

## ***IMPLEMENTATION SCHEDULE AND MILESTONES***

The WPP was developed based on a 10-year implementation schedule with implementation proceeding through the end of calendar year 2018. The projected timeline for achievement of pollutant load reductions and bacteria concentration targets was presented in Table 9.1 (p. 104) of the WPP. Table 23 is an updated version of Table 9.1 as the *E. coli* data originally used for the WPP were official TCEQ reported geometric means from the 2006 Texas Water Quality Inventory and 303(d) List that evaluated data through 2004. These were the only official data at the time the WPP was developed. However, it was determined that measured data now available for February 2008 should be used as the starting point for bacteria targets (shown in red). Table 23 will be used to assess interim progress in achieving the long-term load reduction goals. While it is not expected that the interim target concentrations will be precisely met in any given year, Table 23 serves as a blueprint for gauging water quality progress as a result of implementation. The water quality goals are for each site to be under the water quality standard for *E. coli* of a 7-year geometric mean below the 126 cfu/100 ml.

The 3-year geometric mean for *E.coli* bacteria was computed every 6 months through August 2011 to examine trends in Plum Creek (Table 24). The data for the Uhland and Luling locations were above the bacteria standard of 126 cfu/100 ml. The 3-year bacteria geometric mean for the Lockhart sampling station (12647) was 121cfu; however, the next month there was a fish kill and the recalculated 3-year bacteria geometric mean in March 2008 was 174 cfu/100 ml.

The 2014 Integrated Report, published by TCEQ, will be a key juncture for assessing interim progress in achieving restoration with full implementation of the WPP measured in the 2020 Integrated Report.

**Table 23. Revised Table 9.1 utilizing CRP data for February 2008 to establish *E. coli* interim target to evaluate process over 10-year implementation period.**

<b>Date</b>	<b><i>E. coli</i> Concentration (cfu/100mL)</b>		
	<b>Uhland (17406)</b>	<b>Lockhart (12647)</b>	<b>Luling (12640)</b>
Feb-08	240	121	195
Aug-09	217	118	183
Feb-11	193	116	171
Aug-12	170	113	159
Feb-14	146	110	147
Feb-16	115	107	131
Feb-18	84	103	115

**Table 24. Computed actual geometric means for *E. coli* based on 3-years of data.**

Date	<i>E. coli</i> Concentration (cfu/100mL)		
	Uhland (17406)	Lockhart (12647)	Luling (12640)
Feb-08	240	121	195
Aug-08	212	155	191
Feb-09	241	146	194
Aug-09	289	171	183
Feb-10	352	161	196
Aug-10	361	165	212
Feb-11	377	157	171
Aug-11	419	189	135

Tables 25 and 26 serve as a progress update to the implementation schedule outlined in the WPP. The tables indicate work completed through the third year of implementation (end of FY2011) and can be compared with water quality trends to determine the need for adaptive management. While implementation of some measures began almost immediately, work toward others has required significant additional effort to secure participation and funding. For certain strategies, major work is not expected until later stages of the overall effort. It is anticipated that changes in water quality will experience a lag period following the implementation of management measures, and substantive changes may require several years to be discernible.

**Table 25. Progress toward implementation of management measures identified in Table 10.1 of the Plum Creek WPP.**

Management Measure	Responsible Party	Year			
		1-3	Status thru Nov 30, 2011	4-6	7-10
<b>Urban Stormwater Management Measures</b>					
Pet Waste Collection Stations	City of Kyle	13	<b>16</b>	4	4
Pet Waste Collection Stations	City of Lockhart	10	<b>16</b>	4	4
Pet Waste Collection Stations	City of Luling	6	<b>6</b>	2	2
Pet Waste Collection Stations	City of Buda	10	<b>18</b>	4	4
Comprehensive Urban Stormwater Assessment	City of Kyle	1	<b>Completed</b>	---	---
Retrofit Stormwater Detention Basins	City of Kyle	2	<b>2 Completed</b>	---	---
Initiate Street Sweeping Program	City of Kyle	---	<b>Initiated and continuing</b>	---	---
Comprehensive Urban Stormwater Assessment and Illicit Discharge Survey	City of Lockhart	1	<b>In progress</b>	---	---
Manage Urban Waterfowl Populations	City of Lockhart	---	<b>Ongoing</b>	---	---
Comprehensive Urban Stormwater Assessment	City of Luling	1	<b>0</b>	---	---
Rehabilitate Stormwater Retention Pond	City of Luling	1	<b>0</b>	---	---
Initiate Street Sweeping Program	City of Buda	1	<b>Initiated and continuing</b>	---	---

