



## THE AUDITOR OF PUBLIC ACCOUNTS LOCALITY STORMWATER UTILITY REPORTING FORM

The purpose of this form is to implement the following locality stormwater utility reporting requirement established by Paragraph D.1. of Item 2 of the Fiscal Year 2017-2018 State Budget ([Chapter 836](#) of the 2017 Acts of Assembly): *Each locality establishing a utility or enacting a system of service charges to support a local stormwater management program pursuant to §[15.2-2114](#), Code of Virginia, shall provide to the Auditor of Public Accounts by October 1 of each year, in a format specified by the Auditor, a report as to each program funded by these fees and the expected nutrient and sediment reductions for each of these programs. For any specific stormwater outfall generating more than \$200,000 in annual fees, such report shall include identification of specific actions to remediate nutrient and sediment reduction from the specific outfall.*

Each locality subject to the reporting requirement set forth above shall complete and submit this report form each year to the Auditor of Public Accounts by October 1, in an electronic format emailed to [LocalGovernment@apa.virginia.gov](mailto:LocalGovernment@apa.virginia.gov). **The report as of Fiscal Year 2019 (or applicable reporting period) is due by October 1, 2019.**

### SECTION 1 – LOCALITY INFORMATION

**Locality Name:** City of Roanoke

**Contact Name/Title:** Dwayne D'Ardenne, Stormwater Utility Manager

**Contact Address:** 1802 Courtland Rd NE, Roanoke, VA 24012

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**Contact Phone:** 540.853.5900

**Report Completion Date:** October 1, 2019

### SECTION 2 - STORMWATER UTILITY FEES

*For your stormwater utility fees provide the following information from your most recent audited annual financial report.*

**Financial Statement Fund Name:** 03 – Stormwater Utility Fund\*

**Fiscal year:** FY2018-2019

| Revenues   | Expenditures   | Ending Fund Balance or Net Position |
|--|----------------|-------------------------------------|
| \$6,489,572**  | \$6,529,768*** | \$11,955,040****                    |
| <p><b>Please provide any additional detail/clarification below about the financial information provided at Section 2, if needed.</b></p> <ul style="list-style-type: none"> <li>• *All figures in the table are preliminary as of 9/25/2019 and subject to change as the FY2018-2019 annual financial statement has not yet been completed.</li> <li>• **As required by State Code and City ordinance, all revenue from the stormwater utility fee is credited to the Stormwater Utility Proprietary Fund. Other amounts credited to the fund include transfers from bond proceeds, and revenue from VDOT revenue sharing program and VA DEQ SLAF (Stormwater Local Assistance Fund) program.</li> <li>• ***Expenditures from the fund totaled \$6,529,768. The expenditures included \$5,507,093 for operating expenses including maintenance, water quality, and debt service as well as \$1,022,675 for multi-year capital projects. Historically, expenditures from the 03-Stormwater Utility Fund have exceeded the revenue from the stormwater utility fee. Expenditures beyond the utility fee revenue were made possible via revenue from bond funds, VDOT revenue sharing funds, and DEQ SLAF funds.</li> <li>• ****The balance is split between operations and multi-year capital projects; including remaining bond funds, VDOT revenue sharing funds, and DEQ SLAF funds.</li> </ul> |                |                                     |

## SECTION 3 – FUNDED PROGRAMS AND OTHER MAJOR ACTIVITIES

*Provide a brief description of each major program funded by the utility fee system and, where applicable, the expected nutrient and sediment reductions for each of these programs.*

### A. Operations & Maintenance Program

#### Water Quality Improvement Program

##### Clean Water Act 303(d) Program/Watershed Master Plans

During FY2018-2019, the City of Roanoke continued our collaborative and multi-year Urban Stormwater Research project with the Virginia Tech Department of Civil & Environmental Engineering. The desired outcome from this research is a comprehensive master plan toward the eventual restoration and “delisting” of all impaired stream segments within City limits that are currently identified as part of the Clean Water Act 303(d) program. As a point of fact, segments of the Roanoke River and 11 of its tributaries having watersheds within City Limits are currently on the 303(d) list for various impairments including: Benthic (Sediment), Bacteria, PCBs, Water Temperature, and/or Mercury in Fish Tissue. The FY2018-2019 Urban Stormwater Research focused upon Hydraulic and Hydrologic modelling of the Lick Run and Trout Run watersheds. In-house research staff also completed the Peters Creek Watershed Master Plan (WMP) as well as started the Mudlick Creek and Murdock Creek WMP. These WMPs provide the necessary information and analysis for long-term implementation planning as well as assisting with prioritization of stormwater improvement projects toward protection and restoration of local surface water quality. These WMPs are based on field collected and verified data including physical and biological make-up of the main drainage channel of the watershed; the configuration of the stormwater pipe system that drains

to this channel; and the characteristics of the watershed's land surface that dictate hydrology and water quality. These WMPs identify Goals, Objectives, and Action Items toward the "delisting" desired outcome. The City's overall water quality improvement Goals are as follows:

- Maximize watershed resiliency and sustainability which will reduce flooding, in-stream erosion, sediment loads, and bacteria loads while increasing base flow in dry channels, biological life, recreation, and aesthetics.
- Minimize watershed hazards to public health, safety, and property which will reduce flooding, flood insurance costs, flood repair costs, in-stream erosion, sediment loads, and bacteria loads while increasing base flow in dry channels, biological life, recreation, and aesthetics.
- Connect citizens, businesses, students, and other stakeholders to their watershed which will reduce illicit discharges while increasing property values, treatment from private BMPs, community education, watershed knowledge base, recreation, and aesthetics.

Related to the question of specific stormwater outfalls generating more than \$200,000 in annual fees, the City's GIS analysis reveals that three outfalls exceed that threshold: Tinker Creek outfall #400561, Trout Run outfall #600452, and Lick Run outfall #600164. As alluded to in the paragraphs above, between FY2015-2019, Watershed Master Plans (WMPs) were completed including the Lick Run, Tinker, Carvin, Glade, Trout Run, and Peters Creek watersheds (Apx 53% of the City's 43 sq mile land area.) Combined, all WMPs created to date identify and recommend 147 water quality improvement projects valued at over \$85M to achieve delisting of those WMP specific watersheds.

### **Clean Water Act 303(d) Program/TMDL Action Plans for Sediment, Bacteria, and PCBs**

On October 1, 2015, the City submitted its Sediment and Bacteria TMDL Action Plan in conjunction with the FY2014-2015 annual MS4 permit report. On October 1, 2016, the City submitted its PCB TMDL Action Plan in conjunction with the FY2015-2016 annual MS4 permit report. These Action Plans outline practices, techniques, and designs to achieve Waste Load Allocations (WLAs) set forth by the DEQ for the impaired segments of the Roanoke River and its 13 tributaries having watersheds within the City limits. The TMDL Action Plans are working documents that follow the aforementioned Watershed Master Plan Goals, Objectives, and Action Items. During FY2018-2019, the following TMDL Action Plan items were completed:

- Stormdrain Maintenance: Removed 2,532.42 dry tons of floatables, sediment, and other pollutants during cleaning of 109 inlets and 21,675.84 linear feet of stormdrain pipe Citywide before reaching one of the 711 stormdrain outfalls that flow directly into the Roanoke River or one of its 13 tributaries having watersheds within City limits. Also repaired 60 stormdrain inlets/manholes and cleaned 64 ditchline conveyances during this reporting cycle
- Stormdrain System Asset Inventory: During FY2018-2019, the Ore Branch, Mudlick Creek, and Murdock Creek watersheds' asset inventory were all initiated and are projected to be complete during FY2020. The stormdrain GIS data layer for these watersheds are being verified and updated to include: manholes, pipe orientation, termination points, and outfalls.
- Stormdrain System CCTV Inspection: Using CCTV equipment, crews verified, mapped, and inspected stormdrain assets as well as investigated illicit discharges. In FY2018-2019, CCTV crews inspected 41,878.67 linear feet of Stormdrain pipe.

