

URBAN NONPOINT SOURCE MANAGEMENT MEASURES

The Urban Stormwater and Nonpoint Source work group engaged each of the 4 larger cities with a portion of their city limits in the Plum Creek Watershed to develop strategies that 1) meet city needs and 2) support the overall goals of the Plum Creek Watershed Partnership. Both common and city-specific implementation goals were defined through this process; a summary of these measures is presented in Table 7.1. Emphasis was placed on implementation of programs and practices consistent with MS4 requirements. In addition, because dog waste was identified by SELECT analysis as a significant potential pollutant source in urban areas, measures were defined to address its management. Public outreach components associated with urban management are discussed in the Outreach and Education section.

MS4 Management Strategies

MS4 permits granted by the TCEQ for municipal separate storm sewer systems require several components including public outreach and participation, illicit discharge elimination, runoff control, and general housekeeping measures (see Appendix H for MS4 requirements and Urban Runoff section of Pollutant Sources in the Plum Creek Watershed). While Kyle and Lockhart likely will soon surpass the threshold based on TCEQ guidelines, Buda is currently the only city in the watershed that must satisfy MS4 permit requirements because of its proximity to the Austin metropolitan area. Nevertheless, any municipality can voluntarily implement required measures in whole or part to prevent deterioration of water quality and protect against pollutant loading from urban areas. An important outcome of planning meetings with cities in the watershed was consensus that early implementation of appropriate MS4 programs and practices should be undertaken to the greatest extent possible given available funding.

A fundamental limiting factor for implementation of both non-structural and structural practices is funding. Accordingly, cities agreed to work in concert with the Partnership to identify potential funding sources to support both public education programs on stormwater quality and management, and the installation of structural controls. However, it was determined that to effectively define and guide structural control implementation efforts, detailed engineering analyses are needed for each city to properly locate and design these stormwater management practices. Thus, an initial goal of the implementation plan will be to seek funding to support the needed engineering analyses (Figure 7.2). Results of these analyses will be used by the cities to ensure selection and installation of the most effective structural control measures.

Table 7.1. Summary of recommended common and city-specific stormwater management practices.

Urban Stormwater Management Measures
<p>Common Goals</p> <ul style="list-style-type: none"> • Implement non-structural components of MS4 permits on a voluntary basis in advance of program requirements • Conduct stormwater engineering analyses and city-wide assessments to determine placement of structural management measures in individual cities • Pet waste management, including passage or modification of ordinances and installation and management of pet waste stations <p>Kyle</p> <ul style="list-style-type: none"> • Continue to enforce existing stormwater management provision of the Subdivision Ordinance • Conduct a comprehensive stormwater mapping project of drainage, detention facilities, and the storm sewer system • Retrofit selected detention basins to provide water quality benefits • Initiate city-wide street sweeping program • Install 10 pet waste stations and signage in parks • Nutrient/irrigation water management in park areas <p>Lockhart</p> <ul style="list-style-type: none"> • Enact a pet waste ordinance • Install 10 pet waste stations and signage • Nutrient/irrigation water management in park areas • Manage/periodically relocate duck population at City Park • Continue/expand existing street sweeping program <p>Luling</p> <ul style="list-style-type: none"> • Reconstruct Cottonwood Creek stormwater retention pond • Enact a pet waste ordinance • Install 6 pet waste stations and signage • Continue/expand existing street sweeping program <p>Buda</p> <ul style="list-style-type: none"> • Enact a pet waste ordinance • Install 10 pet waste stations and signage • Enforce the Water Quality Protection requirements of the Unified Development Code • Complete comprehensive stormwater mapping • Initiate a city-wide street sweeping program

Dog Waste Management

SELECT analysis was used to determine the total number of dogs in each urbanizing subwatershed. These numbers were then multiplied by the necessary bacteria load reduction for each monitoring station zone to estimate the number of dogs that should be managed within that area. Results for each of the 3 monitoring station regions are presented in Table 7.2. Based on these estimates, emphasis and resources will be directed primarily into the most urbanized subwatersheds around Kyle, Lockhart, and Luling. A significant number of dogs is already under management, but reducing pollutant input depends upon increasing efforts in city parks and in watershed neighborhoods. Management strategies should include waste bag dispensers and collection stations, code enforcement, and intensive public outreach.

