

Water Resources Preservation Grant Program Upper Guadalupe River Authority



The Need for Nature-based Infrastructure in Kerr County

As Kerr County's population increases, the need to provide adequate protection for our water resources becomes more urgent. Growth of residential and commercial areas usually accompanies the removal of vegetation and the addition of impervious surfaces such as roofs, parking lots, and streets. These modifications increase the potential for pollution to enter waterways because the areas of soil and vegetation that previously intercepted rain and absorbed runoff have been reduced or eliminated. As a result, rainfall now quickly flows across the impervious surfaces and accumulates dirt, grease, oil, bacteria, and other contaminants. Unimpeded, stormwater runoff will carry contaminants from throughout the watershed directly into our rivers and streams and negatively affect the health of these receiving waterbodies.

Development can include design elements that reduce the amount of stormwater runoff that enters waterways by implementing strategies to intercept runoff and retain the water on the land where possible. Contaminants that influence water quality in our river and streams rarely occur at the water's edge but from anywhere within the watershed making it important to intercept runoff as close to where it originates as possible. Additionally, riparian areas, the band of native vegetation along the river and streams, are the last line of defense in protecting waterbodies from stormwater runoff and pollution. Native riparian vegetation acts as a filter, trapping sediments and other pollutants before they reach the river or streams. If riparian areas are disturbed or removed, polluted stormwater will flow directly into the waterway. Through this program, the Upper Guadalupe River Authority (UGRA) will work with individuals and businesses to implement design strategies that can reduce stormwater runoff and protect the health of Kerr County waterways.

Water Resources Preservation Grant Program

Description

The Water Resources Preservation Grant Program is an incentive program funded by UGRA. The program provides cost share funding for design and construction of stormwater management practices commonly referred to as best management practices (BMPs). The program provides rebates for a portion of the cost of specific management practices that reduce, infiltrate, filter, and delay stormwater runoff. These types of practices fall under the umbrella terms of Low Impact Development (LID), nature-based solutions, and Green Stormwater Infrastructure (GSI). Stormwater management practices must be designed and constructed using the guidance provided in this document. The program is open to new construction or retrofit of existing property.

Benefits

Addressing stormwater-related issues on site is one of the most critical aspects of sustainable design and can provide major benefits to ecological health while also minimizing costs and negative impacts to other local infrastructure. Both the amount of rainfall within individual storm events as well as intensity of droughts have increased over time, therefore careful attention to the management and conservation of water is of the utmost importance.

The methods proposed by this program offer specific design solutions to stormwater-related concerns. However, it is important to understand the driving philosophy behind these methods, and what steps to take to ensure they are successful within a larger water-conscious strategy.

Runoff Reduction:

The first step is to reduce and slow stormwater runoff. Every project should aim to retain all rainfall volume on site, reducing flooding and pressure on stormwater infrastructure within the watershed. Reducing runoff can initially be achieved by reducing impervious surfaces (whether through decreasing

the overall hardscape or through utilizing porous materials where possible), and by disconnecting impervious surfaces or providing breaks in them to slow the flow of runoff.

Additional tips for reducing the detrimental effects of runoff include keeping it as sheet flow as much as possible. Sheet flow is when runoff forms a wide shallow flow of water as opposed to a narrow, concentrated flow of water. Once flow is concentrated, its velocity typically increases along with the potential for damaging effects. Be mindful of locating drainage areas and establishing flow lines. Design impervious surfaces to drain to adjacent planted storage or treatment areas. Linear impervious surfaces like walkways or roads should be oriented perpendicular to the slope.

Add planting areas beyond requirements as this not only has a massive impact on the reduction and absorption of runoff but also provides additional ecosystem benefits including habitat creation and heat island reduction. Healthy, uncompacted soils are critical for the absorption of runoff and to support vigorous plant communities.

Distributed Treatment:

The next step is to treat runoff using stormwater best management practices distributed throughout the site. Thoughtful design choices to reduce runoff will result in smaller volumes of stormwater therefore smaller areas required to treat it. The methods available in this program detail several strategies for slowing, storing, and treating stormwater including bioretention and rainwater harvesting.

Centralized Treatment:

Runoff reduction and distributed treatment are sometimes not enough to treat all stormwater runoff at a specific location. When there is more runoff volume than can be treated in distributed controls, then any excess water should be collected and routed to a more centralized treatment on site.

