

PIPELINE PRAIRIES INITIATIVE

Texas Green Infrastructure Case Study

Colton Bontke, Charriss York, and Celina Gauthier Lowry



Native plants to support pollinators in the pipeline right-of-way. Photo taken 18 months after seeding.
Photo Credit: Caesar Kleberg Wildlife Research Institute

PROJECT COMPONENTS

Practice

Habitat Restoration:

Restoring habitat reduces fragmentation of ecosystems and increases the ecosystem services they can provide.

Scale

Landscape: Protecting, preserving, conserving, and/or restoring large areas of undeveloped land for ecosystem services. Examples: prairie and wetland restoration, pipeline corridors, using green belts to reconnect fragmented natural areas.

Green infrastructure practices are designed and engineered to work with nature to capture, store, and treat stormwater runoff in ways that provide both water quantity and water quality benefits. These practices can promote ecosystem services, which are benefits to humans provided by healthy ecosystems. One such project in Kenedy County works at a landscape scale to restore habitat impacted by pipeline construction.

PROJECT OVERVIEW

Monarch butterfly populations have declined in recent years due to environmental changes along their migratory path. Other species, including bees and migratory birds, have been impacted similarly. To help rehabilitate crucial habitat, the Caesar Kleberg Wildlife Research Institute (CKWRI) at Texas A&M University-Kingsville, Enbridge Energy Inc., and several Kenedy County landowners, including the historic King Ranch, collaborated on the Valley Crossing Pipeline native seed planting project. The project is one of several in the Pipeline Prairies Initiative. The coordinated effort spanned a 42-mile section (entire Kenedy County portion) of the 176-mile-long pipeline running through Texas and planted native seeds along the pipeline right-of-way.¹ Native grasses and forbs promote ecosystem services like pollination and habitat for beneficial species.

Another important service provided is water infiltration. Native plants tend to have very long roots that create channels in the soil where water can soak in. This use of native plants to reduce stormwater runoff and restore habitat is an excellent example of green infrastructure.

PROJECT IN-DEPTH

Texas Native Seeds, a project of the CKWRI, developed a custom native seed mix based on impacted soils and seeded a total of 56 miles of right-of-way at the request of landowners. Seeding was only successful in establishing the selected species in some areas, while additional native pollinator species germinated from the existing seed bank. A challenging aspect of the Valley Crossing Pipeline project was determining the correct seed mix. At the time of this project, there were few commercially available species adapted to the deep sandy soils found in the Coastal Sand Plains. Seeding was completed in the middle of summer, which was not favorable for establishment. Plants grown from native seed mixes provide multiple ecosystem services:

Wildlife habitat

Construction of roadways, pipelines, and utility easements fragment wildlife habitat, making certain species more vulnerable. To reduce the effects of fragmentation, the Valley Crossing Pipeline project reestablished prairie areas that were there before the pipeline, restoring connections between small habitat areas. The monarch butterfly is one species that benefits from this habitat rehabilitation along its migratory route.^{1,2,3}

Runoff reduction

Native vegetation is adapted for local conditions, allowing for better growth, water retention, and less upkeep. Deeper roots in native soils allow the transfer of more water into the ground, slowing down and decreasing runoff.^{2,4}

Nutrient buffering

When rainwater runs off urban areas or agricultural fields, it carries pollutants and extra nutrients. Grasses and shrubs slow the flow of water and help settle these pollutants out before reaching adjacent waterways. These natural areas of vegetation are known as buffer zones. The Valley Crossing Pipeline lies in a heavily agricultural area. Kenedy County is known for growing cotton and milo, which are typically managed using heavy fertilization, weed control, and pesticides. The planted areas in the pipeline easement will help catch any fertilizer and pesticides flowing off the landscape.^{2,4}



Monarch butterfly.
Photo Credit: Laura McKenzie, Texas A&M AgriLife

FINANCING

The project cost \$100,000 to plant native seeds over the 56-mile pipeline easement and provide education about the project to the public. It was funded by:

- ▶ Enbridge Energy Inc.
- ▶ The Historic King Ranch

FIND OUT MORE

To find native seed mixes for your area, visit the CKWRI's website to view an interactive native seed mix map with information on which seeds to select based on your location. This resource also provides licensed seed vendors.²

¹ <https://www.naturalgasintel.com/south-texas-natural-gas-pipeline-provides-flyway-for-migratory-monarch-butterflies/>

² <https://www.ckwri.tamuk.edu/research-programs/texas-native-seeds-program-tns/about-us/south-texas-natives-project>

³ <https://king-ranch.com/operations/farming/>

⁴ Tyler, J. (2016). Sustainable Hazard Mitigation: Exploring the Importance of Green Infrastructure in Building Disaster Resilient Communities. *The Journal of Sustainable Development*, 15(1), 134–145



Green Infrastructure for Texas | AgriLife.org/GIFT
Texas Community Watershed Partners | Houston, Texas
Texas A&M AgriLife Extension