



## 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 first report for Fiscal Year 2017 is due by October 1, 2017.**

### SECTION 1 – LOCALITY INFORMATION

**Locality Name:** City of Roanoke

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

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**Report Completion Date:** September 29, 2017

### 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:** FY2016-2017

Revenues	Expenditures	Ending Fund Balance/Net Position
\$5,927,038	\$8,157,663	\$1,297,449.70

## 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 FY2016-2017, 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 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 FY2016-2017 Urban Stormwater Research focused upon completion of the Carvin, Glade, and Tinker Creek Watershed Master Plans (WMP) as well as starting the Trout Run 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 restoration and protection 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 four outfalls exceed that threshold: Lick Run outfall #600164, Tinker Creek outfall #400561, and two Trout Run outfalls #600451 and #600452. As alluded to in the paragraphs above, between FY2015-2017, Watershed Master Plans (WMPs) were completed including the Lick Run and Tinker Creek watersheds. Combined, these WMPs identify and recommend 97 specific projects valued at over \$33.1M to achieve delisting of those watersheds. Further, the Trout Run Watershed Master Plan will be complete by December 2017 and will similarly identify specific water quality projects to achieve delisting.

## **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 FY2016-2017, the following TMDL Action Plan items were completed:

- Stormdrain Maintenance: Removed 179.81 dry tons of floatables, sediment, and other pollutants upon inspection of 4,208 of the 10,033 stormdrain inlets and 415.6 linear miles of stormdrain pipe Citywide before they reached one of the 930 stormdrain outfalls that flow directly into the Roanoke River or one of its 13 tributaries having watersheds within City limits.
- Stormdrain System Asset Inventory: During 2016-2017, the Trout Run watershed's asset inventory was completed. The stormdrain GIS data layer for this watershed was verified and updated to include: manholes, pipe orientation, termination points, and outfalls.
- Stormdrain System CCTV Inspection: Using the two CCTV trucks purchased during FY2015-2016, crews verified, mapped, and inspected stormdrain assets as well as investigated illicit discharges. In FY2016-2017, CCTV crews inspected 331,927 linear feet of Stormdrain pipe representing a 4.5x increase over FY2015-2016 CCTV inspections and a full 22% of the City's entire stormdrain system this year alone.
- Illicit Discharge Detection and Elimination (Outfall Reconnaissance): 55 outfalls were inspected in the Mudlick Creek, Murray Run, Tinker Creek, Carvin Creek, and Lick Run watersheds. 11 of the 55 outfalls were suspect with dry weather flow, but further investigation deemed all but two to be innocuous. Of the two suspect outfalls in the Mudlick watershed, one was determined to be a potential water authority infiltration originating approx. 20 ft from mouth of outfall and was referred to the Western Virginia Water Authority (WVWA) while the other was in an area previously identified as having failing septic systems upstream and referred to the Virginia Department of Health (VDH.)
- Illicit Discharge Detection and Elimination (Investigation of Reported Incidents): 19 of 19 illicit discharge reports were opened, investigated, resolved, and closed.
- Water Quality Monitoring Agreement: In collaboration with USGS a monitoring station was installed 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 will use the collected data to determine annual loads of suspended sediment.
- Bacteria Monitoring Program: In-house bacteria monitoring program began during spring of 2017. Monitoring locations have been selected through an iterative, adaptive process with sites continuing to be added where high levels of stream bacteria have been found. An initial analysis includes sampling through June 30, 2017, however, baseline trends will become more apparent over time. Early data review has identified several areas warranting additional monitoring sites for a total of 71 locations to date.
- Stream Restoration Projects: Application for and award of \$150K VADEQ Stormwater Local Assistance Funds which will be leveraged with Stormwater Utility Funds to restore apx. 700 linear feet of Lick Run in lower Washington Park. This Design/Build project is currently in the contract negotiation phase of the RFP process with an estimated project completion date of March 15, 2018. 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; 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: 1,444.84 tons of sediment & debris were removed from a total of 13,917 City lane miles swept which represents an additional 81.09 tons over FY2015-2016.
- Animal Carcass Collection: 1,240 carcasses were collected from City rights-of-way which is 86 less than FY2015-2016, but 154 more than FY2014-2015 (Animal Carcass Collection reduces bacterial contamination of surface waters via stormwater runoff from the City's stormdrain system.)
- Additional Tree Canopy in the River & Creek Overlay District: Planting of 64 new trees along the Roanoke River during the fall of 2016 as well as coordination and procurement of contract planting of an additional 55 trees during the fall of 2017.
- Mutt Mitt Stations: 47 additional Mutt Mitt Stations have been purchased and installed in the Central Business District and along the Lick Run, Tinker Creek, and Roanoke River Greenways between FY2015-2016 and FY2016-2017. There are now 90 Mutt Mitt stations Citywide.
- Bacteria-specific and Sediment-specific education/outreach brochures: During FY2016-2017, continued focused distribution of two sediment specific brochures and a pet waste specific brochure:
  - Residential brochure, "Understanding Stormwater Pollution," highlights homeowner level best management practices and is distributed during public outreach events and stormwater presentations.
  - Contractor brochure, "Stormwater Pollution Prevention Requirements," is distributed by the City's "Permit Center" as part of the building permit or street opening permit process. Building Inspectors also distribute to contractors in the field, particularly when compliance problems are identified.
  - Residential bacteria-specific pet waste brochure: The "Here's the Scoop...Do Your Doody & Clean Up After Your Pet" brochure continues to be distributed by veterinary offices, animal shelters, and pet stores within City limits with supply provided by our Utility.
- PCB-specific education/outreach during FY2016-2017:
  - Peters Creek, Tinker Creek, and Roanoke River land use inventory and mapping risk assessment was completed during to identify public and private legacy and non-legacy PCB sources, as well as a qualitatively assess other relevant risk factors such as soil type, site slope, receiving to public and private BMPs, areas of associated impervious surfaces (which may amplify instream soil erosion of suspected PCB containing soils), and connectivity to the city's stormdrain system.
  - PCB-specific brochure was developed and will be distributed to all property owners identified in the risk assessment listed above.
  - PCB-specific webpage content was created and posted online.
  - Public Works Service Center (PWSC) PCB Standard Operating Procedure (SOP) was created as part of the PWSC SWPPP development process.