Table 7.2. Recommended number of dogs under pet waste management practices.

Region	Subwatershed	Total Dogs	Dogs Managed
Uhland	UH-1	1,255	816
	UH-2	127	83
	UH-3	815	530
	Region Total	2,197	1,429
Lockhart	LO-1	346	52
	LO-2	520	78
	LO-8	2,157	324
	Region Total	3,023	454
Luling	LU-7	615	252
	LU-21	769	315
	Region Total	1,384	567
	Total	6,604	2,450



Figure 7.2. Storm drain in Kyle adjacent to Steeplechase Park. Stormwater engineering analyses are an important initial part of the urban management strategy.

City-Specific Management Measures

City representatives worked with the Partnership to identify current and ongoing urban stormwater management measures, as well as additional measures that cities plan to implement as a part of their commitment to the Plum Creek Watershed Partnership. In many cases, proactive efforts on the part of cities already are reducing pollutant loading. Below are descriptions of existing and planned management measures for each of the individual cities. In most cases, focus on the management of pet waste and stormwater are critical parts of individual cities' strategies (Figure 7.3).



Figure 7.3. Pet waste station in Plum Creek community and storm drain outlet in Lockhart City Park. Management of pet waste and stormwater are important activities in urbanized areas of the watershed.

Kyle

Based on 2004 land use and city boundary information, the city of Kyle covered approximately 6,000 acres, of which 38% was impervious cover. However, commercial and residential development are occurring at a rapid pace, and this is expected to continue into the future. Article V Section 7 (Watershed and Flood Prevention) of Kyle City Subdivision Ordinance 296 is in place to address impacts from stormwater. Activities associated with new development are required to minimize sediment transport and protect environmental quality during construction, and developers must submit plans for stormwater management.

A large percentage of the current stormwater conveyance system in Kyle, particularly in older areas of town, is comprised of open, vegetated ditches. These ditches have some stormwater pollution mitigation effects as a result of plants slowing water and trapping and assimilating pollutants. However, the city plans to complete a comprehensive stormwater map including storm sewer, detention, and drainage infrastructure. The mapping initiative will be used to coordinate stormwater management between developments and across different areas of the city. The city also has begun efforts to secure funding from the TCEQ to retrofit detention basins to improve water quality. The Plum Creek and Steeplechase neighborhoods have been selected for initial efforts. As an additional management measure, the city has purchased a street sweeper and has implemented a regular sweeping program. Initially, residential streets will be swept twice annually, and a 6 block radius around downtown will be swept monthly to reduce the buildup and runoff of pollutants.

The City of Kyle has enacted a pet waste ordinance under Section 14 of Park Ordinance 461, which requires pet owners to pick up and dispose of pet waste in park areas. Although there are currently no signs in parks, the city is prepared to install both signs and pet waste stations in park areas to facilitate proper pet waste management. Upon funding, the city has made arrangements to install 14 pet waste stations in city parks, with additional stations to be installed by neighborhoods in the future. Common areas in some of the larger neighborhoods, such as the Plum Creek community, already have small numbers of pet waste stations to encourage proper management, but additional stations in this and other participating neighborhoods are needed to reduce pollutant loading to the stream.

To further minimize nutrient inputs and water consumption in parks, park staff currently implement a policy to not irrigate or apply pesticide or fertilizer treatments. If more intensive management is initiated, park staff will recommend management practices including irrigation scheduling, integrated pest management methods, soil testing, and proper application methods for nutrient management.

Lockhart

In 2004, the City of Lockhart covered approximately 7,210 acres. Based on land use analysis, approximately 27% of the city area is comprised of impervious cover. The city currently relies on established stormwater rules under the statewide general TPDES permit, which governs stormwater discharge from construction activities.

As an initial step, the city plans to enact a comprehensive pet waste ordinance requiring collection and proper disposal of waste on private property. Waste collected at parks is currently

treated with lime before being disposed of with routine trash collection. The city supports the installation of signage informing the public of the need to dispose of their pet waste. In addition, the city requires waste on private property, especially near stream areas, to be picked up and treated with lime for trash collection or reapplication to the lawn. Contingent upon funding, the city also supports the installation of pet waste stations in city parks.

