



2024 Texas Regional Stormwater Conference | San Marcos, Texas

The Clean Coast Texas Program

A Partnership Helping Communities Protect Water Quality

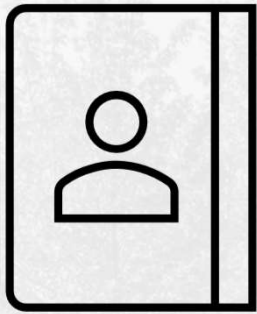
January 11, 2024



CONNECT WITH US. LIKE US. FOLLOW US.

halff.com

MEET THE TEAM



CHRISTINA LOPEZ, PHD

Coastal Coordinator
The Meadows Center for
Water and the Environment
Texas State University



BRYCE CARLILE, PE, CFM

Water Resources
Project Manager
Halff



**TROY DORMAN, PHD,
PE, CFM, ENV SP**

Water Sustainability
Leader
Halff

“We improve lives and communities by
turning ideas into reality.”



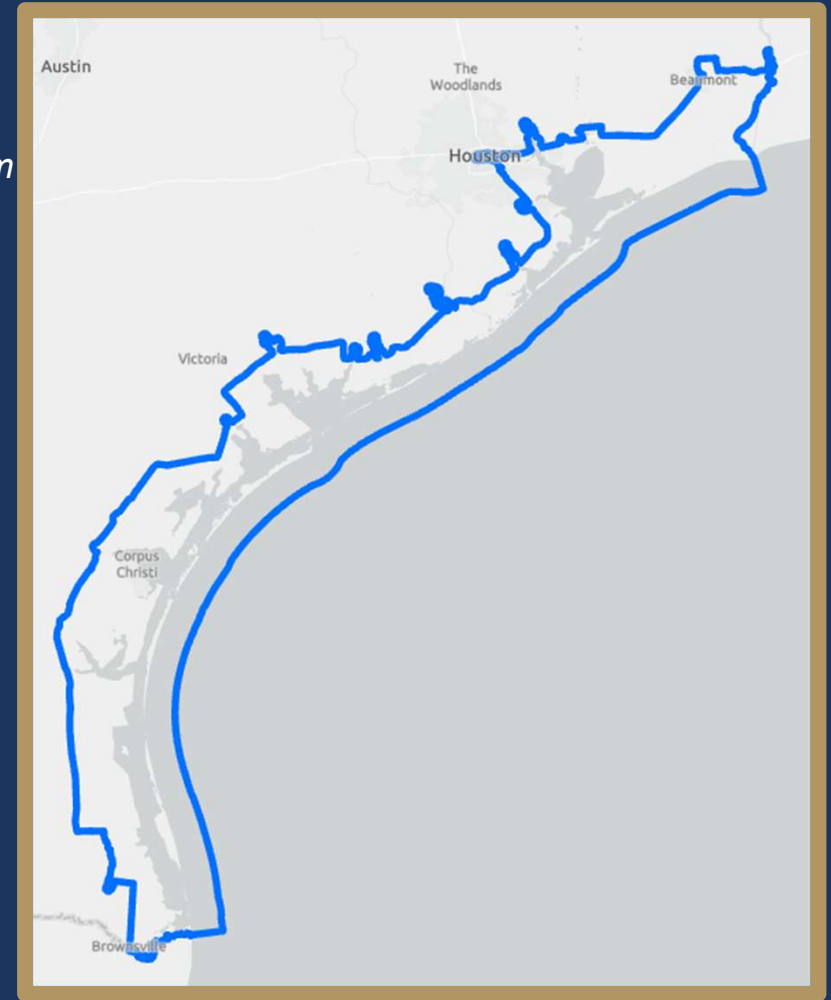
Agenda

- Program Overview
- Project Background
- Siting Process and Challenges
- Considerations for Future Siting
- Construction Plans

CLEAN COAST TEXAS

An Initiative of the Texas Coastal Nonpoint Source Pollution Program

Purpose: Collaborate with coastal communities to achieve their ecological, economic, and public health goals.



