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DISTRICT OF COLUMBIA
WATER QUALITY ASSESSMENT

DRAFT 2016 INTEGRATED REPORT

TO THE US ENVIRONMENTAL PROTECTION AGENCY AND CONGRESS

PURSUANT TO

SECTIONS 305(b) AND 303(d) CLEAN WATER ACT (P.L. 97-117)

Department of Energy and Environment
Natural Resources Administration
Water Quality Division

May 2016

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PREFACE

In August 2015, District of Columbia Mayor Muriel Bowser announced the redesignation of the District Department of the Environment as the Department of Energy and Environment (DOEE).

DOEE's Water Quality Division prepared this report to satisfy the listing requirements of §303(d) and the reporting requirements of §305(b) of the federal Clean Water Act (P.L. 97-117). This report provides water quality information for the District of Columbia's surface and ground waters that were assessed during 2014–2015 and updates the water quality information required by law. The following DOEE divisions contributed to this report: Air Quality, Fisheries and Wildlife, Stormwater Management, Toxic Substances, Watershed Protection, and Water Quality.

Questions or comments regarding this report should be forwarded to the following address:

District of Columbia Government
Department of Energy and Environment
Natural Resources Administration
Water Quality Division
1200 First Street NE
5th Floor
Washington, DC 20002
Attention: N. Shulterbrandt

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ACRONYMS / ABBREVIATIONS

ADB	Assessment database
AFF	Alice Ferguson Foundation
AQD	Department of Energy and Environment Air Quality Division
AWS	Anacostia Watershed Society
BID	Business Improvement District
BMP	Best management practice
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CGP	Construction General Permit
CEI	Compliance Evaluation Inspections
C&O	Chesapeake and Ohio
CSI	Compliance Sampling Inspection
CSO	Combined Sewer Overflow
CSN	Chesapeake Stormwater Network
CWA	Clean Water Act
CWP	Center for Watershed Protection
DCEEC	District of Columbia Environmental Education Consortium
DCPS	District of Columbia Public Schools
DCOP	District of Columbia Office of Planning
DC Water	District of Columbia Water and Sewer Authority
DDOT	District Department of Transportation
DGS	District of Columbia Department of General Services
District	District of Columbia
DO	Dissolved oxygen
DOEE	District of Columbia Department of Energy and Environment
DPR	District of Columbia Department of Parks and Recreation
DPW	District of Columbia Department of Public Works
DSLBD	District of Columbia Department of Small and Local Business Development
EISA	Energy Independence and Security Act
ENF	Earth's Natural Force
FWD	Fisheries and Wildlife Division
FY	Fiscal year
GAR	Green Area Ratio
GIS	Geographic information system
HAP	Hazardous air pollutant
ICPRB	Interstate Commission on the Potomac River Basin
IDDEP	Illicit Discharge Detection and Elimination System Program
IEB	Inspection and Enforcement Branch
IP	Implementation Plan
IPM	Integrated Pest Management
IPMT	Implementation Plan Modeling Tool
JE	Joint Evaluation
K	Kindergarten

LID	Low impact development
LMB	Largemouth bass
LTCP	Long Term Control Plan
MD	Maryland
MS4	Municipal Separate Storm Sewer System
MSGP	Multi-Sector General Permit
MWCOG	Metropolitan Washington Council of Governments
MWEE	Meaningful watershed educational experience
NATA	National Air Toxics Assessment
NATTS	National Air Toxics Trends Station
NE	Northeast
NOI	Notice of Infraction
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
NW	Northwest
OSSE	District of Columbia Office of the State Superintendent of Education
PAH	Polycyclic aromatic hydrocarbon
RSC	Regenerative stormwater conveyance
SAV	Submerged aquatic vegetation
SE	Southeast
SRC	Stormwater Retention Credit
SSO	Sanitary Sewer Overflow
SW	Southwest
SWAP	Source water assessment program
SWMD	Department of Energy and Environment Stormwater Management Division
SWRv	Stormwater retention volume
TMDL	Total maximum daily load
TSB	Department of Energy and Environment Technical Services Branch
UDC	University of the District of Columbia
US	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
US EPA	United States Environmental Protection Agency
US FWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VA	Virginia
VCP	Voluntary cleanup program
WPD	Department of Energy and Environment Watershed Protection Division
WQC	Water Quality Certification
WQD	Department of Energy and Environment Water Quality Division
WQS	Water quality standards
WRRC	Water Resources Research Center
WWTP	Wastewater treatment plant

PART I: EXECUTIVE SUMMARY

The District of Columbia 2016 Integrated Report provides information on the state of the District's waters and the Department of Energy and Environment's (DOEE's) efforts to protect and improve water quality. The Integrated Report combines the comprehensive biennial reporting requirements of the Clean Water Act's Section 305(b) and the Section 303(d) listing of waters for which total maximum daily loads (TMDLs) maybe required.

District of Columbia Water Quality

Thirty-six waterbody segments were monitored for water quality in order to meet the goals of the Clean Water Act (CWA) that apply to the District. Each of the waterbodies has been assigned designated uses in the District's water quality standards. The standards also outline numeric and narrative criteria that must be met if a waterbody is to support its uses. Various types of water quality data collected during the period of 2011 to 2015 were evaluated to assess use support of the waterbodies. The evaluation found that the designated uses that directly relate to the human use of the District's waters were generally not supported. Additionally, the uses related to the quality of habitat for aquatic life were not supported. No waterbody monitored by the Water Quality Division (WQD) fully supported all of its designated uses. The water quality of the District's waterbodies, while showing signs of improvement, continue to be impaired.

Tables 1.1 to 1.3 show the degree to which the waters of the District supported their designated uses.

Groundwater quality in the District is not monitored on the same basis as surface water quality. This is partly due to the fact that surface water north of the District's boundary, not groundwater, is the drinking water source for the District. However, groundwater quality is scrutinized via compliance monitoring and ongoing studies.

TABLE 1.1
DESIGNATED USE SUPPORT BY RIVERS OR STREAMS

Waterbody Type: River, Streams	Degree of Use Support			
	Supporting (mi)	Not Supporting (mi)	Insufficient Information (mi)	Not Assessed (mi)
Swimmable Use	-	38.4	-	-
Secondary Contact Recreation Use	12.8	25.6	-	-
Aquatic Life Use	-	38.4	-	-
Fish Consumption Use		38.4		-
Navigation Use	20.2	-	-	0

* = not a designated use

TABLE 1.2
DESIGNATED USE SUPPORT BY LAKES

Waterbody Type: Lake, reservoir	Degree of Use Support			
	Supporting (ac)	Not Supporting (ac)	Insufficient Information (ac)	Not Assessed (ac)
Swimmable Use	-	238.4	-	-
Secondary Contact Recreation Use	-	238.4	-	-
Aquatic Life Use	-	238.4	-	-
Fish Consumption Use	-	238.4	-	-
Navigation Use	238.4	-	-	-

* = not a designated use

TABLE 1.3
DESIGNATED USE SUPPORT BY ESTUARIES

Waterbody Type: Estuary	Degree of Use Support			
	Supporting (mi^2)	Not Supporting (mi^2)	Insufficient Information (mi^2)	Not Assessed (mi^2)
Swimmable Use	-	5.93	-	-
Secondary Contact Recreation Use	-	5.93	-	-
Aquatic Life Use	0.5	5.43	-	-
Fish Consumption Use	-	5.93	-	-
Navigation Use	5.93	-	-	-

* = not a designated use

Causes and Sources of Water Quality Impairment

The major causes of impairment to the District's rivers, lakes, and estuaries are elevated bacteria and pH and low dissolved oxygen (DO) concentrations.

pH

A survey of the percent violations of the criteria for selected constituents for the period of 2005–2015 was conducted to determine whether the effect of the activities was reflected in the data. The temperature maximum of 32.2 °C was not exceeded in any of the District's monitored surface waterbodies. In the Anacostia River, measurements for pH only violated water quality criteria (6.0–8.5) for less than 2.33% of samples. For this reason, pH does not appear to be a concern in the Anacostia. In the Potomac River, pH violations were observed in as many as 10.9% and 24.5% of samples for some sampling locations, with a drop off occurring between the 2014 and 2016 reports. Violations for pH are generally low with rare exceptions above the 10% threshold. For example, the 2016 report has only three tributaries (Washington Ship Channel, Tidal Basin, and C&O Canal) with violations above the 10% threshold.

Dissolved Oxygen

Dissolved oxygen (DO) with an instantaneous minimum of 5 mg/L year round over the period of study in the Anacostia River increased between the 2014 and 2016 reporting periods. DO violations are not an issue in the Potomac River. The majority of the tributaries do not violate DO. Fort Davis tributary consistently exceeded the 10% threshold for DO for the period of study.

Turbidity

Turbidity during the period of 2009–2015 is about twice as high in the Anacostia River versus the Potomac River. The number of percent violations did not vary widely for the rivers for the period. Kingman Lake, an Anacostia watershed waterbody, consistently has the highest number of percent violations, with an average of 68.9%. The Rock Creek tributaries are not as impacted by turbidity as the Anacostia tributaries.

Bacteria (*E. coli*)

In 2008, the water quality criteria used to evaluate bacteria was updated from Fecal coliform to *E. coli*, so this survey covered the period of 2009–2016. The Potomac River has fewer *E. coli* percent violations than the Anacostia River. But both rivers experienced a slight increase for the period. For the tributaries, the Tidal Basin has the lowest number of violations, while Broach Branch, a Rock Creek tributary, has the highest number of violations with 87.5% for the period of study. Chronic *E. coli* percent violations continue to be a problem for the majority of the city's waterbodies. Fluctuations in these constituents are due to various factors such as weather and sub-watershed activities and conditions such as construction sites, failing sewer pipes, and illicit discharges.

The sources that have major impacts on District waters are combined sewer overflows (CSOs), urban stormwater runoff/storm sewers, municipal point sources, and pollutants from upstream jurisdictions.

Programs to Address Impairment

Several DOEE divisions conduct activities to correct water quality impairments:

- Stormwater Management Division
- Toxic Substances Division
- Watershed Protection Division
- Water Quality Division

The Water Quality Division's water pollution control program implements the water quality standards, monitors and inspects permitted facilities in the District, and comprehensively monitors the District's waters to identify and reduce impairments. The water pollution control program is involved in the search for solutions that will provide maximum water quality benefits.

Given the District's urban landscape, nonpoint source pollution has a large impact on its waters. The Watershed Protection and Stormwater Management Divisions manage the sediment and stormwater control program regulates land disturbing activities, stormwater management, and floodplain management by providing technical assistance and inspections throughout the District. The District is also conducting stream restoration activities to improve habitat as well as implementing a RiverSmart program to reduce polluted runoff. The nonpoint source program also provides education and outreach to residents and developers on pollution prevention to ensure that their actions do not further impair the District's water quality.

Several activities are coordinated for the groundwater protection program in the Toxic Substances Division, including underground storage tank installation and remediation and groundwater quality standards implementation.

DOEE also coordinates with the District of Columbia Water and Sewer Authority (DC Water), which has begun construction of the Anacostia River segment of the stormwater storage tunnel of the District's CSO Long Term Control Plan (LTCP). The plan involves the construction of large underground tunnels that will serve as collection and retention systems for combined sewage during high flow conditions. The LTCP will be implemented over a 25-year period, including the original Consent Decree period and the 2016 modification to the Consent Decree, which extended the end date to 2030.

Conclusions

Activities to restore water quality are an integral part of the push to meet the Clean Water Act's swimmable and fishable goals. Stream restoration projects in tributaries to Broad Branch and Fort Davis have been completed and have created conditions that will improve stream habitat gradually over many years to improve survival of desired aquatic organisms and provide nooks for respite in neighborhoods of the city. The negative impacts of stormwater, intensified by the high imperviousness characteristic of urban areas, are starting to be mitigated by the RiverSmart programs: RiverSmart Homes, RiverSmart Communities, RiverSmart Schools, and River Smart Rooftops. These programs provide valuable educational experiences and opportunities for citizens, students, and businesses to participate in improving water quality in the city. The current sewer system construction projects, once on line, should have a significant impact on the rivers' bacteria levels. New regulations such as the 2013 Stormwater Rule will help improve water quality in the longer term. The Rule, which became fully effective during 2014, is expected to have positive impacts on water quality by requiring more retention of stormwater on-site rather than letting it runoff directly and quickly to waterbodies. The 2013 Stormwater Management Guidebook provides a menu of water quality improvement practices that partners can choose from (see http://doee.dc.gov/swguidebook).

The improvements noted in previous years to aquatic resources, such as submerged aquatic vegetation, wetlands, and fish populations, have been sustained. The concentrations of chemicals in several fish species caught in District waters have decreased, which is progress toward achieving the fishable goal. DOEE and its partners continue to invest a variety of resources in

shared pursuit of improving District and regional water quality and are optimistic about the incremental improvements current and planned activities will deliver.

PART II: BACKGROUND

The Government of the District of Columbia's environmental protection responsibilities are delegated to administrations within DOEE. DOEE's Natural Resources Administration includes the Fisheries and Wildlife Division (FWD), the Stormwater Management Division (SWMD), the Water Quality Division (WQD), and the Watershed Protection Division (WPD). The Environmental Services Administration includes the Air Quality Division (AQD), the Lead and Healthy Housing Division, and the Toxic Substances Division (TSD).

Atlas and Total Waters

Table 2.1 is a general view of the District's resources. Figure 2.1 is a graph of the District's monthly and yearly total rainfall. The District's rainfall totals were above average for the last two years. (The National Weather Service, Washington National Airport, the official rain gauge site, is the source for the rainfall totals). Figures 2.2 and 2.3 present monthly and yearly mean flow data for the Anacostia and Potomac Rivers, from 2014 to 2015 (Source: United States Geological Survey).

TABLE 2.1
ATLAS

State population: 601,723 (2010 Census) / 672,228 (July 2015 Census Estimate)

State surface area: 69 square miles

Number of water basins: 1

Total number of river miles: 39 miles

- Number of perennial river miles: 39 miles
- Number of intermittent stream miles: none
- Number of ditches and canals: none[1]
- Number of border miles: none

Number of lakes, reservoirs, ponds: 8

Acres of lakes/reservoirs/ponds: 238 acres

Square miles of estuaries/harbors/bays: 6.1 square miles[1]

Acres of wetlands: 280 [2]

Names of border waterbodies: Potomac River estuary

Number of border estuary miles: 12.5 miles

[1]Impoundments are classified according to their hydrologic behavior. The District classifies the C&O Canal as a lake. The estuary estimate includes the Washington Ship Channel, the Channel Lagoon, and Little River.
[2] This total is from the District's 1997 Wetland Conservation Plan. In 2015, DOEE WQD released a grant to update the 1997 Wetland Conservation Plan. The update involves mapping and assessing wetlands in the District and the outcome will include a more accurate estimate of wetland acres in the District.

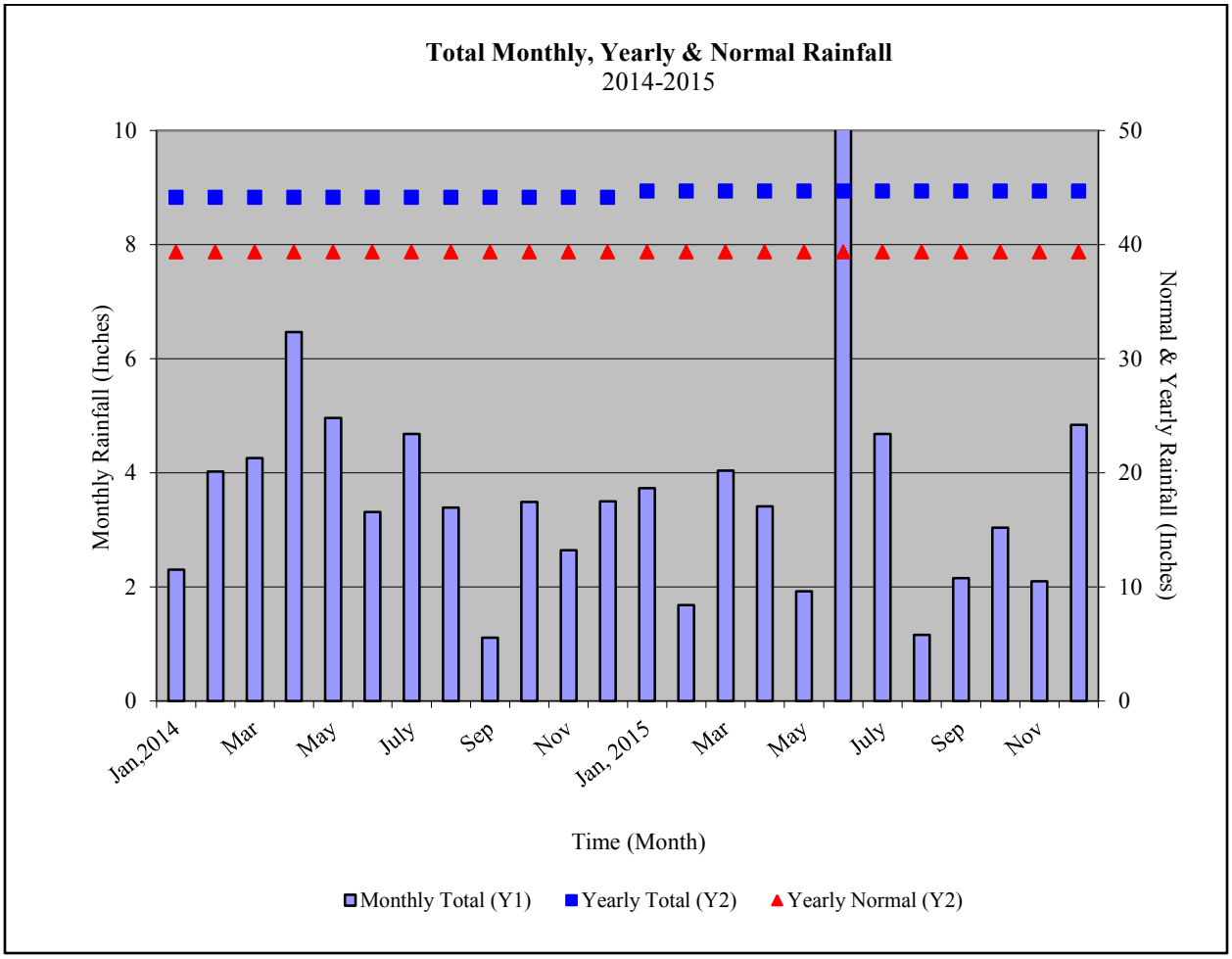

Figure 2.1: Monthly, yearly and normal total rainfall (inches), 2014–2015 (Source: National Weather Service, Reagan National Airport)

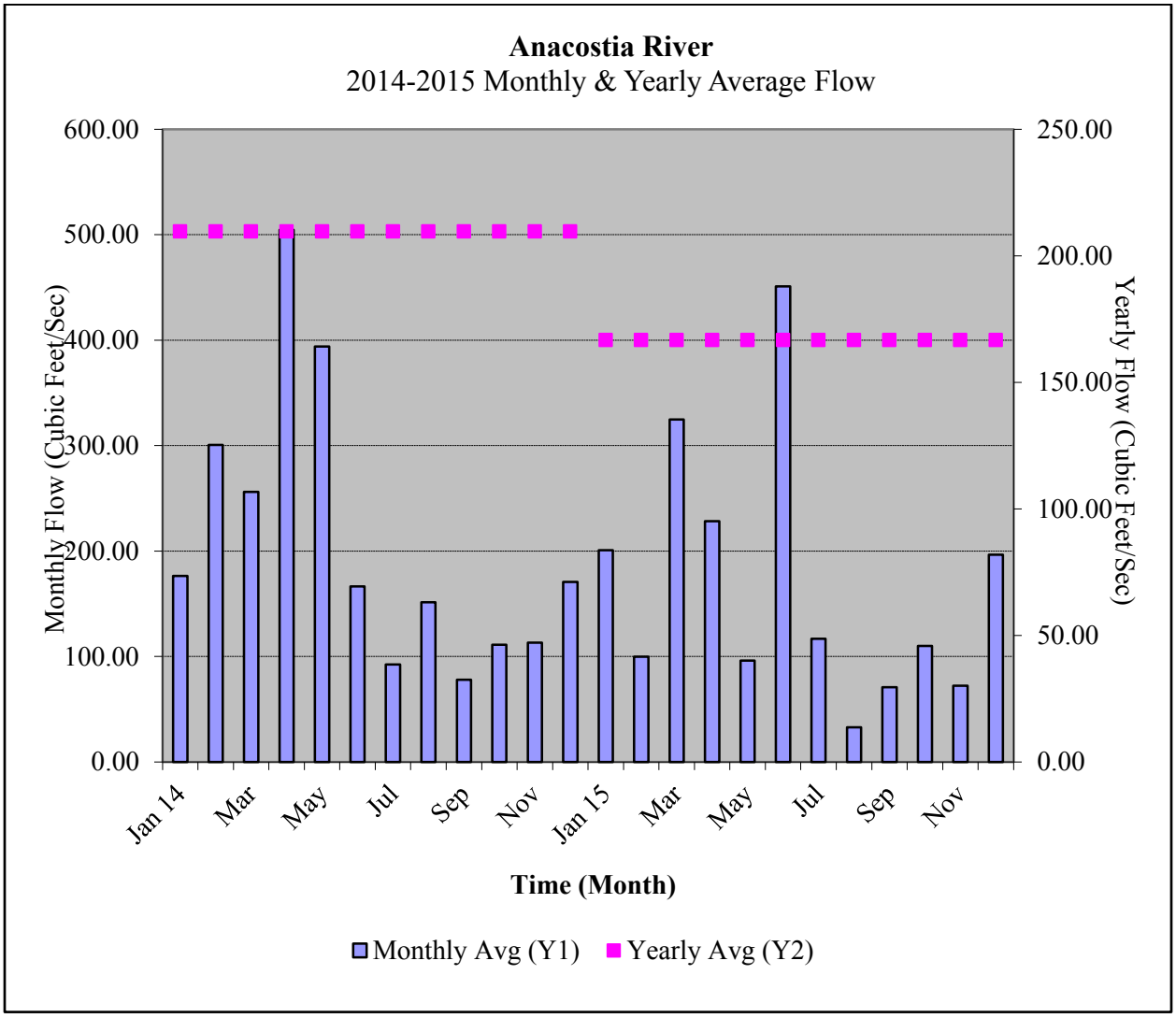

Figure 2.2: Monthly and yearly average flow on the Anacostia River, 2014–2015

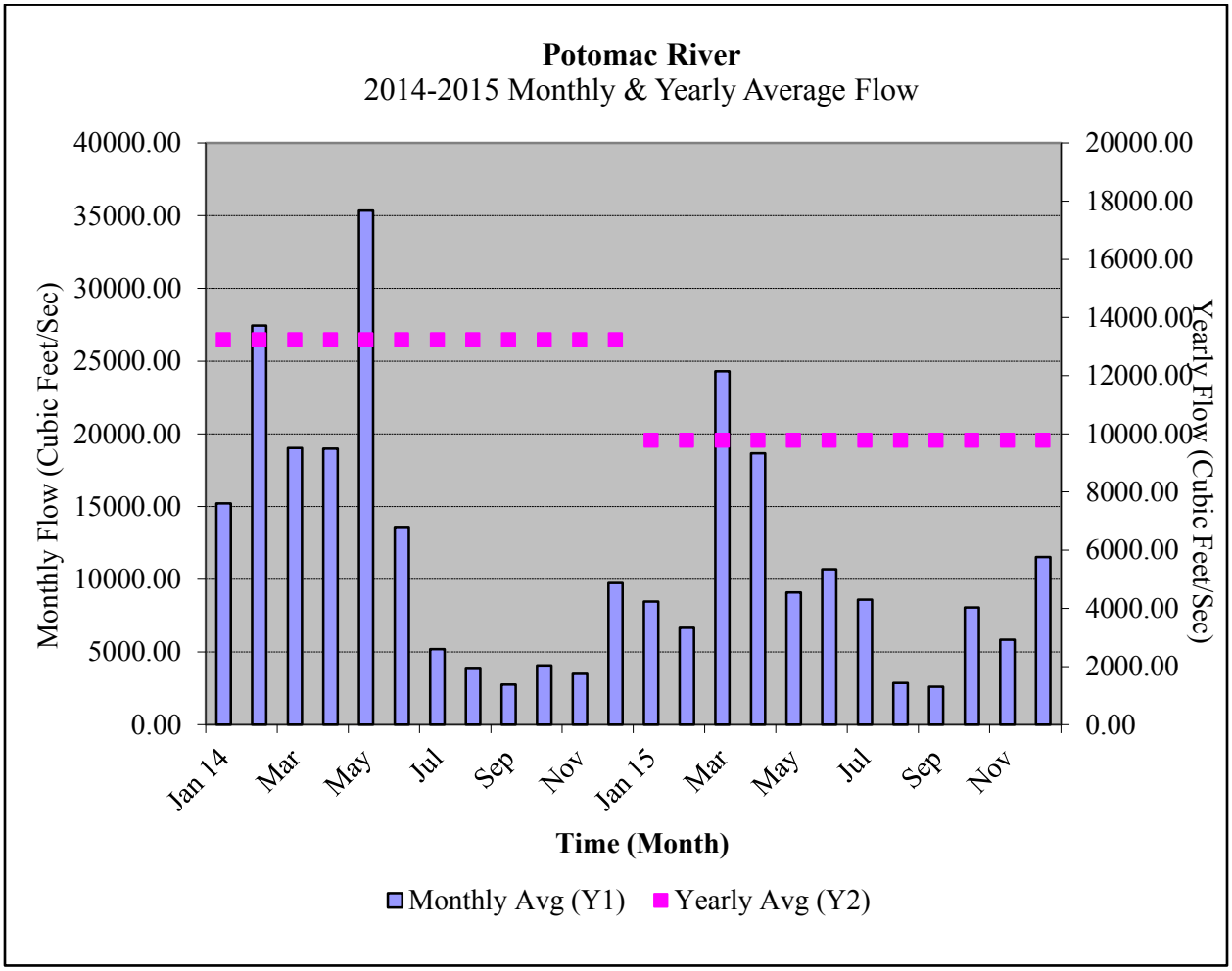

Figure 2.3: Monthly and yearly average flow on the Potomac River, 2014–2015

Maps

Appendix 2.1 is a map outlining the major watersheds within the District.

Water Pollution Control Programs

Water Quality Standards Program

DOEE initiated its 2016 triennial review of the District of Columbia Water Quality Standards regulations (WQS) as required by Section 303(c) of the federal CWA (33 U.S.C. § 1313 (c)) and the District's Water Pollution Control Act of 1984.

Section 303 of the CWA requires states to revise their water quality standards every three years with public participation and public hearing as the new information becomes available. The proposed changes to the water quality standards will enable the District to use standards as a programmatic tool in the water quality management process and as a foundation for water quality based control programs.

The District is considering revising the numeric ammonia criteria for aquatic life (Class C). The proposed ammonia one-hour average criterion maximum concentration is 17 mg/L and the proposed 30-day average chronic criterion continuous concentration is 1.9 mg/L. Both proposed criteria assume the water has a pH of 7 and temperature of 20 °C. The proposed regulations will also incorporate updated formulas and tables to determine ammonia criteria at various pH and temperatures. The change is based on additional toxicity data and other information obtained from the United States Environmental Protection Agency's (US EPA's) internal and external peer review, including scientific input from the public. The proposed criteria will protect most aquatic species from toxic effects of ammonia.

DOEE evaluated US EPA's 2012 recreational water quality criteria guidance and is considering revising its *E. coli* criteria. The recreational water quality criteria are intended to protect human health during primary contact recreation (Class A waters) and include geometric mean and statistical threshold value components. US EPA's guidance is based on the latest scientific information and epidemiological studies. The existing single sample maximum component of the DC water quality standards will be removed.

DOEE is updating the human health numeric water quality criteria for 94 parameters to reflect US EPA's latest studies and updated information for body weight, drinking water intake, fish consumption rates, bioaccumulation factors, and toxicity values. The protection of human health related to consumption of fish and shellfish is considered a designated use (Class D) in the District.

The proposed rulemaking of the 2016 triennial review will be subject to a 30-day public comment period. It will be published in the D.C. Register and on DOEE's website, with copies available at the Martin Luther King, Jr. public library. DOEE will also conduct a public hearing. The final regulations are expected to be published in the D.C. Register by the end of 2016.

Point Source Program

National Pollutant Discharge Elimination System (NPDES) Permits

Currently, 11 facilities in the District have been issued site-specific industrial permits by the US Environmental Protection Agency (EPA) under the NPDES individual permits. The DC Water Blue Plains waste water treatment plant (WWTP) continues to be the major discharger. The WWTP, along with other industrial NPDES permitted facilities, are inspected to ensure compliance with permit conditions and the District's WQS. Table 2.2 lists the individual NPDES permitted facilities in the District.

In addition to NPDES individual permitted facilities, there are several industrial facilities, and construction sites that have been permitted under a Multi-Sector General Permit (MSGP), or a Construction General Permit (CGP).

Table 2.2
NPDES Permitted Facilities in the District of Columbia

Permittee/Facility	Permit No	Type of Facility
Washington Aqueduct – Dalecarlia Plant	DC0000019[§]	Major
Potomac Electric Power Company (PEPCO), Benning Road	DC0000094[§]	Major
D.C. Water and Sewer Authority (DC Water), Blue Plains AWTP	DC0021199[§]	Major
NRG (previously known as Gen*On* Potomac River LLC)	DC0022004[¥]	Major
Government of the District of Columbia – MS4	DC0000221	Major
CMDT Naval District Washington, DC	DC0000141[§]	Minor
Super Concrete Corporation	DC0000175	Minor
John F. Kennedy Center for the Performing Arts	DC0000248	Minor
Washington Metropolitan Area Transit Authority (WMATA)	DC0000337	Minor
General Services Administration (GSA)-NCR HOTD (Central Heating Plant)	DC0000035	Minor
World War II Veterans Memorial	DC0000345[§]	Minor

Note:
[§] The facility submitted permit renewal application and is waiting for US EPA to renew the permit.
[¥] The facility stopped discharging process or waste water and is working with US EPA to formally terminate the permit.

Review and Certification of Draft NPDES Permits

The District is not a delegated state under US EPA's NPDES program and, therefore, does not issue discharge permits. Draft individual and general NPDES permits prepared by US EPA are reviewed for certification by WQD for completeness and compliance with both Federal and District laws and Water Quality Standards, in accordance with Section 401 of the Clean Water Act. WQD may require revisions to the draft permit in order to comply with more stringent District laws and standards. Changes in draft permits may also incorporate comments received

from various stakeholders during the public comment period, the announcement of which is made in one or more of the District's local newspapers. The announcement for public comments is a joint venture by both US EPA and the District. Final permits are issued for a five year period, but contain re-opener clauses in case facility conditions, WQS, or regulations change.

Currently, there are six facilities whose permits have expired and US EPA is in the process of either reviewing the permit renewal applications, or drafting renewal permits. The permits that have expired are: DC0000019, DC0000094, DC0021199, DC0022004, DC0000141, and DC0000345. After drafting the permits, US EPA will ask DOEE-WQD to review and certify the permits in accordance with Section 401 of the CWA.

From January 1, 2014 through December 31, 2015, WQD reviewed or certified the following NPDES permit applications listed below:

(1) Individual Permits:
- (i) New Individual NPDES for the National Park Service, National Mall - Lincoln Memorial Reflecting Pool:
  - Reviewed draft and final permit applications and provided comments to the applicant on how to properly characterize the discharge and complete the permit application.
- (ii) National Park Service, National Mall – World War II Veterans Memorial, NPDES Permit Number DC0000345:
  - Reviewed sampling plan for scanning and characterizing Priority Pollutant List in preparation for NPDES permit application.
- (iii) Washington Gas and Light – Discharge of groundwater that collects in utility vaults:
  - Reviewed sampling plan for scanning and characterizing Priority Pollutant List in preparation for NPDES permit application.
- (iv) Dewatering General Permit for the District of Columbia:
  - Reviewed and provided comments to US EPA on the draft Dewatering General Permit for the discharge of groundwater.

(2) General Permits: reviews and approvals of groundwater discharge under the MSGP or CGP:
- Reviewed, commented on or approved the following projects for the discharge of groundwater into the District's municipal separate storm sewer system (MS4):
  - 55 M Street SE;
  - 400 6th Street SW;
  - 1000 4th Street SW;
  - 3501 Nebraska Avenue NW - American University East Campus;
  - 4861 Massachusetts Avenue NW - Former Chevron Facility;
  - 5180 South Dakota Avenue NE - Art Place at Fort Totten;
  - 5333 Connecticut Avenue NW - CMK Development, LLC;
  - DC Plug (Utilities Vaults) Project – PEPCO/DDOT;
  - 7201 Georgia Avenue NW - Elm Street Residential Condominium Project;
  - 1400 Constitution Avenue NW - National Museum of African American History and Culture;

- 1050 Half Street SE;
- 650 Water Street SW and Maine Avenue SW - Southwest Waterfront Project (The Wharf);
- 6900 Georgia Avenue NW - Walter Reed Army Medical Center;
- 4414–4430 Benning Road NE – So Others Might Eat;
- 4000 Benning Road NE;
- South Capitol Street Corridor and Bridge – CH2M Hill;
- National Mall, Lincoln Memorial Reflection Pool - National Park Service;
- 4430 Newark Street NW – Mann Elementary School;
- Utility vault dewatering - Washington Gas and Light Company;
- 600 Kenilworth Terrace NE - The Grove at Parkside;
- Commodore Joshua Barney Drive NE - Fort Lincoln Multi Family House; and
- Jet Grouting at Main Pump Station Diversion Structures – DC Water.

Compliance Inspections

Compliance Monitoring Strategy

Each fiscal year WQD develops a Compliance Monitoring Strategy to document compliance monitoring activities of facilities covered under the National Pollutant Discharge Elimination System. These proposed compliance inspections are also documented in the annual NPDES Permitting and Enforcement work plans submitted to US EPA. Compliance inspections are recognized as a vital part of the District's NPDES Core Program and Wet Weather Source Program. Appropriate enforcement actions are recommended to US EPA for violations and/or deficiencies noted during the compliance inspections. The objective of the NPDES Compliance Inspection Program is to provide a level of inspection coverage necessary to assess permit compliance and develop enforcement documentation. The District's NPDES Compliance Inspection Program generally conducts Compliance Evaluation Inspections (CEI), but may perform Compliance Sampling Inspection, if required. The CEI is an inspection designed to verify permittee's compliance with applicable permit effluent limits, self-monitoring requirements, and compliance schedules. This inspection involves records reviews, visual observations, and evaluations of the treatment facilities, effluent, receiving waters and disposal practices. From January 2014 to December 2015, the WQD conducted fourteen (14) compliance inspections at the facilities listed in Tables 2.3 and 2.4.

Table 2.3
NPDES Core Program Facilities Inspected

NPDES ID	Permit Name	Type of Facility
DC0000019	Washington Aqueduct	Major
DC0000094	PEPCO Environment Management Services	Major
DC0021199	D.C. WASA (Blue Plains)	Major
DC0022004	Mirant Potomac River L.L.C.	Major
DC0000035	GSA West Heating Plant	Minor
DC0000337	Washington Metropolitan Area Transit Authority – Mississippi Avenue Pumping Station	Minor
DC0000175	Super Concrete Corporation	Minor

Table 2.4
NPDES Wet Weather Industrial Stormwater Program Facilities Inspected

NPDES ID	Permit Name	Type of Facility
DCR05A875	National Park Service Rock Creek Maintenance Facility	MSGP
DCR05A885	WMATA – Western Bus Division Facility	MSGP
DCR05A744	The Washington Marina	MSGP
DCR05A816	Naval Station Anacostia	MSGP
DCR05A757	Bolling Air Force Base	MSGP
DCNOEA812	Eastern Power Boat Club	MSGP (No Exposure)
DCNOEA874	Northeast Transfer Station	MSGP (No Exposure)

WQD also conducts inspections of point source discharges of groundwater from temporary construction dewatering operations. These operations are typically covered under the NPDES Construction General Permit; however, WQD reviews and certifies that the groundwater discharge will meet the District's WQS. WQD conducts inspections of these operations to ensure they are complying with District regulations and to ensure that any required groundwater discharge treatment systems are operating correctly and efficiently. From January 2014 to December 2015, the WQD conducted 12 inspections of temporary construction dewatering operations.

Municipal Separate Storm Sewer System

The Government of the District of Columbia owns and operates its own Municipal Separate Storm Sewer System (MS4), which discharges stormwater from various outfall locations throughout the District into its waterways. On October 7, 2011, the final permit was issued and will expire on October 7, 2016. The MS4 Permit allows discharges of stormwater from the MS4 to the Potomac River, the Anacostia River, Rock Creek and their tributaries. The purpose of the District's MS4 Program is to reduce the pollutant loading from the MS4 to receiving waters. The District continues to manage, implement and enforce a MS4 management program in accordance with all federal and local laws and regulations. Two key components of this management

program are the Critical Source Inspection and Enforcement Program, and the Illicit Discharge Detection and Elimination Program (IDDEP).

Critical Source Inspection and Enforcement Program

DOEE maintains a database of critical sources of stormwater pollution; this includes industrial, commercial, institutional, municipal, and federal facilities within the MS4 area. In fiscal year (FY) 2015, WQD identified and inspected 160 facilities deemed critical sources of stormwater pollution. These inspections are documented with facility specific inspection forms and recorded in the MS4 Inspection Tracking Database. DOEE takes appropriate actions to ensure compliance with the District's MS4 Permit and structural controls and ensure that best management practices are in place and effective for protecting water quality.

Illicit Discharge Detection and Elimination Program

DOEE manages an IDDEP designed to detect and eliminate illicit and unpermitted discharges, spills, and releases of pollutants to the District's MS4 and District waters. This program includes the response to reported illicit discharges, spills, or releases, targeted facility inspections, and dry weather outfall inspections. During fiscal year (FY) 2015, WQD responded to and investigated 61 incidents of illicit discharges, spills, or releases. WQD applies varying enforcement strategies to compel clean up or compliance; including follow up inspections, site directives, notice of violations, administrative or compliance orders, and notice of infractions.

Additionally, WQD maintains a watershed based inventory of all MS4 outfalls and conducts dry weather inspections of these outfalls. In FY 2015, WQD identified 191 Anacostia River outfalls, 206 Potomac River outfalls, and 172 Rock Creek outfalls. In FY 2015, WQD conducted dry weather inspections of 168 of the 569 outfalls identified. In the event that a questionable discharge from the outfall or a suspected illicit discharge is identified, WQD initiates an investigation and implements various techniques to identify and eliminate the discharge or suspected dry weather flow.

