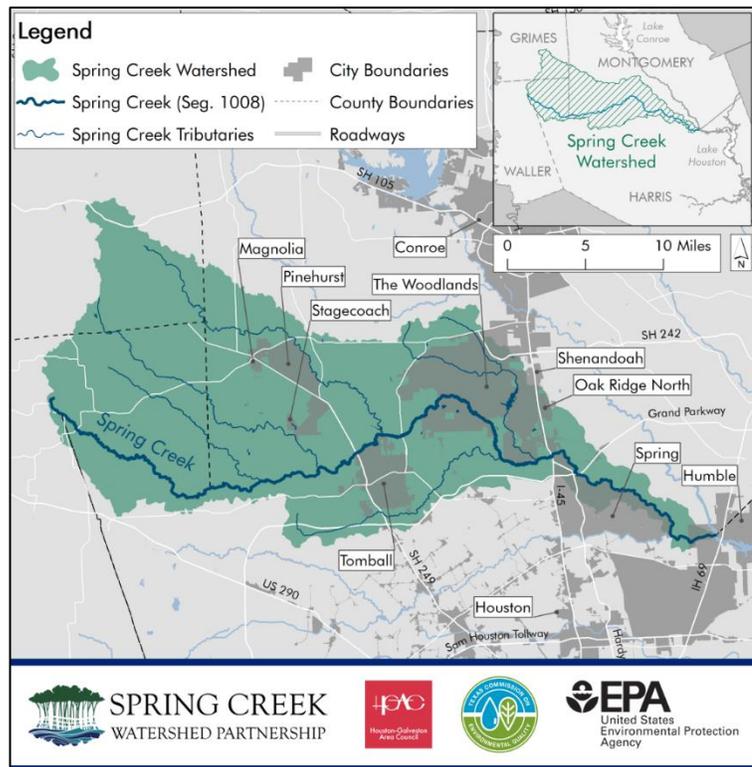


## Executive Summary

### *The Spring Creek Watershed*

Spring Creek (Segment 1008) runs east from headwaters in Waller County to a confluence with the West Fork of the San Jacinto River near its confluence with Cypress Creek. Combined, these waterways contribute appreciable flows to the Lake Houston reservoir—an important drinking water source for the region. As Spring Creek forms the majority of the border between Montgomery and Harris Counties, it connects a diverse landscape transitioning from natural areas such as riparian forest and grassland to the more widely developed areas near the I-45 corridor.



Approximately 440 square miles of land area drain into 903 linear miles of stream network within the Spring Creek watershed. This area and its waterways represent an essential part of supporting local communities and economies, recreation, fisheries, and a diverse ecology.

### *Water Quality Challenges*

Water quality issues – primarily high levels of fecal waste indicated by the presence of the bacteria *Escherichia coli* (*E. coli*) – are prevalent throughout the Spring Creek Watershed and are of particular concern as flows from Spring Creek contribute to the Lake Houston reservoir. Elevated levels of fecal waste in area waterways can be a result of both human activity such as overflow from sanitary sewers and on-site sewage facilities as well as natural influences like waste from wildlife and invasive species. Harmful pathogens associated with fecal waste can impact public health. In addition to water quality issues related to fecal waste, Spring Creek and its tributaries face other water quality concerns like low levels of dissolved oxygen which can endanger aquatic life, excess nutrients (nitrogen and phosphorus compounds) which can exacerbate low dissolved oxygen concerns. Other challenges noted by area stakeholders include increased sedimentation, and trash.



Photo Credit: Houston-Galveston Area Council

Water quality is sampled in Spring Creek and its tributaries on at least a quarterly basis at 20 active monitoring stations, providing the basis for assessing the health of the system. As in past years, the 2020 Texas Integrated Report of Surface Water Quality (a summary of water quality in Texas waterways) indicates that Spring Creek has a contact recreation impairment due to levels of *E. coli* that exceed the state water quality standard. Several of Spring Creek's tributary waterways are also unable to meet the contact recreation standard, including Lower Panther Branch (1008C),

Willow Creek (1008H), Walnut Creek (1008I), and Brushy Creek (1008J). The 2020 Integrated Report also indicated concerns for low levels of dissolved oxygen on Spring Creek and in the Lake Woodlands Reservoir (1008F). Concerns for high nutrient concentrations were observed in the downstream portion of Spring Creek, Upper Panther Branch (1008B), Lower Panther Branch, and Willow Creek which are all located on the more developed eastern side of the watershed. Other concerns of note indicated in the 2020 Integrated Report include a concern for fish community on Spring Creek and a concern for elevated levels of cadmium on Upper Panther Branch.

