

Section 6

Education and Outreach



Section 6. Education and Outreach

Engaging both the general public, key project partners, and specific targeted audiences is a crucial component of ensuring the success of the WPP. This section outlines the various educational programs, outreach efforts, and related strategies the Partnership will use to support the implementation of this WPP. The purpose of these efforts is to ensure ongoing stakeholder involvement in the effort as well as to increase public awareness of the water quality issues faced by their community. The recommended engagement elements are presented by the solution category they support.

Engagement Strategies

In keeping with the water quality goals and guiding principles of this WPP, the strategies for engaging with the public are designed to reflect the specific character and needs of the local communities. These strategies provide general guidance for the implementation of the activities discussed in this section.

- **Strategy 1: Facilitation** — To ensure the continuity of the effort and a consistent point of coordination, a designated facilitator(s) will oversee the early implementation of the WPP (see General Outreach below).
- **Strategy 2: Existing Resources** — To maximize the use of resources and effectively reach existing stakeholder bases, the Partnership will endeavor to use existing communication networks and work within existing outreach opportunities and partners as one of the tools to further project goals.
- **Strategy 3: Audience-specific Messaging** — While some outreach is aimed at a broad base of potential stakeholders, the Partnership will focus on making sure its message for individual groups, communities, etc. is tailored to the specific needs and concerns of that group. The underlying assumption in this strategy is that messages are best received when they have an overlapping nexus of value with the audience. A key focus in the watershed is emphasizing the WPP's respect for private property and voluntary solutions.
- **Strategy 4: Adjacent Efforts** — The density of other efforts planned or ongoing in the watershed provides a wealth of opportunities to build connections and benefit from shared resources with adjacent efforts from practice areas like forestry, flood mitigation, and conservation. As with the implementation of solutions, public engagement efforts will seek to build on work of adjacent programs wherever appropriate and seek to cross-promote water quality messages with communication networks of other practice areas.



Figure 1. Outreach at a local event

General Outreach

The Partnership is one of many organizations working toward similar goals in the watershed but focused primarily on the specific aims of the WPP. A fundamental aspect of ensuring implementation success and community support is to promote public awareness and interest in the watershed and the WPP. To accomplish this goal, the Partnership must maintain itself as an active organization, continue to build its “brand” among the public, represent the watershed among regional and state organizations, and seek to coordinate with related efforts to the greatest degree possible. The Partnership will not supplant existing efforts, but will support them however possible while seeking opportunities to expand or enhance links to water quality and the goals of the WPP.

Maintaining the Partnership

The Partnership will maintain its varied composition and strong local commitments through continued facilitation of an active group by H-GAC and TCEQ. The importance of this effort is to continue the use of the Partnership as a platform for coordination of watershed efforts. Meeting this goal will require:

- Periodic meetings of the Partnership (at least twice a year),
- Dissemination of information regarding WPP activities among stakeholders through e-mail, newsletters, and/or other appropriate channels (e.g., social media), and
- Individual meetings with strategic partners to maintain commitments and coordinate efforts.

Building the Brand

The Partnership must maintain visible representation of its specific goals in the eyes of the public. To accomplish this goal, the Partnership will:

- Maintain a presence at local events and meetings to share information on the Partnership, and the goals of the WPP,
- Maintain and expand Texas Stream Team monitoring sites and trainings,
- Continue to maintain the project website and expand social media presence,
- Actively support local partners, and
- Seek to build relationships with adjacent practice areas of forestry, conservation, and flood mitigation.

Coordination

The Partnership is one of many watershed-based groups in the area, state, and nation. Finite resources and overlapping areas of interest make coordination of partner efforts a vital part of the WPP which the Partnership will carry out by:

- Participating in and collaborating with groups like the Texas Watershed Coordinator's Roundtable, Regional Watershed Coordinators Steering Committee, Galveston Bay Estuary Program, Clean Rivers Program, and others,
- Supporting other area efforts like the Cypress Creek WPP, the West Fork San Jacinto River and Lake Creek WPP, and the various TMDL projects represented by the Houston Area Bacteria Implementation Group,
- Identifying and/or pursuing funding opportunities that would assist local partners in opportunities of shared interest, and
- Seeking additional data necessary to inform stakeholder decisions or evaluate progress¹.

Existing Outreach in the Watershed

Many local stakeholder organizations and regional, state, and national organizations have ongoing education efforts in the watershed. The Partnership recognizes the value of these ongoing programs to positively impact water quality and public awareness in the WPP area. Specific programs of note are described in the discussion of source-based elements. The Partnership will seek to coordinate and support efforts with partners that include the entities listed in **Table 1**².