Wetlands Protection

Review and Certification of Permits Issued Under Section 404 of the Clean Water Act

The WQD reviews and certifies permits issued by the USACE – Baltimore District under Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act, as published in the March 12, 2007 Federal Register, Final Notice of Issuance, Reissuance, and Modification of Nationwide Permits (and at FR 11090). Under Section 404 of the Clean Water Act, the District aims at no net loss of wetlands, stream areas, and their functions within the District. To achieve this goal, WQD reviews all activities and construction projects that may impact wetlands and streams in the District and certifies permits issued by USACE under Section 404 and 401 of the Clean Water Act. When USACE delineates a wetland, makes a jurisdictional determination, or issues a dredge and fill permit, WQD reviews the delineation report, jurisdictional determination, and permit for completeness and compliance with federal and

District laws and water quality standards. Based on the results of the review, WQD can certify or deny the permit.

Although the purpose of the review process is to avoid and minimize impacts, it is anticipated that some projects that may impact wetlands and streams will still be allowed to proceed. These projects include water dependent projects and projects for which there is no practicable alternative. Mitigation is always required for permanent impacts associated with these types of projects. Mitigation of impacts to wetlands and streams are considered in accordance with the following sequence:

Avoidance: Modification of the scope of the proposed activity, or construction to completely avoid the potential impacts to the wetland or stream.

Reduction/ Minimization: Reduction of the necessary impacting activity to the greatest extent practicable.

Restoration: Rectifying the impact by repairing, rehabilitating, or restoring the affected wetlands or stream following completion of the activity or construction.

Compensation: Compensating for the impact to the wetland or stream by creating or enhancing an alternative wetland/ stream.

Table 2.5 list permits reviewed and certified between January 2014 and December 2015.

Table 2.5
Dredge and Fill Permits reviewed and certified

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
George Washington University	WQC DC-00-000	Installation of a stormwater Management System.
District Department of Transportation	WQC DC-13-003	Submitted modified plans for bridge construction over a wetland near Benning Power Plant. The modified plans result in no impact on wetlands.
District Department of Transportation	WQC DC-15-013	To extend the Water Quality Certification, WQC DC-09-009, for wetland mitigation at the 11th Street Bridge Project over Anacostia River.
Competitor Group, Inc.	WQC DC-13-015	Request to extend time to finish the authorized work.
CSX Transportation	WQC DC-13-018	Submitted a monitoring report as part of the requirements of the Water Quality Certification.

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
CSX Transportation	WQC DC-13-018	Request for a waiver of certain conditions in WQC DC-13-018.
Department of Energy and Environment	JE for CENAB-OP-RMS 2014-00151 (Anacostia River Remedial Investigation)	To conduct remedial investigations and ecological assessments in the Anacostia River including: analytical sediment sampling, fish tissue sampling, and benthic invertebrate sampling.
Anacostia Watershed Society	JE for CENAB-OP-RMS (Anacostia Water Trail/ Kingman & Heritage Islands Park) 2014-00255	Expansion of an existing platform below the bridge connecting Heritage and Kingman Island by installing a floating dock anchored into the river bed by steel poles.
District Yacht Club	JE for CENAB-OP-RMS (Yacht Club) 2014-00236	Replacement and straightening of existing pylons.
District of Columbia Water	JE for NAB-2013-01220 (Sewer Rehab/ Stream Rest/Pope Branch, DC)	Restoration of streams and wetlands on Pope Branch.
Forest City SEFC, LLC	WQC DC-14-001	To drill four boring holes with a hollow stem auger in the Anacostia River at 10 South Water Street SE, Washington, DC.
Forest City SEFC, LLC	WQC DC-14-001M	To drill four boring holes with a hollow stem auger in the Anacostia River at 10 South Water Street SE, Washington, DC.
The Catholic University of America	WQC DC-14-002	Replacement of an existing concrete box-culvert with 232 linear-feet of a 36-inch-diameter, twin reinforced concrete pipe culvert on Catholic University.
District Department of Transportation	WQC DC-14-003	Replacement of an existing culvert with a pre-cast concrete bridge on Fenwick Branch at Kalmia Road in a tributary of Rock Creek.
Boston Outdoor Recreation, Inc.	WQC DC-14-004	To construct a floating wooden pier in the Potomac River.
District of Columbia Water and Sewer Authority	WQC DC-14-006	A stream restoration project using the Regenerative Stormwater Conveyance (RSC) method.
Department of Energy and Environment	WQC DC-14-007	To conduct Anacostia River sediment remedial investigation.
Department of Energy and Environment	WQC DC-14-008	To restore an incised channel by the Regenerative Stormwater Conveyance method.

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
District Department of Transportation	JE for CENAB-OP-RMS 2014-00674 (DDOT/East Capitol Street Bridge/Sediment Borings)	To drill three geotechnical borings, approximately in the Anacostia River bottom, to investigate the suitability of the substrate for the repair of the existing East Capitol Street Bridge.
National Park Service	WQC DC-14-009	To install seasonal floating docks in Kenilworth Park/Anacostia River.
Department of Energy and Environment/ Watershed Protection Division	WQC DC-14-010	For stream restoration on Nash Run.
District Yacht Club	WQC DC-14-011	Replacement and straightening of existing pilings.
District Department of Transportation	WQC DC-14-013	To dewater for stream improvements and bridge repair.
District Department of Transportation	JE for NAB-2012-02446 (Francis Scott Key Bridge Repairs/DC)	For the maintenance and repair of the Francis Scott Key Bridge (Bridge # 007, over Potomac River).
Anacostia Watershed Society	WQC DC-14-012	Expansion of an existing platform below the bridge connecting Heritage and Kingman Island by installing a floating dock anchored into the river bed by steel poles.
District of Columbia Commission on the Arts and Humanities	JE for NAB-2014-00971 (Temporary Sculpture/Kingman Lake)	To install an approximately 14-foot-tall by 23-foot-long by 46-foot-wide floating sculpture, suspended with cables between Kingman Island and Heritage Island.
District Department of Transportation	WQC DC-14-014	To drill three geotechnical borings, approximately in the Anacostia River bottom, to investigate the suitability of the substrate for the repair of the existing East Capitol Street Bridge.
Home Owner	Jurisdictional Determination	To build two houses around a wetland and stream.
USACE	Comment and Water Quality Certification	Review and certify Total Maximum Daily Load (TMDL) Regional General Permit.
Department of Energy and Environment	WQC DC-14-016	To perform stream restoration at the National Arboretum.
Eastern Federal Lands Highway Division of Federal Highway Administration	WQC DC-14-017	Pavement reconstruction, bridge and parking area rehabilitation, curb and gutter repair, drainage improvements, traffic signal and street lights replacement, permanent signing and striping.
District Department of Transportation	WQC DC-14-018	Maintenance and repair of the Francis Scott Key Bridge (Bridge # 007, over Potomac River).

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
District Department of Transportation	WQC DC-14-020 (Modification WQC-DC-13-017)	To drill additional geotechnical borings for the South Capitol Street Bridge project.
City of Alexandria	WQC DC-14-021	To dredge the City of Alexandria marina.
District Department of Transportation	WQC DC-14-022	To restore the Klingle Valley Trail and stream.
District Department of Transportation	WQC DC-14-024	To repair a bulkhead in the Anacostia River.
The John F. Kennedy Center for Performing Arts	JE for 2014-02076 (BORINGS/ KENNEDY CENTER, DC)	To drill geotechnical borings in the Potomac River for the proposed Kennedy Center expansion.
AMT, LLC	Jurisdictional Determination	Wetland delineation at 2335 Raynolds Place SE in Washington (new charter school).
District Department of Transportation	WQC DC-14-025	To repair the superstructure on the existing South Capitol Street Bridge above the Anacostia River.
Tetra Tech, Inc.	WQC DC-14-026 Modification of CENAB-OP-RMS 2014-00151 (Anacostia River Remedial Investigation)	To modify an existing permit with additional sediment sampling locations in Anacostia River.
HNTB & Marine Solutions	WQC DC-14-027; new permit; under Rivers and Harbors Act	To perform an underwater structural investigation of bridge footings.
National Park Service - National Capitol Region	WQC DC-14-028	To replace pilings in the Pentagon Lagoon Yacht Club at Columbia Island Marina.
DC Water	WQC DC-15-001	To demolish an existing combined sewer overflow 003 outlet in the Potomac River.
The John F. Kennedy Center for the Performing Arts	WQC DC-15-002	To drill four geotechnical borings in the Potomac River for the proposed Kennedy Center expansion.
District Department of Transportation	WQC DC-15-003	Placement of turbidity curtains for underwater investigation of the East Capitol Street bridge foundation.
US Department of Transportation / Federal Highway Administration	WQC DC-15-004	Additional repair work of placing vegetated riprap impacting 280 linear feet of stream bank in Rock Creek.
Department of Energy and Environment	JE for CENAB-OP-RMC 2015-00081 (DOEE Sediment Remedial Investigation/Potomac River, DC)	To collect 20 Potomac River sediment samples. Original permit was CENAP-OP-RMS-2014-00151; issued on April 2014 for sampling on the Anacostia River.
City of Alexandria	WQC DC-14-021	To redevelop the existing Robinson Terminal North warehouse facility pier.

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
Joint Base Anacostia-Bolling	WQC DC-15-006	To replace an existing boat ramp in-kind.
District Department of Transportation	Frederick Douglass Memorial Bridge	Jurisdictional Determination to determine Waters of the US and Waters of the District within the limit of disturbance for the relocation project of the Fredrick Douglass Memorial Bridge.
Deputy Mayor for Planning and Economic Development	WQC DC-15-005	Southwest Waterfront Pier 4 modification of existing permit.
Joint Base Anacostia-Bolling	WQC DC-15-006	To replace an existing boat ramp in-kind.
Dumbarton Oaks Conservancy	WQC DC-15-007	Stream restoration, dredging, repairing locks and dams, and repairing historic retaining walls in Rock Creek.
Anacostia Watershed Society / National Park Service	WQC DC-15-008	To install a temporary recreation dock in the Anacostia River.
Department of Energy and Environment / Tetra Tech	WQC DC-15-009	To collect 20 Potomac River sediment samples. Original permit was CENAP-OP-RMS-2014-00151; issued April 2014 for sampling on the Anacostia River.
Smithsonian Conservation Biology Institute	WQC DC-15-010	To modify a permit and certification for stream bank stabilization along Rock Creek in the National Zoo.
DC Water	WQC DC-15-011	To emplace marsh mats for construction access for repair of an existing sewer line, temporarily impacting non-tidal wetlands and a stream in the US National Arboretum.
Department of Energy and Environment Fish and Wildlife Division	WQC DC-15-012	To plant submerged aquatic vegetation (SAV), *Vallisneria Americana*, in the Potomac River.
National Park Service and Federal Highway Administration	WQC DC-15-013	To conduct a subsurface investigation including six cores of the Arlington Memorial Bridge abutment footers and bedrock, and eight soil borings in the Potomac River.
Anacostia Watershed Society	JE for CENAB-OP-RMS 2015-00181 (Temp Rec Dock/Anacostia River, DC)	Installation of a temporary dock on the Anacostia River near the 11th Street Bridge.
Anacostia Watershed Society	WQC DC-15-014	To plant submerged aquatic vegetation in Kingman Lake.
Homeowner	Jurisdictional Determination for CENAB-OP-RMS (3303 Aberfoyle Pl., DC/JD) 2015-0087	Delineation and jurisdictional determination of Waters of the US and District of Columbia.

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
Anacostia Watershed Society	WQC DC-15-015	To plant submerged aquatic vegetation in the Kenilworth Gardens.
Anacostia Watershed Society	WQC DC-15-016	To plant submerged aquatic vegetation near Buzzard Point, in the Anacostia River.
Federal Highway Administration	WQC DC-15-017	To repair the Kutz Bridge over the Tidal Basin.
National Park Service / Federal Highway Administration / JMT	JE for CENAB-OP-RMS 2015-00319 (Arlington Memorial Bridge, Borings/DC)	To perform a subsurface investigation, including six cores of the Arlington Memorial bridge abutment footers and bedrock, and 8 soil borings in Potomac River.
Anacostia Watershed Society	JE for 2015-00511 (AWS SAV Planting / Kingman Lake, Anacostia River, DC) (UNCLASSIFIED)	To install ten temporary 2.5-foot-wide by 10-foot-long squares of snow fencing and weighted PVC pipe, and to plant the squares with *Vallisneria Americana*–all to extend no more than 65 feet channelward of the approximate mean high water (MHW) shoreline of the Anacostia River.
Anacostia Watershed Society	JE for 2015-00512 (AWS SAV Planting / Kenilworth Gardens, Anacostia River, DC) (UNCLASSIFIED)	To install ten temporary 2.5-foot-wide by 10-foot-long squares of snow fencing and weighted PVC pipe, and to plant the squares with *Vallisneria Americana,* all to extend no more than 104 feet channelward of the approximate mean high water (MHW) shoreline of the Anacostia River.
Anacostia Watershed Society	JE for 2015-00513 (AWS SAV Planting / Buzzard Pt., Anacostia River, DC) (UNCLASSIFIED)	To install ten temporary 5-foot-wide by 10-foot-long squares of snow fencing and weighted PVC pipe, and to plant the squares with *Vallisneria Americana*, all to extend no more than 40 feet channelward of the approximate mean high water (MHW) shoreline of the Anacostia River.
District Department of Transportation	JE for CENAB-OP-RMS 2015-00137 (Normanstone Drive Repairs)	To repair Normanstone Drive in Rock Creek Park.
District Department of Transportation	WQC DC-15-018	To repair culverts along Normanstone Drive in Rock Creek Park.
Florida Rock Properties, Inc.	WQC DC-15-019	To replace a collapsing 264-foot bulkhead in the Anacostia River with a new 275-foot bulkhead. Owner is concerned about safety and requested immediate replacement, rather than repair.

Permittee	Water Quality Certification (WQC) # / Joint Evaluation (JE) # / Jurisdictional Determination	Project Description
District Department of Transportation	Jurisdictional Determination	Jurisdictional determination of Waters of the US and District of Columbia on the St. Elizabeth West campus property.
Navy Yard	WQC DC-15-020	To perform sediment sampling and borings in Anacostia River.
District of Columbia Department of Public Works	WQC DC-15-022	Delineation and jurisdictional determination of Waters of the US and District of Columbia.

Nonpoint Source Control Program

Environmental pollution from nonpoint sources occurs when water moving over land picks up pollutants such as sediment, bacteria, nutrients, and toxicants and carries them to nearby waters. Sediment and pollutant-laden water can pose a threat to public health. The pollutants may come from both natural sources and human activity. Stormwater runoff and associated soil erosion are significant causes of lost natural habitat and poor water quality in the District. Nonpoint source pollutants of concern in the District are nutrients, sediment, toxics, pathogens, and oil and grease. The origins of nonpoint pollutants in the District are diverse and include:

- Stormwater runoff due to the high degree of imperviousness of urban areas;
- Development and redevelopment activities;
- Urbanization of surrounding jurisdictions; and
- Agricultural activities upstream in the watershed.

In 2014, DOEE finalized a new Nonpoint Source Management Plan as a requirement under the Section 319 Nonpoint Source Grant Program. The Plan gives a framework under which projects are developed, decisions are made, responsibilities are assigned, and implementation is prioritized. The District's Plan is a comprehensive strategy for how nonpoint source pollution will be addressed and mitigated in the coming years. The Plan will be updated a minimum of every five years to ensure it reflects progress toward restoring local waterbodies and improving the quality of waterways in the District.

The District's Nonpoint Source Plan is based on the following short- and long-term goals (10 to 20 years). These goals provide the continued framework for the District government to continue to develop and enhance its program. The goals for the Plan are as follows:

1. Support activities that reduce pollutant loads from urban runoff, construction activity, combined sewer overflows, and trash disposal, for the purpose of attaining present designated uses by 2025 and future designated uses by 2035.

2. Support and implement activities that strive to restore degraded and threatened systems and maintain healthy habitat, species diversity, and water flows to all Anacostia River tributaries by 2025 and to all surface waters of the District by 2035.

3. Coordinate program efforts with other District, federal, and private sector programs, and adjoining jurisdictions, to provide the best delivery of services to prevent and control nonpoint source pollution in the District with the resources available.

4. Support programs that aim to prevent nonpoint source pollution from individual actions by carrying out effective information and education campaigns that reach at least 5,000 individuals each year and to targeted audiences, who live, work, teach, or visit in the District of Columbia and its watersheds.

5. Implement programs that aim to increase nonpoint source pollution runoff prevention practices on private property, reaching at least 1,000 properties per year.

Nonpoint Source Activities

The mission of the District's Nonpoint Source Program is to prevent and control nonpoint source pollution in the District's watersheds. This program uses regulatory and non-regulatory approaches to reach nonpoint source milestones and safeguard the city's water and soil resources, as well as the health and welfare of citizens using those resources.

DOEE WPD programs that fall under regulation and enforcement include the following:

- Stormwater Management Program
- Soil Erosion and Sediment Control Program
- Floodplain Management Program
- Compliance and Enforcement Program

These programs aim to ensure that any development or construction activities occurring within the District prevent erosion or runoff from their sites and adhere to all federal and District laws relating to floodplains and waterways. In addition, these programs ensure that best management practices (BMPs) are installed correctly and receive appropriate maintenance. Non-regulatory programs include the following:

- Wetland and river habitat creation and restoration programs
- Use of low impact development (LID) innovative BMP technology
- Education and outreach programs
- Pollution prevention programs
- Use of sustainable practices

Through these non-regulatory programs, the District educates community members about how their actions contribute to nonpoint source pollution and ways to reduce and/or prevent nonpoint source pollution. Additionally, the District tests and develops innovative approaches to urban nonpoint source pollution reduction and provides support and financial incentives for citizens wishing to implement LID and pollution prevention techniques.

The District also develops partnerships and collaborations to address the issue of nonpoint source pollution. In recent years, the District has worked closely with federal agencies to ensure that nonpoint source pollution is addressed on both District and federal lands.

Regulatory Management

The District works to improve water quality in its rivers and streams through direct action and regulatory efforts. The branches within the WPD responsible for regulatory management are the Technical Services Branch (TSB) and Inspection and Enforcement Branch (IEB).

These branches aim to ensure that any development or construction activities occurring within the District properly control erosion or runoff from their sites and properly adhere to all federal and District laws relating to floodplains and waterways. In addition, they ensure that BMPs are installed correctly and receive appropriate maintenance.

Technical Services Branch

TSB works with multiple stakeholders across the private and public sectors. It evaluates environmental regulatory obligations for every building permit including all commercial and residential parcel projects, linear public right-of-way projects, and in-stream designs. Reviewers determine each applicable obligation and work with the designer to ensure compliance. They review demolition, excavation, grading, and site design plans for erosion and sediment control measures, hotspot concerns, post construction land cover designations, stormwater BMPs, and floodplain management considerations. In some cases, where an applicant proposes compliance with rainwater harvesting for non-potable use the reviewer evaluates the project's mechanical electrical plumbing design to ensure adequate consideration has been given to human health. The reviewer evaluates geotechnical reports to consider opportunities for infiltration. Reviewers ensure projects with land disturbance in excess of one acre file notice with US EPA and maintain an approved stormwater pollution prevention plan on site. Sites greater than 5,000 square feet but under one acre are now required to provide "Good Housekeeping Notes" on their stormwater management plan.

Nonpoint Source Updates

The District is a leader in the development of regulations, guidance, and enforcement tools that are highly protective of the receiving waterbodies. An early adopter of erosion and sediment control regulations, enacted in 1987, the District regulates all land disturbance over 50 square feet and requires on-site stormwater management plan for land disturbances over 5,000 square feet. Regulations and compliance tools were expanded in 2003 to incorporate the first flush

concept. In 2013, a major overhaul to these regulations and compliance and enforcement tools was completed, which set a 1.2-inch retention standard for development projects disturbing an area equal to or greater than 5,000 square feet. This obligation can be met through onsite controls, a combination of on-site and off-site retention, or paying an in-lieu fee for not meeting the stormwater retention standard. The regulations also require major substantial improvement projects to meet a 0.8 retention standard. Major substantial improvement projects have a combined footprint of 5,000 square feet or greater, including the improved building and land-disturbing activity, and the construction costs for building renovation/addition are greater than or equal to 50% of the pre-project assessed value of the structure.

Fiscal years (FY) 2014 and 2015, were the first years that projects had to fully comply with the 2013 stormwater regulations. To facilitate this transition, Technical Services instituted a regular biweekly half-day meeting for all plan reviewers. These meetings provide a technical forum to clarify procedures, work through regulatory nuances, discuss challenging site cases, examine compliance presentation strategies, and generally ensure consistency across reviewers. Plan reviewers find review times have increased significantly per project. DOEE hired two additional plan reviewers to help with the work load. DOEE, with staff support from the Center for Watershed Protection (CWP), continued to develop and deliver monthly training on compliance. Compliance training included General Retention Compliance, Large Storm Design Constraints, and Specialized BMP Design sessions on green roofs, permeable paving, and rainwater harvesting, as well as sessions on right-of-way compliance.

FY 2014 also marked the start of DOEE reviews of the Green Area Ratio (GAR), the new zoning requirements for environmental high-performance landscape elements. DOEE hired two landscape architects to conduct these reviews. DOEE created the GAR compliance process and a standalone guidance manual to support GAR plan submission, review and inspection. In FY 2014 and 2015, DOEE developed and held eighteen GAR training sessions to support applicants, DOEE staff, as well Department of Consumer and Regulatory Affairs and Zoning reviewers and inspectors. A local non-profit, Casey Trees, added a regular charrette process for the GAR to provide more hands-on guidance to applicants.

TSB staff, with staff support from CWP, continues the development of training sessions. Special BMP training sessions focused on unique practices such as green roofs, permeable pavements, and rainwater harvesting will be offered in 2016, as will an online self-paced introductory course.

TSB worked with the District Department of Transportation (DDOT) in its development of green street standards and specifications to ensure DDOT's green standards harmonized with DOEE stormwater management guidelines. DDOT green infrastructure standards were published in April 2014, and are now a required component of any District street creation or reconstruction project.

Technical Services staff worked with DOEE's SWMD to develop an online database to track the submission of plans for regulatory compliance and voluntary retrofits. This allows an integrated and transparent review, approval and inspection process for erosion and sediment control, stormwater management, floodplain, GAR plans, stormwater retention credit, and stormwater fee discount applications. In 2015, DOEE required that stakeholders use the online database as part of the compliance process, a transition that was supported by additional training.

Over this period, the TSB and IEB staff also worked with Office of Planning (OP) and the Zoning Administrator to develop the permitting process for the GAR. These staff also continued to develop the guidance manual and training materials. During the initial review months, staff met regularly to exchange reviews and discuss compliance to ensure consistency among reviewers.

WPD Inspection and Enforcement Branch

WPD IEB inspects construction sites throughout the District to make sure they are in compliance with District regulations. DOEE also regularly inspects existing stormwater management facilities to ensure that they are in working order and are properly maintained. In addition, IEB is responsible for investigating citizen complaints relating to soil erosion and drainage problems and recommending appropriate solutions.

DOEE performs outreach to industrial and construction facilities through workshops, brochures, and site inspections. Inspection and Enforcement personnel use inspections to promote awareness of the proper methods of facility maintenance for stormwater regulation compliance. To aid facilities in ensuring proper maintenance of stormwater management facilities, DOEE has established and published guidelines for their proper maintenance.

In FY 2014 and 2015, the Inspection and Enforcement Branch accomplished the following:

- Conducted 7,563 inspections at construction sites for enforcement of erosion and sediment control and stormwater management regulations.
- Took 290 enforcement actions, including Stop-Work Orders, Notice of Infractions, Notice of Violation, and Maintenance Notices to strengthen enforcement activities.
- Inspected 1,160 stormwater management facilities to ensure proper functioning.
- Developed a new format for self-certification of stormwater management maintenance reporting by contractors and stormwater management BMP owners or their agents.
- Added three new inspector positions.
- Continued to develop outreach and guidance materials, including brochures, web material and presentations.
- Continued development of a green roof documentary and brochure and provided green infrastructure technical assistance by developing a list of contractors and seasonal web bulletins.

Table 2.6 details milestones reached from 2014 and 2015.

Table 2.6
Milestones Reached by Year for Inspection and Enforcement

OBJECTIVES	MILESTONES	2014	2015	2020 Goal	% of 2020 Goal achieved
Review, permit, and inspect all BMPs installed in the District	Milestone 1: Review all erosion and sediment and stormwater permit applications	Number of permits reviewed			
		3,264	3,597	N/A	N/A
		Number of permits approved			
		2,882	1,684	N/A	N/A
	Milestone 2: Inspect all permitted BMPs	Number of sites inspected			
		5,326	2,237	N/A	N/A
		Number of sites in compliance			
		724	436	N/A	N/A
	Milestone 3: Keep a tracking database of permitted BMPs	Total Number of BMPs Installed			
		3,893	4,065	N/A	N/A
		Number of new sites with BMPs			
		211	172	N/A	N/A

DOEE continues to work on automating inspection forms and using best practices to enable inspections and data management in the field for all inspection and enforcement activities. This effort is dependent upon the development of a new web-based database and field tablets that will manage inspection reports, enforcement notices, records of inspection and other events related to erosion and sediment control plans, stormwater management plans, and erosion and drainage complaints. These changes are expected to streamline regulatory operations by providing inspectors in the field with remote access to the complete inspection history of any site.

Non-Regulatory Management Update

<u>Stream Restoration</u>

Stream restoration and wetland restoration is the act of modifying a waterway or marsh to improve its environmental health and habitat. All District streams face similar threats from urbanization due to high stormwater flows from impervious surface runoff. Erosion of the banks and beds of an urban stream is the stream's way of adjusting to accommodate the geomorphological flow regime it is experiencing. Stream restoration attempts to create a channel that is in stasis with the flows it conveys.

DOEE continues to work towards completing construction on several existing projects, to perform pre- and post-restoration monitoring at completed and future restoration sites, and to complete construction on two stream restoration projects. WPD currently has 15,200 linear feet

of restored stream under post-restoration monitoring and has over 10,000 linear feet of stream reaches in the design phase.

Springhouse Run Stream Restoration

Springhouse Run is a remnant of one of the original tributaries to Hickey Run, a tributary of the Anacostia River, with a drainage area of 152 acres. The majority of the tributary is stable, although it is highly altered and armored in most areas. The armoring has resulted in a stream with poor habitat value and very limited ability to trap sediment and uptake nutrients.
The design for the stream's restoration project was completed in 2014. The stream will be reconnected to its historic floodplain and its sinuosity will be restored. This project reach measures approximately 1,800 feet in length and lies entirely within the US National Arboretum.

An additional component of this project is to construct bioretention facilities in the parking areas near the Arboretum Visitor Center. DOEE expects the project to be completed by the end of 2016.

Broad Branch Stream Daylighting

Completed in 2014, this project daylighted a 1,800 linear foot tributary to Broad Branch, a tributary to Rock Creek in Northwest DC. Daylighting a stream is the act of restoring to the open air some or all of the flow of a previously covered creek or stormwater drainage. DOEE anticipates that daylighting this tributary will improve water quality at the location and downstream by exposing the water to sunlight, air, soil, and vegetation, all of which help process and remove pollutants. The project had several components including restoration of the main stem channel using a sand seepage wetland design approach, the stabilization of several eroded tributary gullies using regenerative stream conveyance design, and several upland LID projects to slow and filter runoff from adjacent alleys and roadways.

Park Drive Regenerative Stream Conveyance Installation

In 2014, DC Water completed the installation of a regenerative stream conveyance (RSC) at a highly degraded outfall along Park Drive in Southeast, DC. Prior to restoration, stormwater flows had created conditions so hazardous that the adjacent roadway was in danger of collapsing. Hundreds of tons of sediment had eroded out of the gully from high stormwater flows.

The original design for the outfall repairs involved extending the outfall pipe into the degraded valley on National Park Service lands, a design that would have been costly, highly impacted the flora and fauna of the parkland, and would not have provided any stormwater treatment. Based on the successful installation of regenerative stream conveyances in Rock Creek Park, National Park Service and DC Water agreed to modify the designs to utilize a regenerative stream conveyance approach. The results have protected sensitive parkland, provided for easier outfall maintenance, and water quality treatment at a reduced cost from a typical grey infrastructure design.

Nash Run Stream Restoration

In FY 2014, DOEE and its design contractor completed designs for a 1,400-linear-foot stretch of restoration work on Nash Run, a tributary of the Anacostia River. The project will include an upstream floatable trash trap and will utilize floodplain reconnection design to create a 55-foot-wide low floodplain bench along the stream corridor. The project will also include an enlarged mid-reach culvert to minimize flood risk and increase likelihood of fish passage to the upper portion of the restoration reach.

The Nash Run restoration construction contract, awarded in FY 2015, is expected to commence in early 2016. The restoration project will reduce the estimated 32 tons per year of bank erosion, improve stream connectivity to its floodplain, increase the riparian cover along the stream, add wetland area to the stream corridor, and significantly reduce the stream's contribution of trash and debris to the Anacostia River.

Watts Branch Stream Restoration

The Watts Branch Stream Restoration Project was completed in early FY 2012, and since that time DOEE has monitored the project to determine its effectiveness at achieving its design objectives. Similar to other restored stream projects, DOEE is using a combination of activities to monitor the restoration project. Restoration monitoring consists of photographic and vegetative surveys and geomorphic assessments. DOEE awarded a grant to the Metropolitan Washington Council of Governments (MWCOG) to monitor macroinvertebrates in Watts Branch pre- and post-restoration. MWCOG's monitoring has shown an improvement in the number and diversity of fish since the restoration.

Pope Branch Stream Restoration and Sewer Line Replacement

DC Water completed the lining and repair of the sewer line in the Pope Branch stream valley in FY 2014. In FY 2015, DC Water awarded the contract for stream restoration this area and construction will commence in January 2016. Stream restoration work will connect the stream to its historic floodplain level and create a series of pools and riffles throughout the corridor ensuring that high flow events spread out on the floodplain.

MWCOG was awarded a grant in early FY 2013, to perform both pre- and post-monitoring at Pope Branch for several factors, including water quality, storm flow, bacterial source tracking, and macroinvertebrates. The monitoring by MWCOG, combined with the monitoring to be conducted by DOEE staff post-restoration, will help demonstrate the effectiveness of the proposed restoration design technique.

Alger Park Stream Restoration

In FY 2014, DOEE contracted the 100% design project for a stream restoration for a tributary of the Texas Avenue Tributary. This project will restore 1,540 linear feet of one of the most degraded stream valleys in the District by managing stormwater upland and by improving water quality, bank stability, and habitat.

In FY 2015, DOEE moved the stream project to full 100% designs, began working with DDOT to maximize installation of LID practices in public space, and through the RiverSmart Homes program expanded LID practices on private properties throughout the watershed. In FY 2016, the project will go through contracting for construction with an anticipated start date of in early FY 2017.

Linnean Park and Linnean Gully Stream Restorations

The Linnean Park tributary, a perennial stream, was highly degraded by stormwater runoff from a 24.5-acre watershed dominated by single family homes and wide suburban streets. In FY 2014, DOEE completed the installation of a regenerative stream conveyance system in Linnean Park that restored 1,000 linear feet of in-stream habitat.

In FY 2015, DOEE completed the construction of an RSC in Linnean Gully; a steep gully created by stormwater running directly off the end of Linnean Avenue NW, DC, leaving exposed a tangle of sanitary sewer pipe, storm sewer pipe, and a water main.

This project, partially funded by a National Fish and Wildlife Foundation grant, is being monitored to better understand the efficacy of the regenerative stream conveyance restoration approach. Prior to construction, the University of Maryland Center for Environmental Science, Chesapeake Biological Laboratory completed pre-installation monitoring for concentrations of nutrients, sediment, metals, bacteria, flow volume and velocity, water temperature, and habitat health. The investigators released a report documenting the results of the pre-restoration monitoring and have begun post-restoration monitoring of the project area. The project is using a paired monitoring approach, studying the same set of parameters in Spring Valley, a stream and watershed of similar character that will be restored in the near future. DOEE is also performing photo monitoring of the project area to document the stability of the RSC over time. The initial results of post-restoration monitoring will be published in FY 2016.

Spring Valley Stream Restoration

In FY 2014 and 2015, DOEE collected pre-restoration monitoring data for 1,100 linear feet of Spring Valley Park tributary. Additionally, DOEE staff performed outreach to the community to inform them about this project and encourage them to adopt practices on their properties to reduce stormwater runoff to the stream. This design-build project is expected to be under contract in FY 2016.

Table 2.7 details the milestones reached by 2014 and 2015.

Table 2.7
Milestones Reached by Year for Restoration Projects

OBJECTIVES	MILESTONES	2014	2015	2025 Goal	% of 2020 Goal Achieved
Restore 5 miles of stream by 2025	Milestone 1: To restore two miles of stream by 2025	Miles of stream restored			
		0.55	0.55	2	27.50%
	Milestone 2: Restore additional three miles of stream by 2025	Miles of stream restored			
		N/A	N/A	N/A	N/A
Add 100 wetland acres by 2035 bringing the total acres of wetlands in the District from 280 acres to 380 acres	Milestone 1: Increase wetland acres by 50 acres by 2025	Acres of wetland created			
		0.68	0.68	50	0.97%
	Milestone 2: Increase wetlands by an additional 50 acres by 2035	Acres of wetland created			
		N/A	N/A	N/A	N/A
Protect all the District's wetlands by 2035	Milestone 1: Identify and document all District wetlands	Number of wetlands identified			
		48	48	N/A	N/A
		Total wetland acres			
		280	280	N/A	N/A
	Milestone 2: Updated wetland regulations	# of updated regulations			
		0	0	N/A	N/A
	Milestone 3: Protect District wetlands from degradation, encroachment, or destruction	acres of wetlands protected			
		280	280	N/A	N/A

Pollution Prevention

Private property, including commercial, residential, and non-profit lands (religious and academic institutions), is the single largest land use in the District. These lands are one of the primary sources of pollution to District waterways, contributing pollutants through combined sewer overflow events and urban stormwater runoff.

One of the greatest needs and challenges for the District is to reduce water pollution by incentivizing retrofits at the individual property level. The District has recognized that without convincing property owners to adopt nonpoint source pollution prevention techniques on their lands, it will be difficult to achieve its water pollution reduction goals. As such, the District has developed a variety of programs, including incentives to encourage property owners to adopt

nonpoint source pollution reduction techniques. These efforts include an LID retrofit grant program and the following list of RiverSmart programs:

- RiverSmart Rooftops (Green Roof Rebate/Retrofit Program)
- RiverSmart Communities
- RiverSmart Homes
- RiverSmart Rebates for cisterns, impervious surface reduction, rain gardens and trees

RiverSmart Rooftops (Green Roof Rebate/Retrofit Program)

Historically, the District has offered a rebate for the installation of a green roof on a new building or the retrofit of an existing roof. Programs offered through DOEE provided varying rebate amounts with varying constraints. In 2012, DOEE restructured this rebate program to offer a single application process and set a rebate of $5 per square foot regardless of the roof size. Initially in 2013, the rebate was $5 per square foot, but participation in the program was less than predicted, so DOEE increased the rebate amount to $7 per square foot. DOEE has also identified priority watersheds throughout the District, in which it is implementing a concentrated suite of stormwater practices through programs such as RiverSmart Schools, RiverSmart Homes, RiverSmart Communities, and RiverSmart Rooftops.

DOEE awarded a new grant for administration of the RiverSmart Rooftops program in October 2014. The current program offers a $10 per square foot rebate throughout the District, and $15 per square foot in priority watersheds. The program is expected to continue through fiscal year 2017, pending the availability of funds.

In FY 2014 and 2015, the District added 306,433 square feet of green roof to its portfolio. These projects were funded both publicly and privately, and DOEE's rebate program funded 98,259 square feet, or approximately 32 percent of all green roofs installed District-wide over the reporting time period.

RiverSmart Communities Program

The RiverSmart Communities program is an extension of the RiverSmart Homes program to multi-family residences such as condominiums and co-ops, businesses, houses of worship, and universities. The current program, RiverSmart Homes, targets private, single-family homeowners to encourage the use of five specific stormwater BMPs (rain gardens, BayScaping, pervious pavement, rain barrels, and shade trees) to control nonpoint source pollution on their property. The RiverSmart Communities Program aims to implement similar practices on a larger scale that is more appropriate for the increased runoff area often seen on larger developments.

In FY 2014 and 2015, the RiverSmart Communities program completed 65 site audits at cooperatives, condominiums, apartments, businesses, and churches. Additionally, 15 projects were completed.

RiverSmart Homes Program

Since 2008, DOEE has developed a LID retrofit program aimed at single family homes. The program started with eight demonstration sites – one in each ward of the District. It then expanded to a pilot program in the Pope Branch watershed of the city. The program is now mature and has been open District-wide since the summer of 2009.

Through this program, DOEE performs audits of homeowner's properties and provides feedback to the homeowners on what LID technologies can be safely installed on their property. The District also offers up to $1,600 to the homeowner to help cover the cost of installation of any LID the homeowner chooses. Currently the program offers five different landscaping items including shade trees, native landscaping to replace grass, rain gardens, rain barrels and permeable pavement.

The District has recognized the importance of targeting homeowners for pollution reduction measures because residential property is the largest single land use in the city and is the slowest of all construction areas to be redeveloped. The program has continued in popularity with an average of 100 homeowners signing up each month.

FY 2014 and 2015 accomplishments include the following:

- Installed 1,070 rain barrels
- Planted 1,915 shade trees
- Installed 259 rain gardens
- Implemented BayScaping at 275 properties
- Replaced impervious surfaces with green space or pervious pavers at 58 properties.
- Conducted 2,188 audits

In addition, DOEE's RiverSmart Homes program holds annual contractor trainings for local landscape contractors to become RiverSmart Homes' contractors. Seven trainings were conducted in FY 2014 and 2015. Hands-on rain garden building trainings were completed by 95 contractors.

Rain Barrel Rebate Program

Property owners who purchase and install a rain barrel from an approved rain barrel list are able to apply for a rebate. Rebate amount depends on the volume of the rain, $1 per gallon stored, up to $500. For example, a 75 gallon rain barrel will merit a $75 rebate and a 500 gallon cistern will merit a $500 rebate. The rebate program includes conducting outreach to advertise the program through traditional channels and through innovative approaches (e.g., partnerships with local hardware stores). Through much of 2015 the rain barrel rebate program was administered by a partnering nonprofit organization, DC Greenworks. DC Greenworks verified that the requested rebates are in the District and that the rain barrels were actually installed. Homeowners are

eligible to receive up to two rebates per property. One hundred and eighty rain barrels have been installed and rebated in FY 2014 and 2015.

