Lampasas River Watershed Partnership

Steering Committee Meeting June 16, 2011

Lisa Prcin Watershed Coordinator Texas AgriLife Research at Blackland Research & Extension Center

Introductions

Past Business

Lampasas River Watershed Partnership Activities – 2011

- February
 - Agriculture and Wildlife February 17th
 - Urban NPS February 18th
- March
 - Agriculture and Wildlife March 24th
 - Urban NPS March 25th
- April
 - NRCS Riparian Workshop in Lampasas April 26th
 - NRCS Riparian Workshop in Killeen April 27th
 - Urban NPS April 26th



Recommendations for Best Management Practices Urban NPS Work Group Wastewater Treatment Facilities

Sanitary Sewer Systems On-Site Sewage Facilities Stormwater Control Pet and Non Domestic Animal Waste



Wastewater Treatment Facilities: General Recommendations

- Make a positive statement about plants currently operating well below state standards
- Encourage plants to maintain current housekeeping in regards to operation
- Encourage any additional WWTF that may be built or discharge into the watershed to operate at the same high standards previously set by the cities of Copperas Cove and Lampasas
- Implement voluntary reporting and/ or additional inspections



Recommendations for Best Management Practices Urban NPS Work Group

Wastewater Treatment Facilities

Sanitary Sewer Systems

On-Site Sewage Facilities Stormwater Control

Pet and Non Domestic Animal Waste

Sanitary Sewer Systems: General Recommendations

- Cities will routinely inspect sewer lines to identify problem areas
- Cities will replace old or failing clay pipe sewer lines
 - Develop target number of miles of pipe that needs replacement
- Clean & maintain existing sewer lines
- Individual city ordinances to determine proper size for grease traps, to inspect them and require grease traps be properly cleaned & maintained
- Stormwater mapping of drainage, detention facilities and storm sewer systems
- Inlet protection systems



Sanitary Sewer Systems: City Specific

City of Copperas Cove

- City has currently focused its concern and efforts outside of the Lampasas River Watershed
- Sewer lines are inspected on an as needed basis; consideration is being given to developing a routine inspection scheme; additional labor would be needed
- Not actively replacing old/existing lines
- Lift stations are currently inspected twice daily, 7 days per week by Department of Sewer personnel
- SSO Plan in place and in strict compliance with all TCEQ requirements



Sanitary Sewer Systems: City Specific

City of Killeen

- Clean 350,000 ft of sewer line per year in 2011and 2012*
- TV 12,000 ft of sewer line per year in 2011 and 2012*
- Dry weather screening on Reese and Rock Creek in 2012
- Illicit Discharge hotline to report illegal dumping
- City is transitioning all lift stations to SCADA; last remaining stations to be installed this year
- Fat, Oil and Grease Ordinance enacted in March 2010
- Most of the current city and therefore its water, sewer and drainage resources are outside of the Lampasas River Watershed, however, future development will most certainly be within the watershed. As the city develops, current operating standards will be met.

* Within entire city; only 17% of Killeen is in the watershed, so the number of feet of sewer line will be proportional



Sanitary Sewer Systems: City Specific

- City of Lampasas
 - Actively replacing/repairing aging or failing sewer lines
 - \$100,000 budgeted annually from city funds
 - Approximately \$250,000 in Community Block Development Grants biennially
 - Has a Fats, Oils and Grease ordinance in place, but no routine inspections or follow-up
 - Projected activities

- Continue level of maintenance (pending CBDG funding)
- Conduct Wastewater Collection System Study, estimated cost = \$50,000
- Re-initiate Sanitary Sewer Inspection Program, estimated cost = \$20,000



Recommendations for Best Management Practices Urban NPS Work Group

Wastewater Treatment Facilities

Sanitary Sewer Systems

On-Site Sewage Facilities

Stormwater Control

Pet and Non Domestic Animal Waste

On-Site Sewer Facilities (OSSF): General Recommendations

- Develop database of OSSFs in watershed
 - Identify OSSFs within watershed
 - Map permitted and unpermitted septic systems within the watershed
 - Streamline permitting process throughout watershed
- Repair or replacement of failing septic systems
- Connections to municipal systems (where applicable) and removal of septic systems
- Enforcement of noncompliant systems
 - Hire an Watershed Environmental Officer/Septic Inspector
 - Increase number of system inspections
 - County ordinances