¹ Specific examples identified in the project include wildlife loading estimates, quantifying the relationship between sediment and bacteria concentrations, erosion rates, and spatial data for features like pipelines and new development.

² This list is not intended to be exhaustive, but a representative sample of area efforts currently in progress that overlap with WPP goals. The Partnership will actively seek to engage with partners through existing outreach efforts wherever appropriate, including those not specifically listed here. This is undertaken with the caveat that the Partnership will seek to supplement, enhance, or offer general support to activities completed by partners as part of permit or other regulatory requirements, but will not fund or supplant efforts by those partners.

Table 1. Outreach partners

Outreach Partner	Focus Areas
Bayou Land Conservancy	Conservation, outreach
Bayou Preservation Association	Conservation, water quality, outreach, citizen science, recreation, invasive species management, flood mitigation, trash reduction
City of Houston	Source water protection
Galveston Bay Estuary Program	Galveston Bay, source water protection
Grimes County	Riparian corridors, stormwater, outreach, recreation, OSSFs, illegal dumping, animal control, environmental enforcement
Harris County, Harris County Flood Control Districts, and Harris County Precinct 4	Riparian corridors, stormwater, outreach, recreation, OSSFs, illegal dumping, animal control, environmental enforcement, flood mitigation
Houston Advanced Research Center	Research, urban forestry, water quality
Houston Audubon	Conservation, wildlife, recreation
Houston-Galveston Area Council	Watershed management, water quality, forestry, public outreach, OSSFs, trash reduction
Houston Canoe Club	Recreation, conservation, outreach
Local HOAs (multiple)	Resident outreach, pet waste, inlet marking
Local MUDs/Special Districts (multiple)	Utilities, stormwater, outreach
Local Soil and Water Conservation Districts (Harris, Montgomery, Navasota)	Agriculture, land management programs
Other Cities and Communities (The Woodlands, Tomball, Spring)	Utilities, stormwater, outreach, resident outreach
Montgomery County	Riparian corridors, stormwater, outreach, recreation, OSSFs, illegal dumping, animal control, environmental enforcement
AgriLife Extension/AgriLife Research/Texas Water Resources Institute	Agriculture, OSSFs, water quality, land management, feral hogs, riparian buffers
Texas A&M Forest Service	Forestry
Texas Commission on Environmental Quality	Water quality, wastewater, nonpoint source pollution
Texas Master Naturalists	Environmental education and outreach, habitat
Texas Parks and Wildlife Department	Wildlife, habitat, water quality
Texas State Soil and Water Conservation Board	Agriculture/silviculture
Texas Stream Team	Water quality, volunteering
The Nature Conservancy	Urban forestry, conservation, habitat, water resources
State and Federal Elected Officials	Constituent outreach, environmental events
United States Army Corps of Engineers, Galveston	Flood mitigation, water quality modeling
United States Department of Agriculture, Natural Resources Conservation Service	Agriculture, land management, habitat, conservation
United States Department of Agriculture, United States Forest Service	Forestry
Waller County	Riparian corridors, stormwater, outreach, recreation, OSSFs, illegal dumping, animal control, environmental enforcement

Source-based Outreach and Education Elements

In keeping with the guiding principle of engaging stakeholders with targeted messages, the Partnership will engage, enhance, or support a series of outreach and education efforts aimed at specific pollutant or solution categories. Unless otherwise specified, costs for coordination and outreach tasks by the Partnership are assumed to be part of the cost of maintaining a facilitator for the watershed. Specific costs are called out where applicable.

Wastewater and Sanitary Sewer Overflows

The focus of outreach and education for permitted wastewater and SSOs is on the local governments and utilities of the watershed. However, the Partnership can help promote messages to their communities to serve water quality goals. The Partnership recommends the following activities as specific, supplementary actions under this WPP.

WWTF E1 – Promote Fats, Oils, and Grease (FOG) Awareness

FOG issues are a source of SSOs and operational challenges for local wastewater utilities. Programs like the San Jacinto River Authority's No Wipes in the Pipes (Patty Potty)³ and the regional Galveston Bay Cease the Grease⁴ campaign already exist. The Partnership seeks to promote these programs and maintain model materials⁵ on its website, social media, and at outreach events. Local partners will seek to promote the message through their online presence, utility bills, or through established programs⁶. The promotion will take place throughout the implementation period, and model materials will be added in the first year of implementation.

