Virginia Pollutant Discharge Elimination System (VPDES) Phase II Report

Year III (Internal)
Permit Number VAR040022

Roanoke County Community Development
March 10, 2006

Roanoke County Board of Supervisors

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Contributing Agencies and Organizations:
Virginia's Explore Park
Clean Valley Council
The City of Roanoke
The Town of Vinton
Upper Roanoke River Roundtable
Virginia Water Monitoring Council
Roanoke Valley Television Station
Virginia Association of Teachers
Roanoke Valley Resource Authority

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Executive Summary

Polluted stormwater runoff is a leading cause of impairment to nearly 40 percent of surveyed U.S. water bodies that do not meet water quality standards. Overland or via storm sewer systems, polluted runoff is discharged, often untreated, directly into local water bodies. When left uncontrolled, this water pollution can result in the destruction of fish, wildlife, and aquatic life habitats; a loss in aesthetic value; and threats to public health due to contaminated food, drinking water supplies, and recreational waterways.

Mandated by Congress under the Clean Water Act (CWA), the National Pollutant Discharge Elimination System (NPDES) is a comprehensive, two-phased national program for addressing the urban sources of stormwater discharges that adversely affect the quality of our Nation's waters. This program uses the NPDES permitting mechanism to require the implementation of stormwater management controls designed to minimize surface water pollution caused by urban stormwater runoff.

The County of Roanoke developed and implemented a comprehensive plan to meet the conditions of the VPDES Phase II permit. The permit is outlined in six minimum control measures (MCMs): Public Education and Outreach, Public Participation and Involvement, Illicit Discharge Detection and Elimination, Construction Site Runoff Control, Post Construction Stormwater Management, and Pollution Prevention/Good Housekeeping. Within each MCM, there are numerous best management practices (BMPs) being implemented by the County of Roanoke.

Strong regional cooperation has been pursued in the MCM areas of Public Education and Outreach, Public Participation and Involvement, and Pollution Prevention/Good Housekeeping. The County intends to continue to participate in regional efforts to educate the public in coordination with the City of Roanoke, the Town of Vinton, and other regional environmentally responsible organizations such as Virginia's Explore Park and the Clean Valley Council. Regional cooperation and discussion will not only be economically sound, but also instrumental in the consistent and continual education of the citizens of Roanoke County and beyond. This regional perspective is instrumental in the effective reduction of pollutants into our rivers and streams.

The Minimum Control Measures for year three (April 28, 2005 – April 28, 2006) have been completed and are described in the following document. Directly following the document, appendices illustrate details of the County of Roanoke's compliance to the minimum control measures and subsequent BMPs.

Minimum Control Measure 1: Public Education and Outreach

The County of Roanoke partnered with Explore Park to help fulfill most of the BMPs within Minimum Control Measure 1 and Minimum Control Measure 2. Explore Park's Earth-Wise program is supported by a number of local municipalities and enables them to fulfill the BMPs of these control measures consistently on a regional level.

BMP: 1-1. Complete a comprehensive review of existing stormwater educational programs available to Roanoke County and the Roanoke Valley region..

This resource review lists over 150 resources for stormwater information. The information, updated quarterly, is in the form of printed material, agency websites, environmental education efforts and organizations, maps, videos, hotlines, and books. A website and phone number is listed with each resource if it is available. The review is located on the County of Roanoke's website (www.roanokecountyva.gov) under the stormwater information heading and also located on Explore Park's website (http://explorepark.org/earth_wise/earth_wise.html). The most recent list of resources is attached to this document in Appendix 1-1.

BMP: 1-2. Develop and distribute a Roanoke County Stormwater Informational Mailer to Roanoke County Residents on a Yearly Basis. The mailer will be designed as a regional document based on the unique issues and concerns for the Roanoke River Watershed.