**Table 25. (continued).**

Management Measure	Responsible Party	Year			
		1-3	Status thru Nov 30, 2011	4-6	7-10
<b>Wastewater Management Measure</b>					
Wastewater Upgrade (TSS Reduction)	WWTF Operators	---	<b>0</b>	3	7
Wastewater Upgrade (Phosphorus Removal)	WWTF Operators	---	<b>0</b>	3	7
Voluntary Monthly <i>E. coli</i> Monitoring	WWTF Operators	---	<b>3</b>	---	---
Voluntary Monthly Phosphorus Monitoring	WWTF Operators	---	<b>2</b>	---	---
Sanitary Sewer Pipe Replacement	City of Kyle	2400 ft	<b>4660 ft</b>	2400 ft	3200 ft
Lift Station SCADA Installation	City of Kyle	3	<b>1</b>	4	---
Sanitary Sewer Pipe Replacement	City of Lockhart	1800 ft	<b>4000 ft</b>	1800 ft	2400 ft
Initiate Sanitary Sewer Inspection Program	City of Luling	1	<b>1</b>	---	---
Sanitary Sewer Pipe Replacement	City of Luling	2400 ft	<b>16672 ft</b>	2400 ft	3200 ft
Lift Station SCADA Installation	City of Luling	4	<b>0</b>	1	
Sanitary Sewer Pipe Replacement	City of Buda	--	<b>2652 ft</b>	8523 ft	--
Septic System Inspection/Enforcement (New Position)	Caldwell County	2	<b>0</b>		
Septic System Repair/Replacement	Hays County	300	<b>208</b>	300	400
Septic System Repair/Replacement	Caldwell County.	150	<b>34</b>	150	200
Septic System Connection to Sewer	City of Uhland	100	<b>0</b>	100	150

**Table 25. (continued).**

Management Measure	Responsible Party	Year			
		1-3	Status thru Nov 30, 2011	4-6	7-10
<b>Agricultural Management Measures</b>					
WQMP Technician (New Position)	SWCD	---	<b>Funded through FY 2012</b>	---	---
Livestock Water Quality Management Plans	SWCD	65	<b>8 certified 4 in progress</b>	70	102
Cropland Water Quality Management Plans	SWCD	6	<b>1</b>	9	9
<b>Non-Domestic Animal and Wildlife Management Measures</b>					
Feral Hog Education (New Position)	AgriLife Extension	---	<b>Funded through FY 2012</b>	---	---
Feral Hog (Demonstration Equipment)	AgriLife Extension	---	<b>\$10,000 of Equip.</b>	---	---
<b>Monitoring Component</b>					
Targeted Water Quality Monitoring	GBRA	---	<b>Funded through FY 2013</b>	---	---
Comprehensive Stream Assessment	GBRA	12	<b>8</b>	12	16
Bacterial Source Tracking	TAMU	1	<b>0</b>	---	---