- Illicit Discharge Detection and Elimination (Outfall Reconnaissance): 54 outfalls were inspected in the Ore Branch and Roanoke River watersheds.
- Illicit Discharge Detection and Elimination (Investigation of Reported Incidents): 12 of 12 illicit discharge reports were opened, investigated, resolved, and closed.
- Water Quality Monitoring Agreement: In collaboration with USGS a monitoring station was installed during 2016 to characterize both streamflow and sediment transport in Lick Run. Monitoring objectives include: near real-time stream levels, water temperature, pH, conductivity, dissolved oxygen and turbidity. As part of the agreement, USGS uses the collected data to determine annual loads of suspended sediment. Based upon USGS provisional data for the past 2 water years, the total suspended sediment load for Lick Run was measured at 830 tons/year. Ironically, based upon the Lick Run TMDL modeled existing loading of 1,731 tons/yr, the City's Waste Load Allocation would require an estimated annual sediment load reduction of the entire 830 tons/year. Said another way, subtracting the City's TMDL-required annual sediment load reduction of 830 tons/year from the measured total suspended sediment load would result in zero (0) tons of in-stream sediment transport per year. As a result of this finding, the City intends to meet with DEQ TMDL staff to review this unachievable dichotomy and has also partnered with the USGS to install three additional monitoring stations for measuring annual loads of suspended sediment in other tributaries having watersheds within City limits.
- Precipitation Monitoring Agreement & SHARKS App: As part of the on-going Urban Research Collaboration with Virginia Tech's Department of Civil & Environmental Engineering, the Stream Hydrology And Rainfall Knowledge System (SHARKS) interactive web app was developed to quickly view, analyze, and download rainfall, streamflow, and water quality data from the City's USGS monitoring network. The SHARKS application has been used to summarize rainfall and water quality events - key data in support of the City's watershed management efforts. The application has a public facing interface that provides basic information about stream depth and rainfall conditions, as well as a private interface that provides more robust analytical tools. Continued development of the app will include adding the three additional USGS monitoring stations, as well as a flash flood forecasting tool for use by Stormwater Utility staff. An interpretative sign was installed at Garden City Elementary School where one of the nine USGS precipitation gauges has been installed.
- Update of the City's VSMP stormwater management design manual: RFP finalized after soliciting input from numerous City stakeholders, and stakeholders from surrounding localities. Work should be completed during FY2019-2020.
- Bacteria Monitoring Program: In-house bacteria monitoring program began during spring of 2017. Since then, data from 1,777 samples (738 during FY2019) has provided Stormwater staff with a basic understanding of bacteria levels in the Roanoke River and nine (9) of its tributary streams within City limits. Findings include the following: 1. On average, the Roanoke River and five of its tributaries meet the Recreational Water Quality Standards set forth by the Virginia Department of Health of 235 CFUs/100 ml. (Roanoke River, Carvin Creek, Barnhardt Creek, Tinker Creek, Ore Branch, and Glade Creek); 2. On average, four tributaries do not meet Recreational Water Quality Standards. (Mudlick Creek, Murray Run, Lick Run, and Peters Creek); 3. Regardless of the averages, the Roanoke River and all 9 tributaries in the program have had some samples collected during the 27 month monitoring period that met Recreational Water Quality Standards as well as had some samples collected during the monitoring period that did not meet Recreational Water Quality Standards. New for FY2018-2019, Stormwater staff, in partnership with the Hampton Roads Sanitation District, began a source tracking program via lab analysis of bacterial "hotspot" samples for HF183 (human marker). Once human DNA is verified at a particular "hotspot", staff look for nearby potential sanitary sewer or septic system sources. Over the past year, and with

the assistance of the Western Virginia Water Authority, this program has resulted in three successful human bacteria source eliminations as well as five others still in progress, thereby reducing human source bacteria in our MS4 system and tributary streams.

