

# Implementation Plan for Bacterial TMDLs in the North Landing River Watershed



August 2009

PEP09-02

**IMPLEMENTATION PLAN FOR  
BACTERIAL TMDLS  
(TOTAL MAXIMUM DAILY LOADs)  
in the  
NORTH LANDING RIVER WATERSHED**

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**ABSTRACT**

The North Landing River Watershed is located within the City of Virginia Beach in Southeastern Virginia. In response to Section 303(d) of the Clean Water Act, the Virginia Department of Environmental Quality (VADEQ) listed portions of the watershed, Milldam Creek and Middle West Neck Creek, as impaired on Virginia's Section 303(d) list for being unable to attain the the criteria for primary contact recreation due to elevated levels of fecal coliform bacteria.

The Virginia Department of Environmental Quality completed the "Development of Bacterial TMDLs for the Virginia Beach Coastal Area," in 2005. The TMDL Study included allocations to limit bacteria pollutant loads discharged to Milldam Creek and Middle West Neck Creek to levels that were modeled to achieve compliance with the state water quality criteria for bacteria for primary contact recreation. This Implementation Plan bridges the gap between those specified pollutant load allocations and actual reductions in bacteria counts in Milldam Creek and Middle West Neck Creek by recommending a set of actions to be taken in the watershed during a fifteen year project timeframe. This document follows the development of the "Implementation Plan for the Fecal Coliform Total Maximum Daily Load for the Shellfish Areas of Lynnhaven Bay, Broad Bay, and Linkhorn Bay Watersheds" which the City has chosen to serve as a framework for subsequent TMDL Implementation Plans.

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## 1.0 EXECUTIVE SUMMARY

### 1.1 Introduction

This Implementation Plan (IP) is a companion document to the report, “Development of Bacterial TMDLs for the Virginia Beach Coastal Area,”(Map Tech 2005). The TMDL Study set allocations to limit bacteria pollutant loads discharged to London Bridge Creek and Canal #2, Milldam Creek, Nanney Creek<sup>1</sup>, West Neck Creek (Middle) and West Neck Creek (Upper) to levels that were modeled to achieve compliance with the State water quality criteria for bacteria for contact recreational use. This IP bridges the gap between those specified pollutant load allocations and actual reductions in bacteria counts in impaired waters within the North Landing River Watershed by recommending a set of actions to be taken in the watersheds during a fifteen year project timeframe. Currently, these impaired waters are Milldam Creek and West Neck Creek (Middle). As other TMDLs are completed within the Watershed, they will be added to this report. Actions to reduce bacteria in London Bridge Creek, Canal #2, and West Neck Creek (Upper) were included in the “Implementation Plan for the Fecal Coliform Total Maximum Daily Load (TMDL) for Shellfish Areas of Lynnhaven Bay, Broad Bay and Linkhorn Bay Watersheds.” Actions to reduce bacteria in Nanney Creek were included in “Implementation Plan for Bacterial TMDLs in the Back Bay Watershed.”

#### State and Federal Requirements

Two sets of regulatory requirements for the development of TMDL IPs are applicable in the State of Virginia.

- Virginia Water Quality Monitoring, Information and Restoration Act of 1997 (WQ MIRA)
- §303(d) of the Federal Water Pollution Control Act of 1972 commonly known as the Clean Water Act (CWA)

WQMIRA requires the State to develop reports assessing water quality of State waters, to provide data to develop programs addressing water quality impairments, to develop TMDLs and to develop IPs. CWA strives “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” The inception of the federal TMDL program is found in section 303(d) of that legislation.

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<sup>1</sup> The TMDL Study referred to this waterbody as Nawney Creek, but the name of this creek should be changed to Nanney Creek. This document will refer to this waterbody as Nanney Creek to reflect the wishes of the Southern Rivers Watershed Stakeholders.

## 1.2 Review of Virginia Beach Coastal Area TMDLs

**Table 1-1: TMDL Reduction in Fecal Coliform Loadings from Existing Conditions**  
(Stage 1 reductions as calculated in the TMDL Study)

<b>Waterbody</b>	<b>Direct Wildlife</b>	<b>Forest/Wetlands</b>	<b>Agriculture</b>	<b>Straight Pipes</b>	<b>Urban</b>
Milldam Creek	0	0	50%	100%	50%
West Neck Creek (Middle)	0	0	50%	100%	50%

The core of this IP is a set of actions found in Section 6 aimed to reduce the levels of fecal coliform bacteria in Milldam Creek and West Neck Creek (middle). The actions chiefly target bacteria from human and pet (“anthropogenic”) sources. This reflects the staged implementation recommended by the Virginia Department of Environmental Quality and referenced in the TMDL Study.