WWTF E2 – Promote Floodwater Contact Awareness

Flooding is a repetitive issue in some areas of the watershed, and floodwaters may contain untreated sewage if collection systems or WWTFs are compromised. Residents who enter the water during these events should be aware of exposure risks. The Partnership will include materials on its website (first year of implementation) and seek to coordinate with other local flood safety outreach efforts to ensure this message is represented (throughout the implementation period).

³ For more information, see: <http://www.pattypotty.com/>

⁴ For more information, see: <http://ceasethegrease.net/>

⁵ For this and subsequent source category recommendations, materials may include, but not be limited to model flyers, fact sheets, educational program guides, pamphlets, ordinances, technical resources, etc.

⁶ These efforts are in addition to existing management of utility functions.

Onsite Sewage Facilities

There are several existing programs targeting homeowner and practitioner knowledge for OSSFs. The Partnership recommends the following as specific actions under the WPP.

OSSF E1 – Hold Residential OSSF Workshops

Both H-GAC and AgriLife Extension have existing OSSF programs aimed at educating the general public and specific audiences on general maintenance and visual inspection of OSSFs. The recommended frequency is at least one workshop every other year throughout the project period. Costs for these efforts range from \$450+ per workshop and are paid for by a mix of existing projects (CWA §319(h) grants for both agencies, H-GAC CWA §604(b), and internal organization funding).

OSSF E2 – Participate in County-wide OSSF Workshops for Practitioners

Montgomery and Harris Counties hold annual OSSF workshop for local OSSF practitioners. The Partnership will support the county with publicity and participation as appropriate and seek to support Waller County efforts as well. This activity will happen throughout the implementation period.

OSSF E3 – Provide Model Educational Materials Online

In addition to existing educational materials from the county, AgriLife, and local governments, the Partnership will host or promote materials on its website. Materials will be developed in the first two years of implementation and maintained/updated indefinitely.

OSSF E4 – Texas Well Owner Network (TWON)

The Partnership will work with TWON to hold informational meetings or testing events in the watershed and seek to include an OSSF message related to water well siting. The expected frequency is every seven years, with a focus on the Headwaters area.

OSSF E5 – Signage at Remediation Sites

H-GAC works with the Harris County Attorney's Office and TCEQ to provide funding to remediate failing OSSFs as part of a Supplemental Environmental Project to benefit economically disadvantaged households. H-GAC will post signage at completed project sites as an outreach tool for generating additional interest. This practice has been successful in other areas.

Urban Stormwater

Education and outreach elements⁷ for urban stormwater will include efforts aimed both at MS4s and at diffuse flow off the land directly into waterways in urban areas. Much of the education and outreach for the former is conducted by the MS4s under the TPDES stormwater permits. For these areas, the Partnership will seek to coordinate and support, but will not add additional elements⁸. The need for maintaining stormwater infrastructure and LID features requires well informed community members. The Partnership recommends the following activities as specific actions under this WPP.

Urban Stormwater E1 – Expand Texas Stream Team Participation

TST⁹ volunteers provide valuable information on local conditions in areas where there is not existing CRP monitoring. The role volunteers play as ambassadors to their community about local water quality is an equally important aspect of TST volunteering. H-GAC and local partners foster local volunteers in these efforts. The goal of this element is to increase TST monitoring by 10 volunteers by 2030.

Urban Stormwater E2 – Promote Urban Forestry as a Solution¹⁰

Many of the stakeholders and regional partners in the WPP (e.g., Texas A&M Forest Service) promote urban forestry projects for the ecosystem services¹¹ they produce. The urbanized areas of Montgomery and Harris Counties were part of the *Houston Area Urban Forests*¹² project which identified priorities for promoting urban forestry, including as part of stormwater management efforts. Similar projects addressing the link between water quality and forestry are also active through Texas A&M Forest Service and USDA United States Forest Service, including the i-Tree modeling completed for this WPP to quantify tree benefits and inform stakeholder choices. The Partnership will seek to coordinate with ongoing urban forestry projects and programs, including those of the Harris County Flood Control District and the Houston Area Urban Forestry Council¹³, and highlight water quality benefits. As appropriate, the Partnership will seek funding and technical support for local partners who are doing restoration or new plantings

⁷ While inlet stream marking is included in the structural solutions noted in Section 5, this program has a significant education and outreach component and has been successfully used by Harris County and other partners in the watershed to engage organizations and neighborhoods. Implementation of that solution should emphasize its outreach aspects.

⁸ Except for promoting LID, as indicated in Section 5.

⁹ For more information, see: <https://h-gac.com/texas-stream-team/>

¹⁰ These recommendations are supplemental to existing ordinances that address urban trees. Existing ordinances may be used as model materials.