### **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

To that end during FY2014-2015, the City updated its regional Education and Outreach Plan in collaboration with adjoining locality neighbors, Roanoke County and the Town of Vinton. During FY2015-2016 and FY2016-2017, the City's Stormwater Utility staff created and executed a wide array of education and outreach materials and events including:

- Education/outreach via a completely overhauled Roanoke Stormwater website
- Education/outreach via newly created monthly newsletter: The Riverkeeper
- Education/outreach via social media with 4-5x weekly Facebook posts to 2,132 followers and 2,161 total page likes; 1-2 tweets/day to 821 Twitter followers; 1-2 pins/week to 136 Pinterest followers; 1-2 posts/week to 106 Instagram followers and 1/week posts to Next Door reaching 4,792 members.
- Education/outreach via 10 community events reaching approximately 5,240 citizens during FY2016-2017 including: Roanoke Valley SPCA Tail Chaser, Living Roanoke, Green Academy, GoFest, Tree Stewards, Earth Day, Earth Friendly Fridays, Deschutes Street Pub, Burger Fest, and TAP into Hope
- Education/Outreach via Train-the-Trainer Rainbarrel workshop: In FY2015-2016, 34 participants were trained to make their own Rainbarrel and each committed to organizing at least one Rainbarrel workshop of 20 people each. To date, at least 5 subsequent rainbarrel workshops have been held in the Upper Roanoke River Watershed.
- Stormwater "Creating a Clean Water Legacy" presentations: 14 neighborhood and community presentations were given reaching 327 citizens during FY2016-2017.