- Owner education for proper maintenance
 - Encourage repair and pump-out logs to be kept by homeowners &/or maintenance providers
- Public education
 - Coordinate with Texas Real Estate Commission to include OSSF educational materials at closings on the sale of properties with an OSSF



OSSF Contribution: City Specific

- City of Copperas Cove:
 - All OSSFs are under the jurisdiction of either Coryell or Lampasas County
 - No consideration has been given to connecting OSSFs to municipal system
 - City ordinance requires all new systems within the city limits be an aerobic system
- City of Kempner:

- All residences and businesses are on an OSSF
- All OSSFs are under the jurisdiction of Lampasas County
- Exploratory studies have determined it is cost prohibitive to construct a WWTF and municipal sanitary sewer system



OSSF Contribution: City Specific

- City of Killeen:
 - All OSSFs ware under the jurisdiction of Bell County
 - 796 OSSFs identified within the Killeen city limits in watershed (as of June 2010)
 - No future Septic Tank Elimination Programs are planned within the watershed
- City of Lampasas:

- All OSSFs are under the jurisdiction of Lampasas County
- An Unsewered Area Study was completed in 2000 but hasn't been updated since; a Wastewater Collection System Study would update this data
- Most of remaining OSSFs within the city limits are not economically feasible to connect to municipal system



OSSF Contribution: Watershed-Wide

- ▶ Years 1-3:
 - Identify and map all OSSFs within watershed
 - Develop and populate OSSF database
- Years 4-10:
 - Repair/replace :
 - Primary Focus:
 - Sulphur Creek
 - Lampasas River 1
 - Lampasas River 2
 - Lampasas River 4
 - Lampasas River 5
 - Secondary Focus:
 - All others

- Education and outreach:
 - Primary Focus:
 - Sulphur Creek
 - Lampasas River 4
 - Lampasas River 5
 - Secondary Focus:
 - All others





OSSF Contribution: Estimated Load Reduction

			Estimated Load			Estimated Load
			BEFORE	Number of	Repair/ Replace	AFTER
		Total	Management	OSSFs to	Percentage of	Management
Focus Area	Subwatershed	Systems	(Billions of CFU/day)	Repair/Replace	Total Systems	(Billions of CFU/day)
Primary	Lampasas River 1	189	570	82	43%	323
	Lampasas River 2	240	803	82	34%	529
	Lampasas River 4	1241	5,769	82	7%	5,388
	Lampasas River 5	2789	12,374	82	3%	12,010
	Sulphur Creek	1436	6,780	82	6%	6,393
	Focus Area Total	5895	26,297	410		24,643
Secondary	Lampasas River 3	259	1,100	46	18%	904
	Mesquite Creek	473	2,096	46	10%	1,892
	Rocky Creek	399	1,459	46	12%	1,291
	North Bennett Creek	91	324	46	51%	160
	Bennett Creek	154	721	46	30%	505
	South Bennett Creek	126	519	46	37%	330
	Simms Creek	273	942	46	17%	784
	School Creek	200	773	46	23%	595
	Lucy Creek	374	1,658	46	12%	1,454
	Focus Area Total	2349	9,592	414		7,915
Total		8244	35,888	824		32,558



Recommendations for Best Management Practices Urban NPS Work Group

Wastewater Treatment Facilities

Sanitary Sewer Systems

On-Site Sewage Facilities

Stormwater Control

Pet and Non Domestic Animal Waste

Stormwater Management General Recommendations

- Comply with MS4 Stormwater Permit (where applicable)
 - City of Copperas Cove
 - City of Killeen
- Smaller cities, like Lampasas, may voluntary implement the same measures
 - Public education and outreach

- Public involvement or participation
- Detection and elimination of illicit discharges
- Controls for storm water runoff from construction sites
- Post-construction storm water management in areas of new development and redevelopment
- Pollution prevention and "good housekeeping" measures for municipal operations
- Encourage developers and builders to utilize Low Impact Development practices



Stormwater Management City of Copperas Cove

- Small MS4 Permit issued by TCEQ on April 29, 2009
- City has prepared and implemented a five-year Storm Water Management Plan (SWMP)
- Components of SWMP include:

- Development and maintain a City Stormwater website
- Collaborate with Keep Copperas Cove Beautiful for monthly cleanup activities
- O&E through utility bill inserts, book covers for local schools and distribution of brochures to public
- Map entire city storm sewer system ~ complete
- Stencil all city stormwater inlets ~ complete
- Map stormwater system outfalls and receiving streams ~ planned for 2012
- Require SWP3 required on all municipal projects
- Ordinance in place and actively enforced that requires waste containers to control construction debris
- Street sweeping ~ on average every street is swept quarterly



Stormwater Management City of Killeen

- Small MS4 Permit issued by TCEQ on August 13, 2007
- City has prepared and implemented a five-year Storm Water Management Plan (SWMP)
- Components of SWMP include:
 - O&E through utility bill inserts, book covers for local schools and distribution of brochures to public
 - City Stormwater website developed and maintained
 - Collaborate with Keep Killeen Beautiful for yearly stream cleanup activities
 - Stormwater inlet marking
 - Storm Drain System Mapping:
 - Map Trimmier, Reese and Rock Creek Watersheds in 2012
 - Updated MS4 permit in 2010 to include support for and participation in the Lampasas River Watershed Protection Plan
 - Develop Illicit Discharge Ordinance ~ 2009
 - Develop Erosion and Sediment Control ordinance ~ 2011
- Projected needs:

Additional Vacuum/camera truck(s); estimated cost = \$280,700



Stormwater Management City of Lampasas

- City does not operate under a MS4 permit, but is pursuing voluntary measures
 - Storm Sewer Design and Installation, estimated cost = \$595,000 (funded)
 - Installation of concrete lined drainage ditches, estimated cost = \$35,000 - \$50,000 per year (funded)
 - Management & upkeep of storm water detention ponds, 6 grass ponds, estimated cost = \$1,500 per year (\$15,000 total - funded)
 - Continue routine street sweeping program, estimated cost = \$44,200 per year



Recommendations for Best Management Practices Urban NPS Work Group

Wastewater Treatment Facilities Sanitary Sewer Systems On-Site Sewage Facilities Stormwater Control

Pet and Non Domestic Animal Waste

Domestic and Non-Domestic Animals: Dog Waste Recommendations

- Recommend installation of pet waste (PW) stations in parklands and trails, particularly in areas of high pet density
 - City of Copperas Cove: No parks in watershed where PW stations would be appropriate
 - City of Kempner: No parks in watershed where PW stations would be appropriate
 - City of Killeen: Encourage city to install PW stations as parks are developed within the watershed
 - City of Lampasas: 3 potential locations in Brook Park for PW stations
 - Estimated cost = \$620 installation + \$85
 annual maintenance per PW station





Domestic and Non-Domestic Animals: Waterfowl and Feral Cats

- Resident waterfowl populations:
 - City of Lampasas manages the population at Brook Park through annual relocation; estimated cost \$1,000 per year; will be continued as long as funding is available
- Feral Cat populations:
 - City of Killeen ordinance Sec. 6-129. Cat colony permit, requires anyone feeding cat colonies to obtain a permit and sterilize/vaccinate 50% of the population annually
 - City of Lampasas is considering the development of a feral cat trapping program; estimated cost = \$5,000 annually (unfunded)



Urban NPS: Sources of Funding

- Clean Water State Revolving Fund:
 - Administered by Texas Water Development Board to provide low-interest loans with flexible terms and significant funding for wastewater treatment infrastructure improvements and nonpoint source pollution controls
- USDA Rural Development Program:

- Offers grants and supports low-interest loans to rural communities for water and wastewater development projects
- Clean Water Act 319 Nonpoint Source Grant Program:
 - Provides grant funding through TSSWCB and TCEQ from USEPA to implement specific projects that control and abate nonpoint source pollution
- Supplemental Environmental Project Program:
 - Administered by Texas Commission on Environmental Quality, to direct funds from fines, fees and penalties for environmental violations toward environmental beneficial projects, such as Cleanup of Unauthorized Trash Dumps, plugging abandoned water wells and repair/replacement of failing OSSFs