To reduce nutrient loading, it is recommended that city staff implement a routine soil testing program to guide fertilizer application as part of standard park maintenance. In addition, it is recommended that park staff monitor any irrigation systems to minimize system leaks and over-application, which can result in increased runoff. In addition, approximately 60% of the resident duck population at the city park has recently been relocated outside city limits, and the city has indicated the number of animals will be maintained at this reduced level to minimize potential pollutant inputs (Figure 7.4).

The city currently conducts street sweeping every 45-90 days using a vacuum sweeper. The city anticipates continuing these efforts in support of plan objectives, with the primary focus being residential and commercial streets.



Figure 7.4. Muscovy duck at City Park. Lockhart plans to manage the resident duck population.

Luling

As of 2004, Luling covered approximately 2,120 acres, with an estimated 38% of this area being impervious surface. To control stormwater within the city limits, a recent subdivision policy was established requiring that detention ponds be constructed with new development. A site detention plan must be submitted for approval with the development plan in these areas.

Cottonwood Creek, a tributary to Plum Creek, receives stormwater from the area of Luling that drains into the Plum Creek Watershed. A retention pond which previously existed on this

tributary captured and provided some level of treatment of stormwater runoff. However, the structure was functionally destroyed in a 1998 flood. Contingent upon funding, the city supports the redesign and reconstruction of the pond to provide flood control and water quality benefits.

The city has approximately 60 acres of city parks. However, only 2 of these parks, representing 25 acres, are within the Plum Creek Watershed. Contingent upon funding, the city supports the installation of a total of 6 pet waste stations and associated signage in these parks. Currently, the city does not have a pet waste removal ordinance, but through an addendum to the current animal control ordinance, Luling has agreed to require that owners pick up and properly dispose of pet waste deposited in public areas. To reduce nutrient loading, it is recommended that city staff implement a routine soil testing program to guide fertilizer application as part of standard park maintenance. Park staff also intend to monitor irrigation systems to minimize system leaks and over application which could contribute to surface runoff. As an additional measure, city maintenance crews plan to maintain an existing program in which all city streets are swept at least monthly (and as frequently as once per week).

Buda

As noted previously, only a small portion of the Buda city limits, just north and west of Interstate 35, lies within the watershed and contributes urban stormwater flow and potential pollutant loading to Plum Creek. Because it is considered part of the Austin metropolitan area, Buda falls under MS4 regulations and is required to file a stormwater management permit with the TCEQ. This permit is in the initial stages of development, but will include several key components that will mitigate stormwater impacts in the Plum Creek Watershed.

Buda currently has 7 parks representing approximately 210 acres. Two of these facilities, Stoneridge Park and Green Meadows Park, lie within the Plum Creek Watershed. No leash or pet waste collection ordinances for public areas are currently in place. However, the city supports installation of pet waste collection stations in city and neighborhood parks to encourage proper disposal of waste from dogs. Contingent upon funding, the city has agreed to install 10 pet waste stations in the parks that contribute stormwater to Plum Creek.

Under Chapter 8 of Buda's Unified Development Code, development within the city and its extraterritorial jurisdiction (ETJ) must comply with requirements of the City of Austin's Environmental Criteria Manual. As part of the requirements of Section 8.4 Water Quality Protection, structural controls must be installed and designed to reduce stormwater concentrations of total phosphorus and total suspended solids by 75%. In addition, developers inspect and maintain these controls after installation, depending on the nature of the development. As a part of the Plum Creek plan, Buda will continue to ensure compliance with the ordinance. To complement these efforts, the city anticipates mapping its stormwater system to complete a comprehensive plan which integrates the requirements of the Unified Development Code. This will improve the ability to track and manage stormwater impacts within the city.

The city has budgeted funds to purchase a street sweeping vehicle to maintain city streets and to mitigate the first-flush effect of stormwater pollutant loading. Specific locations and frequencies have not yet been outlined but will be designed both to meet city needs and to support attainment of water quality goals in the watershed.

