Urban Stormwater Management

Urban development continues to be an increasingly critical issue in the watershed, and implementation of management measures in these areas will be extremely important. The Partnership has engaged Kyle, Lockhart, Luling, and Buda to implement strategies in the WPP and identify additional strategies that meet city needs and supplement water quality improvement efforts. The I-35 Corridor has seen a huge increase in development and growth between Austin and San Antonio. A large swath of the watershed has been transformed by the continued construction of State Highway 130. New commercial and residential development have followed this work and will most likely continue in the area around this new corridor that extends from Austin to Seguin (Figure 2).

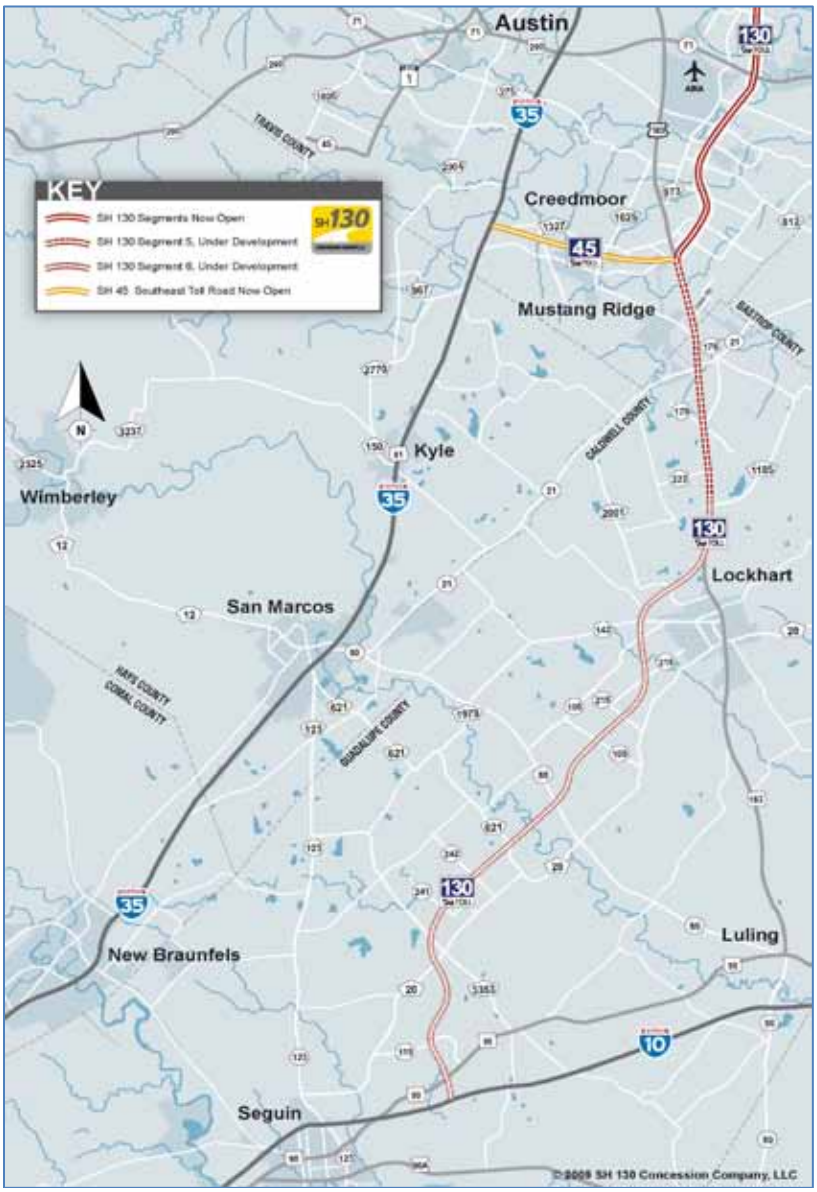

Figure 2. Maps showing locations of SH 130 Segments 5 & 6 through Plum Creek Watershed.