Finally, in addition to the above in-house Public Education and Outreach efforts, the City, in collaboration with Roanoke County and the Town of Vinton contracted with local non-profit, Clean Valley Council (CVC), to provide regional stormwater-related events and programming to Roanoke Valley citizens. Through its stream and in-school education programs, the CVC also provides environmental literacy to students throughout the Roanoke Valley. During FY2016-2017, CVC education and public events reached over 10% of the City's population.

- CVC is also under contract with the City as of FY2016-2017 to coordinate the Roanoke Riverkeeper Program, a Citizen Science Benthic Macro-Invertebrate Monitoring Program. This program uses the SOP's developed by Save Our Streams (SOS). The QAPP was completed and approved by VA DEQ and a permit was secured through VDGIF. Standard operating procedures and QA/QC will be used to deliver Level II quality data. Data will be collected and integrated into an interactive map. There are currently 16 trained monitors with more training classes scheduled for both fall of 2017 and spring 2018. Monitoring locations will be based on priority risk assessments, monitor's home watershed, site accessibility, and total number of program participants.

## **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 211 such stormwater capital improvement program (CIP) projects. Preliminary design and cost estimates for these projects total more than \$139.2 million. In FY2016-2017, five stormwater improvement projects were completed:

- Laurel Ridge/Lewiston Stormwater Improvement Project
- Cove/Andrews Stormwater Improvement Project
- Fresno/Aspen Stormwater Improvement Project
- McVitty/Gatewood Stormwater Improvement Project
- 3500 Blk of Peters Creek Road Stormwater Improvement Project

During FY2017-2018, the following 12 stormwater improvement projects are already under construction or are funded and scheduled to be completed:

- Westover/Edgewood Stormwater Improvement Project
- Trevino/Monterey Phase I Stormwater Improvement Project
- Queen/Courtland Stormwater Improvement Project
- Inglewood/Hartland Stormwater Improvement Project
- Oliver/Troy Stormwater Improvement Project
- 3700 Blk Heatherton Rd Stormwater Improvement Project
- 1600 Blk Blair Rd Stormwater Improvement Project
- Blenheim Rd Stormwater Improvement Project
- 1700 Blk Mercer Rd Stormwater Improvement Project
- 3700 Blk Salem Tpk Stormwater Improvement Project
- 1800-2000 Blk Shenandoah Ave Stormwater Improvement Project
- Washington Park/Lick Run Stream Restoration Project #1

Currently, the following 10 stormwater improvement projects are designed, approved, and are (or near) shovel-ready for construction pending right-of-way acquisition and adequate funding:

- 1400-1500 24th St Stormwater Improvement Project
- Sample/Crown Point Rd Stormwater Improvement Project
- Cove Rd – Dansbury Dr (1 Remaining ROW Acquisition)
- 1300-1400 Graybill Rd (In ROW Acquisition Process)
- 4500 block Narrows Ln (In ROW Acquisition Process)
- 3500 block Windsor Rd (In ROW Acquisition Process)
- Sunrise/Oakland Blvd (In ROW Acquisition Process)
- Troxell/Mabry Av (In ROW Acquisition Process)
- 1400-1600 Blk Templeton Av (In ROW Acquisition Process)
- Lakecrest/Greenlee Rd (In ROW Acquisition Process)

Finally, 8 other stormwater improvement projects are under active design:

- Trevino/Monterey Phase II - Floodplain Reconnection Project
- Victoria St- Caldwell St (95% Designed)
- 22nd St – Cove Rd (90% Designed)
- Hollins/Liberty Rd (90% Designed)
- 3400-3500 Blk Brymoor Rd (85% Designed)
- 19<sup>th</sup> St/Chapman Av (75% Designed)
- Sherwood/Chesterfield St (65% Designed)
- 2400 Blk Florida Av (50% Designed)