Urban NPS: Sources of Funding

- Texas Capital Funds:
 - Administered by Texas Department of Agriculture as part of the Community Development Block Grant and provides more than \$10 million in competitive awards each year for infrastructure projects that include water and sewer lines and drainage improvements
- Economically Distressed Area Program:
 - Administered by Texas Water Development Board in the form of a grant or a combination grant/loan available for qualified communities for water and wastewater infrastructure improvements. Includes measures to prevent future substandard development
- Environmental Education Grants:

- USEPA's Environmental Education Division, Office of Children's Health Protection and Environmental Education to support environmental education projects that enhance the publics' awareness, knowledge and skills to help people make informed decisions that affect environmental quality
- Outdoor Recreation Grants
 - Administered by TPWD's Recreation Grants Branch to provide grant funds to municipalities, counties, municipal utility districts (MUDs) and other local units of government with a population less than 500,000 to acquire and develop parkland or to renovate existing public recreation areas



Recommendations for Best Management Practices Agriculture and Wildlife Work Group

Livestock

Feral Hogs Whitetail Deer

Livestock Contribution: Recommendations

- Livestock bacterial contribution will be managed by encouraging producers to enroll in Water Quality Management Plans (WQMP)
 - A WQMP is a site-specific plan developed through and approved by soil and water conservation districts for agricultural lands
 - WQMPs include appropriate land treatment practices, production practices, management measures, technologies, or combinations thereof and is certified by the TSSWCB as to be consistent with Texas Surface Water Quality Standards



Livestock Contribution: Recommendations

- Hire a District Technician to work with local SWCDs to facilitate enrollment into WQMPs and implementation of BMPs
- Estimated cost for 1 District Technician is \$75,000 per year
- Maximum financial incentive available per WQMP is \$15,000
- All practices will be implemented according to USDA-NRCS Field Office Technical Guide

- Preferred BMPs to be included in WQMPs are:
 - Prescribed grazing
 - Conversion to native grasses and forbs
 - Alternative watering facilities
 - Cross-fencing
 - Riparian Forest Buffers
 - Stream crossings
 - Riparian Herbaceous Buffers
 - Brush management on uplands with subsequent herbaceous cover
 - Filter strips
 - Pasture and hayland planting
 - Terraces
 - Vegetative waterways
 - Nutrient Management AgriLIFE RESEARCH

Livestock Contribution: Recommendations

- 10% reduction in bacterial contribution will be accomplished by enrolling 10% of animal units (approximately 193 farms) into Water Quality Management Plans over a 10 year period
- Subwatersheds were prioritized into 3 levels:
 - Primary
 - Secondary
 - Remainder

- Each priority level will equally distribute 1/3rd of the number of recommended WQMPs
 - Approximately 64 WQMPs will be developed in each priority level
 - If necessary, the number of Animal Units (AU) per Farm will be used as a ranking tool





Livestock Contribution: Estimated Load Reductions

			Number of Farms	Estimated Load	
		Total	Based on Animal	BEFORE Management	WQMPs Per
Focus Area	Subwatershed	Animal Units	Units	(Billions of CFU/day)	Subwatershed
Primary	Lampasas River 1	2980	149	120,154	21
	Lampasas River 2	1546	77	56,642	21
	Lampasas River 5	8530	427	430,891	21
	Focus Area Total	13055		607,687	
Secondary	Lampasas River 3	1424	71	65,419	13
	Lampasas River 4	2131	107	120,077	13
	Simms Creek	3509	175	157,318	13
	Rocky Creek	4901	245	206,063	13
	Sulphur Creek	3487	174	192,434	13
	Focus Area Total	15452		741,311	
Remaining	North Bennett Creek	1563	78	71,450	11
	Bennett Creek	1873	94	70,943	11
	South Bennett Creek	1372	69	76,012	11
	School Creek	1352	68	64,649	11
	Lucy Creek	1401	70	70,309	11
	Mesquite Creek	2476	124	124,023	11
	Focus Area Total	10038		477,385	
Total	Watershed Total	38,546		1,826,382	194

Livestock Contribution: Sources of Funding

- Water Quality Management Plan Program
 - Administered by TSSWCB; referred to as the 503 program to provides financial incentives to augment participation
- Federal Clean Water Act Section 319(h)

