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. **The report as of Fiscal Year 2020 (or applicable reporting period) is due by October 1, 2020.**

SECTION 1 – LOCALITY INFORMATION

Locality Name:	City of Roanoke
Contact Name/Title:	Joseph Arthur, Acting Stormwater Utility Manager
Contact Address:	1802 Courtland Rd NE, Roanoke, VA 24012
Contact Email:	Joseph.Arthur@RoanokeVA.gov
Contact Phone:	540.853.5900
Report Completion Date:	October 1, 2020

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**: FY2019-2020*

Revenues	Expenditures	Ending Fund Balance or Net Position
$6,483,071**	$8,763,190***	$11,451,305****

Please provide any additional detail/clarification below about the financial information provided at Section 2, if needed.

- *All figures in the table are preliminary as of 9/25/2020 and subject to change as the FY2019-2020 annual financial statement has not yet been completed.
- **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.
- ***Expenditures from the fund totaled $8,763,190. The expenditures included $6,083,542 for operating expenses including maintenance, water quality, and debt service as well as $2,679,648 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.
- ****The balance is split between operations and multi-year capital projects; including remaining bond funds, VDOT revenue sharing funds, and DEQ SLAF funds.

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/Watersheds & Urban Stormwater Research

During FY2019-2020, 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 (13 total) 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 FY2019-2020 Urban Stormwater Research focused upon Hydraulic and Hydrologic modelling of the Lick Run and Trout Run watersheds, a SWMM model, our SHARKS app, and the beta version of PUFFIN. The Stream Hydrology and Rainfall Knowledge System (SHARKS) is based upon USGS data that uses nine (9) rain gauges spread throughout the City to record rain events and is updated hourly. The Probabilistic Urban Flash Flood Information Nexus (PUFFIN) is a rain forecast tool to evaluate the probability of flooding downtown Roanoke based upon the National Weather Service's predictions being input into the Stormwater Management Model (SWMM) that mimics the City's watershed and storm drain network

within the Central Business District. These tools assist in identifying 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.

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 FY2019-2020, the following TMDL Action Plan items were completed:

- Stormdrain Maintenance: Removed 1737.24 dry tons of floatables, sediment, and other pollutants during cleaning of 102 inlets and 50,267 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 54 stormdrain inlets/manholes and cleaned 60 ditchline conveyances during this reporting cycle
- Stormdrain System Asset Inventory: During FY2019-2020, the Ore Branch, Mudlick Creek, and Murdock Creek watersheds' asset inventory were initiated and are projected to be complete during FY2021. 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 FY2019-2020, CCTV crews inspected 110,441 linear feet of Stormdrain pipe.
- Illicit Discharge Detection and Elimination (Outfall Reconnaissance): Typically over 50 outfalls are inspected within the watersheds however regrettably due to Covid-19, Inspections will be delayed till FY2021.
- 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.

- 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 was postponed due to initial scope and costs and only one vendor submitting a bid, the manual will be reevaluated in FY2021.
- Bacteria Monitoring Program: In-house bacteria monitoring program began during spring of 2017. Staff collects samples at 41 sites along the Roanoke River and its tributaries the third week every month and has collected data from 2,170 samples (369 during FY2020) thus providing Stormwater staff with a basic understanding of the bacteria levels within the River. 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. The partnership with the Hampton Roads Sanitation District continues as 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 two years, and with the assistance of the Western Virginia Water Authority, this program has resulted in seven (7) successful human bacteria source eliminations as well as seven (7) 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. Currently, there are 53 volunteer, 43 of whom are certified stream monitors on 31 monitoring sites within the City. Volunteer stream monitoring training is available twice a year for interested citizens. 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: FY2019-2020 – Lick Run Stream Restoration at Washington Park – The City received $150,000 in VADEQ Stormwater Local Assistance Funds in FY16. This project is approximately 700' in length with a total budget of $300,000. FY2019-2020 – Lick Run Stream Restoration at Highland Farm – The City received $202,727 in VADEQ Stormwater Local Assistance Funds in FY17. This project is approximately 780' in length with a total budget of $405,455. Future Planning: FY2020-2021 – Glade Creek Stream Restoration at Gus Nicks Blvd. East and West – The City received $986,700 in VADEQ Stormwater Local Assistance Funds in FY17. This project is

approximately 2,921' in length with a total budget of $1,973,400. FY2020-2021 – Lick Run Stream Restoration at Roanoke Regional Airport – The City and Roanoke Regional Airport Commission have dedicated 50/50 funding for the completion of this project per City ordinance Sec. 11.5-7, the Airport will receive a Utility credit equal to 1/7th of their financial contribution for design/build of this project. This project is 1,300' in length with a total budget of $681,936. Other potential stream restorations include W. Fork Carvins Stream Restoration at the Roanoke Regional Airport and Trevino – Monterey Stream Stabilization