Rain Garden, Pervious Paver, and Impervious Surface Reduction Rebate Program

Any single family homeowner in the District is eligible for the Rain Garden, Pervious Paver, and Impervious Surface Reduction Rebate, including homeowners who have already received funding through the RiverSmart Homes program. The rebate is based on how many square feet of impervious area is treated with a rain garden or pervious pavers/impervious surface removal. Impervious areas can either be rooftops or areas that are covered in concrete, or some other impervious surface. The rebate will reimburse homeowners $1.25 per impervious square foot treated. The minimum square footage is 400 square feet, which would total a $500 rebate. The maximum rebate is $1,000 or treating 800 square feet or more of impervious surface. In FY 2014 and 2015, 83 rebates were issued treating 58,438 square feet of impervious surface.

RiverSmart Efforts in Bloomingdale

Bloomingdale is an area of the District with historic flooding issues. After the neighborhood was impacted by a series of flood events in the summer of 2012, Mayor Gray created a multi-agency taskforce to create a plan to address flooding through short- and long-term projects. DOEE's WPD has played an integral role in this effort.

Short-Term Measures – With funding from DC Water, DOEE spearheaded the fast-track action of deployment of cisterns in the sewershed draining to the Bloomingdale neighborhood. DOEE began conducting stormwater audits of properties in September of 2012, which continued through 2013. Over 200 audits were completed and 125 cisterns installed in this target area. Under peak maintenance scenarios, approximately 30,000 gallons of stormwater can be captured during every large rain event through this implementation project.

As part of the audit, DOEE educated homeowners on the need to empty the barrels prior to each rainstorm. Additional education was delivered by DOEE's nonprofit partner at the time, DC Greenworks, who spoke to homeowners about proper usage of cisterns during the installation process.

Medium-Term Measures – The cistern installations were a rapid response effort in the project area. As a second step in installing targeted LID, DOEE has offered higher rebate amounts for green roofs, permeable pavers, and impervious surface removal in the sewershed. Residents who live in this sewershed are able to receive a $15 per square foot rebate for green roofs and permeable pavers. A $5 per square foot rebate is also available for homeowners who wish to remove driveways and patios and replace them with vegetation. Twenty-six rebates were issued and 17,890 square feet were treated under the targeted program in, FY 2014 and 2015.

Stormwater Retention Credits

The 2013 Stormwater Rule provides regulated sites with flexible options for meeting regulatory requirements. Under the rule, each major regulated project faces a stormwater retention volume (SWRv) based on either the 0.8 or 1.2 inch storm. A regulated site may meet a portion of its SWRv through Stormwater Retention Credits (SRCs) that are purchased in a private market or through payment of an in-lieu fee to the District Government.

In 2014, the Stormwater Database was finalized and made public. This database made more information available to potential SRC market participants, allowing them to make better decisions about whether SRCs provide them with a good compliance option. In particular, new reports on SRCs for sale, expected SRCs, and the prices of completed trades, help potential market participants understand the availability of SRCs and the potential costs of SRC purchases.

2014 was the first full fiscal year with retention requirements in place and applicable to all regulated sites. As a result, FY 2014 had larger numbers of engineers and developers becoming familiar with the stormwater rule. DOEE's efforts at training, providing outreach materials, and support during plan review processes further helped to make the regulated community aware of retention requirements under the new rule.

These factors contributed to the growth of the SRC trading program in FY 2015. This year, DOEE certified SRC from five sites, which is an increase from one site in FY 2014. Further, in FY 2015, a site paid the in-lieu fee to meet its retention requirement and a second transfer of SRCs occurred (the first transfer of SRCs occurred in FY 2014).

The Registry, as well as other analyses and information on the SRC trading program, are available at http://DOEE.dc.gov/src.

Foam Ban

The *Sustainable DC Omnibus Amendment Act of 2014* bans the use of food service products made of expanded polystyrene, commonly known as Styrofoam™. The ban begins on January 1, 2016, and applies to all District businesses and organizations that serve food. The law also requires these regulated food entities to switch to recyclable and compostable food service ware products beginning January 1, 2017. The SWMD is charged with implementing this new law and subsequently has spent the last year preparing for this ban to take effect.

Foam is easily blown by wind or washed by rain into storm drains and waterbodies. As a result, foam litter is one of the most common types of trash found in the Anacostia River. In addition to being unsightly, toxic chemicals stick to the surface of foam particles. Birds, fish, and other wildlife may ingest the foam particles, causing the polystyrene and other toxins to enter the food chain. Once in the food chain, these chemicals may impact human health.

In September 2015, DOEE announced a formal comment period on proposed regulations for the District's foam ban. The proposed regulations establish guidelines for DOEE's enforcement of

the requirements and outline the course of appeal for entities that have been issued enforcement actions. DOEE is planning to publish a second round of proposed rulemaking that will create definitions that clarify the recyclable and compostable food service ware requirements, which take effect in 2017.

Once the ban takes effect on January 1, 2016, DOEE will begin enforcement, initially focusing on providing compliance assistance and issuing warnings, before issuing fines to regulated entities that continue to distribute foam products. DOEE has also established a partnership with the District Department of Health (DOH) to help maximize inspection and enforcement resources. DOH's inspectors will provide information to DOEE staff about food establishments that are using foam products as part of their routine inspections.

Coal Tar Ban

Effective July 1, 2009, it is illegal to sell, use, or permit the use of coal tar pavement products in the District. The coal tar ban helps to protect human health and the environment by reducing the amount of toxic polycyclic aromatic hydrocarbons (PAHs) in our communities and environment. Rainwater washes PAH-containing sealant particles and dust down storm drains and into our local streams and rivers, threatening aquatic life in the Anacostia and Potomac Rivers and the Chesapeake Bay.

DOEE oversees the inspection and enforcement of the coal tar pavement product ban. Inspectors conduct regular inspections of sealed parking lots and driveways throughout the District to determine whether or not the sites' sealant contains coal tar. Inspectors also prioritize inspections based on tips received from an online public tip line. Once a site has been identified as sealed, inspectors collect a small sample of the sealant for a solvent screening test, which provides an initial indication of whether or not the sealant contains coal tar. If the solvent screening test indicates that the sealant contains coal tar, the inspector will request documents related to the most recent sealant application from the site's property owner. The inspector will also arrange a time with the property owner to return to the site to collect a larger sample for laboratory analysis to measure the total concentration of PAHs. This laboratory analysis is a reliable indicator of whether or not the site was sealed with a coal tar-based sealant product. If the laboratory analysis indicates that the sample contains coal tar, DOEE will issue an enforcement action and require that the site be remediated. Table 2.8 summarizes coal tar enforcement actions in FY 2014 and 2015, including inspections, Notices of Violation (NOVs), and Notices of Infraction (NOIs).

Table 2.8
Coal Tar Summary Enforcement Statistics

FY2014	Inspections	190
	NOVs	3
	NOIs	0
	Settlement Agreements	1
FY 2015	Inspections	83
	NOVs	1
	NOIs	0

In 2013, the District began utilizing advanced geographic information system (GIS) and remote sensing analysis to remotely identify sealed parking lots for inspection. Using high-resolution aerial imagery and computer algorithms, the District is able to analyze all paved surfaces in the District and identify likely sealed lots to prioritize for inspection. This remote detection increases the efficiency and effectiveness of the District's coal tar inspection efforts.

In FY 2015, DOEE completed the data collection phase of an internal study measuring the prevalence of sealed parking lots and driveways in the District. As part of this study, DOEE randomly selected 258 paved sites from the largest 5,232 paved areas in the District to sample. The study's results will be evaluated both District-wide and at the watershed level. DOEE is currently analyzing the results of the study and plans to release a summary report in 2016.

Bag Law

The Anacostia River Clean Up and Protection Act of 2009, commonly referred to as the District's Bag Law, requires businesses that sell food or alcohol to charge five cents for each disposable paper or plastic bag distributed with any purchase. The law took effect January 1, 2010, and was the first of its kind in the United States. The law was passed after a trash study found that plastic bags were one the largest sources of litter in the Anacostia River. The law's ultimate goal is to reduce the number of disposable bags that people use in order to reduce the volume of trash in the District's waterways.

Regulated businesses retain one cent of the five-cent fee (or two cents if they offer a rebate to customers who bring their own bag), and the remaining three or four cents goes to the Anacostia River Clean Up and Protection Fund, a special-purpose fund managed by DOEE. The money deposited into the fund is used to implement watershed education programs, stream restoration projects, trash collection projects and to purchase and distribute reusable bags.

DOEE inspectors check businesses for compliance with the Bag Law primarily through "secret shopping," in which inspectors do not identify themselves as such. DOEE has determined this to be an efficient and accurate way to ascertain whether a business is in compliance. Items purchased during inspections are paid for with fees collected through the Anacostia River Clean Up and Protection Fund.

From January 1, 2014 to December 31, 2015, SWMD inspectors issued 310 Notices of Violation and 72 Notices of Infraction for bag law violations.

Tree Planting

In July 2011, a planning effort to make the District of Columbia the greenest, healthiest, and most livable city in the nation was announced. One of major initiatives is to increase the District's urban tree canopy. The urban tree canopy is the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. The District's tree canopy provides many environmental and social benefits, including reduced stormwater runoff and carbon footprint, improved air quality, additional wildlife habitat, savings on energy bills, increased property values, and enhanced quality of life. The District's tree canopy also fosters social and educational opportunities and provides aesthetic benefits to residents.

Over the past year DOEE has begun to further emphasize the importance of tree planting and tree care in the District. DOEE worked this year to put together a coalition of partners including federal and city agencies, non-profits, businesses, and major landholders to better coordinate tree planting and tree care. DOEE is in the process of hiring a staff person to lead tree planting and tree policy efforts at DOEE and coordinate with other agencies. Additionally DOEE and DDOT held a "Tree Summit" in December of 2015.

The District has set a goal that 40 percent of the District will be covered with a healthy tree canopy by 2032. According to the 2014 Tree Report Card (the most recent report) by Casey Trees, the District tree canopy has currently been assessed at 36 percent. Sustainable DC estimates that the District and its partners will need to plant 8,600 trees per year to cover 40 percent of the District with a healthy tree canopy by 2032. The District has exceeded this goal by planting 11,593 trees in 2014 and 15,044 in 2015. Table 2.9 details the number of trees planted and the organizations the District partnered with.

Table 2.9
Tree Plantings in FY 2014 and FY 2015

	2014		2015	
Program	**Trees Planted District-wide**	**Trees Planted in MS4 Area**	**Trees Planted District-wide**	**Trees Planted in MS4 Area**
RiverSmart Homes Tree Planting	634	NA	517	353
Casey Trees Tree Planting	1,539	1,326	2,356	1,228
UFA Districtwide Tree Planting	8,796	5,138	10,843	6,685
Tree Rebates	322	NA	426	42
Stream Restoration Tree Planting	273	273	17	17
Washington Parks and People	29	13		
National Park Service Tree Planting	NR	NR	NR	NR
Sustainable DC/Parks and Schools Tree Planting	NR	NR	749	494
Pepco Tree Program	NR	NR	136	77
Any other programs	NR	NR	NR	NR
Total Trees Planted	**11,593**	**6,750**	**15,044**	**8,896**
Net Trees Planted*	**11,013**	**6,413**	**14,434**	**8,451**
Estimated Annual Stormwater Volume Reduction (gallons)**	11,804,835	7,235,325	19,461,287	10,932,420

NA: Not applicable
NR: Not reported
*Assumes 5% tree mortality
**100 trees is assumed to cover 1 acre
1 inch of rainfall per acres is equal to 27,000 gallons of stormwater
CWP credits a 10% reduction in stormwater from tree cover

In-Stream and End-of-Pipe Best Management Practices (Trash Traps)

To date, the District has installed seven trash traps in the Anacostia River watershed. Four of those traps have been installed within hotspot sewersheds. Figure 2.4 displays the location of all trash traps currently installed. DOEE is exploring opportunities to install trash traps at other hotspot sewershed outfalls in 2016.

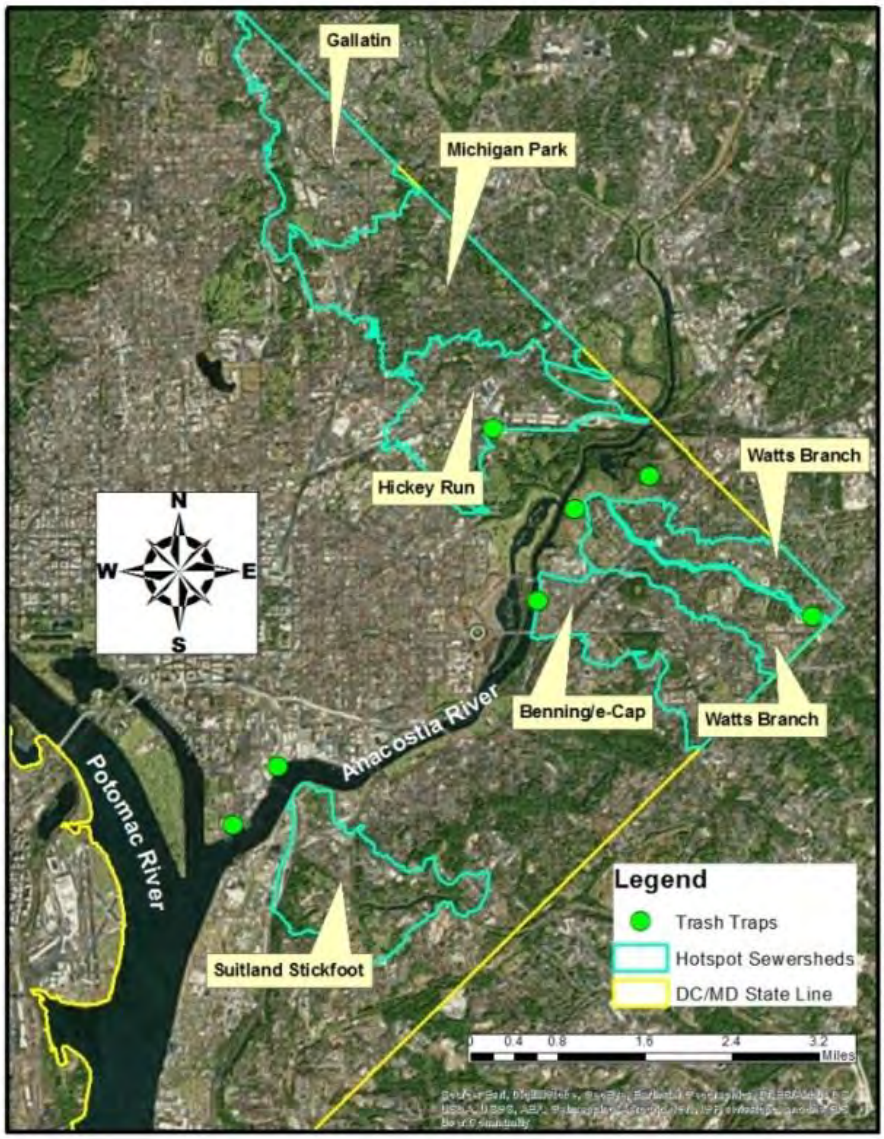

Figure 2.4: Trash Trap Locations and Sewersheds

Summary of 2014 Trash Load Reductions

Table 2.10 displays the current progress made by the District at reducing 103,188 lbs. of trash per year from reaching the Anacostia River.

Table 2.10
Annual Trash Load Reductions

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Trash Traps	Marvin Gaye Park Bandalong	1,092	22	Annual average value taken from empirical data collected between January 2012 and November 2015. The average amount of trash collected during this time period is multiplied by 2% since that is the approximate proportion of the Watts Branch watershed which lies within District and drains to the trash trap.
	River Terrace Trash Trap	775	775	Annual average of trash collected in 2014 and 2015. Reduction factors are not applied since the drainage area lies entirely within the District MS4 and all bottles and cans are emptied of water before weighing.
	Kenilworth Bandalong	2,658	2,658	Annual average taken from empirical data collected between March 2011 and November 2015. No reduction factors are being applied since the entire drainage area above this trap lies within the District.
	Nash Run Trash Trap	2,288	1,716	Annual average taken from empirical data collected between 2009 and 2015. The total amount collected is then multiplied by 75% since that is the approximate proportion of the Nash Run watershed that lies within the District and drains to the trash trap.
	Hickey Run BMP	10,000	2,000	Based on assumed efficiency of 100 percent design capture of device. A reduction factor of 20 percent was applied since glass and plastic bottles may not have been emptied of water.
	James Creek Bandalong	134	134	Annual average taken from empirical data collected between January 2012 and November 2015. No reduction factors have been applied since the entire drainage area for this practice lies within the District.
	Earth Conservation Corps Trash Booms	1,506	126	Amount collected from trap in 2014. Annual average not taken for 2013 and 2014 data since only four months of data was collected in 2013. Reduction factors are applied since a portion of the trash collected is coming from the mainstem of the river. A reduction factor of 16.5% is applied since this the proportion of

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Trash Traps				the Anacostia watershed which lies within the District. A second reduction factor of 50.8 % is applied to account for the District's portion of the Anacostia served by the MS4.
Sweeping Environmental Hotspots	Sweeping Environmental Hotspots	144,768	72,384	The total area of roadways within the environmental hotspots (e.g., blocks found to contain high trash amounts) was calculated. That area was then multiplied by 50% because roughly half of the roadway (the middle of the road) is swept in these areas because they are unsigned. That area is then multiplied by the trash loading coefficient of 31.12 lbs/acre developed for the TMDL. That total mass in pounds is then multiplied by 16 since the DC Department of Public Works (DPW) is supposed to sweep environmental hotspots (i.e., blocks with high amounts of trash) twice per month, 8 months out of the year. That result is then multiplied by 50% because not all hotspots may always be swept.
Clean-Up Activities	Clean-Up Events	36	5,192	Based on empirical data collected during cleanup events within the District's portion of the Anacostia watershed. If a site is located along the mainstem of the river, a reduction factor of 16.5% is applied since this the proportion of the Anacostia watershed which lies within the District. A second reduction factor of 50.8 % is applied to account for the District's portion of the Anacostia served by the MS4. A third reduction factor of 80% is applied to account for the fact that not all plastic and glass bottles collected may have been emptied of water before bagged.
Clean-Up Activities	Skimmer Boats	1,074,769	9,354	Based on the annual average of material collected by DC Water skimmer boats between 2003 and 2015. The average amount is first multiplied by 16.5 %, which represents the proportion of the watershed that lies within the District. A second reduction factor of 50.8 % was applied to account for the area of the District's portion of the watershed served by the MS4. A third reduction factor of 50 % was applied since not all material collected by the skimmer boats may have been trash. Finally, a fourth reduction factor of 80 percent was applied since not all plastic and glass bottles collected were emptied of water.

Activity Category	Activity	Amount of Trash Removed (pounds)	Annual Load Reduction (pounds)	Calculation Methodology
Clean-Up Activities	Clean Teams Program	2,050,429	17,949	This data was captured during the District's FY15. However, a rolling annual average will be reported once multiple years of data is captured. A sample weight is collected by each Clean Team 1× per month. The annual average from those samples is then computed. That average is then multiplied by the number of days each teams operates, and is then multiplied by 52 weeks per year. The total annual estimate is then reduced by 50% to assume that 50% of the weight captured consists of organic debris. The total captured is further reduced by 80% (i.e., the number is multiplied by 20%) to adjust for the weight being impacted by beverage containers full of liquid. Lastly, the result is multiplied by the proportion of the Clean Team area in the MS4 area, but not in an environmental hotspot, to determine the total Clean Team area.
Education and Outreach	Watershed-wide Anacostia Campaign	NA	NA	Efficiency being assessed. DOEE is awaiting results from a grant funded project being undertaken by the Alice Ferguson Foundation. The grant project was renewed during the summer of 2015 which will allow roughly another year's worth of data to be collected on the effectiveness of the campaign. Results should be ready in July 2016.
Regulatory Approaches	Bag Law	1,072	272	DOEE currently estimates (based on data collected for the development of the Anacostia Watershed Trash Reduction Plan) that there are 82,431 bags in the river and tributaries. This amount is first multiplied by 50.8%, since this is the proportion of the Anacostia River served by the MS4. The amount is then reduced by 50% because according to a recent survey report, 50% of businesses in the District report a 50% reduction in bag purchases. Finally, the total number of bags is then multiplied by 0.013 lbs., which is the standard weight for a plastic bag.
Total (pounds)		**3,289,527**	**112,582**	

Trash Monitoring

DOEE continued with its monitoring program for trash. Table 2.11 provides information about each monitoring location.

Table 2.11
Trash Monitoring Station Information

Watershed	Site	Physiographic Province	Station	Land use	Acres
Rock Creek	WR	Piedmont	Walter Reed (Ft Stevens Rd & 16th St NW)	Mixed density residential	23
Potomac	BK	Piedmont	Battery Kemble (Garfield St & 49th St NW)	Low density residential	11
	OR	Coastal Plain	Oxon Run (Mississippi Ave & 15th St SE)	Residential 46%, Public Land 45%, Commercial 5%, Utilities 4%	43
Anacostia	BR	Coastal Plain	Benning Road (Benning Rd & Anacostia Ave NE)	Commercial	12
	McD	Coastal Plain	McDonald's (Minnesota Ave & Burroughs Ave NE)	Residential 65%, Commercial 23%, Industrial 12%,	7.4
	NYA	Coastal Plain	New York Ave BMP (New York Ave & South Dakota Ave NE)	Transportation right-of-way	1.5

Monitoring conducted for the development of the Anacostia trash TMDL in the coastal plain showed that at least 0.25 inches of rainfall is necessary to move trash through the District's MS4. Only samples from storms at least 0.25 inches in magnitude were monitored at stations found within the coastal plain. However, under the direction of DOEE, who gained approval from US EPA, samples collected at Piedmont stations were only collected from storms at least 0.10 inches in magnitude. This was due to greater slopes found in the Piedmont province that could affect flow velocity and movement of trash through the MS4. Table 2.12 details the rain event characteristics of sampled storms.

Table 2.12
Storm Events Sampled

Date	Precipitation (inches)	Duration (hours)	Peak Intensity	Days from Previous Rain	Sites Sampled
01/03/15	0.54	24	0.250	5	McDonalds
03/14/15	0.61	16	0.09	4	Benning Rd, McDonalds, NY Avenue
03/20/15	0.49	11	0.08	6	Walter Reed, Battery Kemble, Oxon Run
04/14/15	0.63	12	0.12	5	Benning Rd, NY Avenue
04/25/15	0.27	6	0.06	4	Walter Reed, Battery Kemble, Oxon Run
05/16/15	0.62	1	1.50	11	McDonald, NY Ave
07/08/15	0.31*	4*	0.66	4	Benning Rd
07/27/15	0.56**	1**	1.60	9	Walter Reed, Battery Kemble
11/19/15	0.63	11.5	0.29	9	Walter Reed, Battery Kemble, Oxon Run

Precipitation amount, duration, and days from previous rain taken from National Weather Service Washington Reagan National Airport KDCA weather station
Intensities calculated from H St Corridor-NoMa KDCWASHI27 Weather Underground station
* Event data taken from H Street Corridor-NoMa KDCWASHI27 Weather Underground station
** Event data taken from Brightwood KDCWASHI113 Weather Underground station

Trash monitoring in the District is conducted with trash traps at outfalls. The trash traps were made to fit over an outfall, with a box or sock of one-inch metal poultry netting that collected trash and natural debris emanating from the pipe. When an acceptable rain event was predicted, traps were deployed at one or more monitoring sites. After the rain ended, traps and any material contained within the trap were retrieved. Trap contents were transferred to labeled plastic trash bags for transport. The bagged samples were set on a sloped concrete pad and small slits were cut in the bottom of the bags to allow water to drain away.

The samples were processed within 72 hours of collection, before appreciable degradation of any organic matter. The trap contents were hand-sorted to separate trash from natural debris. The natural fraction was weighed and properly discarded. The trash fraction was further sorted into its individual components and quantified using the categories used for the Anacostia River trash TMDL. The total trash fraction was then weighed and properly discarded.

Table 2.13 details the results of FY 2015, trash monitoring. The greatest average, amount of trash was captured at Benning Rd followed by the following sites in order: Oxon Run (Potomac), Walter Reed (Rock Creek), McDonald's (Anacostia), New York Avenue (Anacostia) and Battery Kemble.

Table 2.13
Trash Monitoring Results

Station	Date	Rain Amount (inches)	Trash Weight (pounds)
Walter Reed (Rock Creek)	03/20/2015	0.49	0.438
	04/25/2015	0.27	0.188
	07/27/2015	0.56	4.875
	11/19/2015	0.63	0.750
Battery Kemble (Potomac)	03/20/2015	0.49	0.0006
	04/25/2015	0.27	0.000
	07/27/2015	0.56	0.078
	11/19/2015	0.63	0.000
Oxon Run (Potomac)	03/20/2015	0.49	1.125
	04/25/2015	0.27	0.813
	11/19/2015	0.63	4.500
Benning Road (Anacostia)	03/14/2015	0.61	0.500
	04/14/2015	0.63	0.625
	07/08/2015	0.31	6.750
McDonald's (Anacostia)	01/03/2015	0.54	0.250
	03/14/2015	0.61	0.094
	05/16/2015	0.62	2.438
New York Ave BMP (Anacostia)	03/14/2015	0.61	0.375
	04/14/2015	0.63	0.125
	05/16/2015	0.62	2.188

A total of 2,084 items of trash were collected during sampling. The number of items in major categories is shown in Figure 2.5. As in all previous studies, the food wrappers were the most abundant item encountered. Bottles and various beverage containers were not a dominant fraction by number of items, but they are highly visible and occupy a large volume in the trash samples. Paper and plastic bags were a slightly smaller portion of the trash than in previous studies.

Expanded polystyrene foam was aggregated into one number that included fragments and pieces of cups and takeout containers, whole cups and plates, packing material, and miscellaneous foam pieces, but excluded whole Styrofoam clamshells, which were counted in the take-out category. Expanded polystyrene foam is only five percent of the trash by number of items but because it floats it is a highly visible form of pollution.

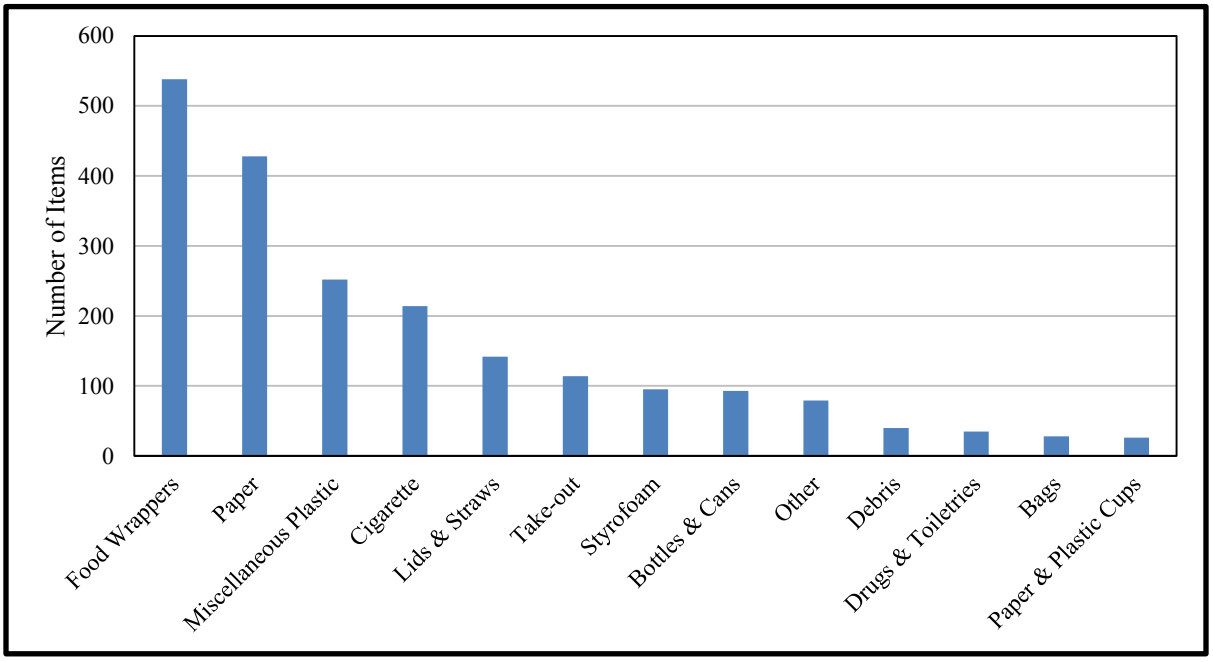

Figure2.5: Items Collected from Sampling Stations in 2015

Stream Clean-Up Activities

The District sponsors several clean-up events on an annual basis throughout the Anacostia River watershed. Examples include the Alice Ferguson Foundation's Potomac Trash Clean-up and the Anacostia Watershed Society's Annual Anacostia River Earth Day Clean-up. In 2013, the Alice Ferguson Foundation received a grant from the National Geographic Society's FieldScope program to create an online GIS map of the cleanup sites.

DC Department of Small and Local Business Development Clean Teams Program

The Department of Small and Local Business Development (DSLBD) provides grant money for the creation of Clean Teams in small commercial areas throughout the District. DSLBD funds Clean Teams to remove litter and graffiti, recycle materials collected from sidewalks and gutters, maintain street trees and other planters, and track and report public space defects. Currently, there are 21 grantees operating throughout the District. Figure 2.6 provides a map of all of the current Clean Team areas. Clean Teams maintain a total length of 41,500 feet, mostly in the District's public right-of-way.

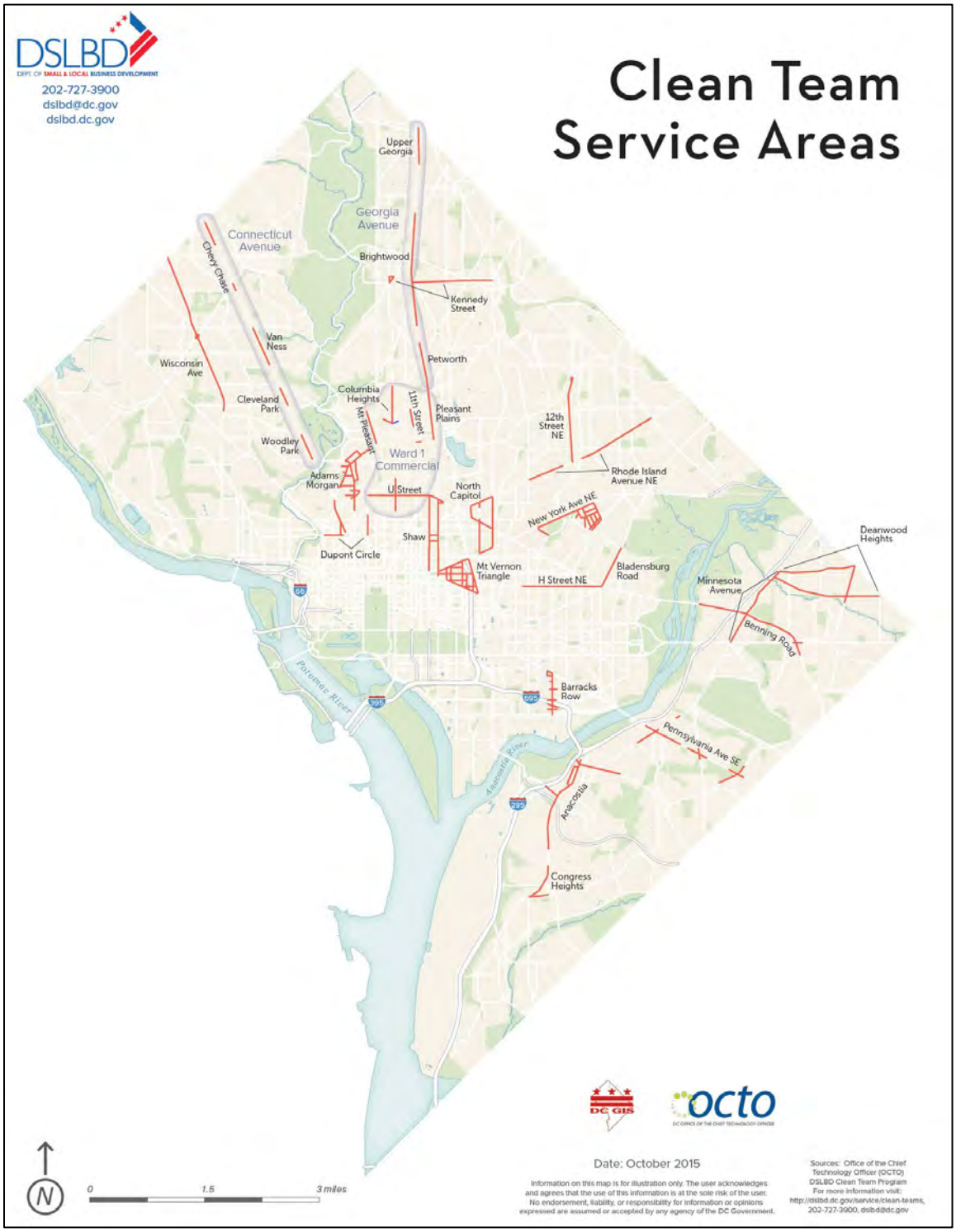

Figure 2.6: Clean Team Service Areas

Since mid FY 2014, DSLBD has been collecting weight data from each Clean Team. Several times per year, Clean Teams transport the collected trash to the District's Fort Totten Trash

Transfer Station for weighing. That data is then entered into a Quickbase® database managed by DSLBD.

While all other trash BMPs are tracked on a calendar year basis, data is monitored and summarized on a fiscal year basis for this BMP by DSLBD. The data captured represents one year's worth of effort and should be counted towards the annual trash reduction required by the MS4 permit.

In FY 2015, DSLBD estimated that the Clean Teams have captured a total of 2,050,429 lbs. of trash, since 2010. To avoid double counting, DOEE only counts the trash collected within both the MS4 drainage area and the Anacostia River watershed, but outside the environmental hotspots. DOEE is excluding the environmental hotspots for this calculation since that area is currently being addressed by street sweeping. This will avoid double counting trash captured by street sweeping and Clean Team activities.

Street Sweeping Environmental Hotspots

In 2011, DOEE funded the Department of Public Works (DPW) to develop an enhanced street sweeping program for the District. The purpose of this project was to make street sweeping more efficient by creating extra time per month to sweep streets identified as environmental hotspots by DOEE. DPW continued to implement the enhanced street sweeping program in 2015.

Low Impact Development Retrofit Program

LID Practices are focused on four main practices: cistern installation, establishment of bioretention cells, retrofit of vegetated (green) roofs and installation of pervious pavers.

In FY 2014 and 2015, DOEE/WPD completed four LID demonstration projects. DOEE partnered for the second time with the Golden Triangle Business Improvement District (BID) to install four bioretention cells treating 20,000 square feet of impervious area. The project, located at a busy commercial intersection on 19th and L Streets NW, is highly visible and builds upon the BID's previous stormwater retrofit efforts. The bioretention cells add 2,280 square feet of green space filled with plants and trees, many of which attract pollinating birds and insects. These bioretention cells were recently designated as Certified Wildlife Habitat™.

DOEE also worked with Groundwork Anacostia to design and install curbside bioretention to treat roadway stormwater runoff in the Parkside neighborhood in the Watts Branch watershed. The bioretention and landscaping has activated a currently underutilized park space in a developing community. The project, which treats 570,069 square feet of impervious area, was completed in the fall of 2014.

DOEE provided a grant to the Friends of the National Zoo and Smithsonian Institute to install a bioretention cell at the National Zoo. The bioretention cell has a drainage area of 2,700 square feet and the calculated volume reduction is 1,646 gallons of urban runoff.

DOEE partnered with Tifereth Israel Congregation on LID a demonstration project at their synagogue. The project, located in an area of 16th Street NW where there are many other religious institutions, will aid the District in performing outreach to the religious community. The constructed BMPs include an infiltration planter, bioswale, and permeable paving. Water from the rooftop of the synagogue is directed first into an infiltration planter that can capture 1,200 gallons of stormwater. Any remaining runoff overflows to the bioswale which is designed to capture an additional 1,600 gallons of stormwater. Additionally Tifereth Israel also retrofitted their parking area with two types of permeable paving to capture and treat the stormwater that falls there. The pavers were sized to capture the 2,010 gallons of runoff from the parking area and rooftop. Table 2.14 details the milestones reached and goals met.

Table 2.14
Milestones and Goals for Green Projects

OBJECTIVES	MILESTONES	2014	2015	2020 Goal	% 2020 Goal Achieved
Objective 1e: To audit 1,000 residential properties per year	Milestone 1: 1,000 audits annually	**Number of residential homes audited**			
		1,117	1071	7,000	31.3%
Objective 2e: To audit 150 multi-family and commercial properties per year	Milestone 1: 150 audits annually	**Number of multi-family and commercial properties audited**			
		31	34	1,050	6.0%
Objective 3e: To plant 750 trees per year on private property	Milestone 1: 750 trees planted in first year	**Number of trees planted on residential properties**			
		972	943	5,250	51.1%
		Estimated canopy expansion/acreage of canopy			
		9.72	1.71	N/A	N/A
Objective 4e: To plant 8,600 tree per year in public space	Milestone 1: 8,600 trees planted annually	**Number of trees planted in public space**			
		9,560	14,700	29,050	83.5%
		Estimated canopy expansion/acreage of canopy			
		95.6	105.2	N/A	N/A
Objective 5e: To install 900 rain barrels per year on residential homes	Milestone 1: 900 rain barrels installed annually	**Number of rain barrels installed**			
		475	595	7,000	15.3%
		Estimated volume of rainwater captured (gallons)			
		1,934,675	2,423,435	N/A	N/A
Objective 6e: To install 100 rain gardens per year at residential homes	Milestone 1: Install 100 rain gardens per year (DOEE, Nonprofits)	**Number of rain gardens installed**			
		138	133	700	19.7%
		Area treated (square feet)			
		61,392	59,850	N/A	N/A
		Volume captured (gallons)			
		1,190,596	1,160,691	N/A	N/A

Environmental Education and Outreach

Over 600,000 people currently reside in the District. Additionally, the District hosts millions of visitors each year, including tourists and those that work in the District but live outside its borders. Without educated and engaged residents and visitors, the District will not be able to achieve its pollution reduction goals.

Because education is critical to the District's efforts, DOEE sponsors and conducts environmental education and outreach activities targeted at teachers, environmental educators and students throughout the District.

Conservation Education (Project Learning Tree)

Project Learning Tree is an internationally recognized program that trains educators in innovative techniques for exploring a wide range of environmental concepts with students and teaching critical thinking skills that foster environmental stewardship (grades K–12).