In conjunction with the City of Roanoke and the Town of Vinton, the County developed an informational mailer titled "When it Rains It Drains." The County's measurable goal was to distribute the mailer to 8,700 County residents which is approximately 10% of the County population according to a 2004 US Census Bureau estimate. The flyer was printed as an insert to the Department of Parks and Recreation bulletin which was distributed to 29,305 homes, approximately 34% of the population. An extra 1500 flyers were printed for distribution in libraries, schools, and county offices throughout the year. The complete flyer can be seen in Appendix 1-2.

BMP: 1-3. In cooperation with Virginia Save Our Streams, Roanoke County will provide Stream School Seminars for adults and high school students on a yearly basis..

Three Save Our Streams (SOS) field days were conducted at Explore Park on July 9 and August 27, another SOS field day was held on November 19 at Vineyard Park. They were well attended and two people became certified monitors from those who attended. In addition to the field days, a Teacher's Workshop was held on November 18. Nine teachers from across the state attended the training through a field trip offered at the Virginia Association of Science Teachers Conference. An attendance list of each field day is provided in Appendix 1-3.

BMP: 1-4. Develop a stormwater education program for Roanoke County school age children. Different programs will target appropriate grade levels..

The Explore Park Earth-WISE program entitled *Stormwater and Water Resources Education* was utilized to fulfill the requirements of this BMP. The program consists of Virginia's Standards of Learning (SOL) based lessons that expose students to storm water, watersheds, pollution and runoff, regional water

resources and a variety of grade appropriate (K-12) storm water topics. A description of the Earth-WISE program and a table showing the schools that utilized it and the number of students reached is shown in Appendix 1-4.

BMP 1-5 Distribute posters, bumper stickers, flyers, fact sheets, and other items promoting the importance of Stormwater Quality to the citizens of Roanoke County..

Information was distributed at a large number of events around the region. The majority of the information was in the form of brochures, bumper stickers, maps, and flyers provided by the DCR. A list, showing quantities and types of information that were distributed, is shown in Appendix 1-5.

BMP 1-6 Utilization of billboards in high traffic corridors to advertise the importance of stormwater quality, conservation, and other stormwater issues.

The County of Roanoke has removed this BMP from its permit. Since the date of approval of the permit, the County's zoning regulations have changed and no new billboards are being allowed within the County. The goal of BMP 1-6 was to utilize billboards as a tool for public education on important stormwater issues. To meet this goal originally designed for this BMP, the County of Roanoke has expanded the distribution of the informational mailer. The County's original goal was a distribution of the mailer to 10% of the citizens of the county. Instead the distribution was expanded to 35,000 of the citizens, approximately 40% of the county to accommodate for the elimination of the billboards.

BMP 1-7 Establish a stormwater hotline for Roanoke County Citizens that allows citizens to report storm drain violations (illegal dumping), make general comments about stormwater/storm drains and stormwater maintenance concerns. The hotline will be designed to include comment tracking and follow up protocols, provide general information on the stormwater management program and provide storm water management program contact information.

The County's Citizen Inquiry System (CIS) is being utilized to handle the stormwater hotline. This system allows any County employee to provide citizens with prompt service regarding their questions and concerns. After a stormwater-related citizen issue is entered into the system, the assigned employee is notified via email, and any activity related to the issue is be logged in the system. Outside of normal business hours, citizens can log on to the County's website and fill out a form that is linked to the CIS. A stormwater specific email address has also been established and is posted on the stormwater web page.

BMP 1-8 Develop and maintain a Roanoke County Stormwater web page, where citizens can get information concerning the County's Stormwater Management Program, ordinances, design guidelines, general information, contact information, pollution prevention information, educational programs and links to other organizations and sites.

The County's website has a page devoted to Stormwater education. The web address is http://www.roanokecountyva.gov/Departments/Engineering/Stormwater/. This past year, the site has been expanded to include: general stormwater management information, a definition of non-point source pollution, pictures and descriptions of typical stormwater structures, stormwater volunteering opportunities, upcoming stormwater events, a database of stormwater publications and programs, and an

interactive map called “What Watershed Do You Live In?”, which allows citizens to discover what watershed they live inside. A site map outline for the webpage is shown in Appendix 1-8.

