**Sewer pipes placed under streams or in stream banks are notorious for cracking and being exposed by erosion. Cracked pipes leak sewage into streams. Eroded pipes block fish passage.**

**Sewer construction damages streams and stream valleys, both during initial installation and again when the sewers must be repaired or replaced.**


(An eroded and cracked sewer pipe that has been repaired more than once)

**To excavate for gravity sewers and build pump stations, hundreds of trees must be cut and access roads built for heavy equipment, like this one.**


**Slopes must be graded to lay the pipes and bring in construction equipment. Access roads are often built across wetlands, seeps, and small streams, as is shown here.**


**New sewers might be located under these roads. If pump stations are built, these roads will be paved and made permanent to allow access for ongoing station maintenance. Runoff from pump stations and access roads -- carrying oils, salt, and potentially raw sewage -- will pollute the creek.**

**Heavy equipment can crush fragile soils and stream banks. Construction can pollute the creek with sediment and oils.**



**Construction debris can wash into the stream, pollute it, disrupt the water flow, and cause flooding.**

**Last summer, the leader of an Audubon Naturalist Society monitoring team on the North Branch of Rock Creek wrote:**

***"Our team went out on Sunday. We were very concerned by the extensive erosion we saw, new since our Spring session. There was major new scouring of both banks and deep new flood channels. We have never seen such erosion at that site. I have attached a few pictures. If you look closely, a lot of photos show a lot of exposed roots and root hairs. Almost all of that is newly exposed. It was previously under several inches of dirt."***

**The team discovered that WSSC was repairing old gravity sewer lines upstream of where they monitor.**

# Effects of sewer reconstruction on the North Branch of Rock Creek

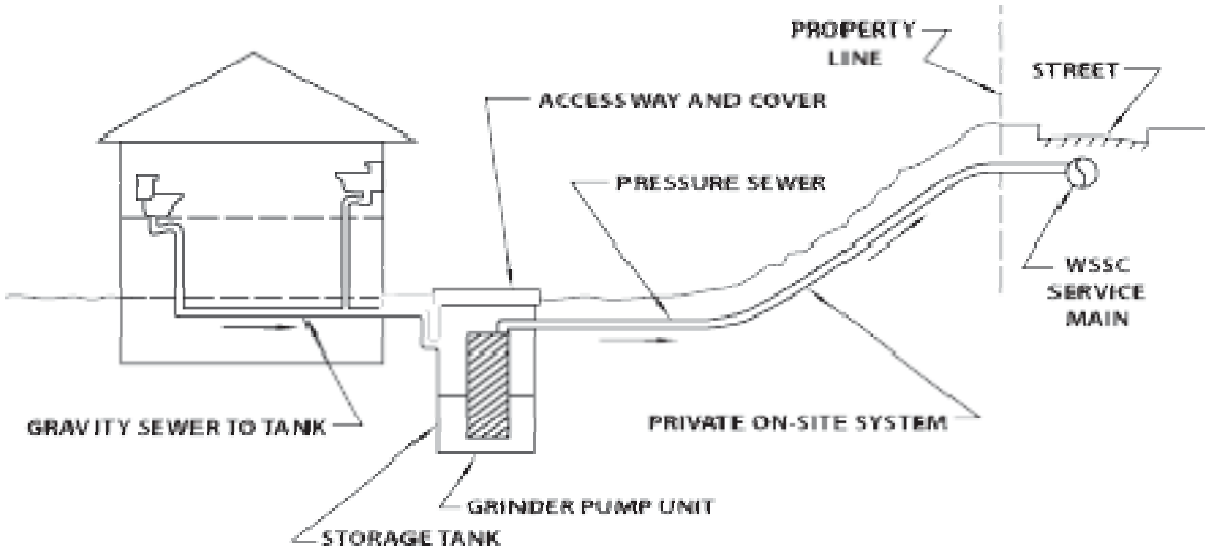

**Evidence of flooding**


**Erosional scour on stream bank**


**Tree roots exposed by erosion**


**Collapsed stream bank**

# An alternative to gravity sewers is a low pressure sewer system (LPS) using grinder pumps




https://www.wsscwater.com/customer-service/frequently-asked-questions/grinder-pump-faqs.html

**A grinder pump the size of a washing machine grinds wastewater into a slurry and then pumps it under pressure to a service main, which may also operate by pressure**