Teacher Training Workshops

Workshops in environmental education provide educators with environmental curricula that support the District's teaching and learning standards and provide students with meaningful environmental education experiences via outdoor activities and events. In FY 2014 and 2015 the workshops included:

- Two Project Learning Tree K–8 curriculum workshops for Department of Parks and Recreation (DPR) staff and Tree of Life Public Charter School staff; and
- Three Project Learning Tree Early Childhood curriculum workshops. One was hosted by the Office of the State Superintendent of Education's (OSSE) Early Learning Division, another with DPR summer programs staff, and a third at the National Children's Center.

Carnegie Academy for Science Education, the local outreach arm of the Carnegie Institution of Washington, worked with DOEE and OSSE on the Environmental Literacy Summer Institute. Teams of teachers from the District of Columbia Public Schools (DCPS) and DC Public Charter Schools reviewed the Next Generation Science Standards and the District's Sustainable DC initiatives to create curriculum unit plans that link national standards and the Environmental Literacy Framework. These units were field tested during the 2014-2015 school year.

District Environmental Literacy Plan

In FY 2014, DOEE continued to collaborate with stakeholders to implement the District Environmental Literacy Plan. In partnership with nonprofit organizations, DOEE has drafted an Environmental Literacy Framework for District schools, a grade-by-grade approach for integrating environmental education into the curriculum. Teachers from Sustainable DC Model Schools, which are exemplary schools that already include environmental programming, helped develop the framework as well as pilot the framework in FY 2015. Two of the eight model schools were DOEE RiverSmart schools. This framework will help identify the best places in school curriculum where DOEE programming will fit. This project will also coordinate Green Career Expos for high school students to learn about green jobs and summer internships.

In July 2014, the District enacted the Sustainable DC Omnibus Amendment Act. One of its seven subtitles is the "Environmental Literacy Plan Adoption Act," which creates a new program and staff within OSSE to further develop and implement the Environmental Literacy Plan first

developed under the Healthy Schools Act. The Environmental Literacy Plan will bring environmental education, including meaningful outdoor experiences, to District youth.

District of Columbia Environmental Education Consortium (DCEEC)

DOEE helps to organize a network of environmental educators throughout the District so that ideas and resources can be shared among them. The DCEEC provides opportunities for networking, event coordination, and program partnering among its members. The members provide environmental expertise, professional development opportunities, curricula and resources, and hands-on classroom and field studies to District schools.

In FY 2014 and 2015, DOEE and DCEEC hosted their eighth and ninth annual D.C. Teacher's Night at the US Botanic Garden. Over 400 teachers registered and those in attendance learned about environmental programming from approximately 30 exhibitors representing local environmental and science education organizations. The teachers met with local environmental educators for connection with environmental education opportunities both inside and outside the classroom. Participants also took part in hands-on experiments and left with lesson plans for their classrooms.

The District held its third and fourth annual Growing Healthy Schools Week, which is the fusion of DC School Garden Week and DC Farm to School Week. Growing Healthy Schools Week reflects the components of the Healthy Schools Act, which encourages linkages between farm-to-school and school garden programs.

Growing Healthy Schools Week celebrates school gardens and farm-to-school programs throughout the District. During the week, school staff worked with local nonprofits, farms and chefs to coordinate inspiring activities aimed at engaging the broader community, increasing environmental literacy, building program capacity, and connecting students to their food.

The Anacostia Environmental Youth Summit

The Anacostia Environmental Youth Summit is a District-wide showcase that spotlights youth voice, demonstrates environmental literacy, and encourages stewardship for the Anacostia and Potomac Rivers and the Chesapeake Bay. By exemplifying an ethic of stewardship and responsible action, the Youth Summit emphasizes youth leadership and innovation. In FY 2014, 25 exhibitors and over 400 students were scheduled to participate in this event in Anacostia Park. Unfortunately, the event was cancelled due to inclement weather and not rescheduled. In FY 2015 the sun was shining and the event was a huge success with 10 schools and 420 students participating.

Meaningful Watershed Educational Experiences (MWEEs)

As part of DOEE's subgrant program, several initiatives were funded for non-profit partners to create MWEEs for hundreds of District youth. In FY 2014, the grant program focused on students in wards 7 and 8. Alice Ferguson Foundation and their partners Living Classrooms of the National Capital Region and Nature Bridge began a pilot project in which fifth grade students

spend three days and two nights in a natural setting learning about the environment. The program provided MWEEs for 816 students with a primary focus on addressing trash and littering. In FY 2015, the MWEE program was expanded to reach the entire District, more than 820 more students.

Environmental Ambassadors

DOEE funded nonprofit partners to establish a group of children and youth to serve as role models for third to eighth graders (target population). The Environmental Ambassadors functioned as "opinion leaders," who are respected and admired by other members of the community. These opinion leaders espouse a certain lifestyle such as respecting the environment by recycling, or properly disposing of trash and their peers wish to emulate them. Outcomes include the following:

- Earth Conservation Corps worked with 48 students from Brent Elementary School. The students accepted the Trash Ambassadors challenge and created a short video.
- Living Classrooms of the National Capital Region worked with 25 students from Eastern Senior High School. These students learned about green careers and worked with 15 students from Eliot-Hine Middle School in Eastern High School's greenhouse and garden.
- Earth's Natural Force (ENF) Connections recruited 14 students to become ENF Rangers. The ENF Rangers perform songs and dances with environmental messages. The Rangers completed four assemblies at seven schools, with at least 100 students attending the assembly at each school.

RiverSmart Schools

RiverSmart Schools works with applicant schools to install LID practices to control stormwater. These practices are specially designed to be functional as well as educational in order to fit with the school environment. Schools that take part in the RiverSmart Schools program receive, teacher training on how to use the sites to teach to curriculum standards, and how to properly maintain the sites.

In FY 2014 and 2015 WPD accomplished the following:

- Provided 59 teachers with a four-day workshop on RiverSmart schools site usage and programming;
- Conducted 32 classroom visits and provided seven boat trips to support integration of watershed lessons for the RiverSmart Schools project at each participating school; and
- Engaged students, teachers, and volunteers in community work days to construct and maintain designed schoolyard conservation sites. Two hundred students from two schools participated in eight community work days.

DOEE also completed the construction of five RiverSmart School projects at LAMB charter school, Bethune Day Academy, Washington Yu Ying, Seaton ES, and the British School of Washington. DOEE also helped maintain two previous RiverSmart School projects over this reporting period.

Storm Drain Marker Program

In FY 2014 and 2015, WPD installed 685 storm drain markers throughout the District. WPD reached out to five colleges/universities along with multiple community and service groups and a few residents to organize storm drain marking events. A group of girl scouts blanketed targeted areas with storm drain markers as a part of a capstone project.

Outreach on Pet Waste and Enforcement of Pet Waste Regulations

In FY 2014 and 2015, DOEE distributed thousands of instructional pamphlets at media/public events throughout all eight wards of the District. DOEE also worked with DPW and DDOT to install approximately 200 pet waste signs across the District. In FY 2014, DOEE began the process of evaluating pet waste education and outreach efforts to better understand the pollution prevention achieved as a result. This research will be completed by the end of calendar 2016.

Integrated Pest Management and Nutrient Management

DOEE has developed a robust outreach and education program on integrated pest management (IPM) and nutrient management. DOEE's IPM and nutrient management program is intended to inform the public about the proper use and disposal of pesticides and the use of safer alternatives. The program provides education and outreach activities to property owners and managers about environmentally sound practices with regard to the use of pesticides in the yard or garden and the introduction of "good" pests into the landscape. Through DOEE's Nutrient Management Program, the property owners receive education regarding the proper amount of fertilizer to use on a lawn. In addition to fertilizer use, this program addresses the proper way to mow, the proper use of mulch, and the effects of applying too much mulch.

DOEE's Pesticide Management Program trains commercial applicators in the legal and safe application of pesticides and herbicides. Commercial applicators must receive a certification through the program to legally apply pesticides and herbicides in the District. A part of this program involves the use of IPM.

Litter Prevention

Through funding from DOEE, the Alice Ferguson Foundation (AFF) has actively engaged the local community in litter prevention by partnering with local businesses on the display of education and outreach materials; conducting community trash clean-ups; disseminating reusable bags; and working with community organizations on litter awareness and prevention. In addition, AFF has been monitoring the effectiveness of the campaign. AFF has conducted on-line behavioral surveys, as well as trash counts and visual behavioral studies along blocks in

neighborhoods in the Anacostia watershed. Through these studies AFF will be gathering data on how the campaign has affected littering behavior.

In June of 2015, DOEE renewed their grant with AFF allowing for an additional year of work. AFF will continue to implement the campaign, and is conducting additional work researching littering behavior in the District's Hispanic population. In addition, AFF is continuing to implement trash behavioral surveys to assess the effectiveness of the campaign. This project will be completed in June 2016.

Coordination with Other Agencies

DOEE is not a landowning or landholding agency, thus strategic partnerships with both governmental and private entities are vitally important to make the agency's watershed protection and restoration work a success. DOEE's partnerships with these governmental and private entities ensure that municipal projects throughout the District are implemented under the same vision of watershed protection and restoration; ensure that streams are adequately protected and prioritized for restoration efforts; and ensure that projects and programs and designed and implemented effectively.

District Department of Transportation

Over the past year DOEE has coordinated closely with the Infrastructure Project Management Administration, which manages the large DDOT roadway construction projects and plays a key role in planning and permitting LID work in the public space throughout the District. Some areas of coordination include the following:

- Partnering on the design, construction, and monitoring of LID retrofits as a part of the RiverSmart Washington project
- Developing and publishing green infrastructure standards and specifications for the right-of-way
- Performing analysis on roadway design projects to determine the maximum extent practicable for LID retrofits
- Constructing permitted LID retrofits in the right-of-way

Urban Forestry Administration

DOEE has worked with DDOT's Urban Forestry Administration on three major efforts:

- Developing new erosion and sediment control guidelines to reduce the impact of construction on existing trees, to be completed in FY 2016.
- Developed and implemented tree planting plans on District school and parklands that resulted in 1,400 trees planted.
- Planning a tree canopy summit in early FY16.

Department of General Services (DGS)

The DGS Sustainability and Energy Management Division, which develops and executes energy conservation and sustainability initiatives for District properties, has received DOEE and US EPA funding to install LID at existing buildings and innovative stormwater practices for new construction. In FY 2014, DOEE funds helped pay for the construction of more than 30 bioretention tree boxes along O Street NW and a cistern at Brookland Middle School. Additionally, DOEE has worked with DGS's Contracts and Procurement Division, which manages all contracts related to DOEE projects and those on other District government property, with the exception of DDOT properties and District of Columbia Public Library facilities. During FY 2014 and 2015, DGS's Contracts and Procurement Division managed several contracts for the design and installation of LID practices and stream restoration.

Department of Parks and Recreation

DPR provides quality urban recreation and leisure services for residents and visitors to the District. DPR supervises and maintains area parks, community facilities, swimming pools and spray parks, and neighborhood recreation centers. In FY 2014 and 2015, DOEE and DPR partnered on the installation of an RSC at Linnean Park, tree planting efforts on DPR lands, urban vegetable gardens, and a memorandum of understanding for the installation of LID on several other DPR parcels. DOEE will contract this LID effort in FY 2016.

Office of Planning

The DC Office of Planning (DCOP) performs planning for neighborhoods, corridors, districts, historic preservation, public facilities, parks and open spaces, and individual sites. In addition, DCOP engages in urban design, land use, and historic preservation review. DCOP also conducts historic resources research and community visioning, and manages, analyzes, maps, and disseminates spatial and US Census data. In FY 2014 and 2015 DOEE has worked with DCOP on targeted planning efforts around the Van Ness/University of the District of Columbia in the Soapstone watershed and on Sustainable DC grant efforts to plant trees on school and park parcels.

District of Columbia Public Schools

DCPS is a school system that provides pre-kindergarten through high school educational programming for 45,000 students. DOEE works with DCPS and the DC Office of the State Superintendent of Education to ensure that environmental education is integrated into classroom programming. Each year, DOEE trains a select group of District teachers to help them better integrate watershed education lesson plans into their daily curriculum and ensure students receive "meaningful watershed education experiences" through grants to nonprofits. Additionally, DOEE worked with DCPS to plant trees on school parcels and helped retrofit several schools through DGS renovations.

Department of the Interior

DOEE works and partners with different branches of Department of the Interior including the National Park Service in the National Capital Region and the US Fish and Wildlife Service (US FWS) to plan and implement restoration projects, in particular stream restoration projects, as many of the District's stream miles lie on Park Service owned and managed land.

In FY 2014 and 2015, DOEE worked with National Park Service to complete the installation of the Broad Branch stream daylighting project, apply for grant funding to install LID retrofits in the parking area of the Carter Barron tennis center and amphitheater and restore the Fort Dupont watershed. The US FWS was also a partner with the planned LID retrofit work at the Carter Barron amphitheater because of the presence of the Hays Spring amphipod, a protected endangered species, in the area around the restoration project.

US Department of Agriculture (USDA)

DOEE is presently partnering with the National Arboretum, managed by USDA, to implement an LID and stream restoration project on the Arboretum's grounds. The LID project will capture and filter stormwater from the parking areas near the Visitor's Center, and the stream restoration project at Springhouse Run, a tributary of Hickey Run and the Anacostia River. DOEE and the Arboretum hope to replicate similar projects in future years. This project is expected to be completed in FY 2016. Furthermore, DOEE worked with the National Resource Conservation Service to contract the installation of LID at MacFarland Middle School in the RiverSmart Washington project area which was completed in FY 2015.

US Environmental Protection Agency (US EPA)

DOEE and US EPA have partnered for many years to ensure that the District meets federal law and guidelines related to nonpoint source management. DOEE and several US EPA branches partner to ensure that the District is meeting all of its local and federal obligations, as well as working in a manner that is in concert with regional and national efforts.

DOEE receives funds from the US EPA Region III 319 Grant Program annually to implement its nonpoint source management projects. DOEE coordinates with the Region III MS4 Program to implement activities required under its 2012 MS4 permit.

The District also receives funds from the US EPA Chesapeake Bay Program for Bay Program goal implementation activities that work to restore the health of the Chesapeake Bay.

US Geological Survey

The US Geological Survey (USGS) presently operates several water monitoring stations around the District, with financial support from DOEE, that measure water height, flow, and various water quality parameters, including but not limited to temperature, dissolved oxygen, and turbidity. The District pays a cost share for the maintenance of the gage stations.

Regional Non-governmental Organizations

The District partners with two primary, regional, non-governmental organizations: the Metropolitan Washington Council of Governments (MWCOG) and the Interstate Commission on the Potomac River Basin (ICPRB).

In June 2006, the MWCOG board adopted a resolution that established a new Anacostia Watershed Restoration Partnership. This partnership created the Anacostia Watershed Restoration and Protection Plan, which quantifies Anacostia restoration goals, specifies an implementation timeline, and provides explicit measurements of progress, with appropriate recognition and incorporation of related planning activities. In FY 2014 and 2015, MWCOG performed macroinvertebrate sampling and fish surveys to document the District's progress towards restoration of its waterways. Additionally, DOEE is an active partner in ICPRB, a regional organization working to enhance, protect, and conserve the water quality and associated land resources of the Potomac River basin.

Universities

Over the past year the District has partnered with universities in several ways. In FY 2014, DOEE worked with the University of the District of Columbia (UDC) to fund the design and construction of several green roofs on its highly impervious campus. DOEE has also been an active participant in UDC's LID workgroup led by its Center for Agriculture, Urban Sustainability, and Environmental Sciences. DOEE has also worked with the University of Maryland in FY 2014 and 2015 to monitor several District streams to examine the effectiveness of stream restoration practices through a grant provided by DOEE. The monitoring results will be available in FY 2016.

Nonprofit Partners

DOEE, through a competitive grant process, funds local nonprofits to increase youth education and awareness about watershed protection, implement LID projects, and manage rebate programs for LID installations. Nonprofit partners provide a valuable service to communities throughout the District and DOEE will continue to partner with a wide array of nonprofits to help fulfill our nonpoint source management obligations.

Non-profit partners that DOEE worked with in FY 2014 and 2015 include the following:

- Tifereth Israel a religious institution that retrofitted their property with LID
- The Smithsonian Institution which installed a rain garden at the National Zoo
- The Anacostia Watershed Society which administers DOEE's RiverSmart Rooftops and RiverSmart Communities grants and trains volunteers through its Watershed Stewardship Academy
- The Anacostia Riverkeeper which has installed cisterns on the grounds of several religious institutions, on behalf of DOEE
- Groundwork Anacostia which oversaw a grant to retrofit a park with stormwater LID

- Casey Trees, the Alliance for the Chesapeake Bay, and DC Greenworks, all of which managed some aspect of the RiverSmart Homes program
- Project Learning Tree, the District of Columbia Environmental Education Consortium, the Earth Conservation Corps, Living Classrooms, the Alice Ferguson Foundation, and Nature Bridge, all of which managed aspects of environmental education grants

Cost/Benefit Assessment

Cost

The District of Columbia has and continues to commit a significant amount of resources to improve the quality of its waters.

Effective wastewater treatment, sanitary sewer system maintenance, and combined sewer overflow control are the principal elements in water pollution control. The WWTP, operated by DC Water, provides wastewater services to over 2 million customers in the District and the surrounding jurisdictions of Maryland and Virginia (Figure 2.7). As such, the waste water treatment costs are apportioned between the jurisdictions served by the WWTP. The financial responsibilities of each jurisdiction were updated under the new Blue Plains Intermunicipal Agreement of 2012, effective April 3, 2013, (see http://www.mwcog.org/uploads/pub-documents/u15dVlc20130506094101.pdf). The District's portion of the capital and operations and maintenance costs for waste water treatment, sanitary sewer maintenance and engineering and technical services constitute 45.8 percent of the total cost incurred by DC Water. The District also shares 49 percent of the combined sewer overflow control costs.

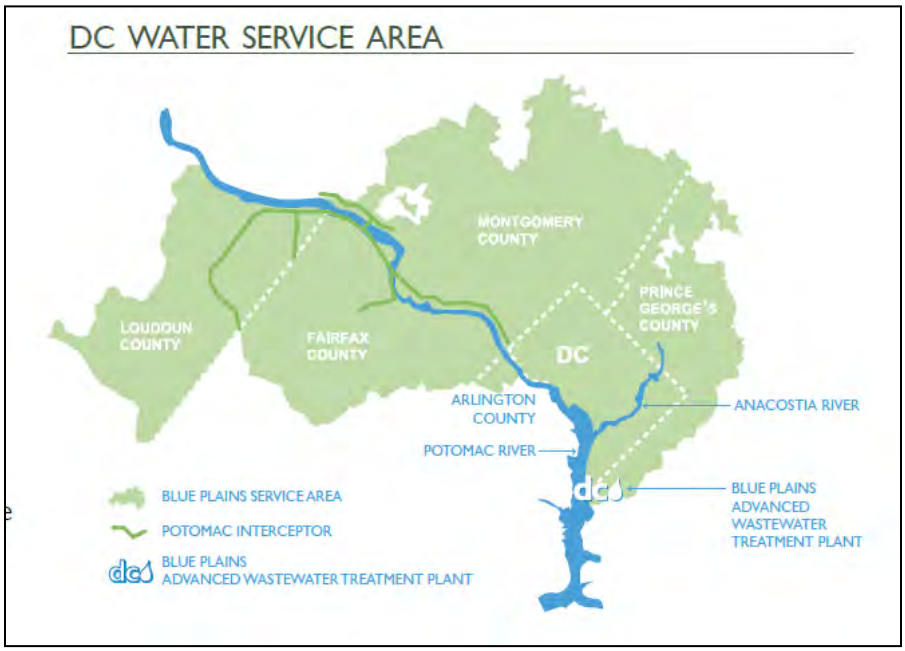

Figure 2.7: Wastewater Service Area

In addition, the District has progressive stormwater management regulations as part of the implementation and administration of activities required by the District's MS4 Permit issued by US EPA. The area covered under the permit is entirely within the District's jurisdiction and constitutes approximately 60% of the city (Figure 2.8). Stormwater management is a multi-agency effort that includes the Department of Energy and Environment, the District Department of Transportation, the Department of Public Works, DC Water, and the Department of General Services. The District's Stormwater Permit Compliance Amendment Act of 2000 established the Stormwater Permit Compliance Enterprise Fund to provide revenue to mitigate pollutants in stormwater discharges.

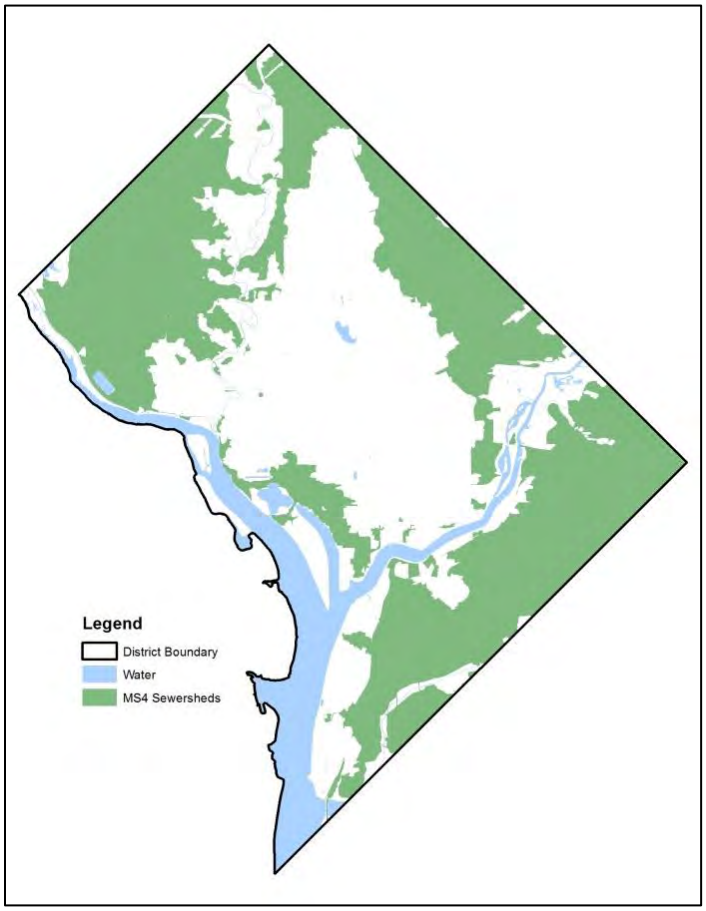

Figure 2.8: MS4 Sewershed Coverage Area

The activities undertaken in wastewater and stormwater, and the associated costs are presented below.

Wastewater Treatment

The WWTP operates under a stringent National Pollutant Discharge Elimination System permit. Significant plant-wide upgrade, rehabilitation and installation of support system are continually ongoing. Among the major projects is the Biological Nutrient Removal project to meet the goals of the Chesapeake Bay Agreement. The Blue Plains WWTP was the first facility to meet the nutrient reduction goals of 40 percent from the 1985 levels. With the recent completion of its enhanced nutrient removal facilities, the nitrogen loads are to be well below the US EPA permitted levels.

Sanitary Sewer System Maintenance

The bulk of the cost of the waste water collection system is associated with the assessment, rehabilitation and replacement of the aging infrastructure in the District. High bacteria counts in various waterways have been attributed to leaking sanitary sewers. Under a multi-year Sewer Assessment Program, DC Water completed the 10-year Sewer System Facilities Plan in 2009 (Executive Summary at https://www.dcwater.com/news/publications/Sewer%20System%20Facilities%20Plan-Executive%20Summary%20June%202009.pdf). The plan addresses the evaluation of the physical condition and capacity of the sewer system, identification and prioritization of rehabilitation needs, record keeping and data management, as well as ongoing inspection and rehabilitation programs. In accordance with key findings and recommendations of the plan, priority projects to rehabilitate sewer collection systems as well as pumping facilities are currently ongoing. In particular, the rehabilitation of sewers in stream valleys will result in significant water quality improvement.

Combined Sewer Overflow Long-Term Control Plan

DC Water completed the CSO LTCP report in 2002. The plan involves the construction of large underground tunnels that will serve as collection and retention system for combined sewer during high flow conditions. Under a 2005 agreement with the federal government, the LTCP was to be implemented over a 20 year period. The plan is to reduce combined sewer overflows to District waters by 96 percent. Construction of the Anacostia River segment of the storm water storage tunnel is underway. In December 2012, the Environmental Protection Agency, the Government of the District of Columbia and the District of Columbia Water and Sewer Authority entered into an agreement: the Green Infrastructure Partnership Agreement (GIPA). The GIPA reinforces the mutual commitments to green infrastructure to mitigate combined sewer overflows to the District waterways. The Federal Court on January 15, 2016 entered an agreement to amend the 2005 consent decree between DC Water, the Department of Justice, and US EPA. The agreement modifies the 2005 LTCP. In the Anacostia River watershed the plan remains the same, a 13.1-mile-long underground tunnel for combined stormwater and sewage storage during rains. The tunnel is already under construction, and scheduled for completion in 2025. Modifications are mainly in two of the District's major watersheds.

In the Rock Creek watershed, the modification will eliminate the previously planned underground tunnel for Piney Branch. Instead, stormwater runoff will be managed through green infrastructure (GI) such as rain gardens, porous pavement installations, and rain barrels. Targeted portions of the combined sewer system in the area will also be separated. This portion of work is scheduled for completion by 2030.

In the Potomac River watershed, a hybrid of GI and a tunnel is planned. DC Water will build an underground tunnel capable of holding 30 million gallons of combined stormwater and sewage. The tunnel will use gravity to allow the collected combined sewage to flow to the Blue Plains Advanced Wastewater Treatment Plant for treatment and is scheduled for completion by 2030. In addition, DC Water will construct green infrastructure and target sewer separations to manage runoff. The green infrastructure is expected to be in place by 2027 and sewer separations will be complete by 2023.

The total cost of the LTCP is over $2.5 billion, including long-term controls and interim upgrades to sewers and the Blue Plains wastewater treatment plant. This modification adds five 5 years to the original LTCP completion schedule.

Engineering and Technical Services

DC Water's Engineering and Technical Services programs provide support to the planning, and design and construction of new and rehabilitation projects across all functions of the collection and treatment of wastewater. The functions include system planning, technical engineering expertise, oversight of construction of government and private contractors by DC Water, and technical and policy coordination, including environmental policy issues related to the discharge of pollutants to the District's water bodies.

Table 2.15 summarizes the costs associated to the treatment of wastewater.

Table 2.15
DC Cost Summary of Water Pollution Control Activities[1]

Activity Area	**FY 2014[2]** (in thousands)	**FY 2015[3]** (in thousands)	**Total FY14–15**
Waste Water Treatment	$45,658	$49,755	**$95,413**
Sewer Services	$9,340	$10,015	**$19,355**
Combined Sewer System	$898	$1,215	**$2,113**
Engineering and Technical Services	$9,268	$10,444	**$19,712**
Total	**$65,165**	**$71,428**	**$136,593**

1 Source https://www.dcwater.com/news/publications/FY2014_and_Approved_FY2015_Operating_Budget.pdf
2 as revised
3 as approved

Stormwater Management

The stormwater management activities cover a whole array of activities including research and demonstration projects, drainage improvements, monitoring and control of various types of pollutants from various sources, enforcement and public education. The cost for stormwater management is closely aligned with the MS4 permit requirements. The subject area of the MS4 permit requirements and the associated costs are shown in Table 2.16.

Table 2.16
FYs 2014 and 2015 Enterprise Fund Budget

Permit Section	Subject Area	Fiscal Year 2014[1]	Fiscal Year 2015[2]
	General MS4 Permit Management	$5,445,000	$3,650,000
4.1	Standard for Long-Term Stormwater Management	$250,000	$500,000
4.1	Tree Canopy	$350,000	--
4.1	Impervious Surface Retrofits	$6,000,000	$4,270,000
4.1	Green Roofs	$1,075,000	--
4.1	Green Landscape Incentives / RiverSmart	$200,000	$3,700,000
4.2	Operation and Maintenance of Stormwater Capture Practices	$75,000	$500,000
4.3	Management of District Government Areas	$550,000	$100,000
4.3	Enhanced Street Sweeping	$100,000	$550,000
4.4	Management of Commercial Institutional Areas	$100,000	$200,000
4.5	Management of Industrial Facilities and Spill Response	$1,250,000	$200,000
4.6	Stormwater Management for Construction Sites	$250,000	$915,000
4.7	Illicit Discharges and Improper Disposal	$100,000	$200,000
4.8	Flood Control Practices	$200,000	$100,000
4.9	Public Education and Public Participation	$1,500,000	$900,000
4.10	TMDL Wasteload Allocation Planning and Implementation	$700,000	$1,700,000
4.10	Trash TMDL Implementation	$500,000	$600,000
5.1	Revised Monitoring Program	$350,000	$600,000
5.2	Interim Monitoring	$500,000	$350,000
5.3	Monitoring and Analysis Procedures	5,445,000	--
Total		**$19,495,000**	**$19,085,000**

1 Source: Government of the District of Columbia, 2013 DC MS4 Annual Report, January 22, 2014
http://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/2013%20Annual%20Report-%20Final.pdf
2 Source: Government of the District of Columbia, 2014 DC MS4 Annual Report, January 22, 2015
http://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication/attachments/2014%20Annual%20Report%20Final.pdf

The cost of other Best Management Practice (BMP) structures and activities incurred by private entities is difficult to estimate. Installation of various BMP devices such as sand filters, infiltration trenches, and oil/water separators have been required for new construction in the District of Columbia since the early eighties. Other BMPs such as green roofs are being actively promoted by DOEE. DOEE sponsored a study of the costs associated with the implementation of District-wide storm water management requirements (Cost Analysis of Proposed District of Columbia Stormwater Regulations - Draft January 11, 2010). The estimated compliance cost for three development scenarios ranges between 0.03% to 0.16% of the total development cost. This cost is not included in this report.

Benefits

The benefits to clean rivers and streams are increasingly being realized in the District of Columbia. In particular, the Anacostia River waterfront development which gained prominence in recent years, promotes recreational use of the waters. The District of Columbia Comprehensive Plan lays the foundation for the policies in support of an ecologically sound waterfront development. Among the key elements of the plan is to "create and enhance relationships between the rivers and District residents, develop urban waterfronts and water-related recreation in appropriate locations, and establish attractive pedestrian connections from neighborhoods to activities along the waterfronts." Development and rehabilitation of waterfront properties to include residential, retail, office space and green space areas that begun in 2007, continue to expand through the watersheds as a part of the Mayor's Sustainability and Green Infrastructures initiatives.

Qualitatively, improvements continue to be seen. A quantitative assessment of the benefits resulting from current water pollution control expenditures is difficult to make. However, the long term benefits over time are evident. A fish tumor survey conducted by the US Fish and wildlife Service ("Temporal and Spatial Patterns in Tumor Prevalence in Brown Bullhead (*Ameiurus nebulosus*) in the Tidal Potomac River watershed", April 2013) examined fish tissue analysis from the Anacostia River sampled in the years of 1996, 2000–2001, 2009–2011. The survey shows that there has been a marked decrease in the prevalence of tumors in bottom dwelling fish in the Anacostia River. The report indicates that the mitigation efforts "… would have occurred in the 2000–2006 period to be reflected in the tumor prevalence of the mostly 3–5 year old bullheads collected in 2009–2011".

Recreational fishing is active in the District. Annual surveys by the Fisheries and Wildlife Division documents the general stability of the resident and migratory fish populations in District waters. The sale of fishing licenses that was instituted in 1988 in the District has served as an indicator of a stable recreational use of the waters. Table 2.17 is a summary of licenses sold from 2010 to 2013. In 2008, the federal law for certifying fishing and hunting licenses by the US FWS was changed and states were required to conduct certification on a fiscal year cycle instead of the former calendar year. In 2010, the US FWS allowed states to certify licenses either by fiscal year or calendar year. The most recent recent figures US FWS has certified are from 2013.

TABLE 2.17
Fishing Licenses Sold in the District of Columbia

Year	Non-Resident	Resident	Total
2010	6,164	1,926	8,090
2011	4,551	1,461	6,012
2012	6,142	2,614	8,756
2013	6,256	2,054	8,646

Special State Concerns and Recommendations

TMDL Implementation Plan

The District completed its draft Consolidated TMDL Implementation Plan in May of 2015. While completing this plan was a challenging task, the District believes this requirement represents a significant opportunity to develop and implement a strategic and meaningful approach for improving the quality of District waters.

The approach outlined in the Consolidated TMDL Implementation Plan represents a performance-based approach for reducing stormwater runoff volume and pollution, addressing TMDL compliance and ultimate attainment of water quality standards. It starts from a position of understanding that waste load allocation (WLA) and WQS attainment are long-term goals, likely to require multiple permit cycles, and that the District is in the best position to conduct this analysis. Finally, this approach provides DOEE much-needed flexibility, first to define a compliance schedule that realistically estimates compliance based on available resources, and also to rationalize the number of TMDLs to address, by consolidating, revising, or employing surrogate measures where appropriate.

Recommendation: The primary action required for successfully implementing the plan is:

- Continued support for the implementation approach as described in the draft Consolidated TMDL Implementation Plan.

Federal Role in Anacostia River Restoration

Restoration efforts to attain Clean Water Act goals in the Anacostia River have been ongoing for more than twenty years. Yet there is still a long way to go before the river can be considered fishable and swimmable. In recent years, increased attention has been placed on the federal government's share of responsibility for the river's current condition, as well as its potential role in restoration efforts. The federal government owns approximately one-third of the total land area in the District of Columbia, and approximately 20 percent of the impervious surface that contributes stormwater runoff to the District's waters. DC Appleseed's 2011 report "A New Day for the Anacostia" summarized how much of the damage to the Anacostia derives from the outsized role the federal government has played in the watershed for centuries. These activities

range from filling in over half of the watershed's tidal acreage and most of the watershed's wetlands, to designing, constructing and operating for some time the city's combined sewer system, to channelizing streams, to discharging toxic materials from federal installations, and to general development of federal facilities which increased impervious surface.

In recognition of these impacts, a number of drivers now compel the federal government to take a larger role in improving and restoring the Anacostia's condition. The Energy Independence and Security Act (EISA) included provisions requiring new federal development and redevelopment projects over 5,000 square feet in size to maintain or restore the property's predevelopment hydrology. Executive Order 13514, on Federal Leadership in Environmental, Energy, and Economic Performance, requires 15% of federal facilities to implement improved stormwater management practices by FY 2015. Finally, Executive Order (EO) 13508, on Chesapeake Bay Protection and Restoration, calls for the federal government to take the lead in planning and implementing strategies to restore the Chesapeake Bay, with a focus on reducing water pollution from Federal lands and facilities. Each of these commitments is admirable and represents a significant opportunity to improve water quality in the Anacostia. However, they are all voluntary efforts by the federal government. It is unclear how close actual implementation will come to the specified performance levels in the absence of any accountability and enforcement mechanism.

Recommendation: The primary action required for a successful increased federal role in the Anacostia River's restoration is

- Successfully implementing the stormwater management requirements of EISA, Executive Order 13508 and Executive Order 13514 by developing accountability and enforcement mechanisms to compel federal agency compliance with these requirements.

Discharge of Treated Groundwater from Contaminated and Potentially Contaminated Construction Sites into Waters of the United States within the District of Columbia

Economic development within the District continues to create a significant challenge when complying with District and federal regulatory requirements. Frequently, developers encounter high groundwater tables and need to dewater at construction sites. Some of these sites are contaminated and may also be impacted by natural background conditions. Within recent years, there has been an increase in the number of developers applying for NPDES permits to discharge treated contaminated groundwater to Waters of the US through the District's MS4. Although the NPDES Construction General Permit authorizes the discharge of uncontaminated groundwater or uncontaminated construction dewatering effluent, currently no US EPA NPDES general permit exists that covers the discharge of treated groundwater from contaminated or potentially contaminated construction sites. The District appreciates US EPA's efforts in the drafting of a general permit, but the permit has not yet been finalized. Additionally, permit applicants have expressed their concern regarding the following issues:

- The need to treat groundwater with naturally occurring metals concentrations above the District's surface water quality standards; and,

- The need to meet the District's surface water quality standards, although there is no economical technology available to treat groundwater to these surface water quality standards.

The District is currently initiating a study to determine the background concentrations of inorganics in soil, surface water, and groundwater as well as upstream sources. However, additional efforts are still required to comprehensively address permittees' concerns.

Recommendations: The District recommends that US EPA conduct the following:

- Finalize and issue the general permit for the discharge of contaminated and/or treated groundwater.

- Develop a new human health criterion for arsenic and other natural occurring metals based on local data or a study to obtain the necessary information such as impacts to biota and assess the need to possibly revise bioaccumulation factors.

PART III: SURFACE WATER ASSESSMENT

Current Surface Monitoring Program

There are two real-time monitoring stations on the Anacostia River and one on the Potomac River (Appendix 3.1). Real-time readings of the Rivers show current temperature, DO, pH, specific conductivity, turbidity, and chlorophyll levels. Appendix 3.2 is the percent violation tables for the continuously monitored stations.

Plan for Achieving Comprehensive Assessments

WQD has a monitoring strategy based on US EPA's 2003 guidance, Elements of a State Water Monitoring and Assessment Program. The strategy will continue the practice of comprehensive monitoring of the District waters. The strategy describes a monitoring program that will move towards allowing water quality resource managers to know the overall quality of District waters, the extent of water quality change, trouble areas, the level of protection needed, and the effectiveness of projects to correct impairments. The approved monitoring strategy includes language to continuously update the document as new areas or issues of concern arise.

Assessment Methodology and Data Summary Report

Class A

E. coli bacteria data were used to make use support decisions about pathogens. Class A water quality criteria are pH, turbidity and *E. coli*.

Class B

Class B water quality criteria are aesthetics, pH and turbidity. A regional Trash TMDL for the Anacostia River exists and the WQS include narratives that the aesthetic qualities of Class B waters shall be maintained. The waterbody segments are not fully supported. A methodology of the use support determination needs to be developed.

Table 3.1 has the threshold used to make designated use determinations for conventional pollutants and *E. coli*.

Table 3.1
Threshold for Conventional Pollutants and Pathogens

Support of Designated Use	Threshold for Conventional Pollutants and Pathogens
Fully Supporting	For any pollutant, standard exceeded in ≤ 10% of measurements. Pollutants not found at levels of concern.
Not Supporting	For any one pollutant, standard exceeded in > 10% of measurements. Pollutants found at levels of concern.
Not Assessed	Not assessed
Insufficient Information	Data to determine if the designated use is fully supporting/not supporting is not available.

Conventional pollutants are defined here as dissolved oxygen (DO), pH, turbidity, and temperature.