The City of Buda is included as part of the Urbanized Area of the City of Austin as defined by the 2000 Census (Figure 3), and thus falls under Phase II MS4 requirements. The City of Kyle has seen tremendous growth over the last several years and has a current population of 28,016 (2010 Census). Kyle has not yet reached the total population threshold to be under Phase II MS4 requirements based on the 2010 Census (Tables 2 and 3). The urbanized area maps based on the 2010 Census have not been released. Implementation thus far primarily has focused on voluntary efforts to meet the requirements of the MS4 program in cities throughout the watershed.

Table 2. Updated Table 2.2 showing the population of incorporated cities completely or partially within the watershed based on the 2000 and 2010 Census. Source: Texas State Data Center and Office of the State Demographer.

City	2000 Census Population	2010 Census Population	Percent Change
Buda	2,404	7,295	203
Kyle	5,314	28,016	427
Lockhart	11,615	12,698	9
Luling	5,080	5,411	7
Martindale	953	1,116	17
Mountain City	671	648	3
Mustang Ridge	785	861	1
Niederwald	584	565	-3
Uhland	386	1,014	163

Table 3. Updated Table 2.3 showing the population of counties partially within the Plum Creek Watershed based on the 2000 and 2010 Census. Source: Texas State Data Center and Office of the State Demographer.

County	2000 Census Population	2010 Census Population	Percent Change
Caldwell	32,194	38,066	18
Hays	97,589	157,107	61
Travis	812,280	1,024,266	26