# Since 1970, over a million grinder pumps have been installed throughout the country and around the world

Map from Montgomery County Planning Department

## WSSC reports that 1,500 grinder pumps have been installed in Montgomery and Prince George's Counties

**(Pressure sewer systems outlined in red)**

**Pressure sewers with grinder pumps are already being used in the headwaters of Ten Mile Creek**

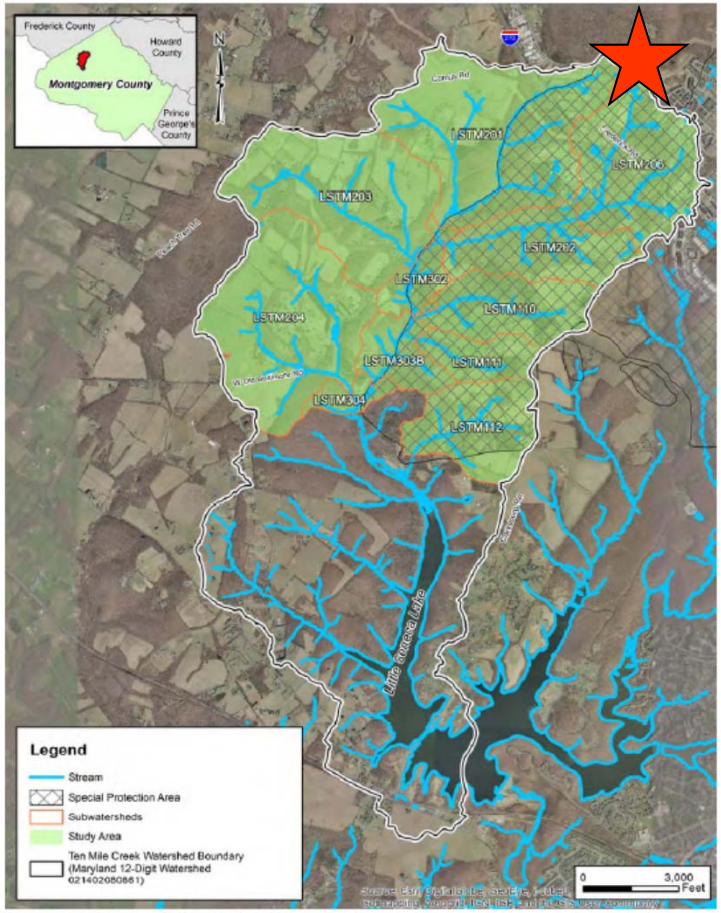



Figure E.1. Ten Mile Creek Watershed and Subwatersheds

Figure from the Ten Mile Creek Area Environmental Analysis for the Ten Mile Creek LMPA

From Montgomery County Planning Department
Site plan number: 820050090

**The pressure sewer system in Woodcrest, across Rt. 355 from the Egan property, keeps sewers out of Ten Mile Creek and Little Bennett Regional Park**

**Grinder pumps in front of two homes in Woodcrest**

Tom Leedy

# Advantages of a pressure sewer system

- The small flexible pipes can follow the natural contour of the land up and down; they do not have to flow to the lowest point in the landscape or be placed in streams
- To maintain pressure, the plastic pipes are fused together to make them air and watertight; there are no manholes for stormwater to enter or joints between pipes for groundwater to infiltrate – frequent sources of outside water in gravity sewer systems that overload wastewater treatment plants and cause massive sewage overflows
- The pipes can be routed to avoid natural features, environmentally-sensitive areas, structures, trees, and landscaping; they cause less disturbance to the land and built environment than gravity systems
- Because the pipes are small in diameter, they do not need deep, wide, and costly excavation; they can be installed easily in small trenches near the surface, alongside streets, and even with trenchless drilling
- Pump stations can be eliminated or their number reduced
- A pressure sewer system costs less to build and to operate than a gravity sewer system

**Here is what some people have had to say about pressure sewers:**

# Great Sky, Georgia

## a community of 2,200 homes on hilly lots adjacent to a reservoir featuring open space, greenbelts, trails, and recreation

*“ ‘We chose to use [a pressure sewer] system because it is not destructive to the landscape’s natural or built features and requires less maintenance,’ said [Bob] McCullough [of Fairgreen Development]. ‘We required a low-cost system alternative that would preserve the most important quality of life characteristics.’*