The Texas Coastal Zone



The Clean Coast Texas Collaborative



Program Oversight



Project management, education, citizen science, and community engagement



Education and outreach including scenario planning, workshops, and resources



Local comprehensive planning assistance



Engineering, planning, outreach and technical support



Engineering, outreach, and community engagement

WE OFFER A MENU OF SERVICES TO COMMUNITIES

Voluntary and incentive-based initiatives

Stormwater Retrofit Design &
Construction

Ordinance & Stormwater Criteria

Water Quality Analysis & Citizen
Science

Grant Funding Assistance

Community Planning

Partnership Development

Education and Community Events



CONNECTING WITH PARTNER COMMUNITIES

- Community Survey
 - **Communities to connect with CCTC**
 - **CCTC to gauge interest and local knowledge**
(WQ efforts, existing barriers, possible community investment)
- Regulatory Review
 - **The community** (population, projected growth, special purpose districts, etc.)
 - **Existing efforts** (previous partner involvement, ordinance information, MS4 status, NFIP status, Haz Mit Plan status, etc.)



CLEAN COAST TEXAS: ROCKPORT PARTNERSHIP

Local meetings
and committees

Little Bay
Initiative/Tule
Creek

MOUs/MOAs

Green
Stormwater
Infrastructure

Stormwater
Ordinances



Feb 22, 2023. Clean Coast Texas team meets with partner communities to determine GSI sites.





BACKGROUND

CLEAN COAST PILOT STUDY

- Demonstration projects (community scale retrofits) to improve water quality, enhance water supplies, manage runoff, and illustrate the methods and techniques that can be used by residents, developers, local governments, and commercial operators in the Coastal Zone.
- The purpose of these BMPs is to illustrate nonpoint source (NPS) pollutant control measures that could be constructed at a future date once final design plans are prepared.

Clean Coast Texas
Community Scale Retrofit Plans & Design Report



Prepared for:
The Meadows Center for Water and the Environment
Texas State University

Prepared by:
Doucet and Associates, Inc.

July, 2022

CLEAN COAST TEXAS GOALS

Sustainable Stormwater Manual Guidance

For pilot studies, capture and treat the runoff volume resulting from the first 1.50" of rainfall.

Maximize the treated stormwater volume by retrofitting as much area as possible within the limits of the budget

Implement projects with approval from property owners and in areas with high visibility to the public.

Provide educational opportunities for citizens.



SITING PROCESS AND CHALLENGES

EXISTING SITE – ROCKPORT AQUATIC CENTER



Parking lot with typical asphalt paving
Thin asphalt section that drains to vegetated area.

▪ Challenges

- Unknown pavement section thickness
- Detailed site survey unavailable
- Sediment control from adjoining vegetated areas