## 1.3 Public Participation

Two public meetings were held to engage the public in the development of the TMDL Implementation Plan for the North Landing River Watershed. The first meeting was held on May 16, 2007 at Creeds Elementary School in Virginia Beach. A work group composed of representatives from city departments, the Hampton Roads Planning District Commission (HRPDC), local citizens, and state and federal agencies was formed to guide development of the TMDL IP. The second public meeting was held on January 26, 2009 at Creeds Elementary School in Virginia Beach.

## 1.4 Implementation Actions

The management actions outlined in this IP capitalize on existing and planned programs and efforts within the North Landing River Watershed and will be implemented in three phases. Phase I will include a reexamination of the land use data and current sources contributing to the impairment of the waterbodies as well as a public information campaign to educate citizens in the watershed about water quality issues and how they can help reduce fecal coliform loadings to the waterbodies. Phase II activities are those that should take place within the next five years but may not have approved funding sources yet. Phase III actions may require regulatory changes, but they may be implemented as necessary if Phase I and Phase II actions do not significantly improve water quality within the study area. Management actions were divided into the following management categories:

- Agricultural BMPs
- Stormwater Programs
- Septic System Programs

- Pet Waste Programs
- Erosion and Sediment Control
- Aquatic Resources Restoration
- Education Programs
- Land Use Management
- Wildlife Contribution Controls

### **1.5 Associated Costs and Benefits**

The primary benefit of the implementation of the management actions described in this IP is the reduction of bacteria levels in Milldam Creek and Middle West Neck Creek. The programs and actions contained within this IP will serve to reduce the anthropogenic sources of bacteria within the North Landing River Watershed. Because many of the programs mentioned in this report also serve purposes other than to just reduce bacteria and because they cover areas larger than the North Landing River Watershed, the costs of reducing bacteria levels in the watershed can be difficult to estimate. City of Virginia Beach staff estimated costs for management categories using knowledge of current program costs and best professional judgment.

### **1.6 Measurable Goals and Milestones**

The goal of the TMDL developed for Milldam Creek and Middle West Neck Creek is to bring the impaired water segments within the North Landing River Watershed into compliance with the water quality standard for bacteria in recreational waters. Once the water segment achieves compliance with the bacteria criteria, then the segment can be removed from the 303(d) Impaired Waters List. Throughout the fifteen year project timeframe, DEQ will continue its monthly monitoring of stations throughout the watershed. Currently, this monitoring program includes one station on Milldam Creek and two stations on West Neck Creek (Middle). Project progress will be tracked throughout the timeframe of the implementation plan, and the effectiveness of the management actions proposed in this IP will be evaluated at the end of five, ten, and fifteen years.

### **1.7 Stakeholders Roles and Responsibilities**

Stakeholders are individuals who live or have land management responsibilities in the watershed, including government agencies, businesses, private individuals and special interest groups. Stakeholder participation and support is essential for achieving the goals of this TMDL effort. Stakeholders for this project were identified at the beginning of IP development and invited to sit on the Workgroup for the project.

## **1.8 Watershed Planning Efforts**

The City of Virginia Beach, through a contract with URS Corporation, has conducted a ground truthing in the Nanney Creek subwatershed in the adjacent Back Bay Watershed to compare these findings with the source assessment from the TMDL Study. The results from this field assessment will guide the Implementation efforts in the North Landing River Watershed. Similar field assessments will also be completed in the Milldam Creek and Middle West Neck Creek subwatersheds to verify the need for similar implementation actions.

## **1.9 Potential Funding Sources**

One of the objectives of this TMDL Implementation Plan was to maximize utilization of existing programs and resources to achieve the goal of reducing bacteria levels within the North Landing River Watershed. In general funding for these programs and the management actions described in this IP will come from four sources:

- Locality funds
- Private / nonprofit funds
- Virginia State funds
- Federal funds