The sources of water quality concerns and impairments in this watershed are widespread, diffuse, and diverse in origin, making them more difficult to address through traditional approaches focusing on single entities and regulation. Primary sources of concern are pet waste, livestock, and waste from invasive feral hogs. Pollutant sources related to human activity will continue to increase as area growth drives future development in the watershed, exacerbating the existing situation. Project estimates indicate that necessary reductions of *E. coli* loads range from 49% to 63% currently, and without intervention, would increase to 64% to 76% by 2030.

Local concerns over the future of Spring Creek led to the development of this watershed protection plan (WPP) as a voluntary, locally-led approach to improving water quality for this area. The Houston-Galveston Area Council (H-GAC) and the Texas Commission on Environmental Quality (TCEQ) facilitated the formation and efforts of the Spring Creek Watershed Partnership, a group of local stakeholders representing residents, government, industry, agricultural producers, community groups, and other local partners. The purpose of the WPP is to use sound science and local knowledge to identify sources of pollution and support community-led decision-making about potential solutions.

## *Finding Solutions*

The Partnership used a variety of methods to evaluate the causes and sources of water quality issues. Interpretation of water quality monitoring data and computer modeling efforts were shaped by local knowledge. Local stakeholders reviewed and revised these results and used them to inform decisions about potential solutions. Specific focus was given to reducing fecal waste, which can directly impact human health, and precursors for low dissolved oxygen, which impacts aquatic life and recreational fisheries. Activities to address fecal waste sources and other concerns were identified and discussed by members of the Partnership who worked diligently to balance local interests and ensure that solutions reflected community priorities. Because pollutant sources are diverse, the Partnership's recommendations represent a flexible range of solutions designed to adapt to changing conditions. The result of these efforts is a set of voluntary solutions that will guide efforts to improve water quality through 2030.

## *Implementing the Plan*

Implementation of the WPP will require the continued coordination, cooperation, and commitment of the local partners. The general guidelines for implementation established by the stakeholders are that solutions should be voluntary, solutions should be cost-effective, decisions should continue to be made by local stakeholders, education should be a primary tool, due diligence should be given to avoiding unintended consequences, and that established programs or resources should be used whenever possible in place of new efforts. A crucial aspect of supporting these efforts will be an ongoing education and outreach campaign focused on increasing public awareness and participation. Successful implementation will rely on an active, engaged stakeholder group.

## *Ensuring Success*

As the WPP is implemented, the stakeholders will review efforts periodically to ensure that progress is being made. The stakeholders established a series of milestones and measures of success to aid in determining whether progress is being made. The ultimate test of the WPP's success will be the ability of the waterways to meet state water quality standards based on water quality monitoring data. However, incremental progress will also be measured by achieving programmatic goals. The WPP is based on a policy of adaptive management, in which results of efforts are used as feedback for modifying approaches to meet new challenges and changing conditions. The following table is a guide to the contents of the WPP. Additional information on specific items can be found in Appendix A.

## Watershed Protection Plan Content Guide

WPP Section	Description	EPA Element	Location
<b>Section 1 – Project Background</b>	An introduction to the watershed planning process for Spring Creek	NA	pp. 1-7, Appendix A
<b>Section 2 – Watershed Characterization</b>	A summary of the physical (geography, climate, etc.), human (land use, political geography), and water quality characteristics of the watershed	NA	pp. 9-34, Appendix B
<b>Section 3 – Identifying Pollutant Sources</b>	An evaluation of water quality data, stakeholder knowledge and modeling results to identify and characterize causes and sources of pollution	<ul style="list-style-type: none"> <li>• Element A – Identify the causes and sources of pollution</li> </ul>	pp. 36-91, Appendix B
<b>Section 4 – Improving Water Quality</b>	Establishing the amount of pollutant source loads needed to achieve water quality goals	<ul style="list-style-type: none"> <li>• Element B – Estimate of load reductions</li> </ul>	pp. 93-108
<b>Section 5 – Recommended Solutions</b>	A description of the solutions recommended by the Partnership, including information about the selection process, and the cost and technical expertise needed to implement them	<ul style="list-style-type: none"> <li>• Element C – Description of management measures.</li> <li>• Element D - Estimate of technical and financial resources needed</li> </ul>	pp. 110-149, Appendices C and D
<b>Section 6 – Education and Outreach</b>	An outline of the education and outreach efforts that will increase public awareness of the WPP and support its implementation	<ul style="list-style-type: none"> <li>• Element E – Information and Public Education Component</li> </ul>	pp. 151-162
<b>Section 7 – Implementation</b>	The schedules for implementation, and measurable milestones for tracking progress	<ul style="list-style-type: none"> <li>• Element F – Schedule for implementation</li> <li>• Element G – Interim measurable milestones</li> </ul>	pp. 164-183
<b>Section 8 – Evaluating Success</b>	An overview of the criteria and data that will be used to evaluate the success of implementation efforts	<ul style="list-style-type: none"> <li>• Element H – Criteria for successful implementation.</li> <li>• Element I – Monitoring component to evaluate effectiveness</li> </ul>	pp. 185-190