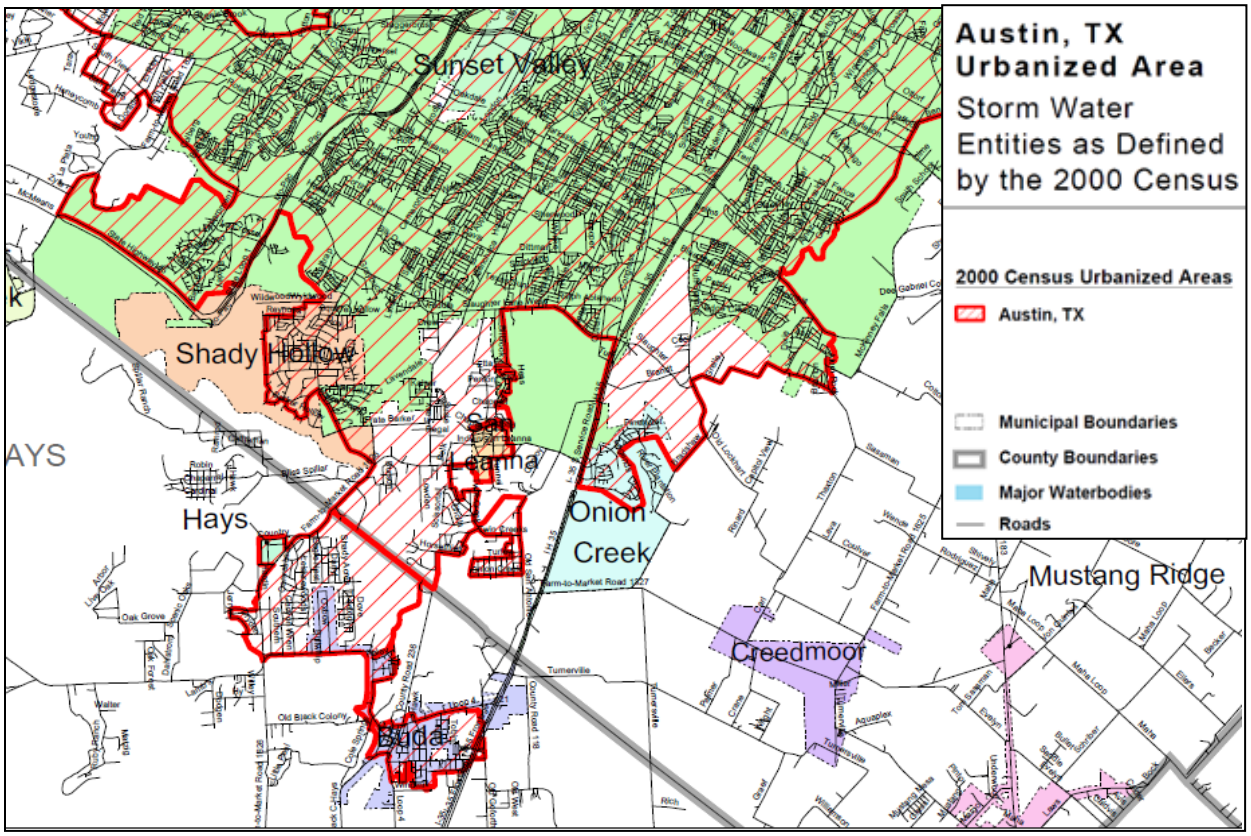

Figure 3. Lower portion of Austin urbanized area map of stormwater entities as defined by the 2000 Census; includes the City of Buda.

As an integral part of the urban stormwater management effort in Plum Creek, the Partnership worked to assist the cities of Lockhart and Luling with development of project proposals which were submitted to TCEQ for CWA §319(h) funding. The City of Lockhart accepted and signed their grant and the grant was executed in August 2010. The City of Luling determined it was unable to accept the urban implementation grant due to changes in economic conditions during the interim period from proposal submission to contract delivery, largely due to the inability to meet matching requirements within the new and compressed project timeframe.

Grant programs are important for nonpoint source management efforts in the urban sector. However, consideration must be given to the fiscal limitations of small cities and the extent to which short-term fluctuations in revenue can impact activities and programs. With worsening economic conditions, cities and particularly smaller cities have become less financially capable of undertaking reimbursable grant projects that require significant matching funds. Unfortunately, it is often these smaller communities that have the greatest need for this financial support to implement or enhance their nonpoint source management efforts. Application review should be streamlined to the greatest extent possible to facilitate timely review/approval and project implementation. In addition, mechanisms for providing assistance to cities for proposal development, including identification of creative and functional matching strategies, should be developed. The Partnership will continue to work with TCEQ and the cities, to achieve urban stormwater management milestones identified in the WPP.

URBAN STORMWATER MANAGEMENT

Street Sweeping

The Cities of Lockhart and Luling already had implemented street sweeping programs with city funds prior to the WPP. The Cities of Buda and Kyle each purchased street sweepers with city funds and initiated sweeping programs in priority areas starting at the end of 2008. Kyle has swept 8,854 miles of roadways from October 2008-May 2011 with a new vacuum sweeper pictured below in Figure 4. Lockhart is currently sweeping an average of 50-60 miles per month or about 660 miles/year. Buda has 35 miles of streets that are swept multiple times annually. Luling city maintenance crews plan to maintain an existing program in which all city streets are swept at least monthly. Sweeping efforts will continue to be adjusted to account for new development, with expansion of frequency and coverage as necessary and possible.

Figure 4. New street sweeper purchased by the City of Kyle.

Urban Stormwater Assessments and Mapping

To identify the most effective locations for the installation of structural stormwater controls, the Cities of Kyle and Lockhart incorporated comprehensive urban stormwater assessments into their TCEQ CWA §319(h) grants. The City of Kyle has mapped their entire system of 1,843 storm drain inlets, 261 storm drain outlets, and 750 stormwater manholes using GIS. These analyses have enabled evaluation of current stormwater flows and conveyance systems, identified needs, and supported optimal placement of additional controls.

Lockhart is in the process of mapping their stormwater system including over 288 inlets. The initial data were used to identify needed locations in the downtown area for markers and inlet filters. Mapping the stormwater system is also a key step for planning and conducting an illicit discharge survey. The mapping and assessment will be used to identify needs and determine need for and optimal placement of additional controls.

Urban Stormwater Markers, Inlet Protection Filter Devices, and No Dumping Campaigns

The City of Kyle has installed “no dumping” markers on all storm drain inlets throughout the city limits (Figure 5), and developed and distributed over 250 copies of a fact sheet on storm drain dumping at various meetings and events including the Kyle Cleanup Event. The fact sheets are available at City Hall and online.

