

1. INTRODUCTION

The Washington Aqueduct produces drinking water for approximately one million citizens living, working and visiting in the District of Columbia, Arlington County, VA, and the City of Falls Church, VA and its service area. A division of the Baltimore District, U.S. Army Corps of Engineers, the Aqueduct is a federally owned and operated public water supply agency that produces an average of 180 million gallons on water per day at two treatment plants located in the District of Columbia (the Dalecarlia and McMillan WTPs). The Aqueduct was designed constructed by the COE, and has been in continuous operation since 1859.

The study area is shown in Figure 1-1. Raw river water is obtained for both plants from the Great Falls Raw Water Intake or the Little Falls Pumping Station on the Potomac River. The water flows through the Dalecarlia Reservoir and is then diverted for settling to either the Dalecarlia plant or the Georgetown Reservoirs. Residual solids from the Dalecarlia plant sedimentation basins are periodically discharged to the Potomac River through Outfall 002 which is located upstream of Chain Bridge. Residuals from the McMillan plant are generated in the Georgetown Reservoir Basins 1 and 2. Those residuals are periodically discharged into the Potomac River via Outfalls 003 and 004 (Figure 1-1). These discharges are allowed in the Aqueduct's NPDES permit.

The timing of these residual discharges is dictated by a number of factors. If permit conditions are satisfied (e.g., acceptably high river level and/or ambient turbidity condition), then a sedimentation basin is usually discharged based on a general frequency (e.g., 3 or 4 times a year at Dalecarlia, and twice a year at Georgetown).

To allow U.S. EPA Region 3 to draft the Aqueduct's new NPDES permit, a water quality study plan was developed to be responsive to a series of specific technical issues raised by staff from U.S. EPA and the District of Columbia's Department of Health. A formal study plan (dated 24 June 1999) was developed and formally approved by U.S. EPA [Included as Appendix C]. This report presents the results from those studies. Chapter 2 describes the effluent dilution and fate modeling studies that were conducted. The results of the effluent toxicity testing and chemical characterization work are presented in Chapters 3 and 4. Discussions of fisheries issues and the results of the field program to evaluate the benthic macroinvertebrate community are presented in Sections 5 and 6. A summary of the program results and conclusions from these water quality studies are in Section 7.

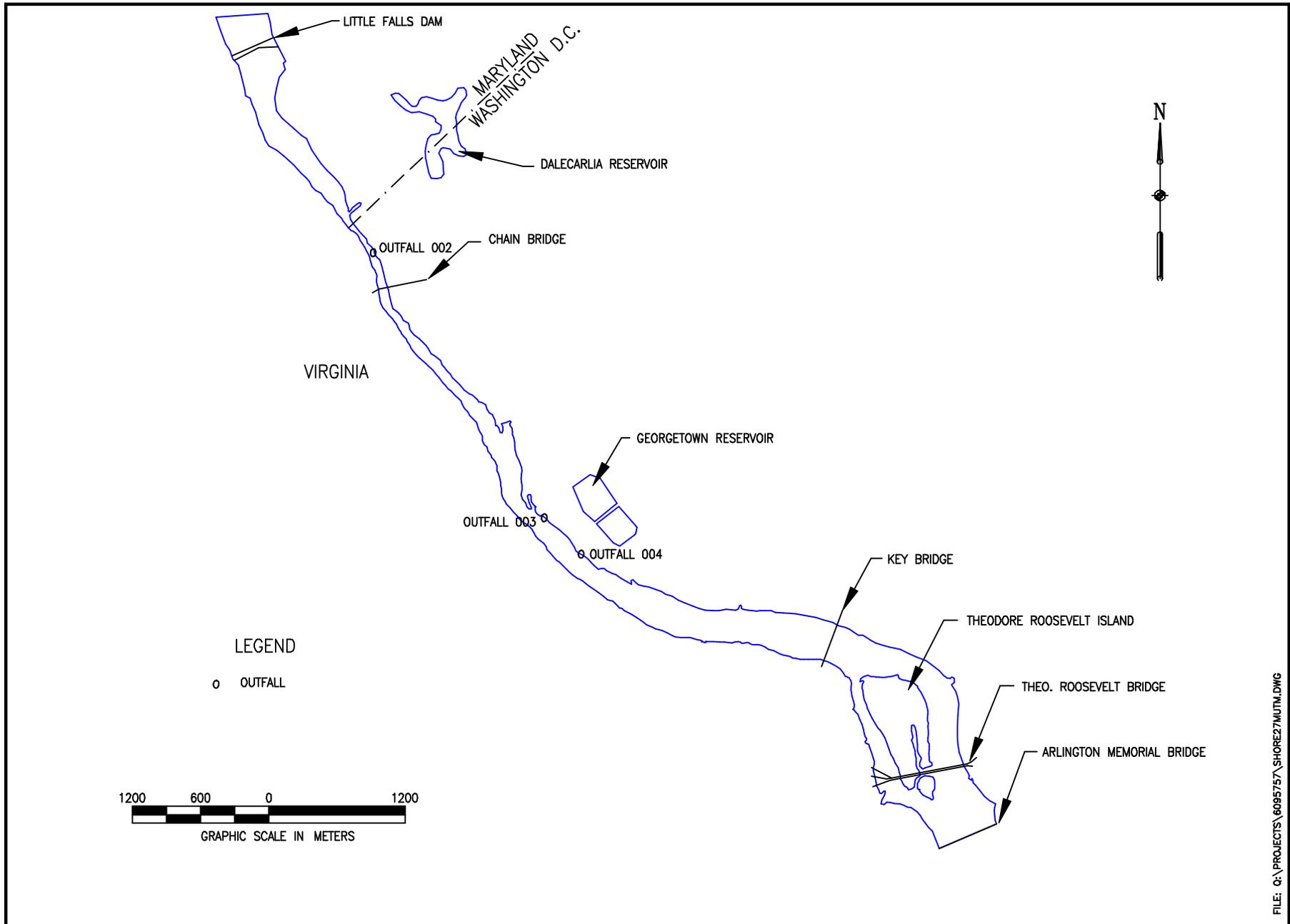


Figure 1-1. Study Area for the Washington Aqueduct Water Quality Studies.