- US EPA provides funding to TSSWCB and TCEQ to support nonpoint source pollution projects
- USDA NRCS Environmental Quality Incentives Program (EQIP):
 - Conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible goals
- Farm Services Agency Conservation Reserve Program (CRP):
 - Landowners can receive annual rental payments and cost-share assistance to establish long-term resource conserving covers on eligible farmland



Livestock Contribution: Sources of Funding

- USDA-NRCS Agricultural Water Enhancement Program (AWEP):
 - Conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land for the purposes of conserving surface and groundwater and improving water quality
- Texas Farm and Ranch Lands Conservation Program:
 - Administered by the Texas General Land Office to provide grants to landowners for the sale of conservation easements that create a voluntary free-market alternative to selling land for development
- Water Supply Enhancement Program:

 TSSWCB administers the Texas Brush Control Program to enhance water supplies through the selective control of water depleting brush with financial incentives



Recommendations for Best Management Practices Agriculture and Wildlife Work Group Livestock Feral Hogs

Whitetail Deer

Feral Hog Contribution: General Recommendations

- Potential Implementation Strategies
 - Removal of feral hogs through hunting and trapping
 - Support county-wide trapping programs
 - Do counties need additional personnel?
 - Aerial hunting
 - Educational programs
 - Texas AgriLife Extension Service
 - Hunters for the Hungry
 - Only accepts venison due to state regulations
 - Purchase hog-control equipment
 - Develop a hog trap rental program
 - Modify existing online feral hog damage tracking tool for use within the Lampasas River Watershed
 - Enforce Texas Animal Health Commission regulations on trap and transport of live feral hogs
 - Bounty program (?)



Feral Hog Contribution: Recommendations

- Reduce current feral hog population by 50% (12,133 feral hogs) over a 10 year period through:
 - Development of a Watershed Extension Feral Hog Specialist position to provide educational programs and resources within the watershed
 - Purchase feral hog traps and develop a trap rental program
 - Support county trapping programs
 - Modify existing online feral hog damage tracking tool for use within the Lampasas River Watershed
 - House Bill 716 The sell of aerial hunts for feral hogs
- Subwatersheds were prioritized into 2 levels:
 - Primary
 - Secondary

 Each priority level will equally distribute 1/2 of the recommended number of feral hogs to be controlled





Feral Hog Contribution: Estimated Load

			Estimated Load		Percent	Estimated Load AFTER
			BEFORE Management	Hogs to be	Removal of	50 % Management
Focus Area	Subwatershed	Total Hogs	(Billions of CFU/day)	Removed	Total Hogs	(Billions of CFU/day)
Primary	Lampasas River 1	1867	10,268	1213	65%	3,597
	Lampasas River 2	1473	8,100	1213	82%	1,430
	Lampasas River 3	1667	9,168	1213	73%	2,497
	Lampasas River 4	1260	6,929	1213	96%	258
	Lampasas River 5	3389	18,641	1213	36%	11,969
	Focus Area Total	9656	53,105	6065		19,751
Secondary	North Bennett Creek	930	5,114	674	72%	1,408
	Bennett Creek	1114	6,125	674	61%	2,419
	South Bennett Creek	846	4,651	674	80%	946
	Simms Creek	2951	16,232	674	23%	12,524
	School Creek	965	5,305	674	70%	1,600
	Lucy Creek	1276	7,019	674	53%	3,311
	Sulphur Creek	2561	14,083	674	26%	10,377
	Mesquite Creek	1266	6,964	674	53%	3,256
	Rocky Creek	2700	14,849	674	25%	11,143
	Focus Area Total	14609	80,342	6066		46,984
Total		24265	133,446	12131		66,734



Feral Hog Contribution: Estimated Costs

- Estimated cost
 - 1Feral Hog Specialist is \$90,000 per year
 - Additional hog control equipment for a rental program
 - \$350-\$600 per trap
 - Aerial hunting \$2500/day
- Current county resources:
 - Bell 1 Full Time Trapper
 - Burnet 1 Full Time Trapper
 - Coryell 1 Full Time Trapper, aerial hunts
 - Hamilton 1 Full Time Trapper
 - Lampasas 2 Full Time Trappers
 - Mills 2 Full Time Trappers

