Stream Restoration

Myths and Misconceptions

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Myths and Misconceptions

- Imperviousness
- Infill development
- Water quality
- Rain gardens
- Trees
- Maintenance
- Floodplains
- Storm flow
- July 2019 storm

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Imperviousness

- Myth: If Arlington County addresses the imperviousness problem, the stream could easily be restored.
- Reality: Gulf Branch watershed is 30% impervious.
- A more ‘natural’ stream watershed would be 5-10% impervious
  - Driveways alone bring Gulf Branch watershed to 5% impervious
  - With just roads, Gulf Branch watershed would be 11% impervious
- Even if we got rid of all the imperviousness, we’d still have a severely eroded stream and exposed sanitary sewer pipes. And we’d still need to go in and fix that.

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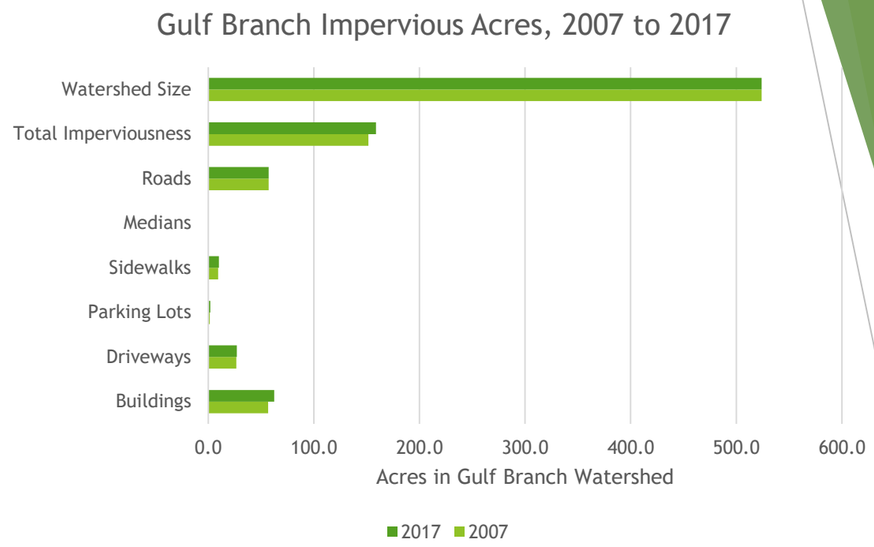
Infill Development

- Myth: If Arlington County regulated infill development more, the stream wouldn't be in such bad shape.
- Reality: Yes, tear down/rebuilds have contributed new imperviousness in Arlington County.



- However, the changes are minor compared to the overall conditions. Gulf Branch watershed has changed from 28.9% to 30.3% impervious from 2007 to 2017.
  - This change – and potential future build-out in the watershed – will be taken into account in the design.
- Since 2014, new development is required to provide onsite stormwater management (permeable paver driveways, planter box rain gardens, etc.).
- County Board is considering the issue of infill development impacts, especially to neighboring properties.

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Myth: Restoration worsens stream life and water quality

Reality: Stream bugs in restored Arlington streams are the most sensitive found in the County.

They are the same kinds as those found in Arlington's unrestored stream sections with adequate habitat.

Arlington's restored streams have:

- Good dissolved oxygen levels
- Good riffles
- Good habitat
- Good surrounding vegetation