Treatment Levels:

This project specifically targets Total Suspended Solids (TSS) and Bacteria. TSS is also commonly referred to as sediment and causes water to look cloudy. TSS may also carry other constituents that adhere to the fine particles and can be treated using filtering and settling. Bacteria is a general term for single cell organisms that exist everywhere in the environment. Some species of bacteria cause waterborne diseases. Bacteria can replicate exponentially under ideal conditions. Harmful bacteria in stormwater that drains to creeks, streams, rivers, and lakes can raise the level of bacteria in the water to levels that are unsafe for human contact.

Standard target removal rates are 80% for Total Suspended Solids and 60% for bacteria. This program presumes these rates of removal for bioretention, rainwater harvesting, vegetated filter strips and permeable pavement designed and constructed using guidance outlined in Appendix A – Technical Design Guidance. Riparian Buffers are not presumed to remove this level of TSS nor bacteria.

Education:

Raise public awareness of nonpoint source runoff as it relates to impervious cover. Show how simple nature-based treatment methods can be implemented to treat runoff before it enters creeks, streams, and the Guadalupe River.

Goals

The goals of this program include the following using guidance outlined in Appendix A – Technical Design Guidance:

1. Improve the quality of water in the Guadalupe River by reducing bacteria and sediment carried into the Guadalupe River by non-point source runoff.
2. Lessen the impact of local flooding by reducing stormwater runoff volume.
3. Reduce stormwater runoff velocity.
4. Preserve functioning riparian areas.
5. Engage local design professionals, including architects, landscape architects, and civil engineers to increase use of nature-based infrastructure practices.

6. Create awareness of how stormwater runoff affects river health resulting in long-term behavioral change to mitigate impacts.

Program Details

- Interested applicants should contact UGRA and schedule a pre application meeting as soon as possible during the project planning process
- One application per project (applicant can reapply for future construction phases and those applications will be evaluated as standalone projects)
- Applications are accepted year-round
- No limit on number of stormwater management practices per project
- Design and construction must follow guidance from this document
- Design is based on runoff volume from a 1.5" 24-hour event
- Projects treating at least 60% of runoff from impervious surfaces will receive priority Projects are scored based on a published rubric
- Eligible projects must have a minimum score of 10 on the published rubric
- List of eligible stormwater management practices include:
 - Bioretention
 - Permeable Pavement
 - Rainwater Harvesting / Cistern
 - Vegetated Filter Strip
 - Riparian Buffer
 - Other treatment options including proprietary devices with written approval from UGRA
- Project must include installation of interpretive signage for each management practice (UGRA will provide selected applicants with sign content).
- Rebate:
 - Minimum rebate \$20,000
 - Maximum rebate \$150,000
 - Number of projects approved per year is contingent upon funds budgeted by the UGRA Board
 - Rebate is only for design and construction of stormwater management practices
 - Rebate agreement signed by landowner is required which will include an expectation for continued operation and maintenance of the practices for which the rebate was provided.
 - Rebate funds are paid after project is complete and an inspection by UGRA personnel is conducted
 - Rebate is payable to landowner only

Eligibility

The program is open to all projects located within Kerr County, except:

1. Single family residential projects
2. Small projects with stormwater treatment cost estimate less than \$20,000

Application

To apply for the program, submit the following documents:

1. Complete **Application Form**
2. Written **Project Narrative** that includes the following information:
 - a. Project description
 - b. Details on how project meets the goals of the program
 - c. Estimated cost of nature-based practices
 - d. Estimated amount of cost share rebate requested
 - e. Impact on receiving water body (i.e. anticipated reduction in adverse impacts such as erosion or sedimentation)
 - f. Details on operation and maintenance
 - g. Project location, easements, public access

- h. Details on commitment to the project (i.e. anticipated educational opportunities to promote BMPs, owner's financial commitment to BMPs, prior experience with similar BMPs)
- i. Details on drainage areas and BMP treatment
- 3. **Project Drawing**, a plan view drawing that includes the following information in order to illustrate a conceptual design (sealed designs are not required for the application).
 - a. Property boundary and area
 - b. Boundaries and dimensions of all impervious areas
 - c. Boundaries and dimensions of all drainage areas
 - d. Boundaries and dimensions of all existing riparian areas (if applicable)
 - e. Boundaries and dimensions of all riparian areas proposed for restoration and preservation (if applicable)
 - f. Existing contours with elevation
 - g. Proposed contours with elevation
 - h. Hydrologic Soil Group (HSG) boundary (refer to references for info)
 - i. Hydrologic Soil Group (HSG) label
 - j. Proposed treatment best management practice(s)
 - k. Cross-section for each best management practice(s). This can be a conceptual cross section based on the example designs in Appendix B of the program guidance.
 - l. All BMP dimensions
 - m. Calculations for Target Volume
 - n. Calculations for Treatment Volume
- 4. Complete **Treatment Worksheet**

An application is complete if it has an **Application Form** with all fields completed, a written **Project Narrative** with all required information, a **Project Drawing** with all required information, and a **Treatment Worksheet** with all the required information. You will be notified when the application is considered accepted.