**Table 26. Progress toward implementation of management measures identified in Table 10.2 of the Plum Creek WPP.**

Outreach Activity	Responsible Party	Year			
		1-3	Status thru Nov 30, 2011	4-6	7-10
<b>Broad-Based Programs</b>					
Texas Watershed Steward Training Sessions	AgriLife Extension	3	2	2	1
Elementary School Water Quality Project	GBRA	---	over 1,000 kids/yr funded through 2012	---	---
Plum Creek Watershed Protection Brochure	GBRA/ AgriLife Extension	---	7,200 distributed of 12,000	---	---
Tributary and Watershed Roadway Signage	AgriLife Extension	60	TxDOT denied	---	---
Displays at Local Events	AgriLife Extension/TSSWCB	9	11	9	9
Watershed Billboards	AgriLife Extension	Partnership decided against moving forward with this option			
<b>Urban Programs</b>					
Pet Waste Programs	Cities/TCEQ/ AgriLife Extension	2	4	---	---
NEMO Workshops	GBRA/TCEQ/ AgriLife Extension	2	2	---	---
Fats, Oils, and Grease Workshop		2	0	---	---
Municipal Site Assessment Visits		4	9	---	---
Urban Sector Nutrient Education	AgriLife Extension	3	3	3	3
Sports and Athletic Field Education (SAFE)	AgriLife Extension	3	1	3	3

**Table 26. (continued).**

Outreach Activity	Responsible Party	Year			
		1-3	Status thru Nov 30, 2011	4-6	7-10
<b>Wastewater Programs</b>					
Develop Online Training Modules	GBRA	4	4	---	---
Septic System Workshops and Assistance	AgriLife Extension/GBRA	4	7	3	3
<b>Agricultural Programs</b>					
Soil and Water Testing Campaigns	AgriLife Extension	3	3	3	3
Agriculture Nutrient Management Education	AgriLife Extension	3	3	3	3
Crop Management Seminars	AgriLife Extension	3	3	3	3
Agricultural Waste Pesticide Collection Days	TCEQ	1	1	No longer funded by TCEQ	No longer funded by TCEQ
Lone Star Healthy Streams – Grazing Cattle Education	AgriLife Extension	3	3	3	3
<b>Non-Domestic Animal and Wildlife Programs</b>					
Lone Star Healthy Streams - Feral Hog Management Workshop	AgriLife Extension	2	3	1	2
<b>Additional Programs</b>					
Stream and Riparian Workshops	AgriLife Extension	2	2	1	2
Illegal Dumping Site Targeted Cleanup	GBRA, AgriLife Extension, Keep Texas Beautiful, Cities, Counties	3	12	3	3
Community Stream Cleanup Events		2	4	3	3
Rainwater Harvesting Education/ Demonstration	AgriLife Extension	2	2	1	2

## ***PROGRAM COORDINATION AND PARTNERSHIP SUSTAINABILITY***

The Partnership recognized early in the process that the fundamental issues associated with long-term project sustainability are extremely complex. These include concerns about how and by whom the implementation strategy will be facilitated, and how funding will be obtained and managed to support active project management and achieve project goals. To address these critical questions, the Partnership created a sustainability subcommittee to research strategies and provide information and options. Experience, input, and recommendations regarding potential approaches were obtained from numerous agencies, entities, groups, and existing watershed efforts both in Texas and across the nation.

To date, AgriLife Extension has facilitated project implementation efforts utilizing personnel located in College Station (i.e., the Plum Creek Watershed Coordinator). However, it became apparent to the Partnership that there is a need to establish a full-time, locally-housed watershed coordinator to actively facilitate implementation efforts. The key questions related to this issue were: 1) What “entity” is most appropriate to administer the local position, and 2) How will the position be funded both in the short-term and over the long-term, assuming a 10-year planning horizon.

In the Plum Creek watershed, the preferred strategy was for project management by either GBRA or AgriLife Extension. It was determined that GBRA would be the managing entity of the TSSWCB CWA §319(h) grant for a local watershed coordinator to take over when the grant managed by AgriLife Extension ended.

