Plum Creek Watershed Protection Planning

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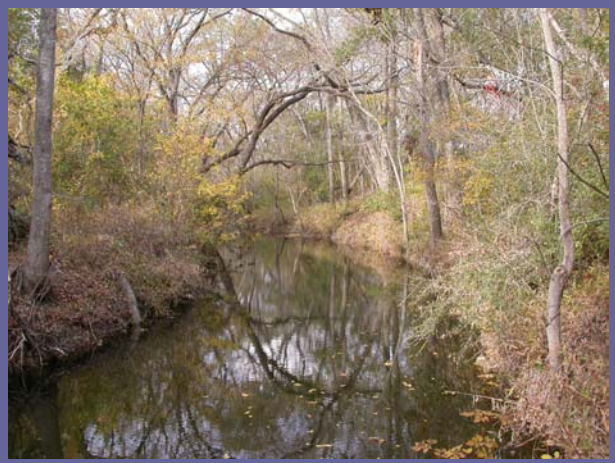
Watershed Partnership

In 2005, Plum Creek was selected by a regional advisory group established by the Texas State Soil and Water Conservation Board for development of a watershed protection plan in lieu of a TMDL. Primary efforts have focused on facilitating active participation of stakeholders. A steering committee and topic-based workgroups are being utilized to assess watershed conditions and identify management strategies. These include:

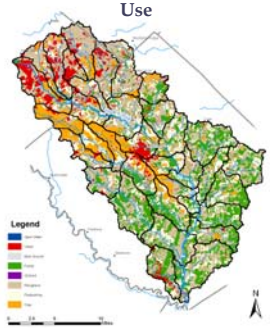
- Outreach and Education
- Urban Stormwater
- Agriculture
- Wastewater Infrastructure
- Water Quality and Habitat



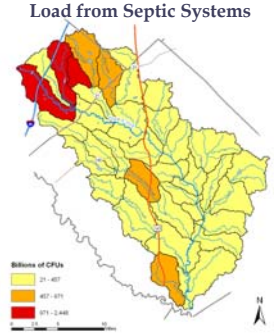
Plum Creek Watershed

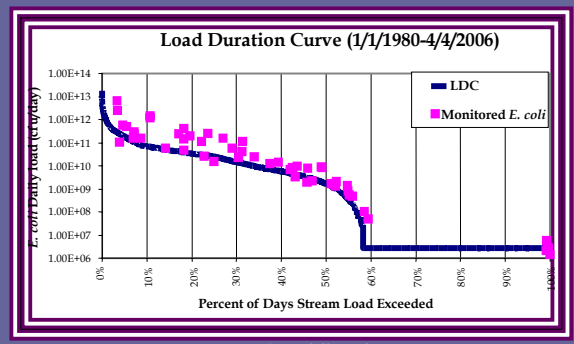
- Located south of Austin, Texas
- Drainage area 400mi²
- Segment length 52 river miles
- Contributes to San Marcos and Guadalupe Rivers
- Early settlement centered around Plum Creek, tributaries, and springs
- Moderate oil production
- Rural-urban interface with agriculture dominant downstream from rapidly increasing city populations
- 303(d) list as impaired by bacteria and having nutrient enrichment concerns

Plum Creek Land Use



Average Daily Potential *E. coli* Load from Septic Systems





Source Identification

Potential point and nonpoint source contributors for Plum Creek have been identified and assessed using Load Duration Curves (LDCs) and SELECT (Spatially Explicit Load Enrichment Calculation Tool). LDCs have verified that both point and nonpoint sources of pollution are present in Plum Creek. However, LDCs cannot identify relative magnitudes of specific source contributions. SELECT utilizes land use data and source number estimates to predict source densities in each subwatershed. Total potential pollutant loads can then be determined for each subwatershed using known pollutant (*E. coli*) production rates.

Assessments have indicated that livestock, wildlife, pets, septic systems, and wastewater facilities are contributing to water quality concerns in Plum Creek. With input from scientific and technical personnel, work groups comprised of local stakeholders are making recommendations on appropriate and feasible management practices to address bacteria and nutrient issues for each source.

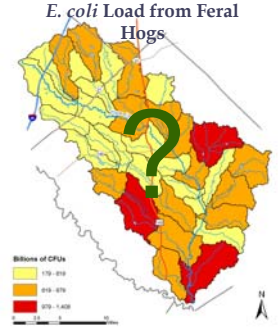
Technical Challenges

Relative contributions from sources generally serve as the basis for targeting selection and implementation of management practices. However, data limitations for some sources have resulted in considerable uncertainty. For example, data from state and federal wildlife management agencies regarding feral hog population and distribution on a county or watershed basis are scarce. Also, temporal variation in livestock numbers (market conditions, drought, etc.) and distribution (on-farm management practices) within a subwatershed may be significant and dramatically affect potential contributions.

Because sources nearest the stream are more likely to impact water quality, potential bacteria transport was adjusted based on proximity to the stream. For sources within 100m of the creek and tributaries, 100% of pollutants were assumed to reach the waterway. Beyond this zone, a 25% rate was used to account for the reduced likelihood of contribution. These data were then used to calculate ranges in potential contributions for each source. These ranges account for the uncertainty inherent in model input data, but still demonstrate and support identification of sources with the greatest potential to contribute pollutants.

Source	Range of Contribution (%)
Cattle	16 -60
Deer	<1
Dogs	1 -64
Feral Hogs	11 -58
Septics	1 -29
Sheep & Goats	1 -18
WWTP	<1
Other	0 -40

Average Daily Potential *E. coli* Load from Feral Hogs



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