Project Evaluation

Projects are evaluated based on the following categories. Please refer to the UGRA Water Resources Preservation Grant Program Rubric for details.

1. Project Description – How well a proposed project meets the goals of the program
2. Amount of treatment – What percentage of impervious surfaces are treated by the proposed BMPs (Projects treating at least 60% will receive priority)
3. Impact on receiving body – Distance to closest receiving waterbody
4. Operation and maintenance – Commitment to preserving operation of BMPs
5. Location – Located on UGRA land, obtained easement, publicly accessible and visible
6. Commitment – Commitment to the goals of the program. Examples include corporate commitment, financial commitment, treatment beyond requirements, O&M commitment beyond requirements, enhanced demonstration of project – social media links, tours, etc.
7. Riparian function – If applicable, does riparian area meet minimum size

Project Selection

Project applications are accepted year-round. Projects are scored using the UGRA Water Resources Preservation Grant Program Rubric and top scoring project(s) are selected to proceed to enter into a cost share funding agreement. A minimum score of 10 and at least 1 point in each category of the rubric is required for a project to be selected (unless the strategy for implementation is restoration of riparian areas, then less than 1 point in a category of the rubric is allowed). Applicants will be notified by UGRA staff when selected. Selected projects will require close coordination with UGRA to work out project details.

References

- Texas Aquifers - https://www.twdb.texas.gov/groundwater/special_projects/valverde/docs/TexasAquiferStudy_FINAL_forWeb.pdf
- Urban Stormwater Quality, Pollutant Loads - <https://pubs.usgs.gov/wri/wri984158/pdf/wri98-4158.pdf>
- Edwards Aquifer Rules - <https://www.tceq.texas.gov/publications/rg/rg-348>
- San Antonio River Basin Low Impact Development Technical Design Guidance Manual - https://www.sariverauthority.org/wp-content/uploads/2023/09/lid_tech_manual-3rded-manual.pdf
- Texas Commission on Environmental Quality, Stormwater Permits - <https://www.tceq.texas.gov/permitting/stormwater>
- Environmental Protection Agency, Summary of Clean Water Act - <https://www.epa.gov/laws-regulations/summary-clean-water-act>
- Riparian Restoration on Farms and Ranches in Texas - <https://bexar-tx.tamu.edu/files/2012/07/Riparian-Restoration-on-Farms.pdf>
- Texas Riparian Association - <https://texasriparian.org/>
- Conservation Buffers - https://www.fs.usda.gov/nac/buffers/docs/conservation_buffers.pdf
- Natural Resources Conservation Service - Web Soil Survey (Hydrologic Soil Group) - <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>
- Riparian Zone Restoration - <https://austintexas.gov/faq/riparian-zone-restoration>
- Riparian Function and Benefits in Austin, Texas - https://austintexas.gov/watershed_protection/publications/document.cfm?id=213558
- Grow Zones - https://www.hillcountryalliance.org/wp-content/uploads/2021/09/HCA_Riparian_GrowZones_2021.pdf
- Remarkable Riparian – <http://remarkableriparian.org/YourRemarkableRiparianOwnersManual>
- Plant database - <https://www.wildflower.org/plants>
- Noxious Plants - [https://texreg.sos.state.tx.us/public/readtac\\$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=4&pt=1&ch=19&rl=300](https://texreg.sos.state.tx.us/public/readtac$ext.TacPage?sl=R&app=9&p_dir=&p_rloc=&p_tloc=&p_ploc=&pg=1&p_tac=&ti=4&pt=1&ch=19&rl=300)
https://tpwd.texas.gov/huntwild/wild/species/exotic/prohibited_aquatic.phtml#plant
- Riparian Management Plan – https://tpwd.texas.gov/landwater/water/aquatic-invasives/aquatic_invasive_plants.phtml
https://tpwd.texas.gov/landwater/water/aquatic-invasives/streamside_restoration.phtml
- Plants for a Riparian Buffer – <http://remarkableriparian.org/YourRemarkableRiparianOwnersManual>
https://www.austintexas.gov/sites/default/files/files/Watershed/riparian/riparian_template.pdf
https://www.hillcountryalliance.org/wp-content/uploads/2021/09/HCA_RiparianPlantingGuide_2021.pdf