AgriLife Extension in collaboration with the GBRA and steering committee members engaged personnel and officials with each of the municipalities and counties within the watershed to build strong cooperative partnerships. This effort led to the development and signing (July 2011) of an interlocal agreement (available on the Partnership website) with local partner entities that provided the 40% match required for a new TSSWCB CWA §319(h) implementation grant to be administered by GBRA. Numerous meetings and presentations were conducted with City Councils, County Commissioner’s Courts, and organization boards to provide project updates and information on the interlocal agreement and match structure for the new project. The 12 participating entities include Caldwell and Hays Counties, the cities of Lockhart, Luling, Kyle, Uhland, and Buda, GBRA, Plum Creek Conservation District, Polonia Water Supply Corporation, Hays County Soil and Water Conservation District and the Caldwell Travis Soil and Water Conservation District. The project will establish a new local watershed coordinator position managed by GBRA and housed by Caldwell County in Lockhart. The watershed coordinator will actively promote WPP implementation, coordinate the PWCP, continue to build and strengthen local partnerships, and seek external grants to facilitate implementation activities and provide the balance of funds needed to sustain the position. These efforts are founded on the understanding that watershed management programs should strive to transition dependency on federal support to local sponsorship. This is the first watershed in Texas to solidify, through an interlocal agreement, local governmental entities’ commitment to jointly funding a watershed coordinator for the mutual benefit of all the entities involved.



Establishment of a non-profit entity was explored as one option for fiscal management. However, several limitations precluded the selection of this option, including: 1) Concerns regarding the ability of selected key stakeholder groups to actively participate in and serve on the board of directors for a non-profit organization, 2) Oversight and management of the entity, 3) Oversight, technical support, and management of the watershed coordinator position that would be funded through the non-profit entity, and 4) Accountability of the non-profit organization and watershed coordinator to the Partnership and Steering Committee.

## Other Developments

In addition to the strategies outlined in the WPP, a number of other efforts and events in the watershed are expected to have significant impacts on watershed stewardship into the future. While some of these only indirectly address water quality, all have implications with regard to education, planning, and regulatory activities in the watershed.

### ***CITY OF KYLE PLUM CREEK PRESERVE***

In 2009, the City of Kyle received \$500,000 from the Texas Parks and Wildlife Department to purchase land and develop the Plum Creek Preserve and Nature Trail as part of an open space initiative. The project will include more than six miles of nature trails, two large fishing lakes, wildlife viewing areas, picnic sites, a wetland preserve, and a wildflower meadow. Construction at the Lake Kyle site, located within the Preserve is approximately 30% complete with an expected grand opening in March 2012. Lake Kyle is one of the flood control structures in the watershed (Site 2). The Kyle Parks and Recreation Department is working to remove livestock and develop the 119 acres in a managed park preserve. The nature trail along the South side of Plum Creek is still under development, with several miles of the trail complete. In addition to the recreational benefits, much of the approximately 350 acres of parkland will be devoted to protecting riparian corridors within the urbanized upper portion of the watershed. This effort will enhance the ability of area residents to interact with more visible components of the watershed system, improving understanding and appreciation, hopefully leading to an increased desire to participate in stewardship of environmental resources. The Plum Creek watershed logo developed by the Partnership will be used on signs for the preserve and trail.

### ***STATE HIGHWAY 130 WETLAND MITIGATION***

As a result of construction of State Highway 130, TxDOT was required to mitigate construction impacts on wetlands as part of a CWA §404 permit issued by the U.S. Army Corps of Engineers. In response, a 265 acre floodplain site north of Lockhart directly along Plum Creek was selected for development of a multi-purpose complex that includes the creation and preservation of 175 acres of wetland and woodland environments lost due to highway construction along the entire Highway 130 corridor (Figure 23). The Plum Creek Mitigation Site will serve the following functions: preservation of wildlife habitat, stream bank stabilization, biodiversity maintenance, water quality improvement, stormwater retention, and flood control. Upon completion, a portion of the site will be made available as public parkland through a cooperative agreement between Caldwell County and the City of Lockhart after five years from development. Unfortunately, planning for the development of this site already was nearing completion before discussions took place with the Partnership. As a result, an important opportunity to incorporate water quality benefits into this project was missed. However, as with the Plum Creek Preserve in the City of Kyle, this site still will serve to increase local interaction with environmental resources and present a multitude of educational opportunities.



Figure 23. Wetland mitigation site for SH 130 in the Plum Creek Watershed.

The United States Army Corps of Engineers and TxDOT should be encouraged to investigate all opportunities for water quality enhancement in the process of wetland mitigation planning. In this case, the distribution of mitigated acres throughout the watershed and targeted to critical areas with water quality issues might have tremendously enhanced the shared goals of these projects.