Figure 5. No dumping markers on storm drains in Kyle and Lockhart.

The City of Lockhart's TCEQ CWA §319(h) project included funds to purchase and install 262 stormwater inlet tiles throughout town and storm inlet protection filter devices are now in place at 80 locations in downtown. These devices reduce NPS pollution in the form of grass clippings, leaves and debris (Figures 5 and 6).

Figure 6. Lockhart storm drain inlet protection and storm drain marker.

Retention Retrofits

As part of the TCEQ CWA §319(h) project in the City of Kyle (subwatershed UH-1), two runoff control structures that receive stormwater from a number of nearby subdivisions have undergone a retrofitting process to facilitate water quality treatment in addition to providing flood control. Retrofit #1 at the Lower Plum Creek located at Steeplechase Park detention facility to reduce

pollution and improve water quality as it moves through this facility was completed in September 2011 at a cost of $54,938 (Figure 7). Retrofit #2 on Upper Plum Creek is located at Spring Branch Subdivision in an area where the stormwater flow from multiple subdivisions come together in a drainage swale or channel that is being retrofitted to improve water treatment of storm water for a cost of $52,146 (Figure 8). Total Engineering costs for these two projects have totaled $49,007.

Luling Stormwater Structure

Rehabilitation of the retention structure near the City of Luling has not moved forward and is unlikely to do so in the near future. The structure on Salt Branch (incorrectly identified as Cottonwood Creek in the WPP) is located on private property. While the City of Luling expressed some interest in the project, the landowner has not been receptive.

Ordinance to Include the Use of Mulch Tubes

The City of Kyle developed and approved (November 1, 2011) an ordinance to require the use of mulch tubing in areas of high runoff or environmental sensitivity. Consistent with the new ordinance, the city plans to install mulch tubing along a retrofit project in Steeplechase Park.