SITE INVESTIGATION



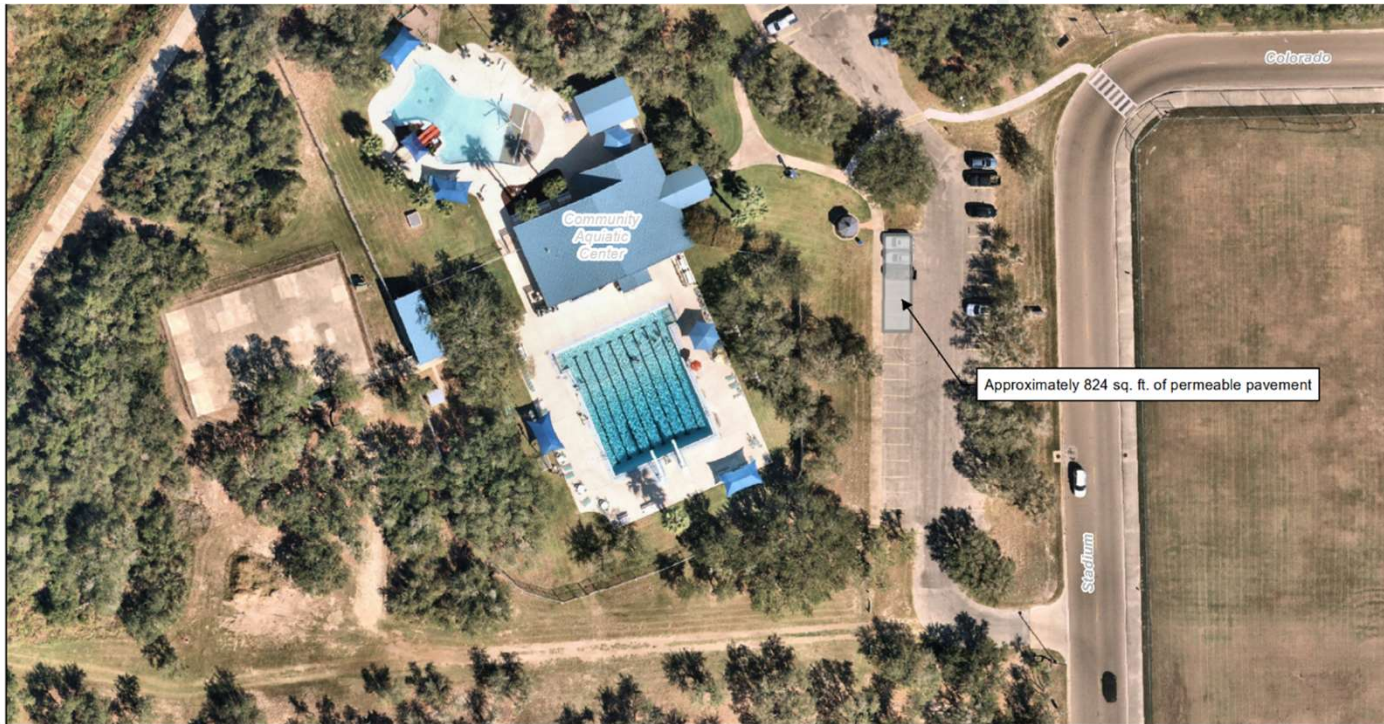
Determine drainage patterns

Measure infiltration rate of soil

- Dig hole,
- Pour in water to saturate soil
- Refill hole
- Measure how long it takes to drain

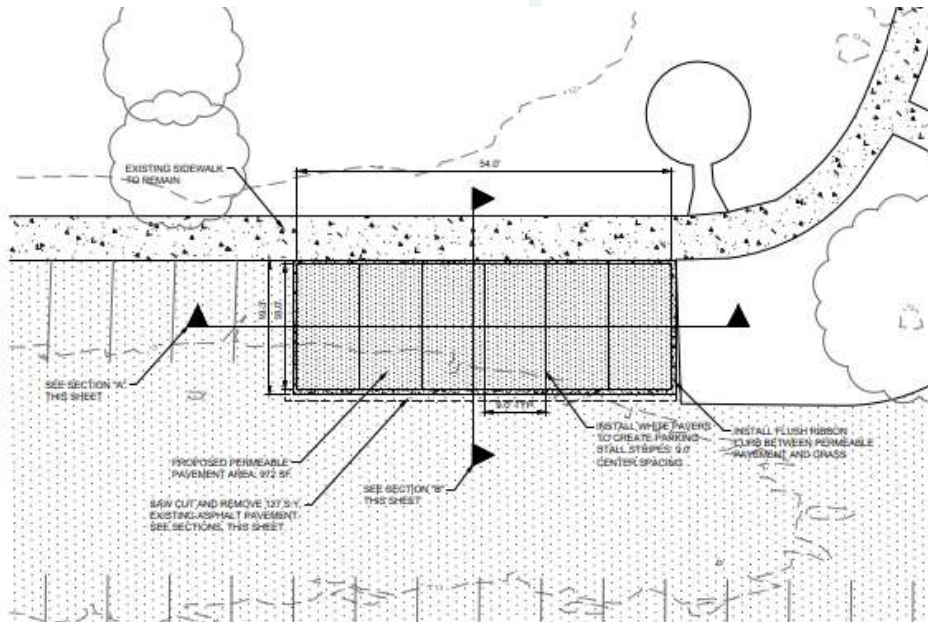
Greater than 5 inches per hour

PRELIMINARY SITING

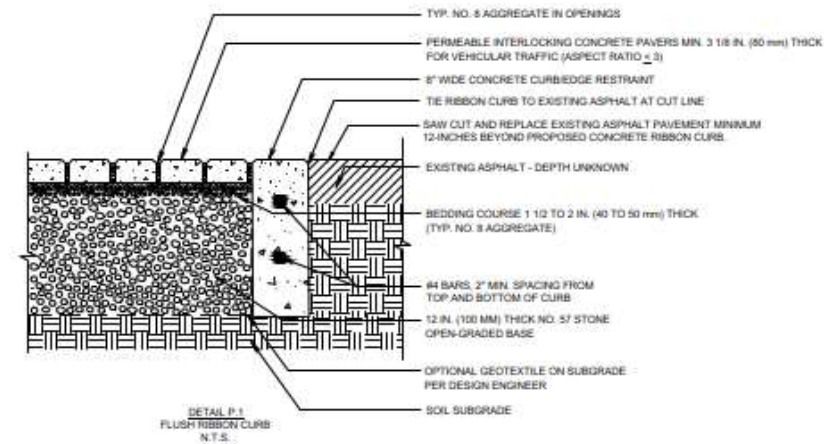


- Confirm location with stakeholders
- Confirm selected location meets the program goals
- Proceed to design

PROPOSED PERMEABLE PAVEMENT



Calculate how much gravel is need to support vehicles
 Calculate how much gravel storage is needed to hold rainfall volume
 Greater of the two is how deep storage layer has to be.
 For this site 12 inches of gravel and total thickness of 16 inches.