### ***CENTRAL TEXAS GREENPRINT FOR GROWTH***

The Trust for Public Land, Envision Central Texas, and the Capital Area Council of Governments completed the Central Texas Greenprint for Growth to help area communities make informed land use decisions and guide where growth and development ideally should occur in relation to the protection of important natural, cultural, and recreational resources. The project identified high priority areas for conservation in Hays, Caldwell, and Bastrop Counties that meet ecosystem protection goals, provide open space and park needs, and support the

overarching vision of sustainable growth for the Central Texas area. In both Hays and Caldwell Counties, protecting water quality and quantity were selected as the highest priority goal. Efforts in these areas will benefit watershed stewardship as the region undergoes significant development in the future. The goal of the planning effort is for cities and counties to incorporate the Greenprint into their planning/zoning and master plan processes to identify opportunities for conservation and protection of the high priority areas. More information on the process and results from Caldwell and Hays Counties can be found at <http://www.tpl.org/centraltxgreenprint>.

### ***OIL SPILL DETECTED AND REPAIRED***

On September 15, 2009 GBRA staff conducting water quality sampling north of Luling discovered a 2-inch pipe spraying oily water into Salt Branch near Caldwell County Road 128/Salt Flat Road. As a result of the spill, the stream bottom and both streambanks for at least 30 feet downstream were coated with a thick deposit of oil, and water appeared very dark and cloudy. Water quality analysis revealed very high levels of total dissolved solids at the site. After being contacted by GBRA, Railroad Commission of Texas personnel identified the responsible party and provided oversight during pipe repair and pumping to remove polluted water from the area. Additional field analysis of water samples at the time of initial response indicated very high chloride levels in the stream. However, when the site was revisited after one week, the spill had been cleaned up, and there was no evidence of oil contamination. Fortunately, the spill site was cleaned up immediately before heavy rains returned to the watershed, thus preventing spilled oil from being washed downstream. This incident highlights the need to continue work in oil and gas production areas in southern portions of the watershed.

### ***FLOOD CONTROL***

The Plum Creek Conservation District (PCCD), in partnership with the Caldwell-Travis SWCD and Hays County SWCD, operates 28 floodwater retarding structures in the Plum Creek watershed. While the primary purpose of these flood control dams is the protection of lives and property by reducing the velocity of floodwaters and thereby releasing flows at a safer rate, a secondary benefit is the reduction of pollutants (e.g., sediment) in floodwater downstream (i.e., NPS pollution). While not expressly identified as an implementation strategy in the Plum Creek WPP, properly maintained and functioning floodwater retarding structures contribute to protecting water quality in Plum Creek.

Through the American Recovery and Reinvestment Act of 2009 (ARRA), USDA-NRCS has provided over \$2.9 million in federal funds to PCCD to rehabilitate and repair aging flood control structures in the Plum Creek watershed. A number of these structures have been designated high hazard dams, meaning dam failure may cause loss of life; serious damage to homes, industrial or commercial buildings; important public utilities; and main highways or railroads. The PCCD received \$883,071 of ARRA funding for repairs and \$364,598 for engineering and design services and construction inspection on Site #8 (located in subwatershed LO-4, Figure 24). The PCCD also received \$1,100,000 in Watershed Rehabilitation Program Financial Assistance (construction funds) for rehabilitation of site #5 (located in subwatershed UH-2) and \$629,000 in Watershed Rehabilitation Program Technical Assistance for Site #5



design and construction inspection, and for a planning study for Site #6 (located in subwatershed UH-3).

In addition, TSSWCB has allocated over \$113,089 in state general revenue in FY2010 and FY2011 through its Flood Control Operation and Maintenance Grant Program to the Caldwell-Travis SWCD and Hays County SWCD to conduct operation and maintenance activities on the flood control structures in the Plum Creek watershed.

Together, these efforts will improve the ability of these watershed dams to remain viable and prolong their contribution to flood control and stormwater management (e.g., sediment trapping) as development increases in critical areas of the watershed.