WASTEWATER MANAGEMENT MEASURES

Wastewater management in both centralized treatment facilities and private septic systems is and will continue to be important in the Plum Creek Watershed, particularly as the population of the area increases. Planning for this future growth, as well as addressing existing infrastructure issues, is a priority for the Plum Creek Watershed Partnership. WWTFs in the watershed are operated by a combination of municipalities and/or private entities (Table 7.3). All WWTFs must comply with site-specific regulations contained in a TPDES permit issued by the TCEQ. Municipalities manage the means of conveyance to WWTFs and are charged with the upkeep and maintenance of these collection systems. There also are some septic systems still present within the city limits or extraterritorial jurisdictions of several of the cities in the Plum Creek Watershed.

In areas where no public sewer services are available, county and local governments serve as authorized agents and are responsible for the inspection and permitting of septic systems. Inspections are typically conducted when new systems are installed and in association with complaints filed with the authorized agent.

The Wastewater and Industry work group developed a suite of management goals common to all entities in the watershed in addition to city- and county-specific management measures to minimize wastewater contributions to pollutant loads in Plum Creek.

Common Goals

The Plum Creek Watershed Partnership worked in cooperation with key city, county, and private wastewater treatment corporations in the watershed to identify strategies for reducing pollutant loading. Common implementation goals identified and supported by all entities include:

Wastewater Treatment Facilities:

- Promote signing of the East Hays County Wastewater Compact, a key interlocal agreement between multiple entities in the region.
- All WWTFs agree to work toward treatment levels of 5-5-2-1 (BOD/TSS/NH₃/TP) by way of permits for new facilities and voluntary action by existing plants.
- All WWTFs will begin monthly self-monitoring of effluent for bacteria and nutrients.
- All WWTF operators will demonstrate the appropriate licenses and certifications and be current on continuing education opportunities.
- The cities of Kyle, Lockhart, and Luling will evaluate costs and feasibility in an effort to implement phosphorus removal techniques for all effluent entering Plum Creek.

Wastewater Infrastructure:

- Cities will continue or initiate daily inspections of lift stations and equip all stations with dialers and/or Supervisory Control and Data Acquisition (SCADA) systems.
- Cities will continue to apply for grants to replace old clay pipe sewer lines, and clean and maintain existing sewer lines.
- Cities will work to locate any septic systems that may still be within the city limits and connect those residences to central wastewater treatment.

Table 7.3. Current permitted and proposed future permitted or voluntarily achieved wastewater treatment levels in the Plum Creek Watershed. Bacteria limits indicate the use of UV treatment.

Facility (Operator) Permit Number		Flow (MGD)	BOD (mg/L)	TSS (mg/L)	NH ₃ (mg/L)	TP (mg/L)	Fecal Coliform Bacteria (cfu/100mL)
Kyle (AquaTexas) 11041-002	C ^a	4.5	10	15	3	-	-
	PF ^b	4.5	5	5	2	1	-
Lockhart No. 2 (GBRA) 10210-002	C	1.5	10	15	3	-	200
	PF	1.5	5	5	2	1	<200
Buda (GBRA) 11060-001	C	1.5	5	12	2	0.8	-
	PF	1.5	5	5	2	0.8	-
Lockhart No. 1 (GBRA) 10210-001	C	1.1	10	15	3	-	-
	PF	1.1	5	5	2	1	-
Luling North (City of Luling) 10582-002	C	0.9	10	15	3	-	-
	F	0.9	5	5	2	1	-
Ranch at Clear Fork 14439-001 (construction 2008)	C	0.7	10	15	2	-	-
	PF	0.7	5	5	2	1	-
Niederwald 14672-001 (construction 2008)	C	0.125	5	12	2	1	-
	PF	0.125	5	5	2	1	-
Railyards-Parkland 14165-001 (construction 2008)	C	0.35	10	15	-	-	200
	PF	0.35	5	5	2	1	<200
Railyard (Village Homes) 14060-001	C	0.124	10	15	-	-	-
	PF	0.124	5	5	2	1	-
Goforth (AquaTexas) 13293-001	C	0.042	10	15	3	-	-
	PF	0.042	5	5	2	1	-
Sunfield (GBRA) 14377-001	C	0.99	5	5	2	1	-
	PF	0.99	5	5	2	1	-
Castletop (GBRA) 14431-001	C	0.486	5	5	2	1	-
	PF	0.486	5	5	2	1	-

^aCurrent permitted wastewater treatment level.