BMP 1-9 Produce Stormwater Program Public Service Announcements on a yearly basis that utilize radio and television media to educate the public on stormwater issues.

Efforts for PSAs this year were focused on a variety of media. Several newspaper ads, press releases, television spots, email notifications, website event listings and notices of public evens were run. An EPA and The Weather Channel program “After the Storm” ran on Roanoke Valley Television (RVTV) with an introduction of local issues by Rachel Parson. Channel 7 News covered the Fall Waterways Celebration on October 1st, 2005 and the event called “Down by the River” on August 20, 2005. Press releases for both events were provided. An announcement listing upcoming water education events was provided to the Virginia Water Monitoring Council for electronic distribution among its extensive membership and all upcoming events were listed on Roanoke County’s storm water webpage. Copies of ads, press releases, notices, television spots, and email notifications are located in Appendix 1-9.

BMP 1-10 Develop a stormwater quality education program for specific commercial businesses within the County of Roanoke and provide information to these businesses in an effort to increase business owner awareness of the impacts of illicit discharges into the County’s storm sewer system.

This past year efforts included promoting a stormwater video presentation specifically designed for businesses called “Stormwater Runoff: I can make a difference”. Information was distributed at public events. The Roanoke Valley Homebuilder’s Association and Landscaper’s Association were both contacted with the program information. Explore Park sent a listing of presentations to the Roanoke Valley Chamber of Business including the video listed above. The list of target businesses and the letter that was sent to them are both in Appendix 1-10.

Minimum Control Measure 2: Public Participation and Involvement

BMP 2-1 Coordinate a Storm Drain Stenciling Program with local schools, organizations, neighborhoods, businesses, etc., with the goal of stenciling storm drains throughout the County.

The storm drain stenciling program primarily involves teen-age groups and teaches that the storm drain system discharges untreated water into local streams and rivers, and also teaches the consequences of dumping wastes into the storm drains. Participants have found this activity enjoyable and the County expects to stencil a large percentage of drains near schools, neighborhoods, and other public places. Volunteers stenciled 86 storm drains and distributed 190 door hangers in Roanoke County that say "Dump no waste … Drains to River". A list of areas where storm drains were stenciled can be found in Appendix 2-1.

BMP 2-2 Coordinate a Save our Streams Program to educate local schools, organizations, neighborhoods, and businesses on water quality regulations, water pollution and the importance of stream monitoring within the County.

This BMP coordinates with BMP 1-3. Currently eleven streams are being monitored quarterly in the Upper Roanoke River Watershed this number is up from nine streams last year. A list of the streams that they monitored this past year can be seen in Appendix 2-2.

BMP 2-3 Once a year, at Virginia's Explore Park, hold a public forum to address different storm water issues, the County's progress towards storm water quality improvements, and to receive input from the public on the County's Stormwater Management Program.

The public forum meeting was held on October 1st of 2005 at the Fall Waterways Cleanup & Celebration. Over 350 people attended the event that was held in conjunction with the Clean Valley Council's Fall Waterways Celebration. Ten booths, including one for Roanoke County and Town of Vinton provided water quality information and activities for the public. A representative for the municipalities was present at the booth to receive input from the public in addition to answering additional questions regarding stormwater management issues. Free t-shirts, food, and music were provided for the attending public and all clean-up volunteers. A list of booth attendees for the event is shown in Appendix 2-3.

BMP: 2-4. Establish a Stormwater Management Program Citizens Advisory Committee

Committee members representing the citizens of County of Roanoke, the City of Roanoke, and the Town of Vinton met with representatives for the governing localities to be updated with the Stormwater Management Program and discuss citizen's issues. The fourteen member Citizens Advisory Committee met four times this year on: May 18, Aug. 24, Nov. 8th, and Feb. 7th, 2006. The meetings were held quarterly and the location is rotated among the localities. Attendance lists and minutes from the meetings can be found in Appendix 2-4.