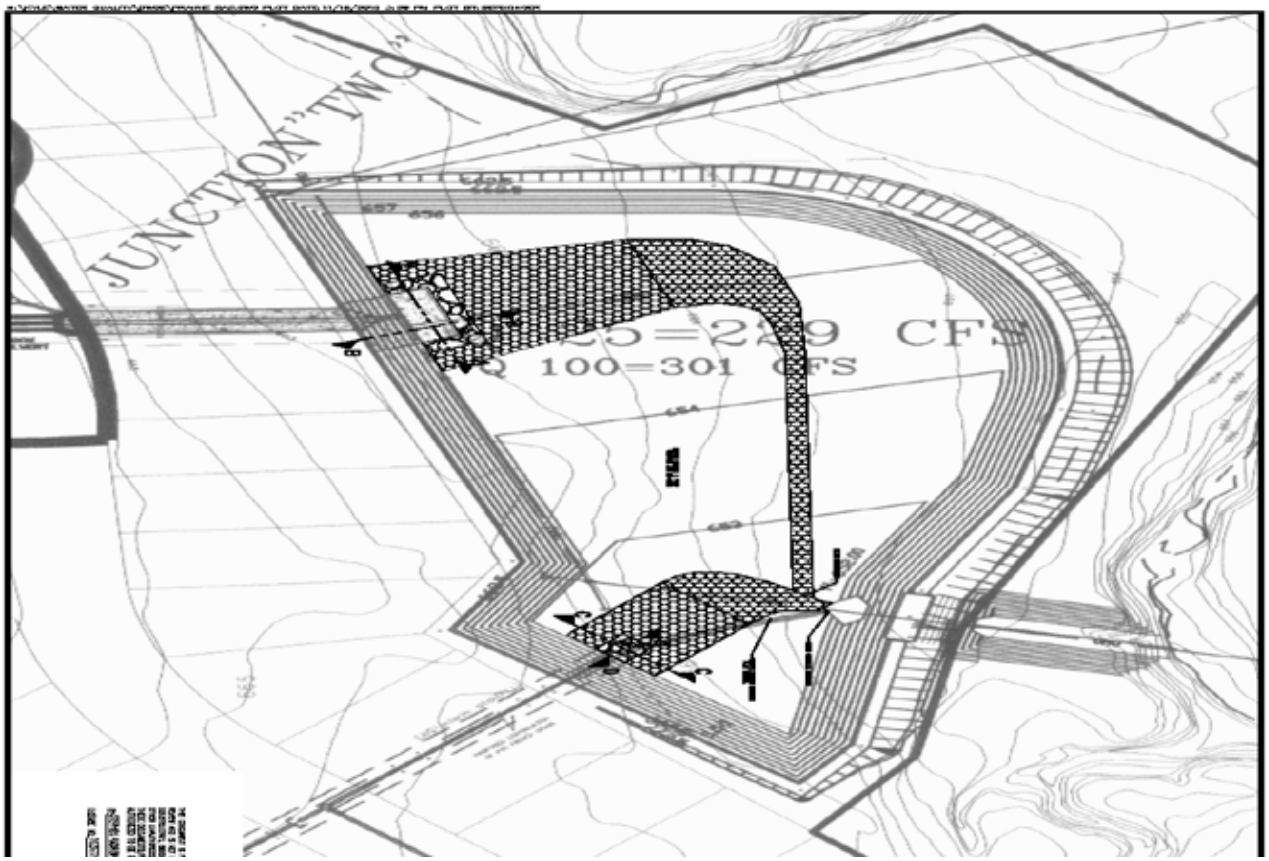

Figure 7. Retrofit Design #1 for Lower Plum Creek at the Steeplechase Park Detention Facility.

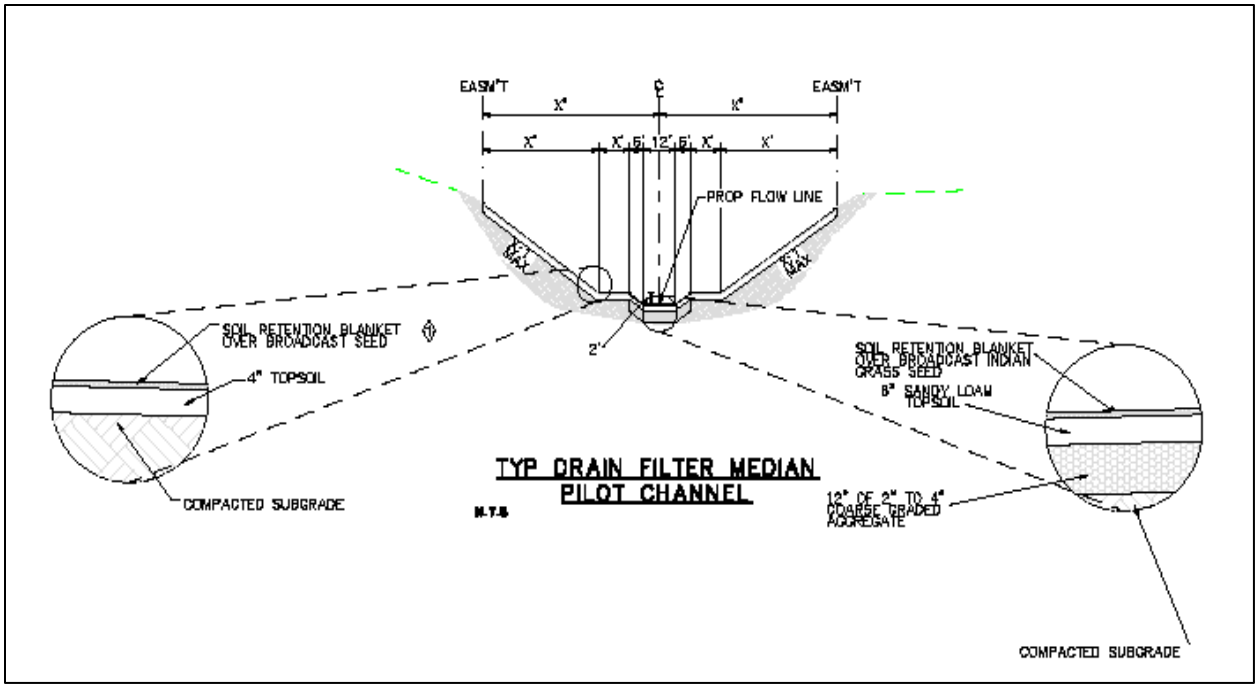

Figure 8. Retrofit #2 Design of Upper Plum Creek drainage swale at Spring Branch Subdivision.