Class C

Biological/habitat data collected during 2002–2009, habitat data collected during 2014–2015, in addition to physical/chemical data is used to determine aquatic life (Class C) use support for the small District streams. Biological/ habitat data for small streams was evaluated using the US EPA stressor identification guidance. If a stream's aquatic life use is not supported based on the biological information found in the DC Tributary Assessment Report (draft internal document) it is listed under Category 5 of the list, if a TMDL has not been completed.

Table 3.2 indicates streams where rapid bioassessment data was collected. The reference streams are in Maryland. The Maryland Biological Stream Survey, 2014, was the data source.

Aquatic life use support is based on the relationship between observed stream biological conditions compared to the reference stream condition producing a percent of reference stream biological condition. This scale rates "impaired" at 0–79 percent, and "non-impaired at 80–100 percent" of reference condition. US EPA 305(b) guidelines on criteria for aquatic life use support classification recommend designation of "not supporting" if impairment exists, and "fully supporting" if no impairment exists. Piedmont and Coastal Plain tributaries were assessed using reference condition data from Montgomery and Prince George's Counties, Maryland. Piedmont is characterized by relatively low, rolling hills with heights above sea level between 200 feet (50 m) and 800 feet to 1,000 feet (250 m to 300 m). Its geology is complex, with numerous rock formations of different materials and ages intermingled with one another. The Coastal Plain has both low elevation and low relief, but it is also a relatively flat landform and has an average elevation less than 900 meters above sea level and extends some 50 to 100 kilometers inland from the ocean.

Biological Integrity Class scores were determined using scoring criteria adapted from Montgomery County. These scoring ranges were also applied to the Coastal Plain values. Habitat assessments were compared directly to each ecoregion's corresponding reference condition habitat evaluation.

The following tributaries in Table 3.2 were assessed for the Aquatic Life Use category using data collected during 2002–2015:

Table 3.2
Coastal Plain and Piedmont Streams Assessed

Coastal Plain		**Piedmont**	
TDU01	Fort Dupont Tributary[1]	TFB02	Foundry Branch[1]
TFC01	Fort Chaplin Run[1]	TLU01	Luzon Branch[1]
TFD01	Fort Davis Tributary[1]	TMH01	Melvin Hazen Valley Branch[1]
THR01	Hickey Run[c]	TPO01	Portal Branch[1]
TOR01	Oxon Run[1]	TPY01	Piney Branch[1]
TWB01	Lower Watts Branch[c]	TSO01	Soapstone Creek[1]
TWB02	Upper Watts Branch[c]	TDA01	Dalecarlia Tributary[2]
TTX27	Texas Avenue Tributary[1]	TFE01	Fenwick Branch[2]
TFS01	Fort Stanton Tributary[2]	TNS01	Normanstone Creek[2]
TNA01	Nash Run[2]	TDO01	Dumbarton Oaks Tributary[2]
TPB01	Pope Branch[2]	TPI01	Pinehurst Branch[2]
TFS01	Fort Stanton[2]	TKV01	Klingle Valley Creek[2]
		TBR01	Broad Branch[2]
		RCRH01	Lower Rock Creek[c]
		RCRH05	Upper Rock Creek[c]
		TBK01	Battery Kemble Creek[1]
		TPIH01	Pinehurst Branch[2]
		TBR01	Broad Branch[2]

1 - First round streams (monitored on the even number year)
2 - Second round streams (monitored on the odd number year)
c - Core streams (monitored every year)

The findings from the habitat assessment are included in the individual assessments (Appendix 3.3).

Class D

Fish consumption use determinations (Class D) are informed by known fish consumption advisories in effect during the assessment period. Fish tissue contamination data used to issue advisories are collected at stations located on the Anacostia and Potomac Rivers. If no barrier for fish movement exists, it is assumed that fish move freely to the smaller streams and other waterbodies. In these cases, fish tissue contamination data may be considered applicable to the connected tributaries. In waters where fish tissue were collected directly from the Anacostia and Potomac mainstems, and the presence of a pollutant was found in actionable levels in the fish tissue, the pollutant will be listed as a cause of impairment for that waterbody. In tributaries that are hydrologically connected to the Anacostia and Potomac mainstems and have indirect evidence, such as fish tissue contamination data from the mainstem Anacostia or Potomac Rivers, that indicate that a tributary may be impaired by a toxic pollutant of concern, the pollutant/tributary combination is deemed to have insufficient data or information to determine if the pollutant is a cause of impairment in the tributary. Table 3.3 has the threshold for fish consumption use designation.

Table 3.3
Threshold for Fish Consumption Use Support Classification

Support of Designated Use	Threshold for Fish Consumption
Fully Supporting	No fish/shellfish advisories or bans are in effect.
Not Supporting	"No consumption" fish/shellfish advisory or ban in effect for general population, or a subpopulation that could be at potentially greater risk, for one or more fish species; commercial fishing/shellfishing ban in effect.
Not Assessed	"Not assessed" is used when fish consumption is not a designated use for the waterbody.
Insufficient Information	Data to determine if the designated use is fully supporting/not supporting is not available.

Class E

Class E use is determined by the presence or absence of unmarked submerged or partially submerged man-made objects that pose a hazard to users of these waters.

Appendix 3.4 includes the tables of percent violations and statistical summary reports for the waterbodies assessed for this reporting cycle.

The District has adopted water quality standards for dissolved oxygen, water clarity and chlorophyll a in accordance with the Chesapeake Bay Water Quality Criteria Guidance Document published in 2003 (US EPA, 2003) for the Potomac Tidal Fresh and Anacostia Tidal Fresh (Chesapeake Bay Program waterbody name). For the 2016 listing year, these segments are in Category 4a because the Chesapeake Bay TMDL was established in December 2010.

Section 303(d) Waters

Background

Section 303(d) of the federal Clean Water Act and regulations developed by US EPA require states to prepare a list of waterbodies or waterbody segments that do not meet water quality standards even after all the pollution controls required by law are in place. Waterbodies may be divided into segments. Waterbodies or waterbody segments not meeting the appropriate water quality standards are considered to be impaired. The law requires that states place the impaired waterbody segments on a list referred to as the 303(d) list and develop total maximum daily loads (TMDLs) for the waterbodies on the list in Category 5. The Potomac and Anacostia Rivers, Rock Creek and Watts Branch are divided into segments for the assessment purposes of this list. The Potomac River has three segments; the Anacostia River, Rock Creek and Watts Branch have two segments each.

US EPA requires that information for the assessment, listing, and reporting requirements for Section 303(d) and 305(b) of the Clean Water Act be submitted in an Integrated Report. The

current guidance requires the categorization of all state waters into five assessment categories.

Category 1 should include waters with the status that all designated uses are being met. Category 2 should include waters that meet some (at least three) of their designated uses, but there is insufficient data to determine if remaining designated uses are met. Category 3 should include waters for which insufficient data exists to determine whether any designated uses are met. Category 4 should include waters that are impaired or threatened but a TMDL is not needed. Category 5 should include waters that are impaired or threatened and a TMDL is needed. Categories can be subcategorized.

US EPA regulations require that the Integrated Report (305(b)/303(d) list) and methodology used to categorize the waters be submitted to US EPA by April 1. The public must also be given the opportunity to comment on a draft list.

Basis for Consideration of Data

Various data sources were considered for use in the preparation of the draft 2016 303(d) list. As the 303d list is a tool of the regulatory TMDL process, the District wants to ensure that the 303(d) list produced and eventually approved is based on data that utilized unbiased, scientifically sound data collection and analytical methods. The Water Quality Monitoring Regulations (Title 21, Chapter 19 - District of Columbia Municipal Regulations) were developed to provide for accurate, consistent, and reproducible water quality monitoring data for decision making purposes. Data that did not satisfy the above mentioned monitoring regulations is not reviewed for the development of the 2016 303d list.

The draft 2016 list enumerates specific pollutants of concern in various waterbodies or waterbody segments. The draft 2016 303(d) list is based on the following data:

- 2014 303(d) list;
- DC Ambient Water Quality Monitoring data for 2011–2015;
- DC Municipal Separate Storm Sewer System 2012–2015 Monitoring Data;
- Stream Survey data collected between 2002–2003 and 2010–2015;
- Analysis of Biological Samples: District of Columbia Phytoplankton, Zooplankton and Benthic Macroinvertebrate Samples, 2005–2009;
- USGS Non-tidal monitoring stations at Hickey Run (USGS station 01651770), Watts Branch (USGS station 01651800), and Rock Creek (USGS station 01648010), 2001–2015; and
- DC Fish Tissue Contamination Report, 2014.

In November 2015, a request for data was sent to organizations that may have data for the waters of the District of Columbia. Data received was reviewed and considered during preparation of the final 303(d) list.

Use Support Determination

Ambient Monitoring Data and Stream Survey Data

WQD uses the WQS to evaluate its surface waters. The designated uses for the surface waters of the District of Columbia are:

- primary contact recreation (swimmable),
- secondary contact recreation and aesthetic enjoyment (wadeable),
- protection and propagation of fish, shellfish, and wildlife (aquatic life),
- protection of human health related to consumption of fish and shellfish (fish consumption), and
- navigation

For the draft 2016 303(d) list determination, physical, chemical, and bacterial data collected from January 2011 to December 2015 are being used to make the use support decisions for primary contact, secondary contact, and aquatic life support uses for the rivers. A waterbody or waterbody segment is included on the draft 303(d) list if its designated use was not supported (i.e., greater than 10% excursions of the conventional pollutant and bacteria measurements taken within the data period of study). It is listed on Category 5 of the list if it is a new instance of non-support of a parameter and a TMDL does not exist. If it is a new instance and a TMDL does exist, the pollutant is placed in Category 4a.

Biological/habitat data collected during 2002–2009 and habitat data collected during 2011–2015, in addition to physical/chemical data is used to determine aquatic life use support for the small District streams. Biological/ habitat data for small streams was evaluated using the US EPA stressor identification guidance. If a stream's aquatic life use is not supported based on the biological information found in the Stream Survey data it is listed under Category 5 of the list, if a TMDL has not been completed.

Municipal Separate Storm Sewer Data

The MS4 data used is the result of wet and dry weather samples collected from the stations monitored during the MS4 monitoring cycle. Only parameters for which numeric criteria was listed in the WQS were evaluated. The most strict criteria listed was used for comparison with the data results.

Listing Revisions

Broad Branch, Dumbarton Oaks, Fenwick Branch, Klingle Valley Creek, Luzon Branch, Melvin Hazen Valley Branch, Normanstone Creek, Pinehurst Branch, Portal Branch, Piney Branch, and Soapstone Creek remain in Category 5 for *E. coli*. In December 2014, US EPA approved the Potomac River and tributaries bacteria TMDL translation from fecal coliform to *E. coli*.

Upper and Lower Anacostia River, Upper and Lower Watts Branch, Kingman Lake, Fort Dupont

Creek, Fort Davis Tributary, Fort Stanton Tributary, Fort Chaplin Tributary, Pope Branch, Texas Avenue Tributary, Nash Run, C&O Canal, Oxon Run, Rock Creek, Tidal Basin, Washington Ship Channel and Hickey Run fecal coliform listings have been changed to *E. coli*. US EPA approved the bacteria TMDL revisions in July 2014.

The priority ranking in category 5 for the Hickey Run for total residual chlorine listing has been changed to low with an establishment date of 2022. See the explanation in the Special Topics section of this report.

Category Placement Methodology

The pollutant causing an impairment in a waterbody or waterbody segment must be identified. With multiple uses associated with each waterbody it is possible for a single waterbody to need more than one TMDL. The guidance allows for a waterbody segment to be listed in one or more categories. Keep in mind that the main goal of this list is to have TMDLs approved and implemented so that water quality standards can be attained. Following is a general description of the categories.

Category 1 - All designated uses are supported, no use is threatened.
Category 2 - Available data and/or information indicate that some, but not all, designated uses are supported.
Category 3 - There is insufficient available data and/or information to make a use support determination.
Category 4 - Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.

- Category 4a - A State developed TMDL has been approved by US EPA or a TMDL has been established by US EPA for any segment-pollutant combination.
- Category 4b - Other required control measures are expected to result in the attainment of an applicable water quality standard in a reasonable period of time.
- Category 4c - The non-attainment of any applicable water quality standard for the segment is the result of pollution and is not caused by a pollutant.

Category 5 - Available data and/or information indicate that at least one designated use is not being supported or is threatened, and a TMDL is needed.

Priority Ranking

Waterbodies that are first placed on the draft list for toxics substances in 2016, such as metals, pesticides, carcinogens, or noncarcinogens, are ranked as high priority for TMDL development on the basis of their risk to human health. Experience with the TMDL development process—data gathering, model development, public participation—the District of Columbia does not foresee the development of TMDL for waterbodies ranked as high priority before the next five years. TMDLs will be developed by 2024 for impaired waters that were added to the Section 303 (d) list in 2016. Revisions to TMDLs required by the consent decree will occur in the interim.

If a waterbody is first listed in 2016 for *E. coli* due to primary contact use violations that waterbody is ranked as Medium priority waterbodies. Bacterial impairment also poses some human health risk, though the effects seen are usually not as severe as toxic substances' effects. The primary contact use exceedances (a current use) will take higher priority than the secondary contact recreation use exceedances as it is also more a efficient use of resource to address the existing uses before the designated uses (such as secondary contact recreation). Waterbodies listed for trash will be ranked as High priority. Waterbodies listed for pH are also ranked as Medium priority as it is an aquatic life use criterion. The medium priority waterbodies (first listed in 2016) will be scheduled for TMDL preparation by 2024.

Waterbodies listed for any other pollutant not previously mentioned will also be ranked low priority. Low priority waterbodies will be scheduled for TMDL preparation by 2024. The TMDL establishment date for some of the waterbodies listed in category 5 has been adjusted to account for changing priorities related to TMDLs development in the region.

Georeferencing

The geographic location codes included in the draft 2016 303(d) list were taken from the National Hydrography Dataset. The District has two codes: 02070010 for the Potomac watershed and 02070008 for the Middle Potomac-Catoctin watershed. Only one District waterbody, Dalecarlia Tributary, is located in the Middle Potomac-Catoctin watershed. All the remaining waterbodies are located in the Potomac watershed. The US EPA Assessment Database Version 2.3.1 for Access is being used to compile the data for the Integrated Report.

Public Participation

The draft 2016 Section 303(d) list was available for a 30-day public comment period. The comment period commenced on February 19, 2016, and ended on March 21, 2016. A copy of the draft 303(d) list was available at the Martin Luther King, Jr. Public Library's Washingtonian Room starting on February 19, 2016. The notice was also published on DOEE's website. The document with amendments was available for a second public comment period starting May 6. Responses to the comments received will be prepared and sent to US EPA Region 3.

Categorization of District of Columbia Waters

See Appendix 3.5 for Categorization List.

Please note the 2016 assessment database (User Cat.) in the sub-header of each waterbody reflects the District's 2016 303(d) category listings. For the complete list of 303(d) categories and contaminants of concern see Appendix 3.5.

Rivers and Streams Water Quality Assessment

Designated Use Support

Twenty-four rivers and streams were assessed for this update. Each of those waterbodies is impaired for one or more uses (Table 3.4). Appendix 3.3 contains individual assessments for each of the waterbodies.

Table 3.4
Summary of Fully Supporting, Threatened, and Impaired Rivers and Streams

	Assessment	Category	Total
Degree of Use Support	Evaluated	Monitored	Assessed Size (miles)
Size Fully Supporting All Assessed Uses	0.00	0.00	0.00
Size Fully Supporting All Assessed Uses but Threatened for at Least One Use	0.00	0.00	0.00
Size Impaired for One or More Uses	0.00	38.40	38.40
TOTAL ASSESSED	0.00	38.40	38.40

Based on Table 3.5, no District stream supported its aquatic life use. The fish consumption use was not supported in any of the streams assessed due to the fish consumption advisory in effect for District waterbodies. No stream in the District supported its primary contact use due to pH, turbidity and/or *E. coli* violations. Several streams supported its secondary contact use. The navigation use was fully supported in the streams and rivers.

Table 3.5
Individual Use Support Summary for Rivers and Streams

Report for Water Type: RIVER; Units: MILES							
USE	**Total Size**	**Size Assessed**	**Size Fully Supporting**	**Size Fully Supporting and Threatened**	**Size Not Supporting**	**Size Not Assessed**	**Size with Insufficient Info**
Navigation	20.2	20.2	20.02	0	0	-	0
Primary Contact Recreation	38.4	38.4	0	0	38.4	0	0
Protection and Propagation of Fish, Shellfish and Wildlife	38.4	38.4	0	0	38.4	0	0
Protection of Human Health related to Consumption of Fish and Shellfish	38.4	38.4	0	0	38.4	0	0
Secondary Contact Recreation and Aesthetic Enjoyment	38.4	38.4	12.8	0	25.6	0	0

Relative Assessment of Causes/Stressors

The causes of impairment to streams and rivers are varied. For example, Fort Chaplin and Fort Davis have occasional problems with low DO. Many of the streams have poor biological integrity. Table 3.6 lists the causes of impairment to District streams and rivers.

Relative Assessment of Sources

A source of impairment that is common to the District's rivers and streams is urban runoff from imperviousness. Battery Kemble and Portal Branch are highly impacted by runoff. Habitat modification still has an impact on many of the streams as riparian vegetation is removed and stream banks are destabilized due to heavy runoff. Combined sewer overflow continues to affect Klingle Valley Creek, Rock Creek and Piney Branch. Table 3.7 lists the sources of impairment.

Table 3.6
Total Sizes of Water Impaired By Various Cause Categories for Rivers and Streams

Report for Water Type: RIVER; Units: MILES	
Cause	**Total Size**
PATHOGENS	38.4
Escherichia coli	38.4
OXYGEN DEPLETION	3
BOD, Biochemical oxygen demand	1.4
Dissolved oxygen saturation	3
FLOW ALTERATIONS	9.1
Other flow regime alterations	9.1
HABITAT ALTERATIONS (INCLUDING WETLANDS)	3.7
Alteration in stream-side or littoral vegetative covers	3.1
Physical substrate habitat alterations	0.6
TOXIC INORGANICS	31.1
Arsenic	21.6
Copper	27.6
Lead	9.5
Mercury	9.5
Zinc	27.6
Chlorine, Residual (Chlorine Demand)	0.9
TOXIC ORGANICS	38.4
Polychlorinated biphenyls	38.4
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	20.7
METALS	27.6
Copper	27.6
Lead	9.5
Mercury	9.5
Zinc	27.6
PESTICIDES	21.9
Chlordane	21.1
DDD	16.2
DDE	16.2
DDT	19.4
Dieldrin	21.9
Heptachlor epoxide	21.9
MINERALIZATION	25.6
Total Suspended Solids (TSS)	12.8
Turbidity	25.6
pH/ACIDITY/CAUSTIC CONDITIONS	5.9
pH	5.9
SEDIMENTATION	12.8
Particle distribution (Embeddedness)	0.2
Total Suspended Solids (TSS)	12.8
OTHER	25.6
Turbidity	25.6
GROUP 1	27.4
Alteration in stream-side or littoral vegetative covers	3.1
Particle distribution (Embeddedness)	0.2
Total Suspended Solids (TSS)	12.8
Turbidity	25.6

Table 3.7
Total Sizes of Water Impaired By Various Source Categories for Rivers and Streams

Report for Water Type: RIVER; Units: MILES	
Source	**Total Size**
CONSTRUCTION Site Clearance (Land Development or Redevelopment)	4 4
HABITAT ALTERATIONS (NOT DIRECTLY RELATED TO HYDROMODIFICATION) Channelization Impacts from Hydrostructure Flow Regulation/modification Loss of Riparian Habitat	4.7 1.3 4.4 0.2
HYDROMODIFICATION Channelization Hydrostructure Impacts on Fish Passage Impacts from Hydrostructure Flow Regulation/modification	4.7 1.3 0.8 4.4
INDUSTRIAL PERMITTED DISCHARGES Wet Weather Discharges (Point Source and Combination of Stormwater, Sanitary Sewer Overflow (SSO), or CSO)	4.8 4.8
LAND APPLICATION/WASTE SITES Illegal Dumps or Other Inappropriate Waste Disposal	5.7 5.7
LEGACY/HISTORICAL POLLUTANTS Illegal Dumps or Other Inappropriate Waste Disposal	5.7 5.7
MUNICIPAL PERMITTED DISCHARGES (DIRECT AND INDIRECT) Discharges from Municipal Separate Storm Sewer Systems (MS4) Municipal (Urbanized High Density Area) Residential Districts Wet Weather Discharges (Point Source and Combination of Stormwater, SSO, or CSO) Wet Weather Discharges (Nonpoint Source)	7.5 1 0.9 5.6 4.8 4.8
STORMWATER PERMITTED DISCHARGES (DIRECT AND INDIRECT) Municipal (Urbanized High Density Area) Residential Districts Site Clearance (Land Development or Redevelopment) Wet Weather Discharges (Point Source and Combination of Stormwater, SSO, or CSO) Wet Weather Discharges (Nonpoint Source)	6.5 0.9 5.6 4 4.8 4.8
URBAN-RELATED RUNOFF/STORMWATER (OTHER THAN REGULATED DISCHARGES) Municipal (Urbanized High Density Area) Residential Districts Site Clearance (Land Development or Redevelopment) Wet Weather Discharges (Point Source and Combination of Stormwater, SSO, or CSO) Yard Maintenance Wet Weather Discharges (Nonpoint Source)	6.5 0.9 5.6 4 4.8 0.8 4.8
Group 1s Impacts from Hydrostructure Flow Regulation/modification Residential Districts Wet Weather Discharges (Point Source and Combination of Stormwater, SSO, or CSO) Yard Maintenance Wet Weather Discharges (Nonpoint Source)	9.2 4.4 5.6 4.8 0.8 4.8

Lakes Water Quality Assessment

Three waterbodies were monitored for designated use support. The waterbodies classified as lakes are Kingman Lake, C&O Canal, and the Tidal Basin. All of these waterbodies were impaired for one or more of their designated uses. Table 3.8 is a summary of the degree of support by lakes in the District. Individual water quality assessments may be found in Appendix 3.3.

Table 3.8
Summary of Fully Supporting, Threatened, and Impaired Lakes

	Assessment	Category	Total
Degree of Use Support	**Evaluated**	**Monitored**	**Assessed Size (miles)**
Size Fully Supporting All Assessed Uses	0.00	0.00	0.00
Size Fully Supporting All Assessed Uses but Threatened for at Least One Use	0.00	0.00	0.00
Size Impaired for One or More Uses	0.00	238.40	238.40
TOTAL ASSESSED	**0.00**	**238.40**	**238.40**

Designated Use Support

Lakes in the District supported the goals of the CWA to various degrees. Based on physical/ chemical data, the aquatic life use was fully supported in the C&O Canal and Kingman Lake. It was not supported in the Tidal Basin. Due to the fish consumption advisory currently in effect in the District of Columbia, the fish consumption use was not supported in any of the waterbodies. No lake in the District supported its primary contact use due to pH, turbidity and or *E. coli* violations. No lake supported is secondary contact use. The navigation use was fully supported. Table 3.9 is the use support summary for District lakes.

Table 3.9
Individual Use Support Summary for Lakes

Report for Water Type: FRESHWATER LAKE; Units: ACRES							
USE	**Total Size**	**Size Assessed**	**Size Fully Supporting**	**Size Fully Supporting and Threatened**	**Size Not Supporting**	**Size Not Assessed**	**Size with Insufficient Info**
Navigation	238.4	238.4	238.4	0	0	0	0
Primary Contact Recreation	238.4	238.4	0	0	238.4	0	0
Protection and Propagation of Fish, Shellfish and Wildlife	238.4	238.4	0	0	238.4	0	0
Protection of Human Health related to Consumption of Fish and Shellfish	238.4	238.4	0	0	238.4	0	0
Secondary Contact Recreation and Aesthetic Enjoyment	238.4	238.4	0	0	238.4	0	0

Relative Assessment of Causes

All the lakes are highly impacted by turbidity and pH levels. Table 3.10 lists the causes of impairment to District lakes.

Table 3.10
Total Sizes of Water Impaired By Various Cause Categories for Lakes

Report for Water Type: FRESHWATER LAKE; Units: ACRES	
Cause	**Total Size**
PATHOGENS	238.4
Escherichia coli	238.4
OXYGEN DEPLETION	102.7
BOD, Biochemical oxygen demand	102.7
TOXIC INORGANICS	102.7
Arsenic	102.7
Copper	102.7
Zinc	102.7
TOXIC ORGANICS	238.4
Polychlorinated biphenyls	238.4
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	211.1
METALS	102.7
Copper	102.7
Zinc	102.7
PESTICIDES	211.1
Chlordane	211.1
DDD	211.1
DDE	211.1
DDT	211.1
Dieldrin	211.1
Heptachlor epoxide	211.1
MINERALIZATION	102.7
Total Suspended Solids (TSS)	102.7
Turbidity	102.7
pH/ACIDITY/CAUSTIC CONDITIONS	135.7
pH	135.7
SEDIMENTATION	102.7
Total Suspended Solids (TSS)	102.7
OIL AND GREASE	102.7
Oil and Grease	102.7
OTHER	102.7
Turbidity	102.7
Group 1	102.7
Total Suspended Solids (TSS)	102.7
Turbidity	102.7

Estuary and Coastal Assessment

The Anacostia River, the Potomac River, and the Washington Ship Channel are classified as estuaries due to their tidal influences. The Potomac River and the Anacostia River are divided into segments for assessment purposes. Individual water quality assessments for the waterbodies can be found in Appendix 3.3.

Designated Use Support

All of the estuary waterbodies were impaired for one or more of their designated uses. The total square miles monitored and assessed are shown in Table 3.11.

Table 3.11
Summary of Fully Supporting, Threatened, and Impaired Estuaries

	Assessment	Category	Total
Degree of Use Support	Evaluated	Monitored	Assessed Size (miles)
Size Fully Supporting All Assessed Uses	0.00	0.00	0.00
Size Fully Supporting All Assessed Uses but Threatened for at Least One Use	0.00	0.00	0.00
Size Impaired for One or More Uses	0.00	5.93	5.93
TOTAL ASSESSED	0.00	5.93	5.93

The aquatic life use was fully supported along 0.5 square miles of estuary, and not supported along 5.43 square miles of estuary, as shown in Table 3.12. The fish consumption use was not supported due to the fish consumption advisory in effect for District waters. No estuary in the District supported its primary contact use due to pH, turbidity and or *E. coli* violations. The navigation use was fully supported in estuaries as no hazard to users by submerged or partially submerged artificial objects were known to exist in the waterbodies during this study period.

Table 3.12
Individual Use Support Summary for Estuaries

Report for Water Type: ESTUARY; Units: SQUARE MILES							
USE	**Total Size**	**Size Assessed**	**Size Fully Supporting**	**Size Fully Supporting and Threatened**	**Size Not Supporting**	**Size Not Assessed**	**Size with Insufficient Info**
Navigation	5.93	5.93	5.93	0	0	0	0
Primary Contact Recreation	5.93	5.93	0	0	5.93	0	0
Protection and Propagation of Fish, Shellfish and Wildlife	5.93	5.93	0.5	0	5.43	0	0
Protection of Human Health related to Consumption of Fish and Shellfish	5.93	5.93	0	0	5.93	0	0
Secondary Contact Recreation and Aesthetic Enjoyment	5.93	5.93	0	0	5.93	0	0

Relative Assessment of Causes

All the estuaries have low DO or turbidity impairments. It is most pronounced in the Anacostia River. Table 3.13 lists the causes of impairment to estuaries in the District.

Table 3.13
Total Sizes of Water Impaired By Various Cause Categories for Estuaries

Report for Water Type: ESTUARY; Units: SQUARE MILES	
Cause	**Total Size**
PATHOGENS	5.93
Escherichia coli	5.93
OXYGEN DEPLETION	0.3
BOD, Biochemical oxygen demand	0.3
Dissolved oxygen saturation	0.3
NUTRIENTS (Macronutrients/Growth Factors)	0.7
Nitrogen (Total)	0.7
Phosphorus (Total)	0.7
TOXIC INORGANICS	0.8
Arsenic	0.8
Copper	0.8
Zinc	0.8
TOXIC ORGANICS	5.93
Polychlorinated biphenyls	5.93
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	1.1
METALS	0.8
Copper	0.8
Zinc	0.8
PESTICIDES	1.1
Chlordane	1.1
DDD	1.1
DDE	1.1
DDT	1.1
Dieldrin	1.1
Heptachlor epoxide	1.1
MINERALIZATION	5.63
Total Suspended Solids (TSS)	0.8
Turbidity	5.13
pH/ACIDITY/CAUSTIC CONDITIONS	2.08
pH	2.08
SEDIMENTATION	0.8
Total Suspended Solids (TSS)	0.8
OIL AND GREASE	0.3
Oil and Grease	0.3
OTHER	5.63
Debris/Floatables/Trash	0.8
Turbidity	5.13
Group 1	5.63
Debris/Floatables/Trash	0.8
Total Suspended Solids (TSS)	0.8
Turbidity	5.13

Special Topics

Total Maximum Daily Load Development and Related Activities

TMDL development is an evolving process which also envisions revisions to be made to a TMDL from time to time whenever new information/data becomes available. Since 1998, WQD has developed approximately 357 TMDLs for the District's waters, all of which were approved by US EPA. Many of the District's existing TMDLs were established based on limited data and narrow modeling options available at the time. Most of these TMDLs need to be revised by taking into account new available data and improved understanding of the natural environmental processes. Revising these TMDLs will provide an opportunity to develop better water quality models with enhanced prediction capabilities, and consequently to that, an improved implementation plan for better protection of the environment.

WQD has undertaken development of the TMDLs through required monitoring and modeling studies for the Anacostia and Potomac Rivers and their tributaries including Rock Creek. The §303(d) list in this report summarizes the TMDLs that are already completed or planned to be developed in the coming years.

Chesapeake Bay TMDL

Pursuant to section 303(d) of the CWA, US EPA established a Chesapeake Bay-wide TMDL for nutrients and sediment for all impaired segments in the tidal portion of the Chesapeake Bay watershed, on December 29, 2010. As a signatory to the US EPA Chesapeake Bay Agreement, DOEE has been actively working with US EPA and the other partner jurisdictions (MD, VA, PA, WV, NY, and DE) on the Phase 6 suite of models. DOEE regularly participated in the Bay Water Quality Steering Committee/Water Quality Goal Implementation Team (WQGIT) and the various technical workgroups and took an active role in addressing issues specific to the District. DOEE also provided source data and related information to the Bay Program as needed. Watershed Implementation Plan III preparation/review discussions and updates to the land-use dataset are ongoing concerns. Land-use dataset updates are intended to improve the accuracy of the federal footprint in the District and also inform the development of the Phase 6 suite of models.

Bacteria TMDLs Revision

Revision of the fecal coliform based-bacteria TMDLs for the District pursuant to Friends of the Earth v. US EPA 446 F.3d 140 (D.C. Cir. 2006) have been approved by US EPA. In July 2014, US EPA approved bacteria TMDL revisions for Anacostia River and tributaries, C&O Canal, Kingman Lake, Oxon Run, Rock Creek, Tidal Basin and Washington Ship Channel. In December 2014, US EPA approved the Potomac River and tributaries bacteria TMDL revisions. The revisions included translation from fecal coliform to *E. coli*, which DOEE adopted as the bacteria water quality criteria on January 1, 2008.

Toxic TMDLs Revision

In 1988, the District listed a number of waterbodies for toxics on its 303(d) list, for which TMDLs were subsequently developed. These TMDLs need to be revised by expressing the load allocations in "daily" terms (Friends of the Earth v. US EPA 446 F.3d 140 (D.C. Cir. 2006). DOEE is currently working on revising the toxic TMDLs with US EPA Region 3, with additional support from the Interstate Commission on the Potomac River Basin and contractors (Tetra Tech and LimnoTech). At the time of this report, daily loads had been calculated from annual loads with draft supporting documentation developed for waterbodies in the Rock Creek and Potomac River watersheds. In 2014 and 2015, DOEE collected sediment, water quality, and fish tissue samples in the Anacostia River as part of a Remedial Investigation to assess the nature and extent of pollution in the river (http://doee.dc.gov/anacostiasediment). DOEE plans to incorporate these additional sampling results into the Anacostia River and tributaries organics and metals TMDL revisions. DOEE anticipates draft TMDLs within the Rock Creek and Potomac River watersheds will be available for public comment in mid-2016.

Hickey Run's Total Residual Chlorine Impairment

Hickey Run was identified on the 2002 District of Columbia's Section 303(d) List as impaired due to Total Residual Chlorine (TRC) from nonpoint sources, and it was expected that a TMDL would be developed by end of December, 2012. Careful evaluation of the sampling data used in the listing revealed that the data was inadequate, and thus could not be used to construct a defensible TMDL. Instead of a TMDL, DOEE plans, and has formally requested US EPA's approval to use alternative approaches tailored to Hickey Run's specific circumstances and incorporate improvement measures and adaptive management. DOEE is planning a water quality assessment in the Hickey Run watershed. Collected data will be used to validate the impairment listing or to develop a TMDL, if necessary.

303(d) New Vision

As part of the implementation of the "*Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program"1*, DOEE has developed strategies to "engage" stakeholders and "prioritize" waterbodies for TMDL development and/or direct implementation. The 303(d) Program New Vision Stakeholders Engagement Strategy and the 303(d) Program New Vision Prioritization Strategy are in Appendix 3.6.

Consolidated TMDL Implementation Plan

A draft of the Consolidated TMDL Implementation Plan (IP) was published for public comment and submitted to US EPA in May of 2015. Several sets of detailed comments were received. DOEE is developing a response to these comments and will update the draft Consolidated

1 http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/vision_303d_program_dec_2013.pdf

TMDL IP as appropriate based on this response. DOEE received US EPA's comments in March 2016 and expects to revise the plan in FY 2016.

DOEE held three stakeholder meetings in 2014–2015:

- Revised Monitoring, Gap Analysis (11/3/2014)
- Revised Monitoring, Implementation Plan (2/9/2015)
- Implementation Plan (3/16/2015)

DOEE also completed several project deliverables, including:

- Final Comprehensive Baseline Analysis
- Scenario Analysis
- Draft Consolidated TMDL Implementation Plan

These deliverables are available on the Project website at:
http://dcstormwaterplan.org/documents-and-deliverables/.

TMDL IP Modeling Tool

As part of the District's Consolidated TMDL Implementation Planning process, DOEE developed a TMDL Implementation Plan Modeling Tool (IPMT) in 2014. The project team used the IPMT to conduct the initial baseline analysis, evaluate progress made toward WLA attainment (using BMP implementation to-date), and to forecast pollutant reductions associated with implementation of the new stormwater regulations using future development scenarios provided by the OP. DOEE anticipates updating the IPMT at the end of each annual reporting cycle with BMP implementation data tracked in the new stormwater database. These data can be used to model pollution reductions made towards TMDL IP milestones and to guide adaptive management strategies if necessary.

DOEE's IP Modeling Tool tracks and accounts for pollutant load generation and load reduction for all of the waterbodies and pollutants of interest that have MS4 WLAs. It consists of three parts:

1. *Runoff Module:* The runoff module calculates the runoff volume for a typical year of rainfall using a Modified Version of the Simple Method (CWP and CSN, 2008). It includes model input sections for precipitation, area, runoff coefficients, composites based on land cover, and summary attributes.

2. *Pollutant Load Module:* This module calculates the pollutant loads using event mean concentrations (EMCs), stream bank erosion loads, and/or trash load rates in conjunction with runoff volume from the runoff module described above.

3. *BMP Module:* Consists of the current BMP inventory and the assumed BMP pollutant load reduction efficiencies in order to calculate load and runoff reductions provided by

the BMPs. The IPMT's graphical user interface (GUI), allows for customized viewing of BMP location information with access to BMP performance characteristics.

The IPMT also includes a comprehensive TMDL inventory that provides users with access to details for any waterbody, pollutant, TMDL document, decision rationale document, and numeric waste load allocation. The District has used the module to estimate runoff, pollutant loads, and reductions associated with the BMPs that have been implemented at part of the Consolidated TMDL Implementation Planning process. Pollutant load reductions, percent reduction required, and projected WLA attainment dates are provided for each TMDL, waterbody, and pollutant are presented in Appendix D of the Consolidated TMDL Implementation Plan.

Additional details on model selection, development, the geodatabase, and BMP efficiencies are documented in Chapter 4 (Model Development) of the Consolidated TMDL Implementation Plan, which is available online at: http://dcstormwaterplan.org/wp-content/uploads/TMDL_IP_with_Appendices.pdf

Submerged Aquatic Vegetation

The FWD Fisheries Management Branch has been monitoring submerged aquatic vegetation (SAV) since 1993. In this time, they have compiled extensive data that reflect the growth and decline of SAV species within the District. Not only does SAV provide an important habitat for aquatic life, it provides sediment stabilization as well as improvements in water quality. It is an important component to the health of the District's aquatic ecosystem. Nutrient and sediment pollution are both limiting factors for SAV within the District's watersheds. The District is considered a highly urbanized area, with substantial runoff. Monitoring SAV within the District is an important factor when considering the health of the aquatic ecosystem for these reasons.

Observations in 2015 revealed seven different species of SAV including*: Ceratophyllum demersum*, *Hydrilla verticillata*, *Najas guadalupensis*, *Najas minor*, *Heteranthera dubia*, *Vallisneria americana,* and *Stuckenia pectinata*. This is a slight decrease in species diversity compared to 2013 data in which *Potamogeton crispus* was seen as well. SAV in the District has been spreading at a tremendous rate with almost 600 acres seen in 2015, the most since 2002, and three times as many acres as 2013, as shown in Figure 3.1.

