

Stormwater Master Plan

Understanding our Stormwater Utility System





Stormwater Master Plan

- Guideline for the City of Lawrenceville to manage its stormwater utility system.
 - Provides a snapshot of the existing stormwater infrastructure system and estimates future conditions and associated costs of maintaining the stormwater system.
 - Identifies necessary growth for Stormwater Management Program including, equipment, staffing, external assistance.
 - Identifies stormwater operation and maintenance needs.
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Stormwater Overview

- Stormwater is water from rain or snow storms, which flows over streets, parking lots and roofs and into a waterbody or storm drain.
- All stormwater runoff is collected and conveyed to a local stream system.
- Impacts to stormwater:
 - Aging infrastructure
 - Increase development





The Purpose of Stormwater Management

- To mimic natural hydrology
- To reduce physical, chemical, and biological degradation of streams
- To meet local, state, and federal requirements
- To allow for future growth and development



Impervious 'hard' surfaces (roofs, roads, large areas of pavement, and asphalt parking lots) increase the volume and speed of stormwater runoff. This swift surge of water erodes streambeds, reduces groundwater infiltration, and delivers many pollutants and sediment to downstream waters.

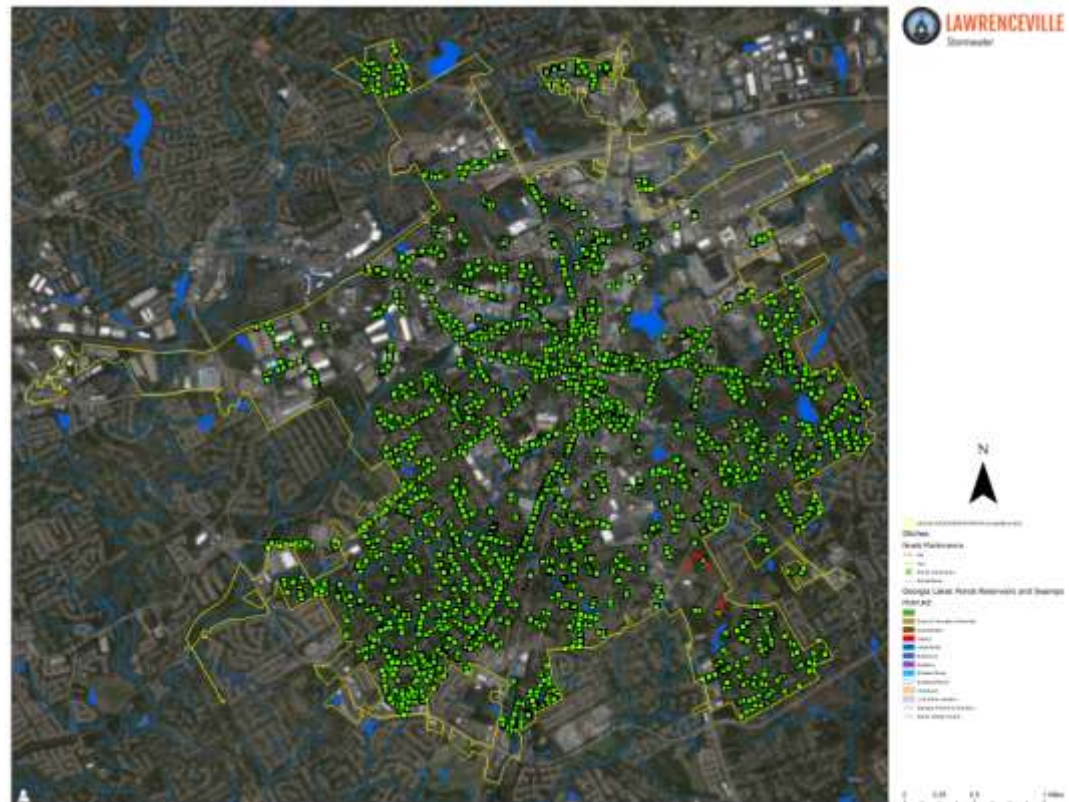


Pervious 'soft' surfaces (green roofs, rain gardens, grass paver parking lots, and infiltration trenches) decrease volume and speed of stormwater runoff. The slowed water seeps into the ground, recharges the water table, and filters out many pollutants and sediment before they arrive in downstream waters.



Stormwater Utility System

- ± 275,700 linear feet of stormwater pipe (± 52 miles)
- ± 4,090 structures
 - Catch Basins/Inlets
 - Junction Boxes
 - Headwalls
 - Culverts
 - Outlets/Outfalls
- ± 200 stormwater detention/retention basins





Condition of System

- Stormwater Pipes
 - Coated CMP: 707 pipes
 - Plain CMP: 930 pipes
 - Total % of CMP within the system: 46.8%
 - Life of CMP is approximately 20 to 30 years
 - Most communities were constructed between 1980-1989
 - Nearing or at the end of CMP's viable life
 - [Stormwater Dashboard](#)
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Level of Service

- Maintain pipes and structures above a grade of 75
 - Address culverts needing repair
 - Strategically replace low-graded infrastructure
 - Address infrastructure nearing the end of viable life
 - Stay proactive and strategic in repair and maintenance
 - Develop robust maintenance plan to prevent accelerated deterioration of the system
 - Prioritize potential failures to avoid utilizing emergency funds
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Identified Project Categories

- Emergency Maintenance
- Replacement of Impaired Culverts
- Replacement of Stormwater System
- Future Televising Inspection Program (CCTV)