- The City continues to explore additional SLAF grant application opportunities for a 350' stream restoration, an outfall restoration, an extended detention pond, and the reforestation of a City park.
- Mutt Mitt Stations: 4 additional Mutt Mitt Stations were purchased and installed during FY2019-2020 for a total of 108 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 FY2019-2020:
    - During FY2019-2020, 700 (down from 1,295 due to Covid-19) 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 450 properties in the City with known or suspected septic systems and we continue to work with the WVWA and its GIS staff.
    - 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 while public meetings for the Glade Creek watershed were held FY2020.
- PCB-specific education/outreach during FY2019-2020:
    - 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 22 PCB monitoring sites along Tinker Creek, Peters Creek, and the Roanoke River based upon risk map and potential current loading as well as legacy sites; 3 air monitoring sites and 1 each in Glade Creek, Lick Run, and Ore Branch.
    - 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 was included in the City's PCB TMDL Action Plan revision that was sent to DEQ 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 FY2019-2020, the City's Stormwater Utility staff created and executed a created a new annual publication, The State of Waters, that summarizes water quality data, outlines what actions the City has taken to reduce pollutants and lets citizens know how they can help improve water quality. The publication 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 including working with the local Big Brothers Big Sisters chapter for watershed demonstrations.
- The Stormwater Utility, partnered with Motivf, a consulting firm to begin a marketing campaign engaging stakeholders and learning more about how citizens interact with Roanoke's waterways.
- Education/outreach in partnership with local Fire Marshal via a Fats, Oils, Greases (FOG) brochure that was direct mailed to 381 restaurants in the City of Roanoke. In FY20, brochures are mailed out to new restaurants as distributed by Fire Marshals office during inspections.
- Education/outreach via social media with 4-5x weekly Facebook posts to 2,996 followers (2,837 followers last year); 1-2 tweets/day to 1,074 Twitter followers (1,053 last year); 1-2 posts/week to 659 Instagram followers (494 last year); 1-2 pins/week to 260 Pinterest followers (214 last year); and 1/week posts to Next Door reaching 12,920 members (10,389 last year.)
- Education/outreach totals: 75,470 total citizens 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 FY2019-2020, the following 6 stormwater improvement projects were undertaken:

- Sweetbrier Av Stormwater Improvement Project
- Lakecrest/Greenlee Rd Stormwater Improvement Project
- 1400-1600 Blk Templeton Av
- 3500 block Windsor Rd Stormwater Improvement Project
- Washington Park/Lick Run Stream Restoration Project (Design/Build)
- Lick Run @ Highland Farms Stream Restoration Project (Design/Build)

During FY2021, the following 9 stormwater improvement projects are scheduled to be constructed:

- Deyerle Rd Stormwater Improvement Project
- Sunrise/Oakland Blvd Stormwater Improvement Project
- 3400-3500 Blk Brymoor Rd (In ROW Acquisition Process)
- 4500 Blk Narrows Ln – Phase II Stormwater Improvement Project
- Sample/Crown Point Rd Stormwater Improvement Project
- Hollins/Liberty Rd
- Park Ln – (In ROW Acquisition Process)
- Lick Run @ Roanoke Regional Airport Stream Restoration Project (Design/Build)
- Glade Creek Stream Restoration Project (Design/Build)

The following 5 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(In ROW Acquisition Process)
- Glenoak/Ivywood – (In ROW Acquisition Process)
- 19th St/Chapman Av (50% Designed)
- Victoria St- Caldwell St (25% Designed)
- 22nd St – Cove Rd (25% Designed)

Finally, 9 other stormwater improvement projects are under various stages of design:

- Salem Ave – 3rd St SW (25% Designed)
- Sherwood/Chesterfield St (25% Designed)
- Downtown Jefferson St -2 (PER Concept)
- West Fork Carvins Creek @ Airport Outfall Retrofit Project (PER Concept)
- Trevino/Monterey Phase III - Floodplain Reconnection Project (PER Concept)
- Valley View Retention Basin Retrofit Project
- Daleton Road Basin Retrofit Project
- Harvest Lane Detention Basin
- Ramada Inn demolition and Ore Branch Stream Restoration