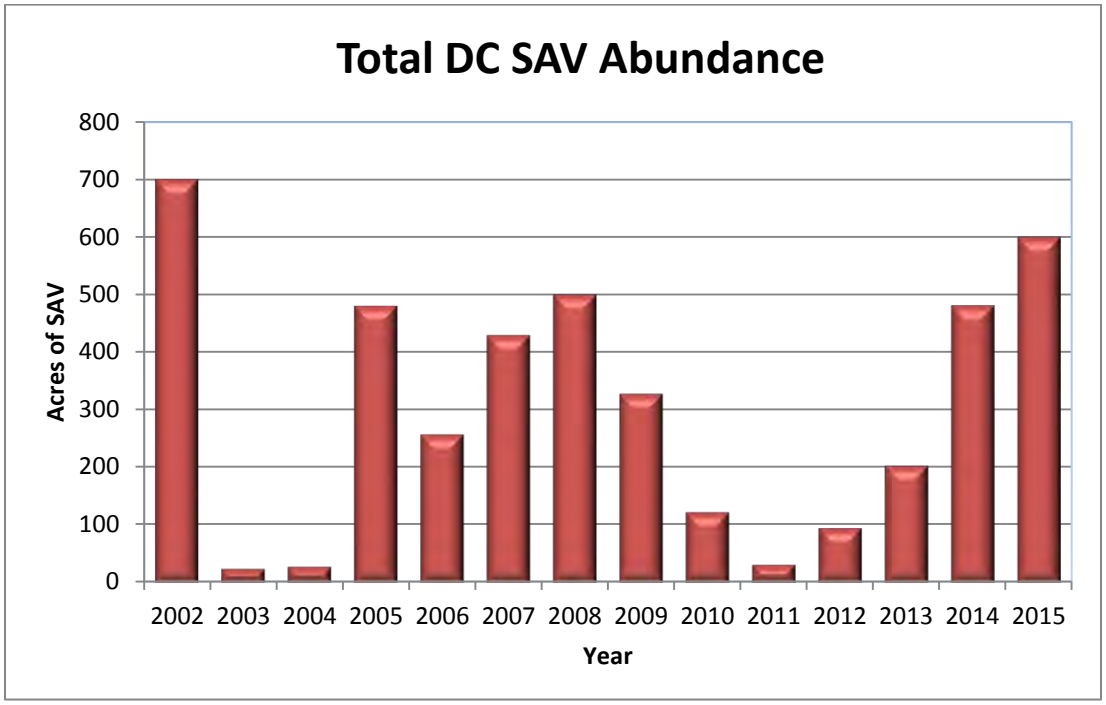

Figure3.1: SAV Abundance by Year

SAV beds provide an important habitat for both juvenile and adult fish in the District. Considered suitable areas for refuge, feeding, and reproduction, SAV beds are of utmost ecological importance in a watershed system (Kraus, Jones 2012). Depicting similarities between SAV cover densities and in fish diversity is an important relationship to review in District waters. Using electrofishing data within the months SAV is present (May–November) allows for these relationships to be compared. The electrofishing sites within the Washington Ship Channel (W1E) and adjacent to the National Airport (P2E), on the Potomac River, are of significant importance due to their close proximity to surveyed SAV beds. The SAV cover density is on a scale of one to four based on the criteria shown in Figure 3.2.

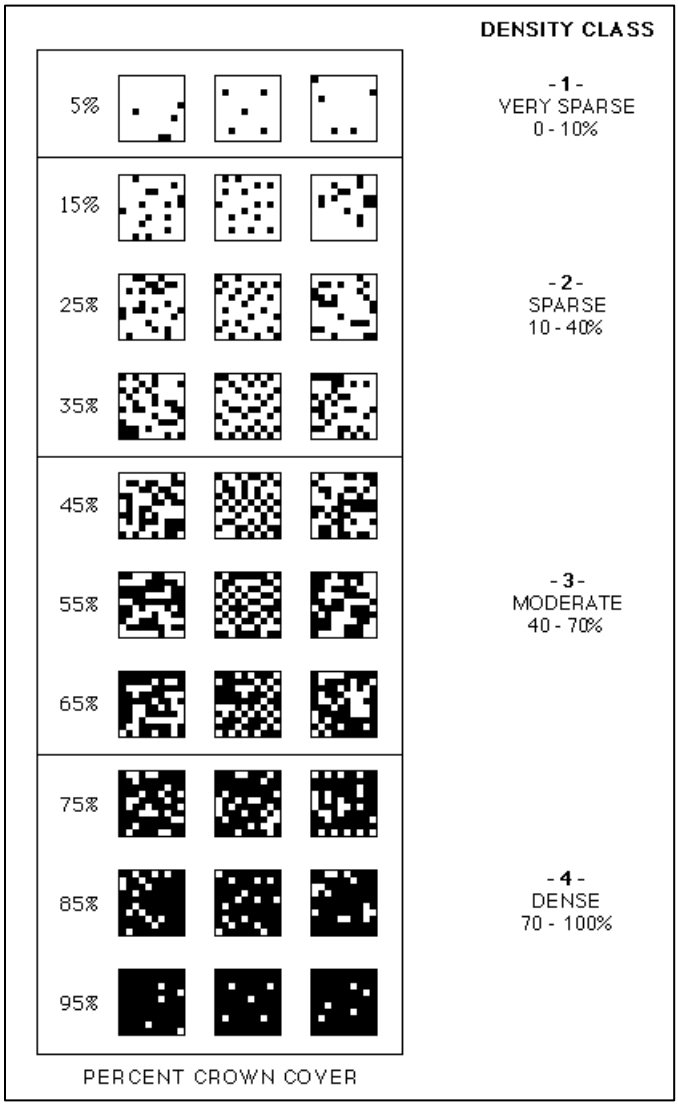

Figure 3.2: SAV density cover criteria

While many relationships can be drawn between relative abundance of fish and the presence of SAV, none are as significant as the relationship in regards to *Micropterus salmoides,* largemouth bass. Largemouth bass is an important predator in a freshwater system such as the Potomac River. Largemouth bass and other piscivorous fish have been observed occupying holes within dense SAV in the Potomac River (Killgore *et al.*, 1989). It is important to review the relationship since largemouth bass is both ecologically and economically important. Long established as one of the country's best largemouth bass fishing regions, the Potomac River hosts many largemouth bass tournaments as well a healthy largemouth bass recreational fishery. Figures 3.3 and 3.4 illustrate the relationship between SAV and largemouth bass within the District.

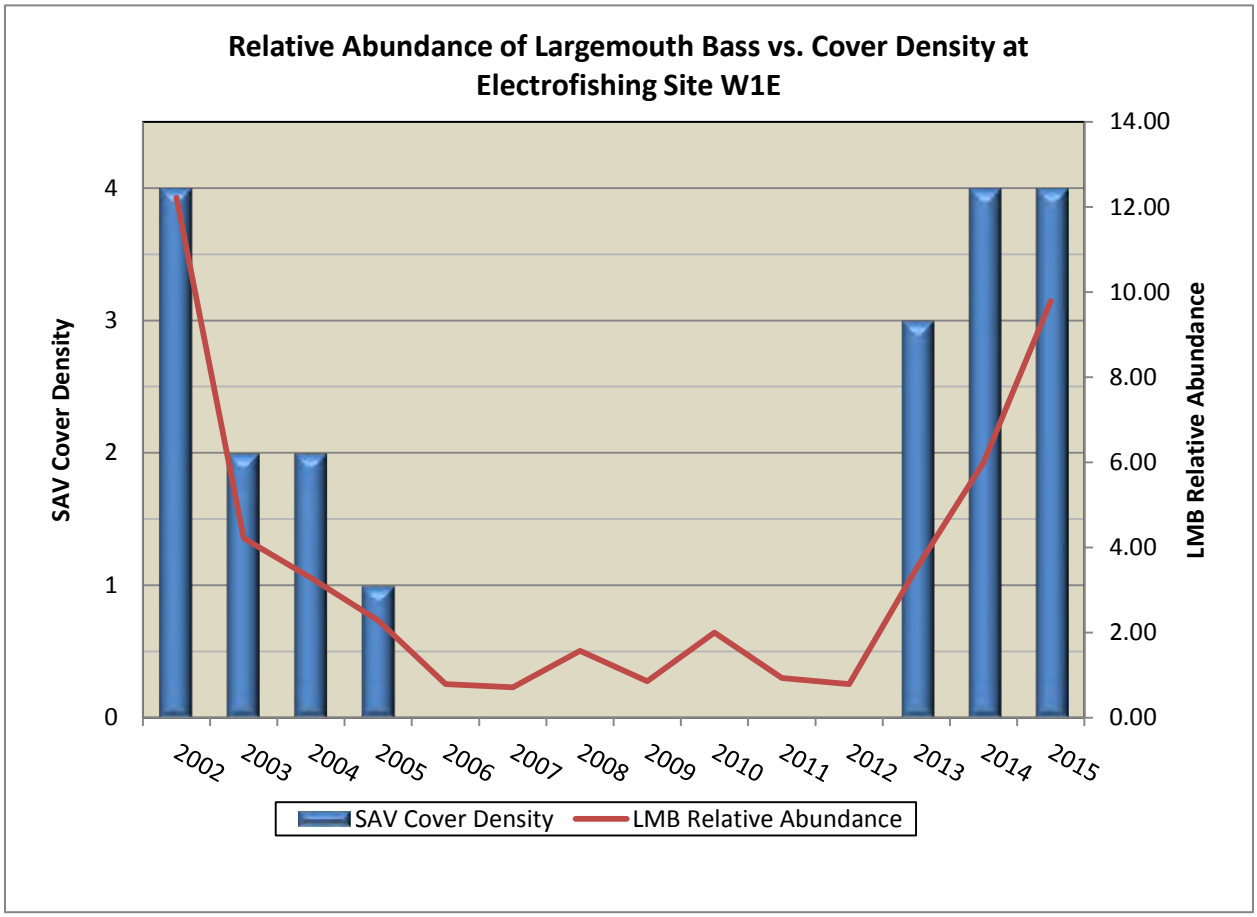

Figure 3.3: Comparing Relative Abundance of Largemouth Bass and SAV Cover Density (W1E)

SAV cover density at electrofishing site W1E reached full coverage in 2014 and stayed that way in 2015. An increase in SAV cover density also coincided with an increase of fish species diversity as well as relative abundance of largemouth bass at electrofishing site W1E. Improved habitat may have influenced the increase of largemouth bass numbers found at W1E. Largemouth bass may be using the increased cover density for foraging as well as shelter and reproduction. It is also apparent that as SAV cover densities decrease the relative abundance of largemouth bass also decreases. This observation only solidifies the strong relationship that largemouth bass (LMB) have with the presence/absence of SAV.

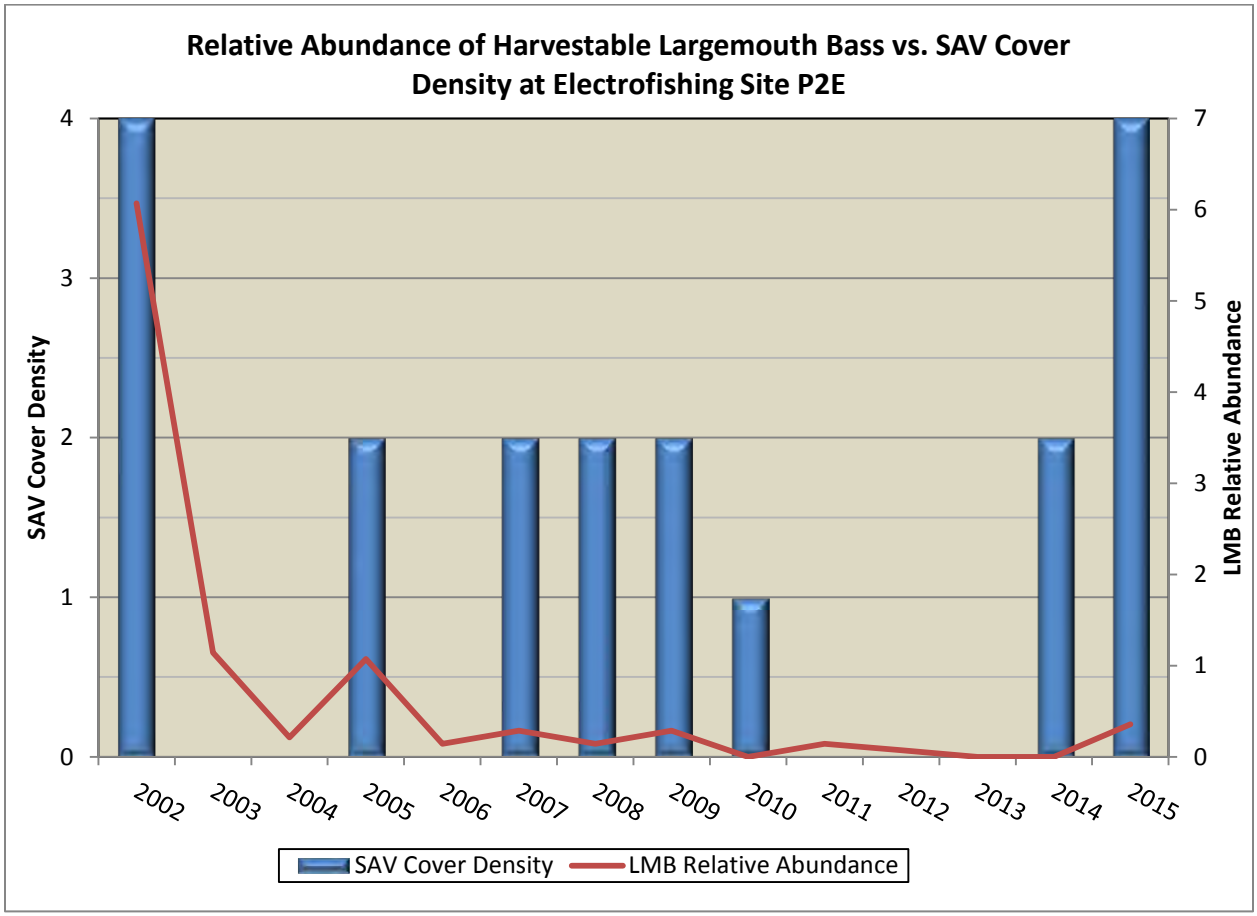

Figure 3.4: Comparing Relative Abundance of Largemouth Bass and SAV Cover Density (P2E)

SAV recently returned to P2E in 2014 and, so far, there has been only a relatively modest rebound of LMB populations at this location. Construction of an airport runway extension has disturbed our shocking site and the habitat itself for some time. With the construction ending, LMB populations should rebound in the coming years as long as the SAV bed is maintained.

Aquatic Habitat Restoration

In 2011, efforts to restore SAV to improve fish habitat and increase fish diversity in District waters began. The first step of the restoration process was selecting suitable locations for new SAV beds. Two sites were selected based on historical maps, water quality and the guidelines set forth in the Second Technical Synthesis for SAV restoration (Batiuk, 2000). Restoration sites are located at Buzzards Point/James Creek Marina on the Anacostia River and the Potomac River Flat west of 295. Because of its historical dominance within freshwater and brackish water systems of the Chesapeake Bay *Vallinsneria americana*, wild celery, was designated the most suitable native SAV for the restoration efforts (Davis, 1985). Collection of adult plants as well as seeds occurred in the Potomac River near Marshall Hall, Maryland during June–August. Initial planting of adult wild celery occurred in spring of 2012 at the Washington Ship Channel site.

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With no barrier in place to deter animals from feeding on the wild celery, the plants at this site had disappeared by the fall of 2012. Restoration efforts continued in 2013 with the planting and seeding of wild celery at the Buzzards Point/James Creek Marina site. This plot was protected by fencing in an effort to minimize grazing by animals. In 2014, the SAV returned and even flowered in September.

In 2015, a second exclosure was placed in James Creek and two more were installed on the Potomac River Flat. These were also planted with wild celery and protected from both fish and waterfowl. The Anacostia Watershed Society also installed several similar devices at the James Creek Marina site based on our design and planted with wild celery. Seeds of wild celery have been spread at this site for the past three years as well. It will be interesting to see how effective this project will be for bringing back SAV in the Anacostia. Figure 3.5 shows the location of the James Creek Marina restoration project.

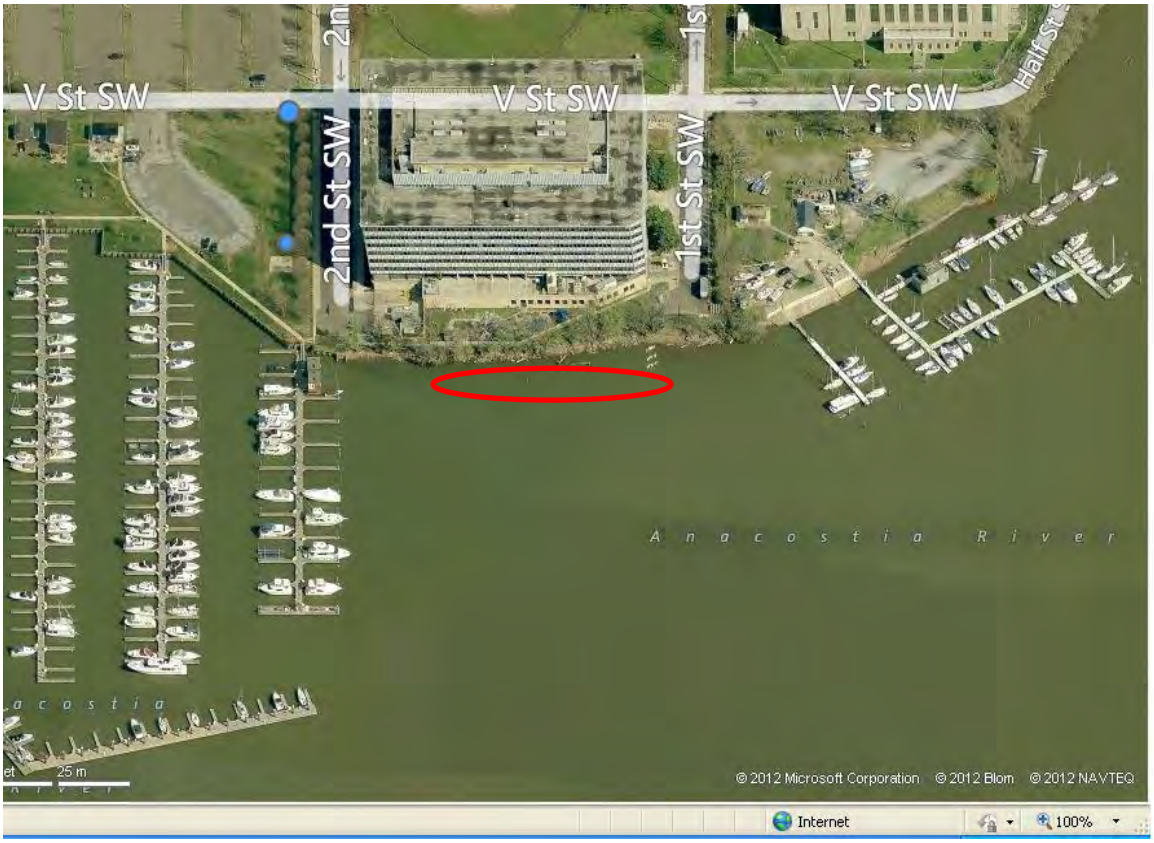

Figure 3.5: Site of the James Creek Marina SAV Restoration

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Monitoring Heavy Metals and Organic Compounds in the Air

Air toxics, or hazardous air pollutants (HAPs), are those pollutants that are known or suspected to cause cancer or other serious health effects, or adverse environmental effects. There are currently 188 HAPs, regulated under the Clean Air Act that have been associated with a wide variety of adverse health effects, including cancer and neurological effects. Many of these toxins are water soluble so can enter and accumulate in water bodies. Thus, many of the same compounds are monitored in both air and water. The US EPA Government Performance Results Act commitments specify a goal of reducing air toxics emissions by 75 percent from 1993 levels to significantly reduce the potential for human health risk.

The National Air Toxics Trends Station (NATTS) Network was developed to fulfill the need for long-term HAP monitoring data of consistent quality. Among the principle objectives are: assessing trends and emission reduction program effectiveness; assessing and verifying air quality models (e.g., exposure assessments, emission control strategy development, etc.); and as direct input to source-receptor models. The current network configuration includes 27 sites (20 urban, 7 rural) across the United States; 13 sites were established in 2003, 10 sites in 2004, and 2 sites each in 2007 and 2008. There are typically over 100 pollutants monitored at each NATTS site. However, only 19 of those are required. Air pollutants monitored for include volatile organic compounds, carbonyls, heavy metals, hexavalent chromium, and polycyclic aromatic hydrocarbons.

Table 3.14 list the air toxics monitored at NATTS sites.

Table 3.14

Air Toxics Monitored at NATTS Sites			
Acrolein	Benzene	1,3-Butadiene	Carbon tetrachloride
Chloroform	Perchloroethylene (Tetrachloroethylene)	Trichloroethylene	Vinyl chloride
Acetaldehyde	Formaldehyde	Benzo(a)pyrene	Naphthalene
Hexavalent chromium	Arsenic compounds	Beryllium compounds	Cadmium compounds
Lead compounds	Manganese compounds	Nickel compounds	

NATTS program continues to support the goals of US EPA's strategic plan related to "Addressing Climate Change and Improving Air Quality". US EPA's recent strategic plan can be found at: http://www2.epa.gov/sites/production/files/2014-09/documents/epa_strategic_plan_fy14-18.pdf.

The Air Quality Division (AQD) has been operating a special purpose NATTS site for ambient air toxics of primary concern including heavy metals in the District since 2004. The NATTS monitoring site is located on the grounds of the McMillan Reservoir in the District.

Air samples are collected daily on a 1-in-6 day schedule throughout the year. The collected samples are sent for laboratory analysis. The District's NATTS site also includes an Aethalometer® for continuous sampling of black carbon.

DOEE reports the quality assured air monitoring data from the District's NATTS site to US EPA's national air database: http://www3.epa.gov/airquality/airdata/index.html. Additionally, US EPA coordinates the development of a detailed annual report for NATTS and other special purpose monitoring programs. The 2013 National Monitoring Programs Annual Report - UATMP, NATTS, CSATAM (EPA-454/R-15-005a, October 2015) provides data summaries and air toxics trends measured in recent years at the 27 station national network, including the District's NATTS air monitoring site.

US EPA also periodically conducts a National Air Toxics Assessment (NATA) to identify which geographic areas, pollutants and types of emission sources of HAPs might need closer investigation. The NATA characterizes potential risks based on cancer and non-cancer toxicity, determines if actions may need to be taken to protect public health, and identifies priorities for expanding the air toxics monitoring network. Table 3.15 shows US EPA 2007 NATA pollutants that are prevalent in the District.

US EPA's Toxics Release Inventory is a database of information about actual releases of toxic chemicals from manufacturing facilities, accessible by zip code.

Table 3.15
US EPA 2007 NATA Most Prevalent Pollutants in the District.

Long-Term Exposure (may cause cancer)		**Short-Term Exposure (may cause acute illness)**	
Pollutant	Cancer Toxicity Weight (risk based on toxicity-weighted emissions)	Pollutant	Non-cancer Toxicity Weight (risk based on toxicity-weighted emissions)
Benzene	1.71 in 1,000	Arsenic	335,237.81
1,3-Butadiene	7.96 in 10,000	1,3-Butadiene	13,271.78
Tetrachloroethylene	2.07 in 10,000	Formaldehyde	12,690.12
Napthalene	1.94 in 10,000	Chlorine	8,575.00
Hexavalent Chromium	1.58 in 10,000	Benzene	7,327.25
p-Dichlorobenzene	1.34 in 10,000	Cyanide Compounds, gas	7,313.33
Arsenic, PM	1.12 in 10,000	Acetaldehyde	4,851.97
Acetaldehyde	9.61 in 100,000	Xylenes	3,447.74
POM, Group 2	7.87 in 100,000	Naphthalene	1,900.71
Ethylene oxide	7.87 in 100,000	Toluene	1,237.45

Organic compounds monitored by AQD that are also required to be monitored by WQD as part of human health (Class D) standards include:

Acrolein	Benzene
Carbon tetrachloride	Chloroform
Tetrachloroethylene	Vinyl Chloride
Benzo(a) pyrene	Methylene Chloride
1,2-Dichloroethane	1,1,1-Trichloroethane
1,2-Dichloropropane	Trichloroethylene
1,1,2-Trichloroethane	Toluene
Chlorobenzene	Ethyl benzene
Bromoform	1,1,2,2-Tetrachloroethane
1,3-Dichlorobenzene	1,4- Dichlorobenzene
1,2-Dichlorobenzene	1,2,4-Trichlorobenzene

Metals monitored by AQD that are also monitored by WQD include:

Arsenic	Cadmium
Chromium	Copper
Iron	Mercury
Lead	Selenium
Zinc	Nitrate
Ammonium (AQD)/ Ammonia (WQD)	

Compounds that AQD found to be most prevalent in the District in 2014 report and are included in WQS are Benzene, Arsenic, Tetrachloroethylene, and Cyanide compounds (WQD responsible for monitoring free cyanide). WQD should pay particular attention to these compounds in future monitoring, especially in the tidal estuaries where they may accumulate.

Wetlands Assessment and Protection Activities

Development of Wetland Water Quality Standards

The development of wetland water quality standards is ongoing.

Integrity of Wetland Resources

No change.

Extent of Wetland Resources

No change.

Wetland Assessment Activities

Wetlands are the link between land and water that often contain characteristics of both terrestrial and aquatic ecosystems. They are some of the most productive ecosystems in the world. Wetlands provide many benefits to the environment such as habitat for a vast variety of wildlife

and plants; flood protection; water filtration and storage; shoreline erosion control; absorption of wind forces; sequestration of pollution from runoff; sediment control; and groundwater recharge. Wetlands are the primary habitat used by the majority of species selected for vulnerability consideration in the District's 2015 Wildlife Action Plan. Protection and restoration of the District's wetlands is vital to the health of the Chesapeake Bay ecosystem.

To determine the extent of wetlands in the District WQD has undertaken a District-wide Wetlands Mapping Project. The project will map and assess the condition and functions of the wetlands in the District; map and assess the condition of unmapped streams in the District; search for potential wetland creation sites; assess existing wetlands to evaluate if restoration or enhancement would be beneficial; update the District's Wetland Conservation Plan; and compile all of the data collected in the field into a publicly available geodatabase, called the Wetland Registry.

The Wetland Registry will allow members of the public, environmental groups, development groups, and DOEE staff to identify potential restoration, enhancement, and creation projects; identify possible wetland mitigation sites; have an initial idea if wetlands are present for land-planning purposes; and protect our existing wetlands.

The Wetland Conservation Plan was developed in 1997 to outline goals for the protection, restoration, and enhancement of wetlands. The goal is for no net loss of wetlands within the District, and eventual overall net-gain of wetlands.
DOEE recently awarded a grant to Wetlands Solutions & Studies, Inc., to update the District's Wetland Conservation Plan, create the Wetland Registry, and perform on-the-ground wetland delineations throughout the District. The project is expected to be completed in 2016.

Wetlands Protection Activities

The most effective approach to protect wetlands is to work with developers in the initial stages of development. Working with developers (designers and project coordinators) during the planning phase of a project allows DOEE, as a regulatory agency, to deal with any wetland protection issues before they arise. If, after completing an alternatives analysis, wetland impacts are unavoidable in order to achieve a project purpose, then impacts are minimized and avoided to the greatest extent practicable. Mitigation is required for any wetland impacts over 400 square feet.

Mitigation requires all temporary impacts to wetlands to be restored to their original conditions and contours (i.e., replanting). Permanent impacts can be mitigated by performing a wetland enhancement, restoration, or creation project in accordance with US Army Corps of Engineers and DOEE requirements.

WQD is proposing regulations on protecting and managing wetlands and streams in the District. The proposed regulations will establish the framework for the review of a proposed project that will impact an aquatic resource, such as a wetland or stream. Applicants will be required to take all practicable steps to first avoid and then minimize adverse impacts to aquatic resources.

If aquatic resource impacts are unavoidable, DOEE may require mitigation to offset the impacts, using one or a combination of four possible methods. In preferred order, these methods are: 1) establishment of a new aquatic site; 2) restoration of a previously existing wetland or other aquatic site; 3) enhancement of an existing aquatic site's functions and values; or 4) preservation of an existing aquatic site. In addition, there are two mechanisms for providing compensatory mitigation: 1) permittee-responsible compensatory mitigation (the preferred mechanism); and 2) payment into the District of Columbia's Wetland and Stream Mitigation Trust Fund. This will ensure that development occurs in a manner that adheres to the District's long-standing policy of no net loss, and the eventual overall net gain, of aquatic resource functions, acreage, and values.

Wetland Mapping Project

WQD has selected a contractor to begin delineating wetlands throughout the District, which has not been done since 1997. The new information will be mapped using GIS technology to accurately create digital maps that will be publically available. Making the wetlands map electronically available will aid developers in knowing if they may impact potential wetlands, and aid the District in identifying areas with potential for wetland restoration. The mapping project is expected to be completed in 2016.

Coordination among DOEE's Natural Resources Administration Divisions

FWD, SWMD, WPD and WQD, all Divisions of the Natural Resources Administration, collaborate to protect, restore and create new wetland resources in the District. WQD routinely requests habitat information or locations of species of greatest conservation need from FWD. WPD is asked for information on their creation and restoration projects and any possible areas for wetland creation. Divisions also work together on floodplain issues and regenerative stormwater conveyance systems. Both FWD and WPD have been heavily involved in the District-wide Wetland Mapping Project. WQD and the SWMD work together when BMPs like trash traps are installed in the District's waterways.

PART IV: PUBLIC HEALTH-RELATED ASSESSMENTS

Drinking Water Program Monitoring and Assessments

None of the District of Columbia's waterbodies have been designated for either public water supply or drinking water uses. Though the Potomac River is the source of the District's drinking water, the intakes are located outside the District's city limits. The drinking water intakes are located at Great Falls and Little Falls, Maryland.

The District is actively participating in the Potomac River Basin Drinking Water Source Protection Partnership organized by the Interstate Commission on the Potomac River Basin. The District is part of the Government committee and participates in the spill exercise programs, agricultural issues, upstream urban source water protection efforts and various emerging issues and continues to track Water Research Foundation projects. The District of Columbia completed its Source Water Assessment Project (SWAP). The primary goals of the SWAP were (a) source delineation, (b) inventory of potential contaminants from upstream watersheds and within the basin, (c) susceptibility analysis of the inventoried contaminants identified in the source delineation, and (d) providing documentation to the general public and the District of Columbia Government describing the source contaminants. Additionally, nonpoint source modeling was incorporated into the SWAP to enable the District to better understand and predict conditions within the basin that might pose a threat to the water supply.

The Potomac Drinking Water Source Protection Partnership's Emerging Contaminants Workgroup is tracking and reporting on findings of research and occurrence of persistent and newly identified threats posed to the Potomac River drinking water supply. Members of the partnership also advocate and support related national-level studies with the goal of providing sound science on how this emerging challenge should be addressed. Some of the specific partnership activities include communication with the public about drinking water contaminants, proper disposal of pharmaceuticals, emerging contaminants challenges and sampling program. The partnership is also conducting a workshop on hazardous algal blooms in source waters. The workshop will focus on monitoring, identification, associated health risks, how to stop outbreaks, best management practices and serve as an educational opportunity for the water operators.

Drinking water is treated by the Washington Aqueduct which is owned and operated by the US Army Corps of Engineers. The Aqueduct is responsible for compliance with all of the regulations which pertain to water treatment such as filtration, disinfection and chemical contaminant removal, and corrosion control. DC Water purchases the treated water and distributes it to District residents. Drinking water quality is regulated by US EPA Region 3. The District of Columbia does not have primacy. Persons seeking information (beyond what is provided) on the status of drinking water or other compliance issues in the District of Columbia should consult the US EPA website at http://www.epa.gov.

Fish Tissue Study

The fish tissue study conducted by the US Fish and Wildlife Service, Chesapeake Field Office (2014) for DOEE generally found lower concentrations of chemicals of concern in the species of fish studied when compared to the earlier 2009 fish tissue study. Table 4.1 lists the species sampled for the two studies. The 2014 study attempted to include fish that are caught by recreational anglers and also invasive species such as Blue catfish and Northern snakehead were included. Note that it is illegal to catch American Shad in District waters.

Table 4.1
Fish Species Captured for 2009 and 2014 Fish Tissue Studies

Species Sampled in 2009	**Species Sampled in 2014**
American Eel	American Eel
Carp	*American Shad*
Blue Catfish	*Brown Bullhead*
Channel Catfish	Blue Catfish
Largemouth Bass	Carp
Smallmouth Bass	Channel Catfish
Sunfishes	Largemouth Bass
	Northern Snakehead
	Striped Bass
	Sunfishes
	White Perch

***Not Sampled in 2014**
***Not Sampled in 2009*

Using the median values of the composite samples of each species, the following comparison of the 2009 and 2014 study findings shows that exceedances of the US EPA guidance values were less in the 2014 study. More specifically:

1. **PAHs** had no exceedances for one or more guidance values in 2014. In the 2009 study, every fish composite sampled exceeded one or more of the guidance values.
2. **Polychlorinated Biphenyls** concentrations were decreased in every sample analyzed in 2014 compared to 2009.
3. **Chlordane** concentrations had no exceedances for one or more guidance values in 2014. American Eel, Carp and Blue Catfish composite samples exceeded one or more guidance values in 2009.
4. Only Striped Bass composite samples exceeded one or more of the guidance values for **DDT** in 2014. In 2009 American Eel, Carp, and Blue Catfish exceeded one or more of the guidance values for **DDT**.
5. **Dieldrin** exceeded one or more guidance values for American Eel, American Shad, Carp and Striped Bass composite samples in 2014. In 2009, American Eel, Carp, Blue Catfish and Channel Catfish composite samples exceeded one or more guidance values.

However, the exceedances in the 2014 study were less (lower concentrations) that what were found in the 2009 study. The presence of Dieldrin in fish tissue is decreasing.

6. **Heptachlor epoxide** exceeded one or more guidance values for American Eel, and Striped Bass composite samples in 2014. American Eel and Carp composite samples exceeded one or more of the guidance values in 2009. However, the exceedances in the 2014 study were less (lower concentrations) than what was found in the 2009 study. The presence of heptachlor epoxide in fish tissue is decreasing.

The concentrations of selected chemicals of concern found in fish tissue seem to be diminishing in most of the species that were sampled in the two studies.

In February 2016, DOEE issued a revised fish consumption advisory for fish caught in the Anacostia and Potomac Rivers, Rock Creek, and their tributaries within the boundaries of the District of Columbia.

The 2016 fish consumption advisory recommends not eating eel, carp and striped bass. The advisory recommends limited consumption of other fish. The complete fish consumption advisory is on DOEE's website at http://doee.dc.gov/node/9582. Due to the existence of a fish consumption advisory for fish caught in the District's portion of the Anacostia and Potomac Rivers, Rock Creek, and their tributaries the Class C (protection of human health) designation is not supported.

Anacostia River Algal Bloom

WQD responded to two algae blooms on the Potomac River during the summer of 2015. On August 21st, 2015, WQD investigated an algae bloom on the Potomac River near the Arlington Memorial Bridge and Roosevelt Island. Floating green filamentous mats were observed growing in and amongst submerged aquatic vegetation (SAV). The algae appeared to be present in most of the areas with SAV surrounding Roosevelt Island and in shallow sections of the river just north and south of the Arlington Memorial Bridge. Using a GIS survey of SAV beds conducted in 2014 by the FWD Fisheries Branch, it was estimated that the algae bloom had a spatial coverage of approximately 66.5 acres. Live and preserved samples of algae were collected for identification. The algae were identified using a light microscope. Maryland Department of Natural Resources performed a taxonomic verification, as a quality control and assurance measure. The algae was identified as *Rhizoclonium*, a "green algae" which is part of the Cladaphoraceae family and does not produce toxins. The FWD indicated that the growth of algae amongst the SAV beds monitored in the Potomac River occurs annually, once SAV beds become established during the summer.

Algae in the *Rhizoclonium* genus are known to grow entangled amongst other algal species or SAV (DiTomaso 2003). Regional studies conducted by the Interstate Commission on the Potomac River Basin and West Virginia Department of Environmental Protection have shown the regular occurrence of algae from the Cladophoraceae family both on solid substrates and within SAV beds in several regions within the Potomac River watershed. These studies indicate

the growth of algae species depend upon several factors including the amount of sunlight, water temperature, turbidity, pH, nitrogen, phosphorus, hardness and alkalinity. Of these factors, the increased availability of phosphorus within the waterbody was identified as a major component responsible for enhanced algal growth (Griggs 2014, Summer 2008). Algae growth has been connected with nutrient availability in other studies within the Chesapeake Bay (Moore 2009, Macalaster 1982).

On August 26, 2015, ICPRB contacted WQD regarding a potential algal bloom on the Potomac River that had been reported by a resident in the region. WQD investigated, the algae bloom was observed in a small area on the western side of the Potomac River near the Marina Towers buildings in Alexandria, Virginia. WQD noted that the green filamentous mats of algae were limited to the shallow sections of the river within the small area and had a similar appearance to the algae recently identified upstream on August 21st. Live and preserved samples were collected and identified. It was determined the algae were the same genus previously observed upstream known as *Rhizoclonium*.

In the summer of 2014, WQD participated in an algal monitoring study led by researchers at Auburn University, funded through a USGS National Institutes for Water Resources grant. The goals of the study were aimed at gathering ambient data in waterbodies to observe any patterns in parameters such as algal abundance, nutrients, and algal toxin concentrations. Samples were collected at four sites, two on the Anacostia River and two on the Potomac River, within the District, in August 2014. Sampling was conducted in August to coincide with environmental conditions that are favorable for algal growth. Final results of the study have not been released In March 2015, WQD initiated a phytoplankton monitoring program in order to better understand the community structure of phytoplankton within local waterbodies. WQD has designed a monitoring plan which collects samples year-round on a monthly basis in both the Anacostia and Potomac Rivers. The program design provides coverage for the two major waterbodies within the District and allows for timely analysis of phytoplankton samples collected. As samples are analyzed on a monthly basis, the program potentially allows WQD to potentially identify new algal blooms as they occur.

Through partnerships with the National Oceanographic and Atmospheric Association (NOAA) Phytoplankton Monitoring Network (PMN) and the Maryland Department of Natural Resources, DOEE has developed plans for verification of phytoplankton identification as well as algal toxin testing in the event of an algal bloom in District waters.

Anacostia River Sedimentation Project

Legacy toxins in the Anacostia's sediment bed are a major source of pollution, both to the quality of the water and as a source of pollution to the species that inhabit the river. In FY 2014 and 2015, DOEE completed fieldwork on the remedial investigation and feasibility study of the sediments in the Anacostia River (9.2 mile section). Approximately 900 samples of various types were taken for the river (surface sediment, 10ft core samples, and surface water samples), and were analyzed in the laboratory. Reporting is currently in progress to determine the nature and

extent of contamination and evaluate human health and ecological risks. The sediments are an ongoing source of contaminants and need to be characterized and remediated before the Anacostia can be returned to a “fishable and swimmable” river. This work will assist with identifying the contaminants that are present in the sediment and allow a determination of proper clean-up methods. This is a multi-year project.