^bProposed future permitted or voluntarily achieved wastewater treatment level.

One of the key recommendations in common for WWTFs is for an increased level of effluent treatment in order to further reduce bacteria concentrations and introduce phosphorus removal measures where they are not already in place. More stringent effluent limits should effect a reduction in both bacteria and nutrient inputs to Plum Creek. In conjunction with the East Hays County Wastewater compact, the Plum Creek Watershed Partnership strongly recommends that wastewater facilities strive to achieve 5-5-2-1 treatment levels. In many situations, effluent quality consistently meets or exceeds current permit requirements for some water quality parameters. The Plum Creek Watershed Partnership recommends new facilities apply for permits with these requirements, possibly including bacteria limits. At existing WWTFs, operators have agreed to continue efforts to improve effluent quality without permit revisions on a good-faith basis. With available funding, facilities agree to expand and/or retrofit operations to facilitate the increased level of treatment. The Partnership also recommends that the TCEQ implement an unannounced inspection program for WWTFs to encourage and ensure compliance with permit requirements.

City-Specific Management Measures

Kyle

The city has begun to pursue funds to facilitate replacement of old and/or damaged sewer pipes. There is a significant portion of the downtown area that has a clay pipe collection system. Four recent and current projects totaling over \$1 million have been initiated to replace these clay pipes and to rehabilitate newer pipes in need of repairs. In addition, the city is now performing smoke testing on the sanitary sewer system to detect and then eliminate problem areas with high rates of infiltration and inflow. Lift stations are currently on dialer notification systems, and the city plans to continue daily inspections. The city also plans to pursue funding for installation of a SCADA system to continuously monitor these stations.

The city currently pumps a portion of its treated effluent to a holding pond which is used to irrigate the Plum Creek Golf Course. Up to 50% of the current discharge volume is now reused for this purpose and requires a fecal bacteria geometric mean of less than 200 cfu/100 mL. If additional reuse occurs in the future, the reduction in discharge volume contributed to Plum Creek may affect both water quality and quantity. In the interim, and contingent upon funding, the city has agreed to initiate voluntary monthly monitoring of bacteria and nutrients in effluent that is to be discharged to Plum Creek.

Within the city limits, there is a limited area of development that relies on private septic systems for household wastewater treatment. The city is investigating the incorporation of this area into existing infrastructure in the future.

Uhland

The city of Uhland does not have a centralized wastewater treatment facility, and there are currently no sanitary sewer lines. As a result, all residents rely on septic systems, and the city is responsible for permitting and inspecting these systems within the city limits. Many of these systems are quite old and may be prone to failure. In some sections of town, properties with systems requiring major repair or replacement have been abandoned. The City Manager currently serves as the septic system inspector, but problem systems typically are identified only

as a result of complaints or when properties known to be without proper permits are found to have residents. To address the issue of aerobic spray system maintenance, the city recently has adopted an ordinance requiring aerobic septic system inspection and maintenance to be conducted by trained professionals. In addition, the city continues to investigate the construction of a centralized wastewater facility to service the area under its jurisdiction. County Line Water Supply holds a Certificate of Convenience and Necessity (CCN) to supply water to the city and is applying for the wastewater CCN for the area. In addition to obtaining funding and a proper permit, efforts to identify a suitable location are underway.

Lockhart

There are approximately 60 miles of sanitary sewer lines in Lockhart, and smoke tests indicate roughly 22 miles are currently in need of repair or replacement. All known areas of clay pipe are being systematically replaced through ongoing infrastructure upgrades. The city continues to routinely inspect all sewer lines every 3 to 4 years using a camera system to identify problem areas. The city also continues to prioritize and seek funding assistance for replacement and repair programs for the wastewater collection system, with a goal of at least 600 feet per year. The city plans to maintain a cleanout cap inspection process which occurs after all significant rain events. In addition, city personnel continue daily inspection of lift stations and maintain the SCADA system utilized for monitoring.