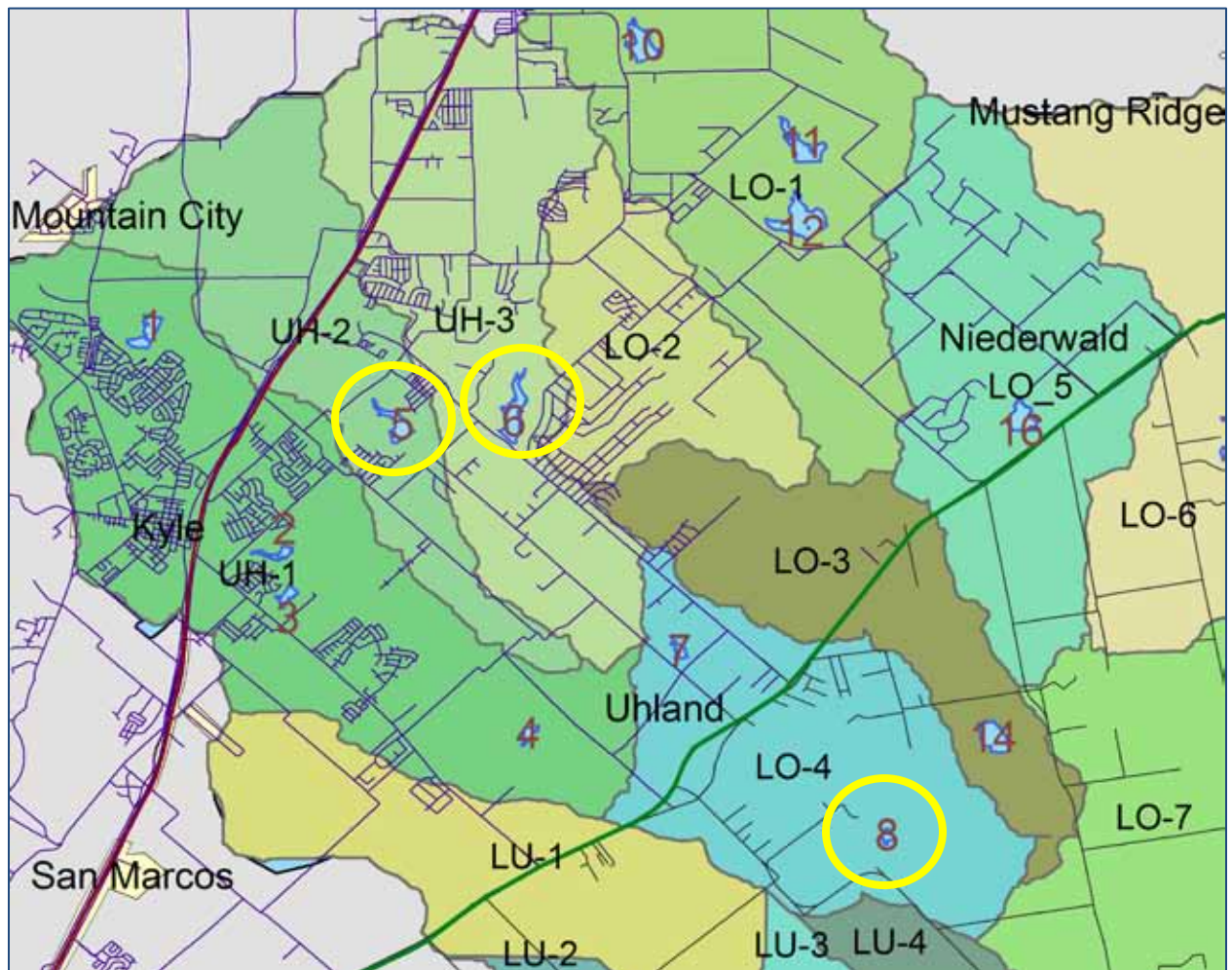


Figure 24. Locations of Plum Creek Conservation District dams at sites 5, 6, and 8 that have received funding for rehabilitation from USDA-NRCS.