PART V: GROUNDWATER ASSESSMENT

Introduction

This section updates the District's groundwater assessment and protection efforts for January 2014 to December 2015. Several changes have occurred since the last Integrated Report. Well regulations almost are ready for final publication; significant groundwater level declines were noted in the deep Patuxent Aquifer over the last two years; wells screened in this aquifer were sampled; and the investigation of the paleohistory of the Anacostia River is continuing.
Summary of Groundwater Quality

The District's groundwater monitoring network continues to be maintained in the Anacostia and Rock Creek Park watersheds. The wells are listed in Appendix 5.1 and their locations are shown in Appendix 5.2. Groundwater elevation data were collected in October 2014 and June 2015 (Appendix 5.3.a and 5.3.b) while the Kenilworth Aquatic Gardens tide gage was monitored every six minutes. Appendix 5.4 contains graphical displays of the tide gage data. The last full groundwater monitoring event was conducted in 2005. Since then, several new wells were installed, but due to the funding source, they were only sampled for pesticides in 2008. Efforts to sample the full groundwater monitoring network again were restricted by limited funding during the reporting period. However, due to rapid declines in hydraulic pressure and an increase in activities in the Patuxent Aquifer from 2013 – 2015, the wells screened in this aquifer were recently sampled. The results are being evaluated and will be available in 2016. All data will be published in the United States Geological Survey (USGS) Annual Water Data Report and made available to the public on the USGS website.

Groundwater Quantity Issues

During the reporting period, potentiometric monitoring of the deep Patuxent Aquifer in the Anacostia River watershed started to show a decline in hydraulic pressure. Data collected by more frequent monitoring of wells screened in this aquifer (Appendices 5.3a and 5.3b) show continued significant declines in hydraulic pressure at several wells. The maximum change was seen at DCMW002-04 (WE Cb8) in Fort DuPont Park where there was a 39.83 foot drop in the potentiometric surface between November 2013 and November 2015. The declines are most likely attributable to several large LTCP dewatering projects underway along the Anacostia River.

Construction dewatering projects along both the Potomac and Anacostia Rivers also are expected to have a large impact on groundwater flux with the dewatering rates typically exceeding 1 million gallons per day for each project. It is not clear when the aquifer will recover from these dewatering activities. Impacts to groundwater quality also are uncertain as the confining unit is not laterally continuous under either river.

Another potential problem that may result from the dewatering projects is subsidence. Dewatering or depressurization of the hydraulic head removes groundwater from the pore spaces between soil particles thereby reducing the upward pressure by groundwater on the overlying soils. The overlying soils then settle into the empty pore spaces and ultimately the ground collapses as subsurface and surface subsidence occurs. Recent studies show that Washington, D.C. may face greater flooding risk due to land subsidence and global climate change. Subsidence from dewatering along the shorelines may only exacerbate the flooding problem in the future.

Overview of Groundwater Contamination Sources

Appendix 5.5 lists the major sources of groundwater contamination in the District. The major sources include those typically found in an urban area.

Overview of Programs Related to Groundwater Protection

DOEE is the primary environmental protection agency in the District of Columbia. The Water Quality Division (WQD) is the body charged with administration of the District of Columbia Water Pollution Control Act, which defines the District's waters as both groundwater and surface water.

In 1993, groundwater regulations were promulgated. Through these regulations, numerical criteria and enforcement standards for 47 constituents were established. Later, the District also developed water quality monitoring regulations that set standards for groundwater monitoring supporting preventive as well as remedial activities. Well regulations have been under development for several years and currently are undergoing internal review. DOEE hopes that these regulations will be promulgated in 2016.

Since the last 305(b) report, DOEE has added the Remediation and Site Response Program to the list of programs responsible for contaminated site investigation and remediation. The program exercises state CERCLA-like authority and focuses on historic hazardous releases to soil and water.

The following list describes DOEE's groundwater-related programs and their functions:

- Voluntary Cleanup Program (VCP): The VCP is a part of the Environmental Services Administration. Unlike the media-specific programs that require mandatory cleanup of contaminated property, VCP oversees owner or developer initiated voluntary remediation of contaminated lands and buildings that return actual or potentially contaminated properties to productive uses.

- Remediation and Site Response Program: This is a relatively new program in the Environmental Services Administration that is responsible for investigation and remediation at sites with historic contaminant releases.

- Construction Grants Program: Pursuant to the Clean Water and the Safe Drinking Water Acts and various appropriations acts, US EPA provides assistance grants to the District of Columbia to perform construction and/or improvement of wastewater facilities, drinking water distribution and storage facilities, and other water-related structures. The objective of this grant program is to fund projects that will protect the quality of water in the District of Columbia.

- Federal Facilities Program: The Federal Facilities Program oversees the cleanup of Formerly Used Defense Sites and currently active defense facilities that are contaminated.

- Hazardous Waste Management Program: The program regulates hazardous waste small and large quantity generators.

- Integrated Pest Management Program: The program conducts public education for pesticide use.

- Nonpoint Source Program: The program plans and implements best management practices and provides oversight of nonpoint source studies.

- Pesticide Certification and Enforcement Program: The program processes registration of pesticide products for use in the District of Columbia, certifies applicators, and performs application inspection.

- Watershed Protection: The program reviews stormwater management, erosion and sediment control, and Green Area Ratio plans and performs compliance inspections.

- Total Maximum Daily Load (TMDL): The program develops point and nonpoint source load allocations to meet water quality standards in impaired waterbodies.

- Underground Storage Tank Management Program: The program provides oversight for installation and removal of underground storage tanks as well as remedial activities for leaking tanks.

- Water Quality Planning and Permitting: The program coordinates water quality planning and research including groundwater quality research. The WQD also reviews and approves the well permit application to ensure groundwater protection.

Appendix 5.6 provides additional information regarding the District's groundwater protection programs.

Aquifer Vulnerability Assessment

The District of Columbia's groundwater vulnerability to contamination was assessed in 1992, by the DC Water Resources Research Center (WRRC) in a report entitled Urban Land Use Activities and The Ground Water: A Background Survey of the District of Columbia (WRRC, 1992). The probability of groundwater contamination was mapped and ranked accordingly. The District recognizes that this report is old and when funds are identified, it will be revised.

Aquifer Mapping

The District in conjunction with the USGS has developed a steady-state three-dimensional groundwater flow model of the shallow aquifers in the Anacostia River watershed. The model contains layers to represent the aquifers in the District. These data will be supplemented by the facies maps being developed for the paleochannel study of the Anacostia River watershed. Geologic information also will be available about the filled-in areas at the confluence of the Anacostia and Potomac Rivers.

Comprehensive Data Management System

All data collected during the joint District-USGS projects since 2002 have been maintained and managed by the USGS. This data is readily available on the USGS website (www.usgs.gov) and will continue to grow as more projects are funded. This data includes chemical, locational, and geological information. Monitoring well data are included in the regional groundwater database maintained by the USGS for the District and other states, and will be available in GIS formats in the near future. Monitoring well location data from well permits issued over several years also can be accessed by the public. The boring/ well data for all permitted wells in both private and public space can be found by using the ArcGIS Map for the well permitting program. The link is as follows:
http://dcgis.maps.arcgis.com/apps/OnePane/basicviewer/index.html?appid=f497d032918e4ac09ac2356b0ffe43cd.

Summary of Groundwater Contamination Sources

Appendix 5.7 summarizes contaminant sources to the shallow groundwater aquifer. No new major sources have been identified since the last Integrated Report.

Groundwater/Surface Water Interaction

DOEE in cooperation with USGS continues to investigate the paleochannels (prehistoric channels) of the Anacostia River to determine if and how they impact groundwater flux to the waterbody. While identifying fluvial paleochannels can be a complex task, the potential for them to become unexpected pathways for contaminant plumes to migrate to the river is a real possibility since many shoreline facilities are recognized contaminated sites. Deep borehole data and pollen samples from key locations are collected as part of the ongoing investigation. Pollen analyses then are used for age-dating of sediments deposited in ancient riverine environments.

DRAFT

Preliminary findings indicate that Quaternary age paleochannels may either create preferential groundwater flowpaths or retard flux depending on the facies emplaced during deposition. Due to the actions of the many transgressive-regressive cycles that occurred in the area and the resulting variability, facies maps are being developed first before trying to determine which paleochannels are active pathways for groundwater flux. A top of basement structure contour map showing possible and documented Cretaceous paleochannels and geologic cross-sections at strategic locations are expected to be included in a future publication.

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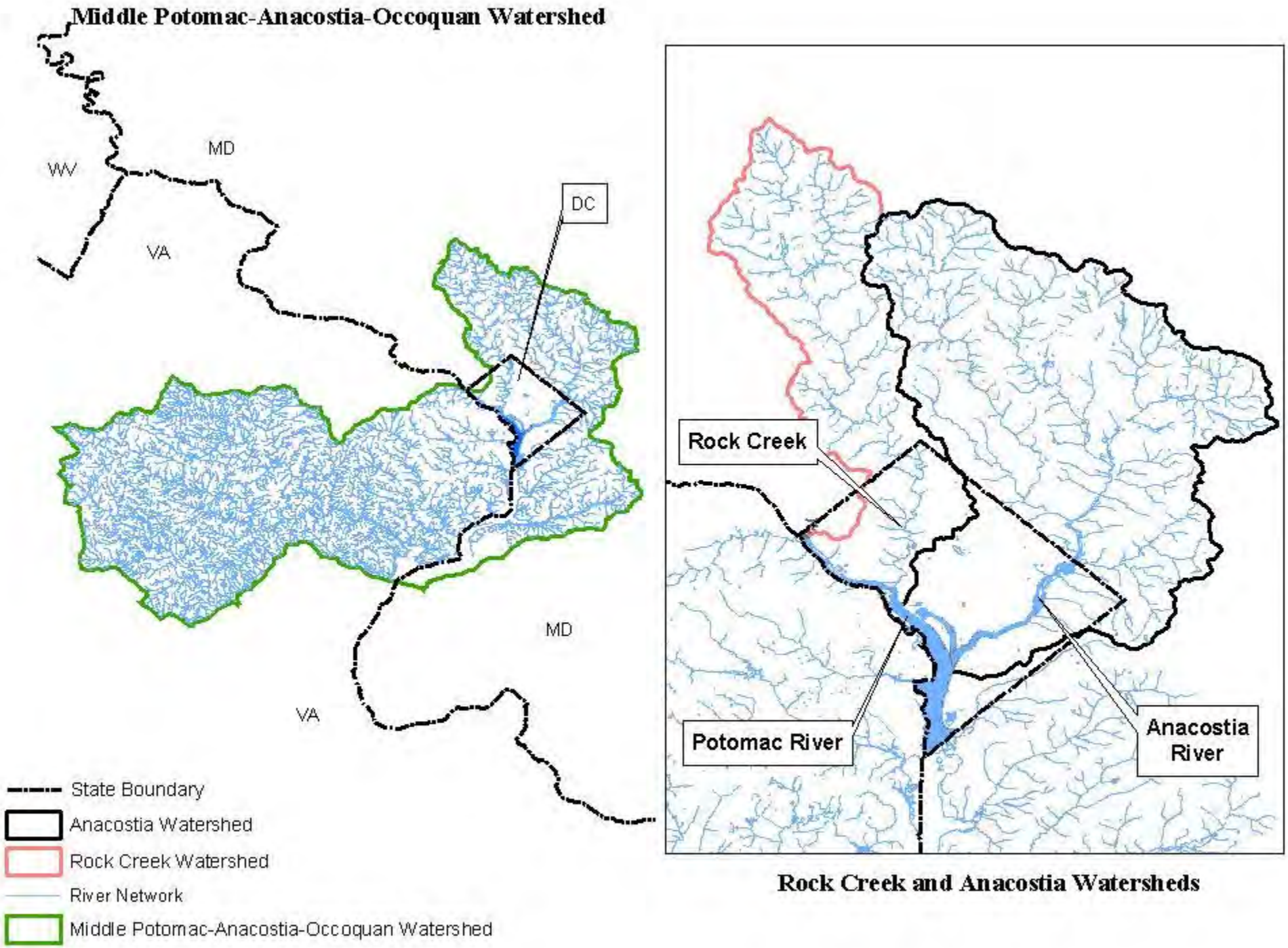
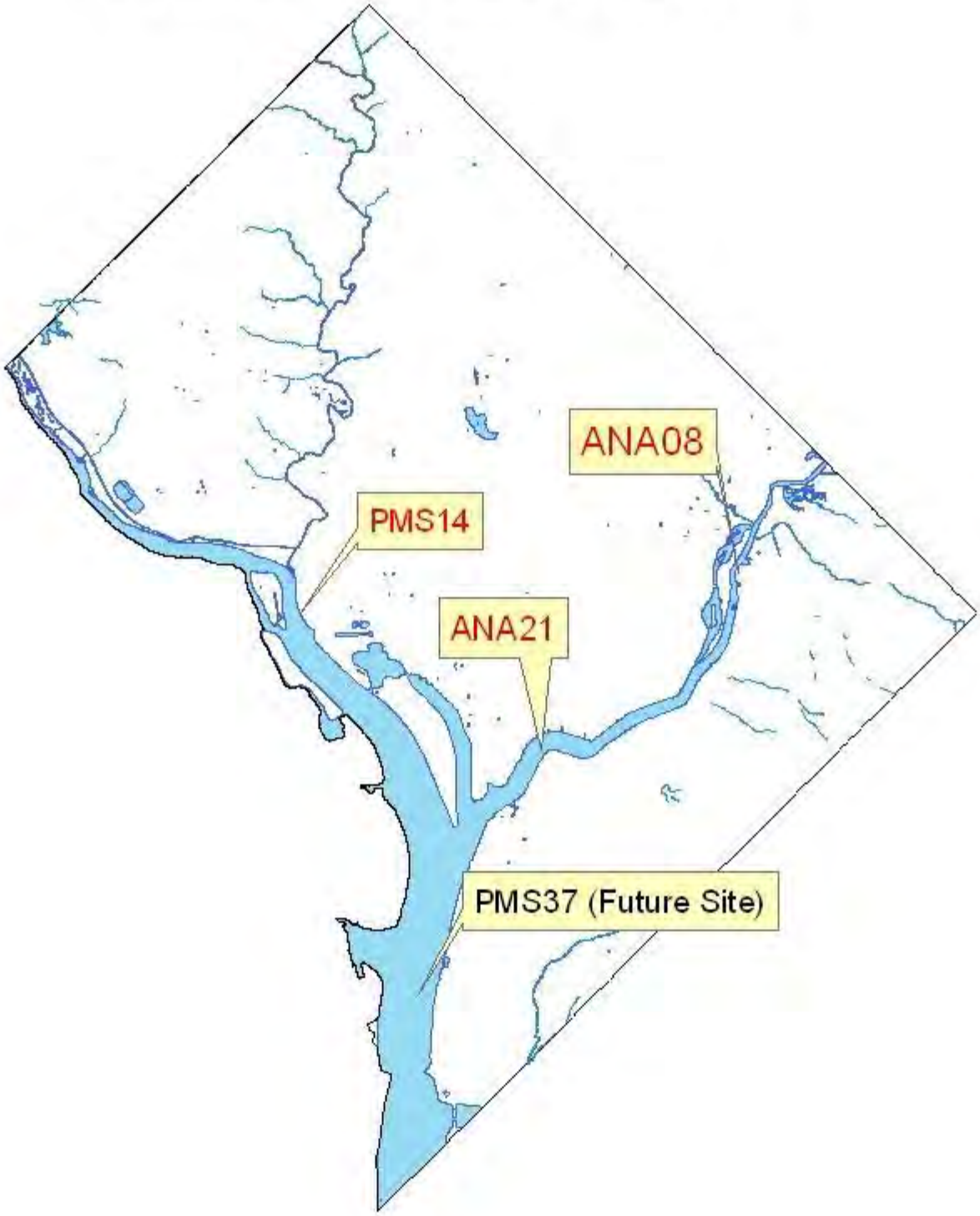
APPENDICES



Appendix 2.1: Major D.C. Watersheds

Real Time Monitoring Stations



Appendix 3.1: Real Time Monitoring Stations

2014–15 Potomac and Anacostia River Dissolved Oxygen

7 day mean - % violations - criteria standard - 6.0 mg/l Feb-May, 4.0 mg/l Jun – Jan

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	n/a	n/a	50	n/a	50	n/a	100	n/a	75	n/a	75	0.0	50	75	0.0	25	0.0	0.0	56	30.1
Lower Anacostia	n/a	n/a	0.0	n/a	100	n/a	75	n/a	75	n/a	0.0	n/a	0.0	n/a	0.0	0.0	0.0	0.0	34.5	n/a
Upper Potomac	0.0	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

30 day mean – criteria standard – 5.5 mg/l Jun - Jan

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	n/a	n/a	n/a	n/a	n/a	n/a	3.2	n/a	3.7	n/a	3.9	4.1	4.1	3.8	5.6	5.8	9.1	5.1	66.7	75
Lower Anacostia	n/a	n/a	n/a	n/a	n/a	n/a	1.9	n/a	3.7	n/a	5.4	n/a	5.6	n/a	6.5	6.6	10.0	6.5	50	0.0
Upper Potomac	n/a	n/a	n/a	n/a	n/a	8.3	8.6	7.6	7.5	7.5	7.6	6.2	7.7	7.7	9.2	9.6	11.7	10.7	0.0	0.0

Instantaneous minimum - % violations - criteria standard 5.0 mg/l Feb-May, 3.2 mg/l Jun– Jan

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	n/a	n/a	0.9	n/a	30.6	n/a	54.5	n/a	52.8	n/a	32.8	23.8	20.4	32.1	0.6	5.0	0.0	2.6	23.5	15.2
Lower Anacostia	n/a	n/a	5.4	n/a	65.1	n/a	83.4	n/a	45.7	n/a	13.6	n/a	6.3	0.0	0.0	0.0	0.0	0.0	29.7	n/a
Upper Potomac	0.0	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Potomac and Anacostia River Turbidity

Monthly % above 20 NTU

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	n/a	n/a	n/a	n/a	87.2	n/a	82.2	n/a	100	n/a	88.4	99.5	70.2	100	95.2	100	64.8	100	83.6	100
Lower Anacostia	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	15.9	n/a	0.6	n/a	0.5	63.3	12.9	0.6	7.5	n/a
Upper Potomac	n/a	n/a	n/a	0.0	30.9	0.0	15.0	16.9	2.2	21.6	7.4	0.1	0.5	1.7	0.5	27.4	0.0	5.5	8.1	10.3

- Real time monitoring equipment removed in winter months (Dec – Feb) to prevent ice damage.

Potomac and Anacostia River pH

Monthly % greater than 8.5 or less than 6.0

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lower Anacostia	0.0	n/a	0.0	n/a	0.0	n/a	0.0	n/a	0.0	n/a	0.0	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Potomac	n/a	n/a	n/a	0.0	0.0	13.0	15.4	7.1	0.0	3.5	0.0	11.9	0.0	22.5	0.4	44.8	10.5	83.1	3.7	26.1

Potomac and Anacostia River Chlorophyll *a*

In situ readings % above 25 µg/L July 1 – September 30

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	-	-	-	-	-	-	-	-	n/a	n/a	n/a	0.0	n/a	0.0	-	-	-	-	n/a	0.0
Lower Anacostia	-	-	-	-	-	-	-	-	0.0	n/a	0.0	n/a	0.0	n/a	-	-	-	-	0.0	n/a
Upper Potomac	-	-	-	-	-	-	-	-	0.0	0.5	0.0	0.6	0.0	0.1	-	-	-	-	0.0	0.4

Potomac and Anacostia River Temperature C

In situ readings % above 32.2 C

	Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		% viol year	
Year	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15	14	15
Upper Anacostia	n/a	0.0	0.0	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lower Anacostia	0.0	n/a	0.0	n/a	0.0	n/a	0.0	n/a	0.0	n/a	0.0	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Upper Potomac	n/a	n/a	n/a	n/a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

n/a – not assessed

INDIVIDUAL WATERBODY WATER QUALITY ASSESSMENTS

Waterbody Page Number

KINGMAN LAKE (DCAKL00L)…….……..1

ANACOSTIA DC SEGMENT 01 (DCANA00E SEG1)…….…...4

ANACOSTIA DC SEGMENT 02 (DCANA00E SEG2)……7

POTOMAC DC SEGMENT 01 (DCPMS00E SEG1)……10

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FORT DUPONT CREEK (DCTDU01R)……..50

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WASHINGTON SHIP CHANNEL (DCPWC04E)……22

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WATTS BRANCH DC SEGMENT 02 (DCTWB00R SEG2)……124

Detail Report for KINGMAN LAKE

ID: DCAKL00L_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**KINGMAN LAKE**	
	Location: LOCATED BETWEEN CHILDRENS ISLAND AND RFK STADIUM PARKING LOT ON THE UPPER ANACOSTIA. THE NORTHEAST BOUNDARY SWIRL CONCENTRATOR IS LOCATED JUST DOWN RIVER FROM THE LAKE.	**Water Type:** FRESHWATER LAKE **Size:** 102.7 ACRES **Next Scheduled Monitoring Date:** N/A **Trophic Status:** N/A **Public Lake:** No

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish Secondary Contact Recreation and Aesthetic Enjoyment

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
BOD, Biochemical oxygen demand	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Oil and Grease	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

KINGMAN LAKE'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH

AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 23.47%, 0.90%, AND 65.14% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARD 0.90% AND 65.14% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.90%, 13.76%, AND 65.14% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY IN PLACE, KINGMAN LAKE DID NOT SUPPORT THE FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

KINGMAN LAKE FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for ANACOSTIA DC

ID: DCANA00E_01 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**ANACOSTIA DC**	
	Location: PENNSYLVANIA AVENUE BRIDGE TO THE MOUTH AT THE POTOMAC (ANA15 TO ANA29), TIDAL FRESHWATER. IT FLOWS THROUGH A HIGHLY URBAN AREA OF MARINAS, COMMERCIAL BUILDINGS AND NATIONAL PARKLAND.	**Water Type:** ESTUARY **Size:** 0.5 SQUARE MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Protection and Propagation of Fish, Shellfish and Wildlife
	Not Supporting	Primary Contact Recreation Protection of Human Health related to Consumption of Fish and Shellfish Secondary Contact Recreation and Aesthetic Enjoyment

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Debris/Floatables/Trash	Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE LOWER ANACOSTIA'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 17.24%, 0.00%, AND 9.90% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE

GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. THE LOWER ANACOSTIA RIVER IS IMPAIRED BY TRASH. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 9.90% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN, AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 5.97% AND 9.90% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, THE LOWER ANACOSTIA DID NOT SUPPORT ITS FISH CONSUMPTION USE.DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE LOWER ANACOSTIA FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for ANACOSTIA DC

ID: DCANA00E_02 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A, 5)

Water Information:	**ANACOSTIA DC**	
	Location: NEW YORK AVE BRIDGE (DC/MARYLAND LINE) TO PENNSYLVANNIA AVENUE BRIDGE (ANA01 TO ANA15), TIDAL FRESHWATER. IT FLOWS THROUGH MOSTLY NATIONAL AND CITY PARK LAND AND PAST A SMALL URBAN AREA OF RESIDENTIAL BUILDINGS, PEPCO, RFK STADIUM AND MARINA.	**Water Type:** ESTUARY **Size:** 0.3 SQUARE MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection of Human Health related to Consumption of Fish and Shellfish Protection and Propagation of Fish, Shellfish and Wildlife

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
BOD, Biochemical oxygen demand	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Debris/Floatables/Trash	Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dissolved oxygen saturation	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Nitrogen (Total)	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Oil and Grease	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Phosphorus (Total)	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d)

CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE UPPER ANACOSTIA'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 37.58%, 1.20%, AND 34.52% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. THE UPPER ANACOSITA RIVER IS IMPAIRED BY TRASH. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 1.20% AND 34.52% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE SUPPORT IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 1.20%, 16.67% AND 34.52% OF THE TIME, RESPECTIVELY.

BECAUSE OF THE FISH CONSUMPTION ADVISORY, THIS SEGMENT DID NOT SUPPORT THE FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE UPPER ANACOSTIA FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for POTOMAC DC

ID: DCPMS00E_01 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**POTOMAC DC**	
	Location: HAINS POINT TO WOODROW WILSON BRIDGE (PRINCE GEORGE'S COUNTY MARYLAND LINE) (PMS29 TO PMS44), TIDAL FRESHWATER. RIVER PASSES THROUGH AN URBAN AREA OF COMMERCIAL BUILDINGS, MILITARY BASES AND MUNICIPAL FACILITIES.	**Water Type:** ESTUARY **Size:** 3.05 SQUARE MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish Secondary Contact Recreation and Aesthetic Enjoyment

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Escherichia coli	Primary Contact Recreation	Yes	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and	Yes	

Aesthetic Enjoyment

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE LOWER POTOMAC'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 10.09%, 4.39% AND 11.86% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 4.39% AND 11.86% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 4.39%, 0.00% AND 11.86% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY IN PLACE THIS SECTION OF THE POTOMAC DID NOT SUPPORT THE FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THIS SECTION OF THE POTOMAC FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for POTOMAC DC

ID: DCPMS00E_02 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**POTOMAC DC**	
	Location: KEY BRIDGE, GEORGETOWN, TO HAINS POINT (PMS10 TO PMS 29), TIDAL FRESHWATER. RIVER PASSES THROUGH AN URBAN AREA OF COMMERCIAL AND RESIDENTIAL BUILDINGS AND NATIONAL PARK SERVICE LAND.	**Water Type:** ESTUARY **Size:** 1.38 SQUARE MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Escherichia coli	Primary Contact Recreation	Yes	
pH	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE MIDDLE POTOMAC'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 12.07%, 8.38% AND 11.22% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 8.38% AND 11.22% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 8.38%, 0.00% AND 11.22% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, THE MIDDLE POTOMAC DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED

CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE MIDDLE POTOMAC FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for POTOMAC DC

ID: DCPMS00E_03 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**POTOMAC DC**	
	Location: CHAIN BRIDGE (MONTGOMERY COUNTY MARYLAND LINE), JUST BELOW FALL LINE, TO KEY BRIDGE (PMS01 TO PMS10), TIDAL FRESHWATER. BORDERED BY NATIONAL PARK SERVICE LAND.	**Water Type:** ESTUARY **Size:** 0.4 SQUARE MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Escherichia coli	Primary Contact Recreation	Yes	
Nitrogen (Total)	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
pH	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes	

Phosphorus (Total)	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE UPPER POTOMAC'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 11.32%, 10.91% AND 14.55% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 10.91% AND 14.55% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE SUPPORT IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 10.91 %, 0.00% AND 14.55% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, THE UPPER POTOMAC DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH

CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE UPPER POTOMAC FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for TIDAL BASIN

ID: DCPTB01L_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**TIDAL BASIN**	
	Location: ADJACENT TO THE JEFFERSON MEMORIAL AND THE WELL-KNOWN CHERRY TREES OF THE NATION'S CAPITOL	**Water Type:** FRESHWATER LAKE **Size:** 108.4 ACRES **Next Scheduled Monitoring Date:** N/A **Trophic Status:** N/A **Public Lake:** No

Use Information

	Attainment Status	**Uses**
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	**Uses**	**Assessment Confidence**
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	**Associated Uses**	**Pollutant?**	**Confidence**
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
pH	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE TIDAL BASIN'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 7.69%, 25.42% AND 1.69% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND

TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 25.42% AND 1.69% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 25.42%, 0.00% AND 1.69% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, THE TIDAL BASIN DID NOT SUPPORT THE FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE TIDAL BASIN FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for WASHINGTON SHIP CHANNEL

ID: DCPWC04E_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**WASHINGTON SHIP CHANNEL**	
	Location: DEEP EMBAYMENT OF THE POTOMAC BETWEEN HAINS POINT AND FORT MCNAIR. IT IS CONTIGUOUS TO THE POTOMAC AND ANACOSTIA RIVERS. THE NORTH END IS CONNECTED TO THE TIDAL BASIN (PWC04).	**Water Type:** ESTUARY **Size:** 0.3 SQUARE MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDT	Protection of Human Health related to	Yes	

	Consumption of Fish and Shellfish	
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
pH	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE WASHINGTON SHIP CHANNEL'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E.COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 12.73%, 11.86% AND 3.33% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPPORTED. PH AND

TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 11.86% AND 3.33% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 11.86%, 0.00% AND 3.33% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, THE WASHINGTON SHIP CHANNEL DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE WASHINGTON SHIP CHANNEL FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for ROCK CREEK DC

ID: DCRCR00R_01 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A, 5)

Water Information:	**ROCK CREEK DC**	
	Location: THE SOUTHERN OR LOWER SEGMENT OF ROCK CREEK WHICH EXTENDS FROM IT'S MOUTH AT THE POTOMAC RIVER IN GEORGETOWN UP TO JUST ABOVE THE NATIONAL ZOO BELOW THE PIERCE MILL DAM	**Water Type:** RIVER **Size:** 3.6 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Lead	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Mercury	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE LOWER ROCK CREEK'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 50.00%, 1.72% AND 18.97% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 1.72% AND 18.97% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 1.72%, 0.00% AND 18.97% OF THE TIME, RESPECTIVELY.

DURING THE 2014 BENTHIC MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS, NUMEROUS CORBICULA SHELLS WERE OBSERVED OPENED AND DISCARDED ON THE RIGHT BANK DURING THE SPRING ASSESSMENT PERIOD. LARGE AMOUNTS OF FISH SPECIES DIVERSITY AND QUANTITY WERE PRESENT. ABUNDANT AMOUNTS OF LARGE AND SMALL MOUTH BASS OBSERVED. BUFFER BREAKS WERE OBSERVED ON THE RIGHT BANK AT THE 35 AND 50 METER MARKS.

DURING THE 2015 BENTHIC MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS THE RIGHT BANK HAD BEEN STABILIZED WITH LARGE ROCKS AND EMERGENT VEGETATION. ALSO, THE MONITORING SITE WAS EXTENDED 5 METERS BEYOND THE 75 METER MARK TO INCLUDE ADDITIONAL SUITABLE HABITAT. DURING THE 2015 FIN-FISH ASSESSMENT THE CHANEL SEEMED HIGHER THAN BASE FLOW AND MORE LARGE AND SMALLMOUTH BASS WERE OBSERVED. LARGE AMOUNTS OF FISH SPECIES DIVERSITY AND QUANTITY WERE PRESENT. BUFFER BREAKS WERE OBSERVED ON THE RIGHT BANK AT THE 35 AND 50 METER MARKS. HURRICANE JOAQUIN OCCURRED PREVIOUS WEEK PRIOR TO SAMPLING. CANOPY COVER REDUCED BY FALL SEASONAL LEAF SHEDDING OBSERVED. DCSS WAS CONDUCTED OUTSIDE OF NORMAL SEASONAL SAMPLING PERIOD.

MACROINVERTEBRATE SAMPLES COLLECTED DURING IN 2012 THROUGH 2015 WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA WITH MORE THAT 12 SPECIES PRESENT. THERE WERE NOT EPT TAXA PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, LOWER ROCK CREEK DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED

CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

LOWER ROCK CREEK FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for ROCK CREEK DC

ID: DCRCR00R_02 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**ROCK CREEK DC**	
	Location: THE NORTHERN SEGMENT OF ROCK CREEK EXTENDING FROM THE PIERCE MILL DAM ABOVE THE NATIONAL ZOO AND KLINGLE ROAD TO THE DISTRICT/MARYLAND LINE. THIS SEGMENT OF ROCK CREEK FLOWS ABOVE THE FALL LINE AND IS SURROUNDED BY ROCK CREEK PARK.	**Water Type:** RIVER **Size:** 5.9 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Lead	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Mercury	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
pH	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE UPPER ROCK CREEK'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 70.85%, 3.45% AND 15.51% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE

21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 3.45% AND 15.51% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 3.45%, 0.00% AND 15.51% OF THE TIME, RESPECTIVELY.

DURING THE 2014 MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS, THE STREAM'S HABITAT WAS IN EXCELLENT CONDITION. HIGH FLOW WAS OBSERVED WITH ABUNDANCE OF RIFFLES OBSERVED THROUGHOUT THE ENTIRE 75 METER STREAM REACH. LOWER THAN NORMAL FLOW WAS OBSERVED DURING THE SUMMER INDEX PERIOD. THERE WAS CONCRETE ON THE RIGHT BANK JUST BELOW THE ZERO METER ASSESSMENT LOCATION. MINOR BAR FORMATIONS WERE OBSERVED. LARGE AMOUNTS OF FISH SPECIES DIVERSITY AND QUANTITY WERE PRESENT.

DURING THE 2015 MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS, HIGH FLOW WAS OBSERVED WITH ABUNDANCE OF RIFFLES OBSERVED THROUGHOUT THE ENTIRE 75 METER STREAM REACH. THERE WAS CONCRETE ON THE RIGHT BANK JUST BELOW THE ZERO METER ASSESSMENT LOCATION. MINOR BAR FORMATIONS WERE OBSERVED. LARGE AMOUNTS OF FISH SPECIES DIVERSITY AND QUANTITY WERE PRESENT. CANOPY COVER REDUCED BY FALL SEASONAL LEAF SHEDDING OBSERVED. HURRICANE JOAQUIN OCCURRED PREVIOUS WEEK PRIOR TO SAMPLING. DCSS WAS CONDUCTED OUTSIDE OF NORMAL SEASONAL SAMPLING PERIOD.

MACROINVERTEBRATE SAMPLES COLLECTED IN 2012 THROUGH 2014 WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED A HIGH DIVERSITY OF SPECIES PRESENT. EPHEMEROPTERA AND TRICHOPTERA WERE PRESENT. CHIRONOMIDAE WAS THE DOMINANT TAXA.

BECAUSE OF A FISH CONSUMPTION ADVISORY, UPPER ROCK CREEK DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND

ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE UPPER ROCK CREEK FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for BATTERY KEMBLE CREEK

ID: DCTBK01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**BATTERY KEMBLE CREEK**	
	Location: ORIGINATES AT NEBRASKA AVENUE AND FOXHALL ROAD. THE WATERSHED'S NORTHWESTERN BORDER IS UNIVERSITY TERRACE AND THE WESTERN EDGE OF BATTERY KEMBLE PARK.. THE EASTERN BORDER IS FOXHALL ROAD AND THE SOUTHERN BORDER IS NORTH OF W STREET, NW.	**Water Type:** RIVER **Size:** 1.2 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Zinc	Protection of Human Health related to	Yes	

Consumption of Fish and Shellfish

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

BATTERY KEMBLE'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 31.58%, 0.00% AND 5.56% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 5.56% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 5.56% OF THE TIME, RESPECTIVELY.

DURING THE 2012 AND 2014 STREAM ASSESSMENTS THERE WAS ALGAE ON

ROCKS, VERY LITTLE AQUATIC LIFE OBSERVED AND THE ODOR OF CHLORINE PRESENT. DURING THE 2014 DCSS, THE SPRING INDEX PERIOD WAS SAMPLED DURING THE SUMMER INDEX PERIOD TIME FRAME. AN ODOR WAS PRESENT FROM AN UPRIGHT SEWAGE LINE ON THE RIGHT BANK AT THE 5 METER MARK. SEVERE BUFFER BREAK WAS OBSERVED ON THE RIGHT BANK AT THE 15 METER MARK. LARGE BAR FORMATIONS CONSISTING OF SAND, GRAVEL, AND COBBLE FORMED BELOW DOWNED TREES AT THE 70 METER MARK THAT CROSSES ENTIRE WIDTH OF STREAM. MACROINVERTEBRATE SAMPLES WERE COLLECTED FOR 2012 AND 2014, THEY WILL BE ANALYZED AT A LATER DATE.

BECAUSE OF A FISH CONSUMPTION ADVISORY, BATTERY KEMBLE DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for BROAD BRANCH

ID: DCTBR01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A, 5)

Water Information:	**BROAD BRANCH**	
	Location: BROAD BRANCH IS A WESTERN TRIBUTARY OF ROCK CREEK WHICH IS JOINED BY SOAPSTONE CREEK ABOUT 800 FEET BEFORE IT DISCHARGES INTO ROCK CREEK. THE SURFACE PORTION OF THE STREAM BEGINS NEAR NEBRASKA AND CONNECTICUT AVENUES.	**Water Type:** RIVER **Size:** 1.7 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Heptachlor epoxide	Protection of Human Health related to	Yes	

	Consumption of Fish and Shellfish	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

BROAD BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 64.71%, 0.00% AND 10.53% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATES THE WATER QUALITY STANDARDS 0.00% AND 10.53% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON

THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 10.53% OF THE TIME, RESPECTIVELY.

THE 2013 AND 2015 DCSS REVEALED DENSE BROWN MACROPHYTES AND ALGAL GROWTH IN MAJORITY OF STREAM BED. HIGH EROSIONAL SCARING ON BOTH BANKS WERE OBSERVED. DOWNED TREES LAY ACROSS STREAM. THERE WAS ODOR CONSISTENT WITH RAW SEWAGE PRESENT DURING THE 2015 ASSESSMENT PERIOD. BUFFER BREAKS WERE OBSERVED ON BOTH THE RIGHT AND LEFT BANKS. VERY LITTLE AQUATIC LIFE OBSERVED.

IN 2011, 2013 AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECETED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. TRICHOPTER WERE ALSO PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, BROAD BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

BROAD BRANCH FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for CHESAPEAKE AND OHIO CANAL

ID: DCTCO01L_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**CHESAPEAKE AND OHIO CANAL**	
	Location: IMPOUNDMENT RUNNING PARALLEL TO UPPER POTOMAC (TCO01:GEORGETOWN AND TCO06: FLETCHER'S BOATHOUSE).	**Water Type:** FRESHWATER LAKE **Size:** 27.3 ACRES **Next Scheduled Monitoring Date:** N/A **Trophic Status:** N/A **Public Lake:** No

Use Information

	Attainment Status	**Uses**
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	**Uses**	**Assessment Confidence**
HABITAT	Navigation	GOOD
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	**Associated Uses**	**Pollutant?**	**Confidence**
Escherichia coli	Primary Contact Recreation	Yes	
pH	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes	

Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

THE C&O CANAL'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 11.58%, 12.00% AND 0.99% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 12.00% AND 0.99% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 12.00%, 0.00% AND 0.99% OF THE TIME, RESPECTIVELY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, THE C&O CANAL DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

THE C&O CANAL FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for DALECARLIA TRIBUTARY

ID: DCTDA01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**DALECARLIA TRIBUTARY**	
	Location: DALECARLIA TRIBUTARY (ALSO REFERRED TO AS DALECARLIA CREEK) IS A STREAM WHICH ORIGINATES IN DC THEN CROSSES INTO MARYLAND CONTRIBUTING TO THE MARYLAND STREAM, LITTLE FALLS RUN. DALECARLIA FORMS AT THE CONFLUENCE OF MILL CREEK AND EAST CREEK, UNNAMED STRE	**Water Type:** RIVER **Size:** 1.7 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

DALECARLIA'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 63.16%, 0.00% AND 15.79% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION

1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 15.79% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 15.79% OF THE TIME, RESPECTIVELY.