Minimum Control Measure 3: Illicit Discharge Detection and Elimination

BMP: 3-1. Develop a storm drain system map which identifies all outfalls 15-inch and larger and all 12-inch outfalls from zoned industrial properties within the County of Roanoke, which discharge to natural waterways.

The County of Roanoke is making two distinct efforts to map the storm drain system. The first involves drafting the system in AutoCAD, based on research of as-built plans and planimetric data derived from aerial photography. The second effort towards mapping the storm drain system is field collection of the storm drain structures using the Global Positioning System (GPS). During the summer of 2005 the County of Roanoke hired interns to do the GPS mapping and continue the efforts from the previous years. The AutoCAD and GPS based mapping has located nearly 9000 storm drain structures, with 749 fifteen-inch or larger outfalls, and 53 twelve-inch or larger outfalls from industrial zoned properties. All structures that have been mapped from as-built plans and topo maps will be field verified with GPS prior to completion of the mapping effort. A total of 8910 structures have been collected with GPS in the field.

The measurable goal for this BMP is a complete map of 50% of all storm drain outfalls 15-inch and larger, and all outfalls 12-inch and larger from industrial zoned properties within the County of Roanoke. The County estimates that it has successfully mapped 85-90% of all storm drain outfalls in the County. This map can be found in Appendix 3-1.

BMP: 3-2. Develop regulations and an enforcement program for a stormwater ordinance preventing illegal discharges into the storm drain system.

The County of Roanoke and the City of Roanoke currently have the consulting firm of Hayes, Seay, Mattern & Mattern under contract to revise existing stormwater management plans to make the proposed ordinances as similar as practical, while incorporating stormwater quality issues and using the state model ordinance as an example. An illicit discharge ordinance is one of the proposed ordinances still in draft phase. Currently, the draft ordinance prohibits all discharges of sewage, industrial wastes, or other wastes into the storm drain system or into areas that drain to the storm drain system. The contract calls for completion by this summer with adoption by the appropriate governing bodies shortly thereafter. The draft of the illicit discharge ordinance is in Appendix 3-2. The County of Roanoke is also working on an enforcement plan for illegal discharges into the storm drain system to be put into effect after the illicit discharge ordinance is passed by the Board of Supervisors.

The County has requested and has been authorized by DCR to modify the implementation date for BMP 3-2, 3-4, 5-1, and 5-2 to March 10, 2007. This modification will allow the County of Roanoke to continue the coordination of ordinance development on a regional basis with the other local MS4 permit holders. The letter of request and subsequent letter of approval may be found in Appendix 3-2.

BMP: 3-3. Pilot project for Illicit Discharge Detection and Elimination.

During the summer of 2004, the County implemented a pilot project for illicit discharge detection in the Mudlick Creek watershed. A copy of the Illicit Discharge Detection Outfall Reconnaissance Inventory is attached in Appendix 3-3. All of the outfalls within the watershed that had been located from the storm drain mapping effort were inspected during a dry period in early August. Only one flow was detected, and after it was traced back to the source, it was determined that is was not an illicit

discharge. This project gave some insight into the process of detecting illicit discharges. It seems that the likelihood of finding any is low with this method as it is truly a matter of looking in the right place at the right time. Another pilot project for illicit discharge detection is planned for the summer of 2006.

BMP: 3-4. Identify and enforce correction of illicit connections.

The County has been conducting dry weather survey of all storm sewer system outfalls in the process of mapping the storm sewer system. Emphasis has been placed on surveying the outfalls from zoned industrial properties. Enforcement for illicit connections will commence once the Illicit Discharge Ordinance is passed by the Board of Supervisors. See BMP 3-2 for modifications to implementation date for enforcement of illicit connection ordinance.

Minimum Control Measure 4: Construction Site Runoff Control.

BMP: 4-1. Require Erosion and Sediment Control plans for any land disturbance greater than 10,000 square feet.