The city and the GBRA have agreed to begin voluntary monthly sampling of phosphorus at both facilities and weekly bacteria sampling at the Lockhart No. 1 facility. In addition, the GBRA and the city have proposed evaluating the feasibility of installing flow-triggered phosphorus removal. With this system, effluent would be treated to remove phosphorus when flow in the creek drops below a specific level in order to enhance the stream's ability to assimilate existing nutrient loads.

Luling

Most of the old sewer mains in the city are composed of clay pipe and in need of replacement. Through a proactive 10-year project with the TWDB, the city already has replaced 2 miles of old pipe, representing approximately one-third of existing problem pipes. Additional critical areas will be addressed annually. To support these efforts, the city is in the process of purchasing a camera to inspect pipes and locate critical areas. The city of Luling currently operates 8 lift stations and soon will be adding 2 additional stations. Lift stations continue to be inspected daily by public works personnel. In addition, to help prevent overflows, the city plans to seek funding to install dialers or a SCADA system to monitor all lift stations.

The City of Luling has 2 WWTFs, one of which discharges into Plum Creek (Luling North) while the other discharges into the San Marcos River. Contingent upon funding, the city has agreed to conduct monthly sampling for bacteria and nutrients at the Luling North facility.

There are currently no septic systems within the city limits of Luling. However, as a result of planned annexation, nearly two dozen residential systems as well as several commercial systems will be brought under city jurisdiction. When complete, a new sewer line to Carter Memorial Airport will connect these properties to city utilities.

Buda

Within the City of Buda's ETJ and in the Plum Creek Watershed, there are multiple neighborhoods representing approximately 500 homes on septic systems. The city anticipates the incorporation of these areas and their connection to municipal sewer services as the annexation plan progresses. These connections will contribute wastewater to the city facility, which discharges to the Plum Creek Watershed.

There are currently 6.4 miles of sewer lines within the city. Multiple locations have been identified as problem areas mostly due to blockage by tree roots. The city desires to pursue funding to upgrade areas relying on older clay pipe to minimize infiltration/inflow and leakage issues in the future. In addition, the city will continue a program to inspect and replace cleanout caps within the city in order to minimize the likelihood of sanitary sewer overflows. The 6 lift stations operated by the city are equipped with emergency dialers and undergo daily inspections.

The Buda wastewater facility conducts monthly sampling for bacteria in addition to monthly phosphorus monitoring already directed by permit requirements. The city currently does not reuse treated wastewater effluent, but will investigate the potential for municipal irrigation or sale/release to potential industrial users (e.g., Texas Lehigh Cement Company).

Counties

Most septic systems in the watershed lie outside city limits and are within county jurisdictions. Thus, active programs in both Caldwell and Hays Counties will be critical in locating and addressing failing systems and to ensure appropriate preventative management of all systems. Both counties plan to continue requirements of the inspection of new systems when new utilities are connected or when properties change ownership. In addition, Hays County and the City of Umland have drafted and plan to implement an ordinance requiring aerobic septic systems to be routinely inspected and maintained by trained professionals, rather than by homeowners. Caldwell County also has adopted an ordinance addressing routine inspection and maintenance of aerobic systems by properly trained professionals. Hays County will continue to maintain 8 total sanitarians to implement the program. Caldwell County currently has only 1 sanitarian, thus funding will be sought to add 2 additional staff to implement and assist the inspection and enforcement program.

To target the inspection programs, SELECT analysis was utilized to locate and quantify potentially failing septic systems in the watershed and to estimate the number of systems in close proximity (within 330 ft) to Plum Creek and its tributaries. These systems will be targeted for repair or replacement due to their greater potential to impact water quality. Analysis included a 12% failure rate for systems constructed after state regulations (Reed, Stowe, and Yankee 2001) and a higher estimated failure rate of 50% for older pre-regulatory systems. These failure rates were applied to the total number of systems within each subwatershed to predict the number of systems that may require management, repair, or replacement (Table 7.4).

Table 7.4. Estimated total number of septic systems, failing systems, and failing systems within 330 ft. of a stream.