• Williamson – 1 Full Time Trapper



Feral Hog Contribution: Sources of Funding

- Federal Clean Water Act Section 319(h)
 - US EPA provides funding to TSSWCB and TCEQ to support nonpoint source pollution projects
 - Has been utilized in Plum Creek to fund an educational program for feral hog management, funded with 319(h) funds through TSSWCB
- Feral Hog Abatement Grant Program:

 Administered by Texas Department of Agriculture to provides funding for practical, effective projects aimed at controlling the feral hog population across the state



Recommendations for Best Management Practices Agriculture and Wildlife Work Group Livestock Feral Hogs Whitetail Deer

Whitetail Deer Contribution: Recommendations

- Deer populations are not managed for water quality purposes
- Encourage landowner participation in Wildlife Management Associations
- Encourage landowner to acquire Managed Land Deer Permits from Texas Parks and Wildlife
- Encourage hunters to harvest animals at sustainable levels



Whitetail Deer Contribution: Urban Area Recommendations

- Lampasas City council is considering the development of an ordinance to prohibit the feeding of whitetail deer within the city limits
 - Potentially include the development of a deer relocation/removal program; estimated cost = \$4,000 per year (unfunded)
 - Development and distribution of outreach and educational materials on the effects of feeding residential deer populations; estimated costs =\$2,500 per year (unfunded)
- City of Copperas Cove: Sec 3–68 Wild Animals, prohibits keeping and feeding of deer within the city limits



Whitetail Deer Contribution: Sources of Assistance

- Texas Parks and Wildlife Department Programs (for Private Landowners)
 - TPWD regional Wildlife Biologist

- USDA- NRCS Wildlife Habitat Incentive Program (WHIP)
 - Voluntary program for conservation-minded landowners who want to develop and improve wildlife habitat on agricultural land, nonindustrial private forestland and Indian land
 - Provides both technical assistance and up to 75% cost-share assistance to establish and improve fish and wildlife habitat.
 - Key objectives include restoration of declining or important native fish and wildlife habitats; reduction of the impacts of invasive species on fish and wildlife habitats and restore, develop or enhance declining or important aquatic wildlife species habitats



Outreach and Education Strategies

Broad-based Programs

Outreach and Education Strategies: Broad-based Programs

- Lampasas River Watershed Partnership Awareness Campaign
 - Develop promotional and educational materials that address WPP implementation:
- Community Outreach

- Disseminate project information through presentations and/or participation in public events
- Texas Watershed Steward Program
 - Science-based watershed education program designed to help citizens identify and address water quality impairments; "Water Quality 101"
- Riparian Proper Functioning Condition Workshops
 - Program to help develop a common vocabulary and understanding of riparian areas among people who live and work on the land



Outreach and Education Strategies: Broad-based Programs

- Tributary and Roadway Signage
 - Develop signs to be posted along major roadways notifying travelers when they are entering the watershed or crossing the Lampasas River or other major tributaries to encourage residents and travelers to play a positive role in protecting water quality
- Illegal Dumping Campaign

- Develop and post signs at known "dumping points" to dissuade dumping of waste into the streams and river
- Don't Mess With Texas Water
 - H.B. 451 creates the Don't Mess with Texas Water program, administered by the Texas Commission on Environmental Quality, passed 5/23/11 and sent to govenor
 - Program will place signs on major highway water crossings that display a toll-free hotline to report illegal dumping



Outreach and Education Strategies: Broad-based Programs

- Texas Waterway Cleanup Program
 - Coordinate with Keep Texas Beautiful to organize roadway cleanups at bridge and stream crossings
- Water Quality in the Classroom
 - Promote and/or adapt modules designed for school-aged children
- Texas Stream Team

- Provide opportunities for volunteer water quality monitoring and to provide educational resources to stakeholders
- Household Hazardous Waste Collection Days
 - Support the Central Texas Council of Governments by providing publicity for annual or biannual hazardous waste collection events to increase public participation within the watershed



Outreach and Education Strategies

Urban NPS Targeted Programs

• OSSF Education:

- Adapt and distribute existing technical guidance for owning and operating an OSSF through mailings, door hangers, point of sale displays in hardware/plumbing supply stores, real estate closing agreements, etc.
- Promote GBRA's Online Training for OSSF Owners
 - Online program that illustrates proper OSSF function and maintenance to ensure efficiency and extend the life of the system (<u>http://www.gbra.org/septic.swf</u>)
- Provide workshops for homeowners to discuss operation, maintenance and repair of OSSFs



http://www.gbra.org/septic.swf



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- WWTF Education:
 - Promote GBRA's Online Wastewater Treatment Facility Training Program
 - Online module that shows the procedures of wastewater treatment and explains why it is important to properly manage wastewater at all steps in the process, from the home all the way to the stream where the treatment facility discharges (<u>http://www.gbra.org/wastewater-treatment.swf</u>)
- Sanitary Sewer Systems:

- Promote GBRA's Online Fats, Oils and Grease Module
 - Online training program to address management practices for handling fats, oils, grease, and household chemical use and disposal



http://www.gbra.org/wastewater-treatment.swf



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Pet Waste Management

 Develop or adapt existing campaigns to educate the general public on the effects of pet waste on water quality and the importance of waste management at home and on public property

Urban Nutrient Management

- Soil and Water Testing Campaign
 - Campaign to promote the need and benefits of soil testing for proper nutrient management
- Adapt and promote programs like Grow Green and Earth-Kind Landscaping and Master Naturalist/Gardener programs to encourage the general public to manage their landscape in a sustainable manner
- Host Texas AgriLife Extension's SAFE (Sports and Athletic Field Education) workshops to educate on nutrient and pest management



Stormwater Control

- Promote and provide educational resources to communities interested in stormwater control and voluntary MS4 control measures
- Host NEMO (Nonpoint Education fro Municipal Officials) workshops to provide community planners a resource for materials on smart growth, low impact design, stormwater management and reducing impervious surfaces
- Provide workshops and education resources about utilizing Low Impact Design (LID) when planning community growth
- Host field days demonstrating stormwater control BMPs at sites where implementation is already occurring
- Promote GBRA's Online Training for Stormwater Control
 - An online training tool to encourage proper stormwater management. Module addresses stormwater control practices and includes information for entities that must satisfy municipal stormwater regulations



Outreach and Education Strategies

Agriculture and Wildlife Targeted Programs

Outreach and Education Strategies: Agriculture and Wildlife Targeted Programs

- Achieve Implementation of WQMPs
 - Promote the enrollment of agricultural producers in the WQMP Program through workshops and promotional material
 - Encourage the beneficial use of soil test prior to adding soil amendments (organic and inorganic)
 - Host field days promoting and demonstrating BMPs for proper grazing management, nutrient management, etc
 - Lone Star Healthy Streams Program (LSHS)

 Focuses on educating farmers, ranchers and landowners about mitigating bacteria runoff through management practices for <u>beef cattle</u>, dairy cattle, horses, poultry and <u>feral hogs</u>



Outreach and Education Strategies: Agriculture and Wildlife Targeted Programs

Feral Hog Management

- Develop and/or adapt existing materials about the management of feral hog populations to the Lampasas River Watershed
- Feral Hog Management Workshops to educate landowners about the negative impacts of feral hogs and the most effective methods for their control
- Online Damage Tracking System
 - Adapt Plum Creek Feral Hog Damage Tracking program to the Lampasas River Watershed to better estimate the density and location of feral hogs within the watershed, as well as to help direct future implementation



Outreach and Education Strategies: Agriculture and Wildlife Targeted Programs

- Whitetail Deer Management
 - Participation in TPWD Wildlife Programs
 - Campaign to promote landowner involvement in the preparation of Wildlife Management Plans, Wildlife Management Associations and acquire Managed Land Deer Permits if necessary
 - Promote and encourage landowner Wildlife Habitat Incentive Program (WHIP) to establish and improve fish and wildlife habitat



Outreach and Education Strategies: Other Targeted Programs

- Illegal Dumping Campaign
 - Develop or adapt existing material about respecting property rights and disposing of trash while recreating on the river; distribute at sporting good centers and kayak rental facilities and other points deemed
 - Educate hunters and recreationalist about proper disposal of waste effluent



Long Term Monitoring



Next Steps

Next Steps

- Release of WPP for Public Comment
 - Late Summer 2011
 - 45 day Public Comment Period
- Public Comment Meetings



Thank you!



ZGH System