- Stream Monitoring Program: Utility staff have contracted a professional biologist perform the DEQ-adopted Virginia Stream Condition Index (VSCI) on 20 sites along the Roanoke River and its tributaries having watersheds within City limits to assess against regulatory impairment status.
- Citizen Science Benthic Macro-Invertebrate Monitoring Program: Utility staff partnered with Clean Valley Council to create and manage this program using the standard operating procedures (SOPs) developed by Save Our Streams. SOPs and QA/QC are used to deliver Level II quality data which staff loads into an interactive map for display and analysis. There are currently 37 certified monitors plus one new certified trainer with more training classes schedule for both fall of 2019 and spring 2020. Monitoring locations continue to be based on priority risk assessments, monitor's home watershed, site accessibility, and total number of program participants.
- Stream Restoration Projects: 2016 Award of \$150K VADEQ Stormwater Local Assistance Funds which is being leveraged with Stormwater Utility Funds to restore apx. 700 linear feet of Lick Run in lower Washington Park. Contract for this Design/Build project has been executed; Design has been approved with an estimated project construction date beginning in November 2019. Further, 2017 DEQ SLAF Grants were awarded for three future stream restoration projects: Lick Run at Highland Farm Road with a total project budget of \$405,455 and a project length of 778 feet (Contract for this Design/Build project has been executed; Design has been approved with an estimated project construction date beginning in October 2019); Glade Creek east and west of Gus Nicks with a total budget of \$1,973,400 and a project length of 2921 feet; and finally, a tributary of Lick Run near the Roanoke-Blacksburg Regional Airport with a total budget of \$681,936 and a project length of 1300' feet.
- Streetsweeping: 2,532.42 tons of sediment & debris were removed from a total of 19,967 City lane miles swept which represents an additional 500.76 tons over FY2017-2018.
- Animal Carcass Collection: 1,817 carcasses were collected from City rights-of-way, an additional 425 over FY2017-2018 (Animal Carcass Collection reduces bacterial contamination of surface waters via stormwater runoff from the City's stormdrain system.)
- Mutt Mitt Stations: 3 additional Mutt Mitt Stations were purchased and installed during FY2018-2019 for a total of 104 Citywide in the Central Business District and along the Lick Run, Tinker Creek, and Roanoke River Greenways. Educational signs at existing Mutt Mitt stations are replaced as needed.
- Bacteria-specific and Sediment-specific education/outreach during FY2018-2019:
  - Stormwater collaborated with Downtown Roanoke, Inc (DRI) and PooPrints to promote dog registration day. The PooPrints Program was started by downtown residents and DRI to register pets living downtown. As part of the program, DNA testing is used to determine which owner is responsible for uncollected pet waste downtown.
  - During FY2019-2020, 1,295 pet waste bag dispensers were provided during education/outreach events to dog owners across the City.
  - Stormwater's septic outreach mailer was direct mailed to 422 properties in the City with known or suspected septic systems
  - Stormwater continues to support the Western Virginia Water Authority in implementing the DEQ awarded 319 Grant funds for sanitary sewer hookups in areas with known septic failures. Awarded locations are in the tributary watersheds of Glade Creek and Mudlick Creek. New sanitary sewer infrastructure has been constructed in the Mudlick watershed with three conversions from septic to date while public meetings for the Glade Creek watershed is scheduled for fall 2019.

- PCB-specific education/outreach during FY2018-2019:
  - PCB-specific brochure is available for distribution at outreach events, staff presentations, at the lobby kiosk in Noel C. Taylor Municipal Building, and for citizens applying for building demolition permits. During Stormwater staff presentations to the community, the topic of PCBs, including those found in consumer products, is routinely covered.
  - Based upon previously completed PCB risk mapping, potential current loading, and legacy sites, staff identified 21 high priority PCB monitoring sites along Tinker Creek, Peters Creek, and the Roanoke River.
  - During the spring 2019 Baltimore Region Toxics Workshop, staff learned that related to PCB monitoring, polyethylene passive sampling in the water column and sediment pores was a superior method to understand bioavailability, mass quantity of PCBs, and if sources are legacy vs. non-legacy. Subsequently, staff has collaborated with UMBC's Dr. Upal Ghosh to propose Roanoke-based PCB monitoring via UMBC research staff at the City's 21 high priority sites. More information will be included in the City's PCB TMDL Action Plan revision that is due to DEQ by April 30, 2020.

### **Public Education and Outreach/Connect Stakeholders to their Watersheds**

The three Watershed Master Plan objectives under "Connect citizens, businesses, students, and other stakeholders to their watershed" are as follows:

- Provide the community with life-long learning opportunities about their watershed
- Engage the community in revitalizing watershed ecosystem health
- Coach the community to participate in outdoor recreation and stewardship opportunities within their watershed

During FY2018-2019, the City's Stormwater Utility staff created and executed a wide array of education and outreach materials and events including:

- Education/outreach via a routinely updated Roanoke Stormwater website.
- Education/outreach via quarterly electronic Roanoke Stormwater newsletter.
- Education/outreach via neighborhood and community presentations by Stormwater staff. During FY2019, nine presentations were given reaching 399 Roanoke citizens and 15 outreach events reaching approximately 7,181.
- Education/outreach via a Fats, Oils, Greases (FOG) brochure that was direct mailed to 381 restaurants in the City of Roanoke.
- Education/outreach via social media with 4-5x weekly Facebook posts to 2,837 followers (2,520 followers last year); 1-2 tweets/day to 1,053 Twitter followers (1,004 last year); 1-2 posts/week to 494 Instagram followers (339 last year); 1-2 pins/week to 214 Pinterest followers (157 last year); and 1/week posts to Next Door reaching 10,389 members (6,722 last year.)
- Education/outreach totals: 83,346 total citizens (86% of City of Roanoke population) were reached through combined efforts of Stormwater staff and Clean Valley Council (CVC), the City's contracted local non-profit entity specializing in environmental education/outreach including: Community Wide Public Events, Outreach Events, Educational Programs and Publications, Stream School, Neighborhood/Community Presentations, and Combined Social Media

