River Authority (SARA) was awarded the Upper San Antonio River Stormwater Retrofit BMPs (Best Management Practices) Implementation of Watershed Protection Plan (WPP) 319 Grant from the Environmental Protection Agency to retrofit two of its locations: Main office on 100 E. Guenther and Environmental Center on 600 E. Euclid. Both locations are owned and operated by SARA and were constructed before low impact development (LID) and other sustainable stormwater technologies were known of and/or available in San Antonio, Texas. Both buildings regularly house large public meetings, and the Guenther building is in a highly visible location along the San Antonio River Walk. This project will answer a common question voiced by members of the design and development communities at LID training sessions: can LID retrofits be justified in a heavily urbanized area such as San Antonio's urban core? During the design, construction, and maintenance processes, SARA staff are documenting lessons learned, construction processes, costs and milestones to share first-hand with the public and professionals. After the BMPs have been installed, SARA will provide further public education about stormwater management through tours of the systems, signage at the sites, website presence, and promotion through social media. In addition, SARA will conduct one year of post-construction performance monitoring and educate the zoning and building communities on storm water BMP retrofit design, construction, and maintenance and how they benefit the larger community.

## **Education and Outreach**

- Community Mailers announcing the retrofits sent to surrounding neighborhoods
- Newsletters and Articles published throughout the project's duration and highlighted on SARA's website
- Social Media and Website updates about retrofit progress and activities
- Hard Hat Tours of the project for the professional community and SARA staff
- Professional Workshops using the project as the backdrop for design professional and operation and maintenance technicians
- Open House for the community to learn about the project upon completion
- Tours of the completed sites for students, professionals and the community
- Signage installed permanently to educate visitors on the project's BMP functions, design and stormwater benefits

## **Design Benefits**





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The purpose of these two projects is to retrofit the facilities' stormwater infrastructure utilizing LID design and construction to improve runoff water quality by capturing first-flush pollutants and to increase on-site infiltration and water storage for reuse. All BMP designs are based on the triple bottom line of economic, quality of life, and environmental benefit and costs, as well as on the standards in SARA's San Antonio River Basin: Low Impact Development Technical Guidance Manual. Both sites' capture volume will exceed the City's newly adopted Unified Development Code voluntary LID use pattern of a 1.5" design storm. GI/LID Elements: 1 permeable pavement parking lot, 7 cisterns, and 10 bioretention cells. Status: Pre-stormwater monitoring is complete. In the construction phase at Guenther with Euclid to follow. Intended purpose: Retrofit case study, runoff management, pollutant removal, flood mitigation, riparian protection, water conservation, aesthetics, habitat creation and education. Monitoring parameters: stormwater monitoring and sampling was done pre-BMP installation and electronic flow monitoring is planned for one year post-BMP installation on each LID BMP type. Operation and Maintenance: performed by SARA staff in accordance with SARA's San Antonio River Basin: Low Impact Development Technical Guidance Manual.

# Upper San Antonio River Stormwater Retrofit **BMPs Implementation of the Watershed Protection Plan**

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#### Main Office, 100 E. Guenther

The stormwater runoff from the Guenther site drains directly into the San Antonio River. With approval from the City of San Antonio's Historic Design Review Commission and the King William Neighborhood Association of onsite designs for the Guenther building location, BMPs are being installed to meet the water quality and water quantity goals of the Watershed Protection Plan as well as the community historic design aesthetics.

permeable pavement parking lot, 5 cisterns, and 10 GI/LID Elements: 1 bioretention cells. Total Impervious Cover Removed = 4,135 SQ. FT (No.1, No.3)







The stormwater runoff from the Euclid building rooftop causes erosion to the site and hardscaped infra and flooding of the surrounding streets and carries pollution to the San Antonio River Walk. Eucli design modifications include two, 22-ft tall, 10,000 gallon cisterns that are designed to capture two-thi stormwater that falls on the rooftop. One-third of the rooftop runoff is currently being managed w garden that runs the length of the front of the building. The BMPs will provide water quality treat reduce pollutant loads and erosion.



#### References

Michelle E. Garza is a stormwater analyst in the Environmental Sciences Department at the San Ante Authority (SARA). Ms. Garza has a Bachelor of Science degree from the University of Texas at Sa Her responsibilities at SARA include promoting LID within and without the organization to protect Antonio River Watershed. Ms. Garza is the TCEQ representative for contractual matters on the Antonio River Stormwater Retrofit BMPs Implementation of the WPP 319 Grant.

Aarin Teague, Ph.D., P.E., CFM, Senior Engineer in Watershed Engineering at the SARA, is manager for the Upper San Antonio River Stormwater Retrofit BMPs Implementation of the WPP Grant.



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#### Construction documents by Tetra Tech, Inc.

## **Environmental Center, 600 E. Euclid**







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