*“ ‘The LPS system is significantly kinder to the terrain and that was one of the big factors out here – keeping the beauty of the place,’ McCullough said.*

*“In the case of Great Sky, twenty or more lift stations would have been needed to operate a gravity sewer system. However, only three were required for the LPS system.*

*“Shallow trenching lowers excavation costs, infrastructure investment, and labor and materials costs when compared to gravity systems. This also means reduced carrying costs, reduced commitment and municipal fees, and lowered performance bond premiums. In addition, final pump installation can be scheduled after each home is sold.*

*“Feedback from Great Sky homeowners has been overwhelmingly positive. Most homeowners never know the system is operating. The pump itself is self-contained and engineered to perform under a wide range of flow conditions and posts an impressive national average of 8 to 10 years between service calls.”*

**-- Tony Wernke, “Developer Overcomes North Georgia Terrain,” *Land Development Today*, September 2005**

# Fallingwater

## Frank Lloyd Wright's masterpiece on Bear Run in Western Pennsylvania serving 140,000 visitors annually

www.designrulz.com/architecture/2012/10/fallingwater-house-by-frank-lloyd-wright/

***" "The [grinder] pumps had to be dependable, economical, capable of pumping at high head, low profile, invisible to the guests, silent, odorless, and easily serviced.' (Rob Trombold, vice president of Trombold Equipment)***

http://quizlet.com/29810464/architecture-buildings-2-flash-cards/

***" 'We could not dig for a large sewer system because there was too much rock,' said Jeff Gaul, director of maintenance at Fallingwater. 'We didn't have 8 feet to dig in and the excavations would have been much too disruptive to the landscape.'***

www.galenfrysinger.com/http://galenf.com/us/fallingwater62.jpg

***"Fallingwater, recognized as the single best American architectural achievement of the 20th century, finally has a sewage system worthy of the pristine, creekside environment celebrated in Frank Lloyd Wright's design."***

**-- Heather McCune, *"Restoring Frank Lloyd Wright's Masterpiece," Custom Builder,* March 2005**

# Sharpsburg and Keedysville, MD,

**where in 1990 an LPS system replaced failing septic systems and cesspools**

***"A major concern for all involved was potential disruption of environment or architecture during the laying in of the system. Gravity sewers were ruled out because of the huge expense of blasting through rock strata and the possible seismic vibrations which could shake, rattle and roll the towns' historic structures.***

***"The Sharpsburg/Keedysville Low Pressure Sewer System has been on-line for over a year now and the Washington County people are 'very happy,' according to Lynn Palmer, Executive Director for the Washington County Sanitation District. He is quick to comment on aspects of the project which have proven to be an ideal situation for Low Pressure Sewers, like the ability to cut through and lay small diameter pipes in shallow trenches, avoiding the potential explosive costs of blasting for gravity sewers. But Mr. Palmer notes that it's some of the hidden benefits of LPSS that also help make this job shine. Since the Sharpsburg/Keedysville project is a completely new system that is 100% LPSS, some interesting results are clear:***

***1. The system was designed to the EPA level of 200 gallons per day - per EDU (equivalent dwelling unit)***
***2. Average daily flow is actually 124-150 GPD per EDU***
***3. Measured wastewater flow to the Treatment Plant is about 2% less than metered water consumption in winter and about 10% less in summer (due to lawn watering, etc.)***
***4. Infiltration/inflow has been eliminated with the LPSS***
***5. Plus - the equipment is experiencing lower than expected operating costs, which translates into customer satisfaction."***

http://www.zillow.com/homedetails/124-E-Main-124-126-St-Sharpsburg-MD

-- http://www.eone.com/sewer-systems/regions/us/technical-reprints/municipal/antietam/

# WSSC's sewer plan violates Montgomery County's commitment to protect Ten Mile Creek

- **All 5 of WSSC's alternatives would severely harm Ten Mile Creek and Little Seneca Reservoir; WSSC should scrap them and design new concept plans based on nondestructive sewer choices like pressure sewer systems**
- **Sewers must be placed along streets, not in Ten Mile Creek, its tributaries, intermittent and ephemeral streams, seeps, springs, wetlands, forests, erodible soils, or protected buffers**
- **A new, transparent, and fair process that includes <u>all</u> stakeholders is needed to craft a fully protective sewer plan**
- **Montgomery County must live up to its commitment to protect Ten Mile Creek**

Tenley Wurglitz