In February 2004 the County of Roanoke adopted an updated erosion and sediment control ordinance to reduce construction pollutants in its storm water runoff. It is entirely in compliance with the VPDES Phase II regulations. The ordinance states that any land-disturbing activity of 10,000 square feet or more requires an approved erosion and sediment control plan that contains measures to reduce soil erosion and practices to control sediments that have already eroded. For land-disturbing activities between 5,000 and 10,000 square feet, either a plot plan prepared by a certified responsible land disturber or an engineered plan prepared by a professional engineer must be approved. For land-disturbing activities between 2,500 and 5,000 square feet, an "agreement in lieu of a plan" may be substituted for an erosion and sediment control plan. The complete erosion and sediment control ordinance can be found in Appendix 4-1. In 2005 the Department of Community Development issued 92 erosion and sediment control permits with a total disturbed area of approximately 504 acres.

BMP: 4-2. Identify current Erosion and Sediment Control certified employees and develop a program for additional certifications and cross training.

Two county departments, Community Development, and Parks and Recreation were identified as having positions whose job responsibilities necessitate erosion and sediment control training and certification. Currently the county utilizes training and certification through the Department of Conservation and Recreation's Virginia Erosion and Sediment Control Training and Certification Program. Additional employees hired into positions whose job responsibilities have already been determined as needing training in erosion and sediment control will be certified using the DCR's Erosion and Sediment Control Training and Certification program. A table of the positions within each department, the employee(s) in the positions, and their level of certification can be found in Appendix 4-2.

BMP: 4-3. Develop a County sponsored awards program for Exemplary Erosion and Sediment Control Compliance

In year one an erosion and sediment control awards program was developed. The program recognizes any outstanding project or program that demonstrates excellence in natural resource conservation and environmental protection through the use of effective erosion and sediment control policies. The focus is on the application of a new practice, design or process that has combined technological and environmental considerations to reduce erosion and sediment loss and improve water quality.

A flyer describing the awards program and the types of innovative practices it promotes was developed for distribution to individuals and companies in preliminary meetings. This will provide county staff with a way to help promote the program and encourage erosion and sediment control practices that exceed the minimums for compliance. This flyer is in Appendix 4-3.

County staff working in site development review, site engineering, and inspections make note and vote on projects to be considered for awards. Any awards given will be presented in front of the Board of Supervisors quarterly or semi-annually, depending on the number of awards given. A plaque will be

given and companies will be recognized in a splash screen on RVTV, the local public access television station. A seal or logo is also being considered so recipients can show in their literature or signage that they were recognized by the County of Roanoke for their efforts in erosion and sediment control.

In year three of the permit, no awards were given. It has been difficult to find projects that have exceeded the minimum standards for erosion and sediment control. The County also does not feel it is appropriate to give awards to projects that have just met minimum standards and have had no violations, since that is required of all projects. The County plans to utilize the Roanoke Regional Homebuilders Association and the Upper Roanoke River Roundtable to help make nominations for County review of projects that deserve recognition.

Minimum Control Measure 5: Post Construction stormwater management in new development and redevelopment.

BMP: 5-1. Develop, adopt and enforce an ordinance addressing water quality in post construction site storm water runoff. Design the Roanoke County Stormwater Management Ordinance to address water quality, watershed management, design guidelines, and other applications that will meet the VPDES Phase II requirements.

The County, along with the City of Roanoke, has hired a consultant (Hayes, Seay, Mattern & Mattern) to help with the preparation of a stormwater management ordinance. A number of localities in the region have met to discuss the possibility of regional cooperation in the development of the stormwater ordinance. A draft of the ordinance has been written that addresses several areas of concern in terms of construction resource protection including: stormwater quantity and quality, watershed planning, low impact development techniques, steep slope/soils development issues, floodplain management, land conservation, stream buffer requirements and maintenance of drainage easements. The draft is currently under review. The County of Roanoke originally had enforcement of the construction stormwater quality ordiance as the goal for year three. Due to efforts to develop consistent and effective regional ordinances, Roanoke County has requested and has been approved for an extension for this BMP. See Appendix 3-2 for stormwater management ordinance modification.