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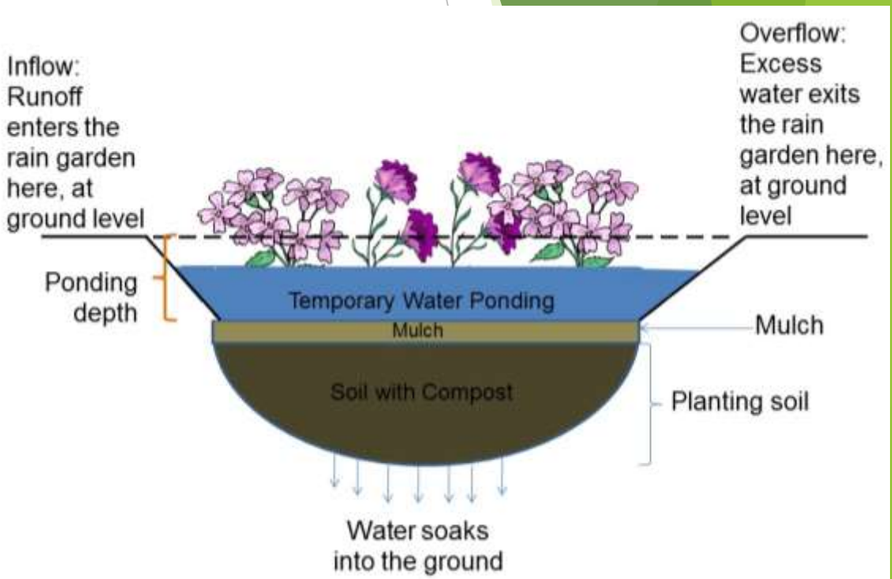
Myth: More rain gardens will fix Gulf Branch

- Rain gardens have a ponding area, amended soil 2-4 feet deep, & a planted surface. They can absorb thousands of gallons of runoff in a rainstorm.
- A one-inch rainstorm produces more than 14 million gallons of water across the Gulf Branch watershed.
- ~4 million gallons fall on impervious surfaces and run off into Gulf Branch in a one-inch rain.
- Reality: Rain gardens are not enough. And even if they were, we'd still have a severely eroded stream and exposed sanitary sewer pipes. We'd still need to fix that.
- Rain gardens are important, and we are installing them throughout the County. Up to four rain gardens will be included in the Gulf Branch project.



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Myth: More trees will fix Gulf Branch

- Trees intercept and take up stormwater.
- That's why County stormwater funds are used to plant and give away thousands of trees every year, and why we carefully follow tree replacement guidelines.
- A 20 inch diameter tulip tree in Arlington can intercept 5,202 gallons of stormwater a year.
- A single one-inch rainstorm produces more than 14 million gallons of water in the Gulf Branch watershed.
- Arlington receives 42 inches of rain annually on average.
- Reality: Trees alone are not enough. And even if they were, we'd still have a severely eroded stream and exposed sanitary sewer pipes. We'd still need to fix that.

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Myth: With maintenance, restoration could be avoided

- Myth: The stream is in its current condition because the County didn't do enough maintenance in the past (riprap, etc.)
- Reality: The County has been doing maintenance work on Gulf Branch for years. In some areas, it has been enough.
- Unfortunately, in other areas it has not been enough, and we need a higher level analysis and design to avoid recurring repairs.
- Spot repairs can also shift the stress points and create problems further downstream.

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Myth: Streams should never overtop their banks

- Reality: A healthy stream accesses its floodplain in heavy storms.
- Floodplains play a key role in helping streams dissipate the energy of heavy storms.
- Typically the stream channel will contain a 2-year storm. Larger storms should overflow into the floodplain.
- If a stream cannot be connected to the broader floodplain, a floodplain bench can be used.

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Myth: After stream restoration, storm flow will be significantly less

- Step pools and floodplain (or floodplain bench connection) will help to dissipate energy.
- The goals of the restoration are to create a stable stream channel that can **safely convey storm flows** while still providing good habitat.
- We will still have flashy streams with fast-moving, high water levels during rainstorms and flood events – but in a more stable channel.

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Effects of the July 2019 storm on restored stream sections

- Before stream restoration: Severe, active erosion, steep stream banks, exposed sanitary sewer pipes
- After: Stream reconnected to floodplain, gently sloping banks, meanders, protected infrastructure

July 2019 storm:

- Step pools successfully held the grade, sanitary sewer pipes were not exposed, erosion on banks was minor, especially compared to pre-restoration conditions.
- **Unrestored** stream segments eroded tons of sediment, degrading and stressing habitat downstream
- Footbridge at Zachary Taylor Park created a blockage (example of competing human and stream priorities)

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