¹¹ Including but not limited to flood mitigation, water and air quality improvement, heat reduction, erosion control, atmospheric carbon storage, health benefits, and aesthetic benefits.

¹² For more information, see: www.houstonforests.com

¹³ For more information, see: <https://www.haufc.org/>

that have a water quality link¹⁴. Model materials will be hosted on the Partnership website in the first year of implementation, and the Partnership will promote local urban forestry projects. The Partnership will also coordinate efforts regarding urban forestry with broader regional conservation efforts, including the Gulf-Houston Regional Conservation Plan¹⁵, the BIG, and City of Houston source water protection efforts. Lastly, the Partnership will seek to work with new development to promote maintenance, restoration, or development of new forested areas in new development, as appropriate to the surrounding land cover.

Pet Waste

Pet waste is an area in which direct engagement with the public is a necessary component of an effective outreach strategy. Unlike centralized sources like WWTFs, pet waste reduction relies on the individual efforts of thousands of residents. The Partnership recommends the following activities as specific actions under this WPP.

Pet Waste E1 – Pet Waste Dispensers at Local Events

H-GAC currently focuses on pet waste reduction as specific action individual residents can take. To support the message, H-GAC uses refillable dog waste bag dispensers with branding or messaging on the dispenser. These units are a low-cost way to engage community members and facilitate reductions. The dispensers take the place of event giveaways to raise awareness, and cost approximately \$1.50 each. A standard giveaway would be 50 dispensers per outreach event, on average. For a 9-year implementation period, assuming 6 outreach events per year, this would equate to a cost of \$4,050.

Pet Waste E2 – Elementary School Visits

Elementary-age children are a good candidate for educational programs and can influence activities of their parents. H-GAC or other local partners will visit local schools (at least one a year) to put on educational programming appropriate for the age range and subject topic of the classes involved. Past education efforts have included general water quality education with a pet waste message included. Costs for this activity are limited to staff time.

Pet Waste E3 – Provide Model Educational Materials Online

In addition to existing educational materials from local partners, the Partnership will host or promote materials on its website. Materials will be developed in the first two years of implementation and maintained/updated indefinitely.

¹⁴ Specific urban forestry practices and technical resources are available from the Texas Forest Service at: <http://texasforestservice.tamu.edu/abouturbanandcommunityforestry/>

¹⁵ For more information, see: <https://www.gulfhoustonrcp.org/>

Agriculture

A wealth of information and programs exists to promote water-friendly practices for agricultural operations. The focus of the Partnership for this category is largely to support the existing efforts of the Soil and Water Conservation Districts, TSSWCB, Texas A&M AgriLife, USDA NRCS, and other agricultural partners in promoting their programs in the watershed. The Partnership recommends the following activities as specific actions under this WPP.

Agricultural Operations E1 – Develop and Implement Education Measures and Materials for Livestock Operations (Non-CAFO)

There are several horse stable operations and livestock operations present in the watershed. The stakeholders identified the need for best practices and educational materials for these facilities. The Partnership will work with the agricultural agencies to identify existing source material and develop educational materials specific to the stabling operations, etc. in the watershed within the first two years of implementation.

Agricultural Operations E2 – Hold Agricultural Resources Workshops

The Partnership will hold workshops for local landowners and producers at least once every three years. The workshops will have representation from agricultural and other land management agencies (TSSWCB, AgriLife, USDA NRCS, and others) as a “one-stop shop” for residents to hear about available programs and meet one on one with several agencies.

Agricultural Operations E3 – Support Local Agricultural Conservation

The Partnership will support efforts to develop partnerships or funding sources to implement local conservation initiatives, and future elements of regional conservation plans in agricultural areas, including the H-GAC Regional Conservation Framework program.

Agricultural Operations E4 – Outreach for Recreational Horses

The Partnership will work with existing agricultural outreach efforts (Lone Star Healthy Streams¹⁶, etc.) to develop or promote materials for recreational horse owners, either stabled or on acreage lots. This specific focus is to bridge the gap between general outreach and programs aimed primarily at agricultural operations. The intent of the outreach is to modify behaviors regarding horse manure handling and concentrated grazing at stables, with a focus on riparian areas.

¹⁶ For more information, see: <http://lshs.tamu.edu/>

Feral Hogs

Feral Hog abatement is a strong concern for properties throughout the watershed, but especially along riparian corridors. Existing outreach programs through AgriLife Extension and other sources are well developed. The Partnership seeks to promote these elements through the website, social media, partner networks, and with event publicity as appropriate. The following programs are of specific interest for the watershed.