BMP: 5-2. Develop an Inspection and Enforcement program for maintenance of Post Construction structural stormwater quality controls in new development and redevelopment. The inspection program will be designed to tie into CRS inspections, Flood/911 response calls, flood damage reporting, and stream habitat inventory efforts.

This program is being created as one of the sections of the stormwater ordinance which is in development. See Appendix 3-2 for extension approval for Ordinance. Efforts for year two and three were primarily focused on developing an inventory of structural runoff controls. In conjunction with the storm drain system mapping program, a database of structures was developed. Stormwater ponds were located in the field and digitized from aerial photography. Currently there are 274 structures inventoried in the database. The County plans to use handheld Windows CE-based computers with GPS integration to conduct the annual inspections.

Minimum Control Measure 6: Pollution Prevention/Good Housekeeping.

BMP: 6-1. Develop Spill Prevention and Control Plans for Municipal Facilities

As a cornerstone of EPA's strategy to prevent oil spills from reaching our nation's waters, the Agency requires that facilities with a total above ground oil storage capacity of greater than 1,320 gallons develop and implement oil spill prevention, control, and countermeasure, or SPCC plans. All county facilities were evaluated and it was determined that the Public Safety Center, and the Cave Spring, Clearbrook, Fort Lewis, and Hollins fire stations required SPCC plans. The County hired Maureen Castern of Stratus Environmental Systems to prepare SPCC plans for the listed county facilities. The plans have been completed and the County is currently in the process of implementing them.

BMP: 6-2. Participate in a Household Hazardous Waste (HHHW) Collection Event

The County of Roanoke participated in three Household Hazardous Waste Collection events: May 7th, Aug. 6th, and Nov. 6th. The last event was located at the Roanoke Civic Center where over 250 people dropped off their unwanted household waste items. The City of Roanoke, Roanoke County, Botetourt County, Roanoke Valley Resource Authority, and the Town of Vinton provided financial resources and volunteers, which enabled the day to be a success. Almost 700 people participated in the Household Hazardous Waste Collection days this year. A table showing the list of participants and the information that was distributed for the event can be found in Appendix 6-2.

BMP: 6-3. Develop and Maintain a Program for Maintenance of Public Storm Drain Systems.

The Stormwater Division of the Department of Community Development employs two stormwater construction and maintenance crews with a total of 8 men. These crews perform a large variety of duties including storm pond maintenance, installation of pipes and structures, repair of damaged structures, emergency response to flooding problems and all other county storm drain system maintenance. The measurable goal for this BMP is 5600 labor hours towards storm sewer system maintenance. Eight men working full time for one year is equivalent to 16,000 labor hours, which is nearly three times the County's commitment for this BMP.

Currently, the stormwater operations supervisor records the work on projects in a hand written logbook. A database is being developed to keep a log of drainage projects and the hours worked on those projects. This will provide a better method to maintain records of the activities of the stormwater maintenance crew and will allow for more accurate reporting of man-hours for subsequent years of the County's VPDES permit.

BMP: 6-4. Develop and maintain Pollution Prevention and Hazardous Waste training programs for County employees, grounds maintenance workers and landscaping crews.

The County of Roanoke currently maintains basic hazardous waste training for employees in Fire and Rescue. The County's Environmental Assessment Team (EAT) is a team responsible for establishing and maintaining the environmental management and ensures its conformance with state laws. The County's EAT is also involved in specifying hazardous waste training for applicable positions within the County. All County employees receive environmental awareness and management training. Human Resources ensure this training is delivered to all County full and part-time employees. The training

includes: the County's environmental policy and system to manage environmental resources, identification of potentially significant environmental impacts, environmental objectives and targets, and employee roles and environmental responsibilities.