Region	Subwatershed	Total Systems	Potential Failing Systems	Near-Stream Failing Systems
Uhland	UH-1	739	367	43
	UH-2	130	65	9
	UH-3	1,009	501	52
	Region Total	1,878	933	104
Lockhart	LO-1	435	217	11
	LO-2	649	311	31
	LO-3	171	82	10
	LO-4	195	82	5
	LO-5	392	195	10
	LO-6	191	92	8
	LO-7	113	56	6
	LO-8	268	126	1
	LO-9	118	49	4
	LO-10	165	66	5
	LO-11	121	53	5
	Region Total	2,818	1,329	96
Luling	LU-1	155	66	10
	LU-2	153	76	4
	LU-3	29	14	1
	LU-4	44	22	3
	LU-5	60	30	3
	LU-6	145	72	11
	LU-7	438	208	17
	LU-8	56	28	2
	LU-9	50	25	3
	LU-10	111	54	4
	LU-11	69	33	5
	LU-12	233	96	12
	LU-13	52	26	3
	LU-14	81	31	2
	LU-15	81	40	5
	LU-16	28	15	2
	LU-17	14	7	0
	LU-18	42	21	1
	LU-19	95	48	4
	LU-20	95	48	3
	LU-21	313	149	12
	Region Total	2,346	1,110	107
Total	7,040	3,369	307	

Using this approach of focusing on potentially failing systems near waterways, the greatest concentration of systems requiring repair or replacement is in the upper portion of the watershed in Hays County (subwatersheds UH-1, UH-3, and LO-2). Additional target areas will include LU-7 south of Lockhart and LU-12 near Dale. Inspection programs will initially focus on these areas, but over time will work to address all subwatersheds.

To assist in the repair and replacement of failing septic systems, high risk areas within targeted subwatersheds will be identified through coordination with authorized agents and inspectors in both Hays and Caldwell Counties. In cooperation with these counties, critical areas that would benefit from more intense monitoring and inspection will be located based on GIS mapping, county data, and local knowledge of residents and inspectors. These initial efforts will enable effective septic system remediation.

Counties continue to update septic system permits, compiling data on system age, location, and condition in electronic format for quick access. With incorporation of new information, this central database will allow patterns of system installation and failure to be monitored in order to predict, prevent, and respond to problems in the future.

Regional Compact

The East Hays County Wastewater Compact (Appendix I) represents a key interlocal agreement, which if adopted, will serve to mitigate the effects of failing septic systems as well as provide the benefits of regional wastewater treatment services. As a partnership between the cities of Buda, Niederwald, Uhland, and Kyle, as well as Hays County and the GBRA, the Compact would serve to elevate the standard of wastewater treatment in the area, provide opportunities for reuse, and protect water quality in Plum Creek. Once signed, the agreement will act as a reasonable assurance that commitments to components of the Compact will be implemented by local entities. Some of the key components of the Compact are:

- While not all developments are practical candidates for connection to centralized wastewater services, where possible, developments of 10 or more homes should be connected to a wastewater facility.
- To ensure proper operation over the long-term, WWTFs should be operated by public entities, and centralized facilities associated with new developments should be jointly permitted (as between a private developer and a public entity).
- By utilizing the best available technology, new facilities will move toward adopting a 5-5-2-1 effluent set (BOD/TSS/NH₃/TP) to protect water quality.
- Reuse of treated wastewater utilizing a “purple pipe” system for irrigation and other applications will be encouraged to reduce pressure on the drinking water supply.
- The parties will jointly participate in the review of proposed wastewater projects, plans, and in special studies.
- The parties will agree to participate in supporting the core provisions of the Compact.

The Compact has been signed by several local entities, including the GBRA, the City of Niederwald, and Hays County. As a part of the Plum Creek Watershed Protection Plan, the remaining parties commit to review and move forward with an effort to finalize the Compact.

To assist in the activities outlined in the Compact, professional engineering analysis will be sought to determine the constraints and costs for upgrading wastewater infrastructure throughout the Plum Creek Watershed. Increased levels of treatment will require additional equipment at most facilities, and selection of additional treatment options will be guided by the findings of the analysis.