Prioritizing Projects

- Emergency Response
 - Protecting Life and Property
 - Identify neighborhoods with single point of roadway access
 - Community data
 - Age of community and its infrastructure
 - Community rated grade of all infrastructure for large scale repairs
 - Material of the infrastructure
 - Review with Pavement Condition Index data
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Infrastructure Assessments

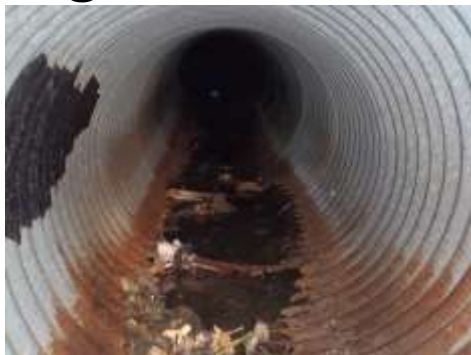
- Excellent Condition



- Excellent Condition



- Failing Condition



- Failing Condition





Televising

- Televising – early detection method
 - Evaluation of infrastructure conditions in isolated areas or inaccessible areas
 - Identify ideal infrastructure to receive televising
 - Medium graded infrastructure
 - Assists in determining priority projects and verifying condition
 - Assists in determining if infrastructure is viable for lining





Lining

- Lining – extension of viable life
 - Avoids road closures, traffic concerns, and construction
 - Viable pipes can be lined to extend the life of the pipe an additional 20-30 years





Flood Impacts

- Approximately 34 road crossings which may be jeopardized by severe weather.
 - Calculated based on 100-year or 1% chance of a storm
 - Flood that statistically has a 1% chance of occurring in any given year.
 - Probability of a flood heights reaching X feet once in a 100 years.
 - Understand our areas of concern during severe weather.
 - Identify areas of study to determine infrastructure demands.
 - Current and future stormwater infrastructure impacts.
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Budgeting the Stormwater Program

Operational

- Maintenance
- MS4 Permit Requirements
- Compliance
- Staffing & Equipment

Capital

- Large Scale Repairs
- Culvert Replacements
- Flood Impacts
- Infrastructure Enhancements

Reserve

- Emergency Repairs
- Meeting program demands



Permit Requirements and Compliance

- GA Phase 1 MS4 Permit
 - Stormwater Management Program (SWMP)
 - GA Industrial General Permit
 - Stormwater Pollution Prevention Plan (SWPPP)
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Stormwater Operation and Maintenance

Proactive

- Inspections
- CCTV Inspections
- Capital Improvement Plan
 - Plan, design, fund, and repair

Routine

- Cleaning
- Minor Repairs
 - Grouting
 - Tops/manhole lid replacements

Corrective

- Dig and replace
- Major repairs
 - Replacing entire catch basins
 - Replacing pipes
- Lining



Summary of Identified CIPs Per Year

| Item | 2024 | 2025 | 2026 | 2027 | 2028 | TOTAL |
|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|
| SW System Repairs | \$1,785,784 | \$1,552,971 | \$1,775,594 | \$1,798,387 | \$1,798,836 | \$8,711,572 |
| Impaired Culverts | \$195,870 | \$241,147 | \$188,441 | \$286,400 | \$834,400 | \$1,746,258 |
| CCTV Program | \$49,500 | \$152,625 | \$152,625 | \$152,625 | \$152,625 | \$660,000 |
| | \$2,031,154 | \$1,946,743 | \$2,116,660 | \$2,237,412 | \$2,785,861 | \$11,117,830 |

*Estimations of costs per year based on 2023 dollars



Identified Culvert Repairs

| Project Name | Projected Costs | Project Name | Projected Costs |
|--------------------------------------|-----------------|--|---------------------|
| Bedford Bay Trail | \$ 195,870 | Huff Street | \$ 151,877 |
| 292 Summit Ridge | \$ 89,271 | 187 Willow Lane | \$ 59,668 |
| 52 Gwinnett Drive | \$ 65,706 | Daniel Lane | \$ 63,067 |
| Juniper Court and Downstream Channel | \$ 51,562 | Industrial Park Drive and Harris Drive | \$ 234,783 |
| Springlake Road | \$ 588,000 | 371 Northdale Road | \$ 246,400 |
| Total | | | \$ 1,746,204 |

*Estimations of costs per year based on 2023 dollars



Critical Issues

- Protection of life and property
 - Aging infrastructure
 - Flood hazard risks
 - Culvert collapses
 - Increasing development with increasing runoff quantities
 - Undersized infrastructure with continued development
 - Increasing state and federal compliance requirements
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Funding

- Stormwater Utility Fee
 - ~ \$2,479,524 annually
- Total cost to repair 100% of the system: \$300 M
 - Cost to replace CMP to more durable material: \$140.4 M
 - 46.8% of system is CMP installed approximately 20 to 30 years ago
 - Existing CMP has a potential remaining life of 10 more years.
 - \$14 M a year for the next 10 years to address system upgrades from CMP
 - 57 years to replace existing CMP with current funds.
 - As CMP reaches end of its useful life, the potential for emergency repairs increases.
 - Emergency repairs are more costly than planned repairs.



Next Steps

- Accept Stormwater Master Plan
 - Capital Project List will be developed for FY 2025 Budget
 - Stormwater Utility Fee
 - Fee Study
 - Assess level of service capabilities
 - In-House
 - Out-Source
 - Develop Stormwater Infrastructure Maintenance Plan
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