EXISTING SITE – FESTIVAL GROUNDS/BAY EDUCATION CENTER





Approximately 1772 sq. ft. of permeable pavement

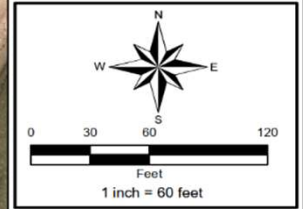
**CLEAN COAST TEXAS
PERMEABLE PAVEMENT
RETROFIT**

**BAY EDUCATION
CENTER
PRELIMINARY
PAVEMENT LAYOUT**

KEY TO FEATURES

■ Permeable Pavement Outline

- Notes:
- Approximate construction cost: \$53,200
 - Cost of permeable pavement estimated to be \$30.01/sq.ft.
 - Total area of proposed permeable pavement 1772 sq.ft.
 - All information is preliminary, for conceptual purposes only. Not for construction



EXISTING SITE – BAY EDUCATION CENTER



Dredge material from intercoastal waterway
May contain random fill materials (old cars?)

Material is finer clay, silt, sand
Hard compacted in most cases
No geotechnical information

Less than 2 feet above ocean/water table
High tide concerns for sunny day flooding
Utility conflicts

ALTERNATE SOLUTION



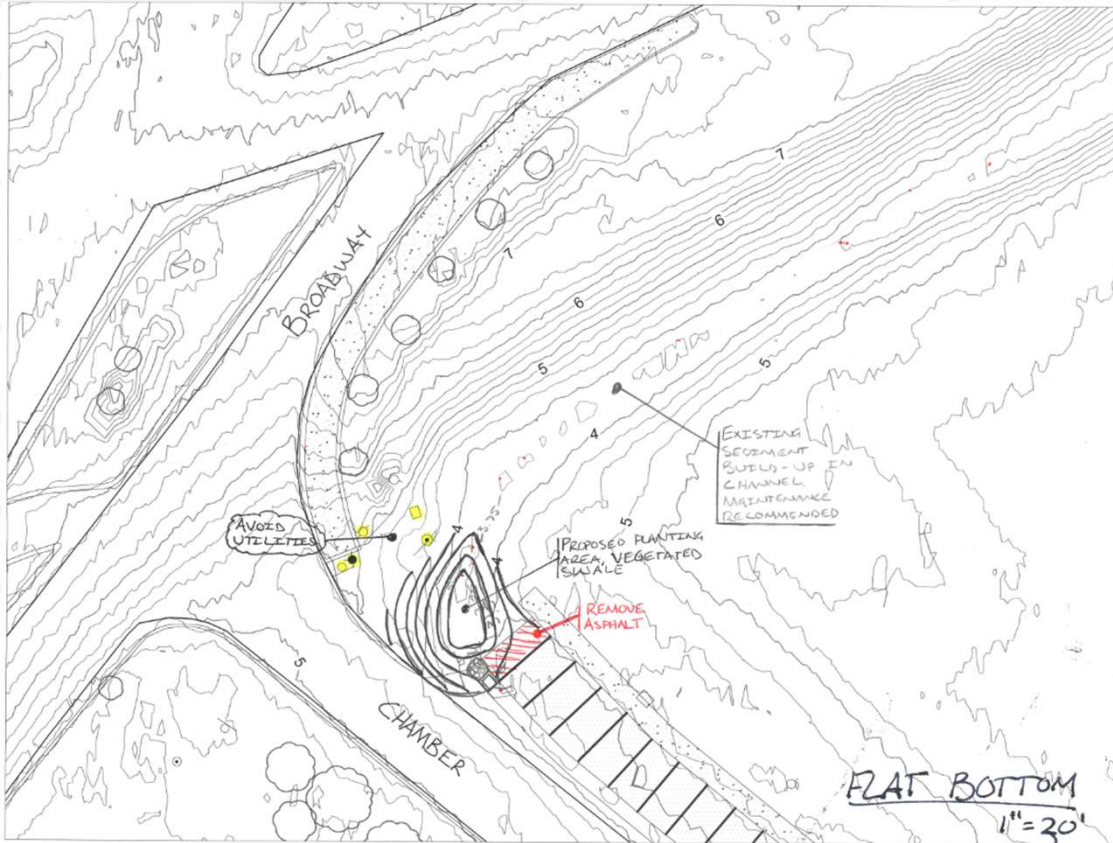
CHALLENGES

Undetermined
property lines
Flat slopes
No soil information
Utilities?
Survey unavailable

Don't give up.