## B. Capital Improvement Program

### Stormwater Capital Improvement Program/Minimize watershed hazards

The largest objective under the “Minimize watershed hazard to public health, safety, and property” Watershed Master Plan goal is to “Prioritize and construct Capital Improvement Projects that both mitigate neighborhood flood hazards and improve downstream water quality” The City currently has a backlog of more than 215 such stormwater capital improvement program (CIP) projects. Preliminary design and cost estimates for these projects total approximately \$140 million. Adding this \$140M CIP project total to the information shared earlier regarding Watershed Master Plan identified 147 water quality improvement projects totaling \$85M for 53% of the City’s land area (equating to approximately \$160M Citywide), means that the City’s Stormwater Utility has an total estimated capital project backlog of approximately \$300M. Current Utility resources combined with bond funds, VDOT Revenue Sharing Funds, and DEQ SLAF funds allow approximately \$4.3M per year to be expended for both CIP and WMP Projects. Assuming the current level of Utility resources and outside funding remains flat, the Utility’s CIP and WMP project backlog (necessary to achieve DEQ required TMDL endpoints) will be completed in approximately 70 years or the year 2089.

In FY2018-2019, the following 6 stormwater improvement projects were undertaken:

- Troxell/Mabry Av Stormwater Improvement Project
- Cove Rd – Dansbury Dr Stormwater Improvement Project
- 1300-1400 Graybill Rd Stormwater Improvement Project
- 1800-2000 Blk Shenandoah Ave Stormwater Improvement Project
- 2100 Blk Staunton Av Stormwater Improvement Project
- 4500 Blk Narrows Ln – Phase I Stormwater Improvement Project

During FY2020, the following 8 stormwater improvement projects are scheduled to be constructed:

- Sweetbrier Av Stormwater Improvement Project
- Lakecrest/Greenlee Rd Stormwater Improvement Project
- 3500 block Windsor Rd Stormwater Improvement Project
- Deyerle Rd Stormwater Improvement Project
- Sunrise/Oakland Blvd Stormwater Improvement Project
- 3700 Blk Heatherton Stormwater Improvement Project
- Washington Park/Lick Run Stream Restoration Project (Design/Build)
- Lick Run @ Highland Farms Stream Restoration Project (Design/Build)

The following 8 stormwater improvement projects are designed, approved, and are (or near) shovel-ready for construction pending right-of-way acquisition and adequate funding:

- 1400-1600 Blk Templeton Av (Shovel Ready)
- Sample/Crown Point Rd Stormwater Improvement Project (In ROW Acquisition Process)
- 1400-1500 24th St Stormwater Improvement Project(In ROW Acquisition Process)
- 3400-3500 Blk Brymoor Rd (In ROW Acquisition Process)
- Park Ln – (In ROW Acquisition Process)
- Glenoak/Ivywood – (In ROW Acquisition Process)
- Lick Run @ Roanoke Regional Airport Stream Restoration Project (Design/Build)
- Glade Creek Stream Restoration Project (Design/Build)

Finally, 14 other stormwater improvement projects are under various stages of design:

- 4500 block Narrows Ln - Phase II (95% Designed)
- Hollins/Liberty Rd (90% Designed)
- 19<sup>th</sup> St/Chapman Av (50% Designed)
- 22nd St – Cove Rd (25% Designed)
- Salem Ave – 3<sup>rd</sup> St SW (25% Designed)
- 2400 Blk Florida Av (25% Designed)
- Victoria St- Caldwell St (25% Designed)
- Sherwood/Chesterfield St (25% Designed)
- Downtown Jefferson St -2 (PER Concept)
- West Fork Carvins Creek @ Airport Outfall Retrofit Project (PER Concept)
- Coca-Cola Parcel 3P Stream Restoration Project (PER Concept)
- Trevino/Monterey Phase III - Floodplain Reconnection Project (PER Concept)
- Valley View Retention Basin Retrofit Project
- Daleton Road Basin Retrofit Project