Feral Hogs E1 – Lone Star Healthy Streams – Workshops and Feral Hog Resource Manual

The Partnership will promote the AgriLife Lone Star Healthy Streams¹⁷ program by promoting the Feral Hog Resource manual and hosting a workshop in the watershed at least twice during implementation, subject to AgriLife availability.

Feral Hogs E2 – Feral Hog Management Workshop

The Partnership will work with AgriLife Extension in the watershed counties to host a local feral hog management workshop. The expected frequency for this element is at least once every six years, based on AgriLife availability.

Deer and Other Wildlife

Although the Partnership elected not to recommend any direct solutions for reducing deer populations or addressing other wildlife, stakeholders expressed interest in having better data regarding wildlife contributions (see recommendations regarding additional research in Section 7). The Partnership will, however, seek to use existing wildlife events as potential platforms for general outreach. Specifically, the Partnership recommends:

Wildlife E1 – Homeowner Education Materials and Mailing

The Partnership will work with AgriLife Extension to promote distribution of materials for homeowners instructing them on how to use exclusionary devices to deter invasive species such as feral hogs from using deer feeders. The materials will be hosted online and made available at outreach events in the priority areas of the watershed. The Partnership will work with local HOAs and other community groups to include the message in existing communication networks (HOA newsletters, etc.).

Land Management

Beyond programs focused on agricultural/silvicultural properties, there are many programs and opportunities to promote or support land management practices that are beneficial to water quality, including Farm Bill programs through USDA NRCS, conservation easements and similar conservation mechanisms. The Partnership

¹⁷ For more information, see: <http://lshs.tamu.edu/workshops/>

recognizes the ample effort already put forth by local partners in developing land management projects for habitat (e.g., Bayou Land Conservancy preserves), recreation (e.g., Spring Creek Greenway) and flood retention. The key focus for water quality is lands adjacent to the waterways. The Partnership will generally support and promote voluntary projects and programs however appropriate, and recommends the following outreach activities as a specific action under this WPP.

Land Management E1 – Promote Riparian Buffers

In addition to the specific action of developing conservation areas, easements, etc. in riparian corridors, the Partnership will maintain resources on its website relating to riparian buffers, including a link to the H-GAC riparian buffer planning tool¹⁸ for landowners. Resources will be developed/obtained and hosted during the first year of implementation. The Partnership will seek to promote the Texas Water Resources Institute (TWRI) Texas Riparian and Stream Ecosystem Education Program and Urban Riparian and Stream Restoration Program¹⁹ and similar workshops from Texas A&M AgriLife. Expected frequency is once every five years for these programs. Funding is currently provided by CWA §319(h) grants, and attendee fees. This will focus on both fecal waste and DO benefits in this watershed.

Land Management E2 – Texas Watershed Stewards

AgriLife Extension's Texas Watershed Stewards program is an effective way of developing knowledge among the local communities of watershed issues and actions they can take. The Partnership will work with AgriLife to bring the program to the watershed on an expected frequency of every five years.

Land Management E3 – Conservation Coordination

In addition to long-standing efforts by NGOs and local governments in the watershed, several regional conservation and open space planning projects are currently active in the watershed. The Partnership has, and will continue to, participate meaningfully in the Gulf-Houston Regional Conservation Plan, the Regional Conservation Framework, the Waller County Parks, Trails, and Open Space Master Plan, Bayou Preservation Association Stream Corridor Restoration Committee, and other local efforts that may have implications or opportunities for riparian-oriented conservation in the watershed.

¹⁸ For more information, see: <http://www.h-gac.com/community/water/riparian-buffer-planning-tool.aspx>

¹⁹ For more information, see: <http://texasriparian.org/riparian-education-program/>

Trash and Illegal Dumping

In addition to enhanced enforcement, the stakeholders recommended that trash reduction is a local priority and serves as a visible form of outreach. Counties and other local jurisdictions will continue to enforce dumping issues. In addition, the Partnership recommends the following actions.

Trash and Illegal Dumping E1 – Trash Bash Site

The Texas Rivers, Lakes, Bays N' Bayous Trash Bash²⁰ is an annual trash reduction and community outreach event that takes place throughout the region. Upwards of hundreds of volunteers attend each site, where outreach materials and education about water quality accompany the trash reduction elements. The cleanups focus on areas adjacent to local waterways. The Partnership will participate in this annual effort as a direct way of engaging the public on visible examples of water pollution, and in providing an accompanying water quality message.



Photo Credit: Houston-Galveston Area Council

Figure 2. Trash Bash volunteers at Lake Houston

²⁰ For more information, see: <http://www.trashbash.org/>