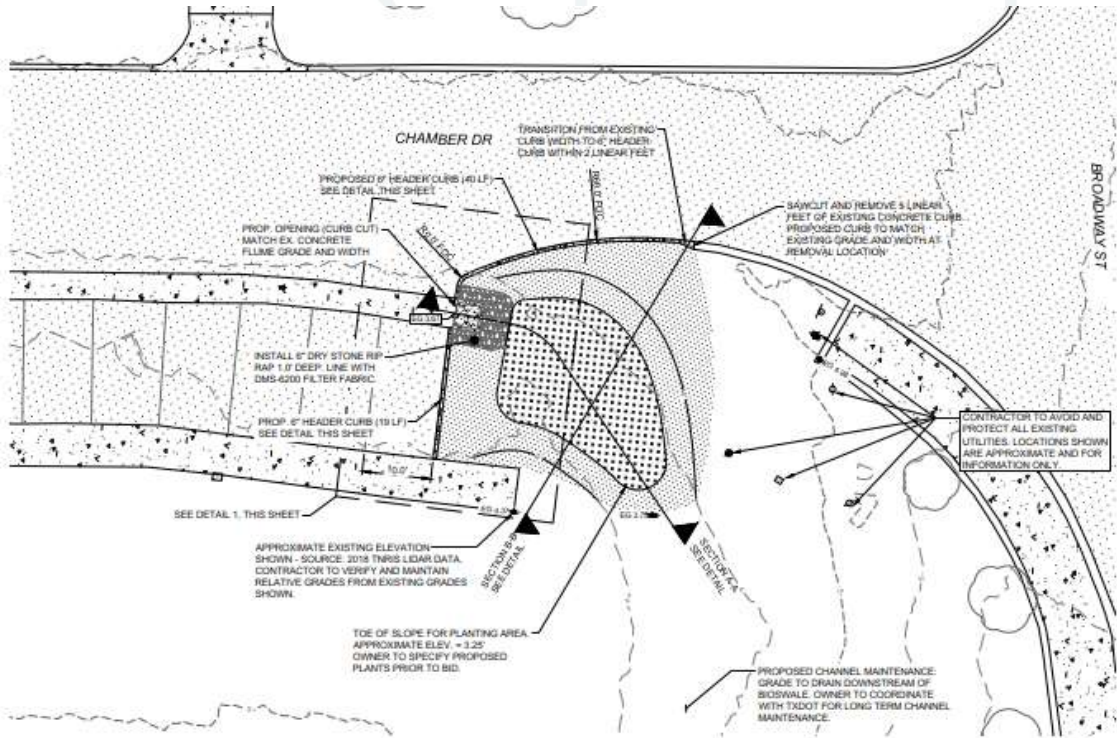


PROPOSED



Communicate
Coordinate
Collaborate

PROPOSED



Bioswale to capture runoff from parking area and street.

Sediment collection area to ease maintenance

Native vegetation to survive frequent rain, salt spray, and dry periods.

Opportunity for future enhancement along grass channel



TAKEAWAYS FOR FUTURE SITE SELECTION

PLANNING FOR FUTURE SUCCESS



Work closely with property owner



Be Adaptable



Investigate local conditions



Have a great multidisciplinary team

- Understand needs vs desires
- Clearly explain the intended uses and outcomes
- Keep working to find a solution
- Green Infrastructure is very adaptable
- Coastal water table
- Localized groundwater
- Where infiltrated water moves to
- Multi benefit projects
- Planners
- Ecologist
- Biologist
- Engineers

CONCEPTUAL
DESIGNS BENEFIT
FROM FATAL FLAW
EVALUATION

BIG THREE
SOIL INFORMATION
RIGHT OF WAY
UTILITIES

GET IN TOUCH



- Christina Lopez, PhD | christina.lopez@txstate.edu
- Bryce Carlile, PE, CFM | bcarlile@half.com
- Troy Dorman, PhD, PE, CFM, ENV SP | tdorman@half.com