Stormwater Management and Illicit Discharge Survey

The City of Lockhart's TCEQ CWA §319(h) project includes funds for an illicit discharge survey. In addition to the stormwater mapping and control plan, and installation of stormwater inlet tiles and inlet protection filter devices, city staff will conduct an illicit discharge survey of the stormwater system to assess the nature of dry weather flows and determine the need for further action. The QAPP is under development.

Urban Waterfowl Management

The City of Lockhart identified a large domestic waterfowl population in City Park as a potential bacteria source. In 2008, resident ducks from the City Park pond were reduced by 60% as they were relocated to a pond on a large landowner's property outside of the City of Lockhart. The other 40% of the duck population remained within the large pond in the park. The City notes that, under normal conditions, the pond does not discharge to Town Creek or Plum Creek. Based on comments received from citizens regarding the aesthetic value of the ducks in the park, the City has decided to no longer manage the duck population within the park and to not remove the remaining 40%.

Dog Waste Management

As the local human population continues to grow, it is likely that the pet population will keep pace. Initial dog population estimates utilized in the planning process were based on household data from the 2000 Census. Current numbers for both are undoubtedly higher as shown by increasing population numbers in the 2010 Census data (Table 2). To address this component of urban stormwater, the Cities of Kyle, Buda and Lockhart each have enacted pet waste ordinances requiring proper disposal in parks and public areas. More recently, the City of Luling is evaluating the potential of an addendum to include a pet waste ordinance to their existing pet ordinance. Pet waste stations with bag dispensers and waste receptacles and signage encouraging

their use have been installed throughout the City of Lockhart's park system and in Kyle's Steeplechase and Gregg-Clark Parks (Figure 9). Six of these stations were supported by CWA TCEQ §319(h) funds in Kyle and by city funds in Lockhart. The City of Buda utilized city funds to purchase 4 pet waste stations to place in city parks in the middle of 2011.

Each spring in Kyle, a community clean-up event is conducted in Steeplechase Park, which is bisected by Plum Creek. In 2009, approximately 550 dog droppings in the park were marked for removal prior to installation of 13 pet waste stations in conjunction with the event, including several in Steeplechase Park. On the day of the clean-up event in 2010 and 2011, only 128 and 175 dog droppings were present representing 76% and 68% reductions.

Figure 9. Pet waste stations installed in City Parks in Lockhart and Kyle.

Enforcement of existing ordinances and education of pet owners remain priorities. Public education campaigns are in place in Kyle and Lockhart to promote proper pet waste management and will be supplemented through the CWA TCEQ §319(h) projects in these cities.

TSSWCB utilized CWA §319(h) grant funding for the purchase of 37 new pet waste stations in August 2011, including pet waste stations for Kyle (3), Buda (18), Lockhart (10), and Luling (6). The cities will install and maintain these stations into the future. The installation of these stations approaches the goal for pet waste stations established in the WPP.

Hays County Development Regulations

In July 2011, Hays County adopted regulations to provide a framework for the orderly and efficient development of rural and suburban areas outside of incorporated cities. The purpose of these regulations is to implement the powers and duties of the County authorized under the Texas Water Code, the Texas Health and Safety Code, the Texas Local Government Code and other laws, to establish the policies of the Commissioners Court and to set forth procedures to be followed in County proceedings in regulating certain activities associated with development in Hays County. The regulations are designed to simplify procedures, avoid delays, save expense, and facilitate the administration and enforcement of laws and regulations by the County. The regulations are consistent with the WPP goals of improving water quality from stormwater, construction sites, and wastewater from new development and were supported by the PCWP.