DURING THE 2013 AND 2015 DCSS SEVERE BUFFER BREAKS OBSERVED ON THE LEFT AND

RIGHT BANKS WITH EROSIONAL SCOURING ON THE RIGHT BANK. EXPOSED ROOTWADS WERE OBSERVED FOR THE ENTIRE 75 METER STRETCH. A STRONG ODOR OF CHLORINE WAS PRESENT. THERE WAS A HIGH VOLUME OF TRASH PRESENT. IRON FLOCCULENT OBSERVED IN STANDING POOLS. DRY CHANELS OBSERVED JUST BELOW THE 75 AND 50 METER MARK ON THE LEFT BANK. NEW CLEARED ROAD PRESENT WITH WASHINGTON SUBURBAN SANITARY COMMISSION CONSTRUCTION CUTTING PATH THROUGH RIPARIAN ZONE TO STREAM SIDE. LOW FIN-FISH SPECIES DIVERSITY OBSERVED.

IN 2011, 2013 AND 2015 MACROINVERTEBRATES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDE AS THE DOMINANT TAXA. THRE WAS VERY LITTLE DIVERSITY AMOUNG BENTHIC MACROINVERTEBRATE SPECIES.

THE HBI SCORE SUGGESTS SEVERE ORGANIC POLLUTION IN THE STREAM. NO SENSITIVE ORGANISMS WERE FOUND (EPT). HABITAT IS MODERATELY IMPAIRED. 73 CHIRONOMIDAE (TOLERANT GENERALIST) WERE FOUND. WITH 73 CHIRONOMIDAE BEING PRESENT, THIS MAY POSSIBLY SUGGEST A STREAM THAT IS IMPACTED WITH TOXICS AND ORGANICS. MORE THAN 100 ORGANISMS FOUND IN THE SAMPLE.

BECAUSE OF A FISH CONSUMPTION ADVISORY, DALECARLIA DID NOT

SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for DUMBARTON OAKS

ID: DCTDO01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**DUMBARTON OAKS**	
	Location: THE SURFACE PORTION OF THE STREAM ORIGINATES AT A PAIR OF STORMDRAINS AND FLOWS A LITTLE MORE THAN HALF A MILE SOUTHEAST TO ROCK CREEK.	**Water Type:** RIVER **Size:** 0.6 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

DUMBARTON OAKS' EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 31.58%, 0.00% AND 11.76% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK

UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 11.76% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 11.76% OF THE TIME, RESPECTIVELY.

DURING THE 2013 AND 2015 DCSS DOWNED TREES OBSERVED WITHIN THE 75 METER

STRETCH. BUFFER BREAK ON THE LEFT BANK AND GULLY WITH POSSIBLE INPUT FROM SPRINKLER SYSTEM (IN DUMBARTON PARK) OBSERVED. INPUT TO STREAM FROM SPRINKLER SYSTEM (IN DUMBARTON PARK) TESTED AND FOUND TO BE NON-CHLORINATED. THE STREAM IS STRAIGHT WITH HEAVY CANOPY COVER. LOW FIN-FISH SPECIES DIVERSITY WAS OBSERVED.

IN 2011, 2013 AND 2015, MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. HYDROPSYCHIDAE WERE ALSO PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, DUMBARTON OAKS DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

DUMBARTON OAKS FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for FORT DUPONT CREEK

ID: DCTDU01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**FORT DUPONT CREEK**	
	Location: THE STREAM AT FORT DUPONT PARK IS A MINOR TRIBUTARY OF THE ANACOSTIA RIVER WHICH ORIGINATES AT FORT DUPONT NEAR ALABAMA AND MASSACHUSETTS AVENUES, SE.	**Water Type:** RIVER **Size:** 1.7 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and	Yes	

	Aesthetic Enjoyment	
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

FORT DUPONT'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 36.84%, 0.00% AND 20.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 20.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON

THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 10.00% AND 20.00% OF THE TIME, RESPECTIVELY.

THE 2012 MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS REVEALED SEDIMENT, IRON FLOCCULANT AND AN ORANGE TINT IN THE STREAM BED. THERE WAS A BUFFER BREAKS ON THE LEFT BANK. THE SUBSTRATE WAS SANDY, THERE WERE DOWNED TREES BETWEEN THE ZERO AND 50 MARKS. CONSTRUCTION IS POSSIBLE CAUSE OF THE SANDY SUBSTRATE.

THE 2014 HABITAT ASSESSMENT REVEALED MACROPHYTES PRESENT WITH SUFFICIENT AMOUNTS OF ORANGE FLOCCULENT MATERIAL PRESENT. HEAVY BAR FORMATIONS AND SEDIMENT LOADS CONSISTING PRIMARILY OF SAND, PRESENT THROUGHOUT STREAM BED. NO FIN-FISH SPECIES OBSERVED. NEW BASEBALL FIELD RECENTLY CONSTRUCTED UP STREAM.

IN 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

BECAUSE OF A FISH CONSUMPTION ADVISORY, FORT DUPONT DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for FOUNDRY BRANCH

ID: DCTFB02R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**FOUNDRY BRANCH**	
	Location: FOUNDRY BRANCH ORIGINATES FROM A 60" STORM DRAIN JUST SOUTH OF VAN NESS STREET, NW, BETWEEN NEBRASKA AND WISCONSIN AVENUES. THE SURFACE PORTION OF THE STREAM FLOWS THROUGH GLOVER ARCHIBALD PARK. A LARGE PORTION OF THE STREAM IS SUBTERRANEAN AND EMPTIES	**Water Type:** RIVER **Size:** 0.8 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Escherichia coli	Primary Contact Recreation	Yes	
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Observed Effects

Observation	Associated Uses

Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Impacts from Hydrostructure Flow Regulation/modification	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

FOUNDRY BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 33.33%, 0.00% AND 5.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 5.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE 2012 DC STREAM SURVEY CONDUCTED, NO AQUATIC LIVE WAS OBSERVED. TEMPERATURE, PH, DISSOLVED OXYGEN AND TUBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 5.00% OF THE TIME, RESPECTIVELY.

DURING THE 2012 DCSS THERE WERE ROCKS WITH FILAMENTOUS ALGAE,

DOWN MATURE TREES-THOUGHOUT STREAM'S STRETCH, A BUFFER BREAK ON THE LEFT BANK AND DEWATERED WOODY DEBRIS OBSERVED. 16 METERS OF THE STREAM WAS UNASSESSABLE.

DURING THE 2014 MACRINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS, LARGE AMOUNTS OF DOWNED TREES AND BRANCHES COVERING LARGE PORTIONS OF THE STREAM WERE OBSERVED IN AND AROUND THE STREAM BED. THERE WERE ROCKS WITH FILAMENTOUS ALGAE, A BUFFER BREAK ON THE LEFT BANK AT THE 5 METER MARK AND FLASHY STREAM FLOW. THE ENTIRE 75 METER PORTION OF THE STREAM WAS UNSAMPLEABLE DUE TO DOWNED BRANCHES.

IN 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

BECAUSE OF A FISH CONSUMPTION ADVISORY, FOUNDRY BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for FORT CHAPLIN RUN

ID: DCTFC01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A, 5)

Water Information:	**FORT CHAPLIN RUN**	
	Location: FORT CHAPLIN ORIGINATES AS A 6.5 FOOT DIAMETER STORM PIPE NEAR BURNS STREET AND TEXAS AVENUE, SE.	**Water Type:** RIVER **Size:** 0.6 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Dissolved oxygen saturation	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Physical substrate habitat alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Total Suspended Solids	Primary Contact Recreation	Yes	

(TSS)	Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Illegal Dumps or Other Inappropriate Waste Disposal	Physical substrate habitat alterations	
Impacts from Hydrostructure Flow Regulation/modification	Physical substrate habitat alterations	
Residential Districts	Physical substrate habitat alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

FORT CHAPLIN'S EVALUATION OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 52.63%, 0.00% AND 15.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT

ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 15.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 15.00% AND 15.00% OF THE TIME, RESPECTIVELY.

DURING THE 2012 AND 2014 MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS, IT WAS OBSERVED THAT THE STREAM'S HABITAT APPEARED TO BE SEVERELY IMPAIRED. THERE IS A NEED FOR IMMEDIATE ACTION TO SLOW THE EROSION OF THE STEAMS BANKS. DURING THE 2012 AND 2014 HABITAT ASSESSMENTS, COPIOUS AMOUNTS OF TRASH AND DEBRIS WERE PRESENT. GRAY COLORED CLAY SOIL OBSERVED, WITH LOTS OF YOUNG AND MATURE TREES DOWNED IN AND AROUND THE STREAM. THERE WAS HIGH EROSIONAL SCARING ON BOTH BANKS, AND STAGNANT SHALLOW POOLS WITH IRON FLOCCULANT PRESENT. BUFFER BREAK PRESENT AT THE 57 METER MARK ON THE LEFT BANK. THIS 75 METER STRETCH OF STREAM APPEARS TO BE A REGULAR ILLEGAL DUMPING SITE AS LARGE AMOUNTS OF YARD CLIPPINGS WERE PRESENT IN BOTH 2012 AND 2014. NO FIN-FISH SPECIES WERE OBSERVED.

IN 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

2002 HBI SCORE SUGGESTS FAIRLY SIGNIFICANT ORGANIC POLLUTION. A HIGH PERCENTAGE OF GATHERER-COLLECTOR ORGANISMS SUGGESTS POLLUTANTS, BECAUSE THEY ARE GENERALIST AND CAN THRIVE IN POLLUTED WATERS. THE DOMINANT TAXA WAS OLIGOCHAETA (SEWAGE LOVING ORGANISMS). 47 ORGANISMS WERE FOUND IN THE SAMPLE. THE STREAM'S HABITAT IS SEVERELY IMPAIRED. THE EROSION IS RAPIDLY DESTROYING THIS STREAM. THERE IS A NEED FOR IMMEDIATE ACTION TO SLOW THE EROSION OF THE STEAMS BANKS.

BECAUSE OF A FISH CONSUMPTION ADVISORY, FORT CHAPLIN DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL

AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for FORT DAVIS TRIBUTARY

ID: DCTFD01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A, 5)

Water Information:	**FORT DAVIS TRIBUTARY**	
	Location: FORT DAVIS IS A TRIBUTARY OF THE ANACOSTIA RIVER OF WHICH THE SURFACE PORTION PARALLELS PENNSYLVANIA AVENUE BEGINNING AT ALABAMA AVENUE AND SUBMERGES FOR THE REMAINDER OF ITS COURSE AT PENNSYLVANIA AVENUE ABOVE BRANCH AVENUE.	**Water Type:** RIVER **Size:** 1.4 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
BOD, Biochemical oxygen demand	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
Dissolved oxygen saturation	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

FORT DAVIS' EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 35.29%, 0.00% AND 31.37% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 31.37% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 10.53% AND 31.37% OF THE TIME, RESPECTIVELY.

DURING THE 2012 MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENTS DEBRIS HAD BEEN REMOVED FROM PIPED PORTION OF THE STREAM. STREAM FLOW WAS IMPROVED AND THERE WAS A MORE DEFINED STREAM BED. THERE WERE BUFFER BREAKS ON BOTH BANKS. THE ENTIRE 75 METER STRETCH WAS SAMPLEABLE. THE 2014 STREAM ASSESSMENT WAS CONDUCTED DURING THE SUMMER INDEX PERIOD. THE 2014 ASSESSMENT AGAIN REVEALED A BLOCKAGE AT THE PIPED PORTION OF THE STREAM WITH NO DEFINED STREAM BED, WITH WETLANDS AND MANY NONDESCRIPT BRAIDS IN AND AROUND MAIN CHANEL. NO FIN-FISH SPECIES OBSERVED.

THE 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED, THEY WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT FOUND THE ONLY TAXA WAS A SINGLE OLIGOCHAETA (SEWAGE LOVING ORGANISM).

BECAUSE OF A FISH CONSUMPTION ADVISORY, FORT DAVIS DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for FENWICK BRANCH

ID: DCTFE01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**FENWICK BRANCH**	
	Location: THE STREAM ORIGINATES AS A DISCHARGE FROM A STORM DRAIN A FEW FEET OUTSIDE THE DC BORDER IN MARYLAND SOUTH OF EAST-WEST HIGHWAY.	**Water Type:** RIVER **Size:** 1 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Secondary Contact Recreation and Aesthetic Enjoyment Navigation
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

FENWICK BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 33.33%, 0.00% AND 5.56% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT

ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 5.56% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 5.56% OF THE TIME, RESPECTIVELY.

DURING THE 2011 DCSS TWO LARGE DOWNED TREES, ONE EACH, AT THE 20 AND 75 METER MARKS OBSERVED. GULLY DRAINS E. BEACH DR. INTO STREAM. HEAVY RAINS DURING THE 2011 ASSESSMENT PERIOD. EXTENSIVE SAND, SILT, AND CLAY FOR THE ENTIRE 75 METER STRETCH. BANK EROSION PRESENT, BUT DIFFICULT TO SEE SEVERITY DUE TO HEAVY VEGETATION. DEEP POOLS PRESENT IN PORTIONS OF THE STREAM. FLOATING SAV OBSERVED.

DURING THE 2013 DCSS SEVERE EROISIONS ON BOTH BANKS AND EROSIONS SCARS ON THE LEFT BANK WERE OBSERVED. THE STEAM HAS LOW FLOW AND DOWNED TREES IN THE STREAMBED.

DURING THE 2015 DCSS SEVERE EROISION ON BOTH BANKS AND HIGH EROSIONAL SCARS ON THE LEFT BANK WERE OBSERVED. THE STREAM HAD LOW FLOW AND DOWNED TREES IN THE STREAMBED. TWO LARGE DOWNED TREES, ONE EACH, AT THE 20 AND 75 METER MARKS OBSERVED. GULLY DRAINS E. BEACH DRIVE INTO STREAM. LARGE DEPOSITS OF SAND PRESENT IN STREAM, WITH SILT, AND CLAY FOR THE ENTIRE 75 METER STRETCH. BANK EROSION PRESENT, BUT DIFFICULT TO SEE SEVERITY DUE TO HEAVY GRASSES/FORBES TYPE VEGETATION. DEEP POOLS PRESENT IN PORTIONS OF THE STREAM CREATED BY LARGE DOWNED TREES IN STREAM. ROAD WORK OCCURRING ALONG ENTIRE 75 METERS OF RIGHT BANK, WITH SEDIMENT CONTROL FENCES IN PLACE.

IN 2011, 2013 AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT WHICH WAS COLLECTED DURING THE 2009 DCSS SAMPLING SEASON REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. TRICHOPERTA WERE PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, FENWICK BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

FENWICK BRANCH FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for FORT STANTON TRIBUTARY

ID: DCTFS01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**FORT STANTON TRIBUTARY**	
	Location: FORT STANTON TRIBUTARY IS A TRIBUTARY OF THE ANACOSTIA RIVER WHICH ORIGINATES NEAR ERIE STREET AND PEARSON PLACE, SE JUST NORTH OF THE SMITHSONIAN'S ANACOSTIA MUSEUM.	**Water Type:** RIVER **Size:** 1.3 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Alteration in stream-side or littoral vegetative covers	Protection and Propagation of Fish, Shellfish and Wildlife	No	
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

FORT STANTON'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 31.58%, 0.00% AND 26.32% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 26.32% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 26.32% OF THE TIME, RESPECTIVELY.

THE 2011 AND 2013 DCSS REVEALED FINE SEDIMENT AND IRON FLOCCUTANT IN THE STREAMBED. THERE WAS A BLOCKAGE AT THE 59 METER MARK, AND WQD STAFF WAS NOT ABLE TO ACCESS THE STREAM BEYOND THAT POINT TO THE 75 METER MARK. THE TREES ON THE RIGHT BANK WERECLEARED JUST BEYOND THE 10 METER MARK, GRASSES AND SCHRUBS GROWING IN THEIR PLACE. GULLY ON THE LEFT BANK CAUSES SEVERE BUFFER BREAK, DRAINS PARKING LOT FOR NEW DEVELOPMENT.

THE 2015 DCSS REVEALED FINE SEDIMENT AND IRON FLOCCUTANT IN THE STREAMBED. GULLY ON THE LEFT BANK CAUSES SEVERE BUFFER BREAK, WHICH DRAINS PARKING LOT FOR NEW DEVELOPMENT. EXSTENSIVE BAR FORMATIONS IN STREAM CONSISTING OF SAND. LARGE AMOUNTS OF TRASH PRESENT IN AND AROUND STREAM. PORTIONS OF STREAM WITH NO REAL DEFINED CHANEL. SEDIMENT FENCE ON LEFT BANK JUST BELOW NEW HOUSING CONSTRUCTION NOT INTACT. NO FIN-FISH SPECIES OBSERVED.

IN 2011, 2013 AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT WHICH WAS COLLECTED DURING THE 2009 DCSS SAMPLE PERIOD REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA, WITH HIGH DIVERSITY.

BECAUSE OF A FISH CONSUMPTION ADVISORY, FORT STANTON DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE

SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for HICKEY RUN

ID: DCTHR01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**HICKEY RUN**	
	Location: HICKEY RUN IS A WESTERN TRIBUTARY OF THE ANACOSTIA RIVER WHICH RUNS THROUGH THE NAT'L ARBORETUM (THR01).	**Water Type:** RIVER **Size:** 0.9 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlorine, Residual (Chlorine Demand)	Protection and Propagation of Fish, Shellfish and Wildlife	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dissolved oxygen saturation	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Channelization	Other flow regime alterations	
Illegal Dumps or Other Inappropriate Waste Disposal	Other flow regime alterations	
Impacts from Hydrostructure Flow Regulation/modification	Other flow regime alterations	
Municipal (Urbanized High Density Area)	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

HICKEY RUN'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 77.42%, 0.00% AND 15.52% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 15.52% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 15.79% AND 15.52% OF THE TIME, RESPECTIVELY.

IN 2011 AND 2012 NO ASSESSMENTS WERE CONDUCTED DUE TO A SEWAGE LEAK FROM DC WASA SERVICE LINES, A MEMO IS ON FILE IN WQD. BOTH THE 2015 SPRING AND SUMMER SURVEYS WERE CONDUCTED DURING THE SCHEDULED DCSS PERIODS. IRON FLOCCULANT WAS OBSERVED IN STAGNANT POOLS IN STREAM. SEWAGE ODOR PRESENT WITH GRAY WATER OBSERVED IN STREAM REACH. STREAM HAD LOW FLOW WITH LITTLE TO NO DEFINED RIFFLES. EXTENSIVE SAND AND SILT BAR FORMATIONS PRESENT IN STREAM BED. RIPARIAN BUFFER ZONE CLEARED ON RIGHT BANK. BUFFER BREAK ON RIGHT BANK AT THE 58 METER MARK. LARGE AMOUNTS OF HUMAN REFUSE AND TRASH PRESENT IN AND AROUND STREAM. HIGH EROSIONAL SCARING OBSERVED ON BOTH BANKS.

IN 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED, THEY WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA, WITH A HIGH DIVERSITY OF SPECIES.

BECAUSE OF A FISH CONSUMPTION ADVISORY, HICKEY RUN DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for KLINGLE VALLEY

ID: DCTKV01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**KLINGLE VALLEY**	
	Location: KLINGLE VALLEY TRIBUTARY FLOWS THROUGH A RESIDENTIAL AREA AND DISCHARGES INTO ROCK CREEK FROM THE WEST NEAR THE PORTER STREET BRIDGE. THE STREAM'S REACH PARALLELS THE SOUTH SIDE OF KLINGLE ROAD.	**Water Type:** RIVER **Size:** 0.8 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Secondary Contact Recreation and Aesthetic Enjoyment Navigation
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Alteration in stream-side or littoral vegetative covers	Protection and Propagation of Fish, Shellfish and Wildlife	No	
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Residential Districts	Alteration in stream-side or littoral vegetative covers Other flow regime alterations	
Wet Weather Discharges (Non-Point Source)	Alteration in stream-side or littoral vegetative covers Other flow regime alterations	
Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	Alteration in stream-side or littoral vegetative covers Other flow regime alterations	
Yard Maintenance	Alteration in stream-side or littoral vegetative covers Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

KLINGLE VALLEY'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 20.00%, 5.00% AND 5.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.00% AND 5.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 5.00%, 0.00% AND 5.00% OF THE TIME, RESPECTIVELY.

THE 2011 DCSS REVEALED ALGAL GROWTH, EXTENSIVE BAR FORMATIONS AND POCKETS OF STANDING WATER AT THE 75 METER MARK. LARGE DOWN TREE ABOVE THE 50 METER MARK. THE MAXIMUM DEPTH WAS LESS THAN 0.3 METERS. THE STREAM WAS PARTIALLY DRY. DURING THE 2013 AND 2015 DCSS THE STREAM HAD LOW FLOW AND BUFFER BREAKS ON THE LEFT BANK. THERE WERE MODERATE BAR FORMATIONS AND DEWATERED ROOTWADS. THERE WAS ALSO A CONCRETE RETENTION BARRIER COVERING 75% OF THE ASSESSMENT SITE. DURING THE 2015 DCSS DENSE BROWN MACROPHYTES AND ALGAL GROWTH PRESENT ON ROCKS IN STREAM BED.

IN 2011, 2013 AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. HYDR0PSYCHIDAE AND BAETIDAE WERE ALSO PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, KLINGLE VALLEY DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

KLINGLE VALLEY FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for LUZON BRANCH

ID: DCTLU01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**LUZON BRANCH**	
	Location: THE STREAM FLOWS THROUGH A SMALL PARK AND ENTERS ROCK CREEK AT JOYCE ROAD.	**Water Type:** RIVER **Size:** 1 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Discharges from Municipal Separate Storm Sewer Systems (MS4)	Other flow regime alterations	
Impacts from Hydrostructure Flow Regulation/modification	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

LUZON BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF CONVENTIONAL WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 55.00%, 5.00% AND 5.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.00% AND 5.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 5.00%, 0.00% AND 5.00% OF THE TIME, RESPECTIVELY.

DURING THE 2012 STREAM ASSESSMENTS ALGAE WAS PRESENT ON ROCKS, AND ABUNDANCE OF LEECHES, AND AN ABUNDANCE OF PIEDMONT ROCKS IN THE STEAM. THERE WERE BUFFER BREAKS ON BOTH BANKS AND THE CONDUCTIVITY WAS HIGH. DURING THE 2014 STREAM ASSESSMENTS LARGE AMOUNTS OF TRASH AND HUMAN REFUSE WERE OBSERVED IN AND AROUND THE STREAM. SEWAGE ODOR WAS PRESENT WITH ALGAE OBSERVED ON ROCKS. LARGE WOODY DEBRIS WAS OBSERVED JUST BELOW THE 0 METER PORTION OF THE STREAM. BUFFER BREAKS OBSERVED ON THE LEFT BANK AT THE 28 METER MARK AND THE RIGHT BANK AT THE 43 METER MARK. CONDUCTIVITY WAS CONSISTINTLY HIGH DURING BOTH THE SPRING AND SUMMER ASSESSMENTS. A GOLF COURSE IS LOCATED ABOVE THE SAMPLING AREA NEAR THE STREAM.

IN 2010, 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE STREAM'S 2002 HBI SCORE SUGGESTED A FAIRLY SIGNIFICANT AMOUNT OF ORGANIC POLLUTION IN THE STREAM. THE DOMINANT TAXA FOUND WAS TURBELLARIA. HABITAT WAS ALSO MODERATELY IMPAIRED ON THE RIGHT BANK AND SEVERELY IMPAIRED ON THE LEFT BANK.

29 ORGANISMS WERE FOUND IN THE SAMPLE COLLECTED. THE DIVERSITY OF THE STREAM WAS POOR AS EVIDENCED BY ONLY 2 TAXA IDENTIFIED. ORGANICS AND TOXICS ARE POSSIBLY THE CAUSE OF DEGRADATION.

BECAUSE OF A FISH CONSUMPTION ADVISORY, LUZON BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

LUZON BRANCH FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for MELVIN HAZEN VALLEY BRANCH

ID: DCTMH01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**MELVIN HAZEN VALLEY BRANCH**	
	Location: THE STREAM FLOWS THROUGH A SMALL PARK AND ENTERS ROCK CREEK AT JOYCE ROAD.	**Water Type:** RIVER **Size:** 1 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Alteration in stream-side or littoral vegetative covers	Protection and Propagation of Fish, Shellfish and Wildlife	No	
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

MELVIN HAZEN'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 36.84%, 5.00% AND 10.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT

RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.00% AND 10.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 5.00%, 0.00% AND 10.00% OF THE TIME, RESPECTIVELY.

DURING THE 2012 DCSS INVASIVES HAD BEEN REMOVED ON BOTH BANKS, THERE WERE DOWNED TREES ON THE LEFT BANK AND MODERATE BAR FORMATIONS.

DURING THE 2014 STREAM ASSESSMENT THE RIPARIAN BUFFER ZONE HAS BEEN REMOVED JUST BELOW THE ZERO METER PORTION OF THE STREAM SEGMENT EXTENDING JUST BEYOND THE 25 METER MARK ON THE RIGHT BANK. LARGE AMOUNTS OF WOODY DEBRIS WERE OBSERVED IN AND AROUND THE STREAM WITH MORE LARGE DOWNED TREES BEYOND THE 75 METER MARK.

IN 2010, 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE STREAM'S 2002 HBI SCORE SUGGESTS A SIGNIFICANT ORGANIC POLLUTION. HYDROPSYCHIDAE IS THE DOMINANT TAXA AND THE HABITAT IS SEVERELY IMPAIRED. 47 ORGANISMS WERE FOUND IN THE ENTIRE SAMPLE. HABITAT AND ORGANICS ARE POSSIBLY THE CAUSES OF DEGRADATION TO THE STREAM.

BECAUSE OF A FISH CONSUMPTION ADVISORY, MELVIN HAZEN DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

MELVIN HAZEN FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for NASH RUN

ID: DCTNA01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**NASH RUN**	
	Location: NASH RUN IS A TRIBUTARY OF THE ANACOSTIA RIVER WHOSE MOUTH IS A BRAIDED WETLAND THAT EMPTIES INTO THE KENILWORTH MARSH. NASH RUN ORIGINATES FROM A STORMDRAIN AT NASH ROAD AND SHERIFF AVENUES IN DEANWOOD PARK IN MARYLAND	**Water Type:** RIVER **Size:** 0.1 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dissolved oxygen saturation	Protection and Propagation of Fish, Shellfish and Wildlife	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Channelization	Other flow regime alterations	
Impacts from Hydrostructure Flow Regulation/modification	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

NASH RUN'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 75.00%, 0.00% AND 15.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 15.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE SUPPORT IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 10.00% AND 15.00% OF THE TIME, RESPECTIVELY.

DURING THE 2011 DCSS MACROPHYTES WERE PRESENT. THE STREAM SMELLED OF SULFUR. THE STREAM WAS SAMPLEABLE UP TO THE 56 METER MARK, DUE TO HIGH TRASH VOLUME AND DOWNED TREES. DURING THE 2013 DCSS THERE WAS AN OIL SHEEN ON THE WATER'S SURFACE, MODERATE EROSION ON BOTH BANKS, RIP-WRAP ON BOTH BANKS AND A HIGH TRASH VOLUME. DURING THE 2015 DCSS OIL SHEEN WAS OBSERVED ON THE WATER'S SURFACE, WITH IRON FLOCCULENT OBSERVED IN STAGNANT POOLS. EXTREME EROSION ON BOTH BANKS WITH SOME RIP-WRAP ON BOTH BANKS OBSERVED. HIGH TRASH VOLUME AND HUMAN REFUSE PRESENT IN AND AROUND STREAM CONSISTENT WITH DUMPING. DENSE BROWN MACROPHYTES AND ALGAL GROWTH PRESENT ON ROCKS IN STREAM BED. SEWAGE ODOR PRESENT WITH GRAY WATER OBSERVED IN STREAM REACH. EXTENSIVE SAND AND SILT BAR FORMATION OBSERVED THROUGHOUT STREAM REACH. LARGE DOWNED TREES LITER STREAM, CREATING DEEP AND STAGNANT POOLS. STREAM FLOW HIGHER THAN OTHER SAMPLING YEARS WITH NO RECENT RAIN FALL. BUFFER BREAK ON RIGHT BANK AT 30 METER MARK OBSERVED.

IN 2011, 2013 AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. NO SENSITIVE ORGANISMS PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, NASH RUN DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for NORMANSTONE CREEK

ID: DCTNS01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A, 5)

Water Information:	**NORMANSTONE CREEK**	
	Location: NORMANSTONE CREEK FLOWS THROUGH A SMALL RESIDENTIAL PARK AND ENTERS ROCK CREEK FROM THE WEST ABOUT 1000 FEET ABOVE THE MASSACHUSETTS AVENUE BRIDGE BELOW THE ZOO. THE STREAM ORIGINATES AS A STORMDRAIN NEAR GARFIELD AVENUE AND 3RD STREET, NW	**Water Type:** RIVER **Size:** 0.8 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation
	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Escherichia coli	Primary Contact Recreation	Yes	
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Hydrostructure Impacts on Fish Passage	Other flow regime alterations	
Impacts from Hydrostructure Flow Regulation/modification	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

NORMANSTONE'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 57.89%, 5.26% AND 10.52% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE

GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.26% AND 10.52% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.0%, 5.26%, 5.26% AND 10.52% OF THE TIME, RESPECTIVELY.

DURING THE 2011, 2013 AND 2015 DCSS THERE WERE BROKEN PIPES THAT TRANSECT THE STREAM WITH SEWAGE ODOR PRESENT. THERE WERE THREE LARGE DOWNED TREES IN THE 75 METER STRETCH. STREAM BED LITERED WITH CONCRETE AND ASPHALT. SEVERE EROSION PRESENT ON THE LEFT AND RIGHT BANK OF THE STREAM WITH HIGH EROSIONAL SCARING PRESENT ON THE LEFT BANK. THERE WERE BUFFER BREAKS ON THE LEFT AND RIGHT BANK OF STREAM FROM STORM DRAINS. EXPOSED SEWER LINE AT THE 75 METER MARK. DISCHARGE OBSERVED COMING FROM PIPE ON RIGHT BANK AT THE 55 METER MARK, AND FROM PIPES ON THE LEFT BANK AT THE 65 AND JUST BELOW THE 15 METER MARK .

IN 2011, 2013 AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLESE COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. HYDROPSYCHIDAE WERE ALSO PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, NORMANSTONE DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NORMANSTONE FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA

PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for OXON RUN

ID: DCTOR01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**OXON RUN**	
	Location: THIS STREAM ORIGINATES IN PRINCE GEORGES COUNTY, MARYLAND AND FLOWS INTO THE DISTRICT BEFORE IT DIPS BACK INTO MARYLAND JUST BEFORE IT ENTERS OXON COVE	**Water Type:** RIVER **Size:** 3.2 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

OXON RUN'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 38.10%, 0.00% AND 5.26% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 5.26%

OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 5.26% OF THE TIME, RESPECTIVELY.

DURING THE 2012 DCSS RIP-WRAP HAD BEEN USED TO STABILIZE THE LEFTBANK, THERE WAS A BUFFER BREAK ON THE LEFT BANK OBSERVED. THE 2014 STREAM ASSESSMENT SHOWED ALGAL GROWTH PRESENT THROUHOUT THE STREAM WITH LOW FLOW OBSERVED. HIGH SEDIMENT LOADS OBSERVED AT THE 0 METER PORTION OF THE STREAM. LARGE AMOUNTS OF TRASH WAS OBSERVED AT THE 75 METER MARK. LITTLE TO NO CANOPY COVER WAS OBSERVED AT MORE THAN HALF OF THE STREAM REACH.

IN 2010, 2012 AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2002 HBI SCORE SUGGESTS FAIRLY SIGNIFICANT ORGANIC POLLUTION. A HIGH PERCENTAGE OF EPT, SUGGEST THE STREAMS HAS SOME SENSITIVE ORGANISMS. THE DOMINANT TAXA WAS COENAGRINIDAE. 42 ORGANISMS WERE FOUND IN THE SAMPLE.

BECAUSE OF A FISH CONSUMPTION ADVISORY, OXON RUN DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for POPES BRANCH (HAWES RUN)

ID: DCTPB01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**POPES BRANCH (HAWES RUN)**	
	Location: POPE'S BRANCH, THE LOWER REACHES OF WHICH WERE ONCE CALLED HAWES RUN, DISCHARGES INTO THE ANACOSTIA RIVER BY WAY OF A STORMWATER PIPE ABOVE THE EASTERN FOOTING OF THE PENNSYLVANIA AVENUE SOUSA BRIDGE	**Water Type:** RIVER **Size:** 1.1 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

POPE BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 40.00%, 0.00% AND 10.53% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION

1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 10.53% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 10.53% OF THE TIME, RESPECTIVELY.

THE 2003 HBI SCORE SUGGESTS SOME ORGANIC POLLUTION. NO SENSITIVE ORGANISMS WERE FOUND (EPT). A HIGH PERCENTAGE OF GATHERER-COLLECTOR ORGANISMS SUGGEST POLLUTANTS; BECAUSE THEY ARE GENERALIST AND CAN THRIVE IN POLLUTED WATER. ALL 75 METERS OF THE HABITAT WERE MODERATELY IMPAIRED. THE DOMINANT TAXA WAS OLIGOCHAETA (WHICH SUGGEST SEWAGE LOVING ORGANISIMS). 39 ORGANISMS FOUND IN THE ENTIRE SAMPLE. HABITAT AND TOXICS ARE THE POSSIBLE CAUSES FOR DEGRADATION.

IN 2011 OBSERVATIONS OF THIS STREAM REVEALED SEVERE EMBEDDEDNESS AND UNUSUALLY DEEP POOLS. DURING THE 2013 DCSS SEDIMENT IN THE STREAMBED, LOW FLOW, SAND DEPOSITS, HIGH VOLUME OF TRASH WERE OBSERVED. DEEP POOLS OBSERVED IN 2011 ARE BEING FILLED WITH SEDIMENT. DURING THE 2015 DCSS LARGE AMOUNTS OF SAND AND SILT BAR FORMATIONS WERE PRESENT IN THE STREAMBED. LOW FLOW WITH HIGH VOLUMES OF TRASH AND HUMAN REFUSE WERE OBSERVED. FLOOD PLAIN ADJACENT TO LEFT BANK MOWED. FLOOD PLAIN MOWED AT 35 METER MARK UP TO STREAM SIDE. BUFFER BREAK OBSERVED AT THE 35 METER MARK ON LEFT BANK.

IN 2011, 2013, AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. NO SENSITIVE SPECIES WERE PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, POPE BRANCH DID NOT

SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for PINEHURST BRANCH

ID: DCTPI01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**PINEHURST BRANCH**	
	Location: PINEHURST BRANCH IS A TRIBUTARY OF ROCK CREEK WHOSE MOUTH IS ABOUT 1,200 FEET NORTH OF THE INTERSECTION OF BINGHAM DRIVE AND BEACH DRIVE NW	**Water Type:** RIVER **Size:** 1.5 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

PINEHURST BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 30.00%, 5.00% AND 0.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT

ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.00% AND 0.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 5.00%, 0.00% AND 0.00% OF THE TIME, RESPECTIVELY.

DURING THE 2011 DCSS THE LEFT BANK WAS GOUGED OUT AT THE ZERO METER, THE RIGHT BANK WAS SEVERLY ERODED AND MACROPHYTES WERE PRESENT. DURING THE 2013 DCSS DOWNED TREES, BROWN MACROPHYTES AND LOW FLOW WAS OBSERVED. DURING THE 2015 DCSS DOWNED TREES WHERE OBSERVED AROUND STREAM CHANEL. BROWN MACROPHYTES AND LOW FLOW WAS OBSERVED. HIGH EROSIONAL SCARING OBSERVED ON THE RIGHT BANK. SCOURING OF THE LEFT BANK WAS OBSERVED AT THE ZERO METER MARK. SPECIES DIVERSITY LOWER THAN PREVIOUS YEARS. HEAVY SEDIMENT LOAD CONSISTING OF SAND AND SILT PRESENT BELOW THE 0 METER MARK.

IN 2011, 2013, AND 2015 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. BAETIDAE WERE PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, PINEHURST DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

PINEHURST BRANCH FULLY SUPPORTED ITS NAVIGATION USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for PORTAL BRANCH

ID: DCTPO01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**PORTAL BRANCH**	
	Location: PORTAL BRANCH FLOWS FROM MARYLAND INTO THE NORTHERN CORNER OF THE DISTRICT TO FENWICK BRANCH IN THE DISTRICT BEFORE JOINING ROCK CREEK	**Water Type:** RIVER **Size:** 0.5 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

PORTAL BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 50.00%, 0.00% AND 5.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT

RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 5.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 0.00% AND 5.00% OF THE TIME, RESPECTIVELY.

DURING THE 2012 DCSS RECENT LEFT BANK STABILIZATION WAS EVIDENT. THE RIPARIAN AREA ON BOTH BANKS WAS REDUCED. THERE WAS ALGAE, FINE SEDIMENT, REDDISH GREY CLAY PRESENT DUE TO SEVERE BANK EROSION. THE 2014 STREAM ASSESSMENT REVEALED SEVERE BANK EROSION ON BOTH THE RIGHT AND LEFT BANK OF THE STREAM. ROADWORK WAS OBSERVED BEING CONDUCTED UPSTREAM OF THE DCSS SAMPLING LOCATION. EXTENSIVE BAR FORMATIONS CONSISTING OF HEAVY SAND, CLAY, AND SILT PRESENT THROUGHOUT THE ENTIRE STREAM BED. EXPOSED ROOTWADS WITH LOTS OF DOWNED TREES OBSERVED IN AND AROUND STREAM. LARGE AMOUNTS OF TRASH AND HUMAN REFUSE OBSERVED. CONSISTENT HIGH CONDUCTIVITY READINGS DURING BOTH SPRING AND SUMMER SAMPLING PERIODS.

IN 2010, 2012, AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2002 HBI SCORE SUGGESTS SIGNIFICANT ORGANIC POLLUTION. THE DOMINANT TAXA IDENTIFIED WAS GASTROPODA, WHICH IS VERY TOLERANT TO TOXIC WATER QUALITY. HABITAT IN THE STREAM WAS SEVERELY IMPAIRED. ONLY 21 ORGANISMS WERE FOUND IN THE ENTIRE SAMPLE. SIX STORM DRAINS THAT DISCHARGE IN DC AFFECT PORTAL BRANCH. ORGANICS AND HABITAT ARE POSSIBLY THE CAUSE OF DEGRADATION TO THE STREAM.

BECAUSE OF A FISH CONSUMPTION ADVISORY, PORTAL BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL

AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

PORTAL BRACH FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for PINEY BRANCH

ID: DCTPY01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**PINEY BRANCH**	
	Location: THIS MINOR STREAM WHICH ENTERS ROCK CREEK FROM THE EAST ABOVE THE NATIONAL ZOO	**Water Type:** RIVER **Size:** 1 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

PINEY BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 40.00%, 5.00% AND 0.00% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT

ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.00% AND 0.00% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2012. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 5.00%, 0.00% AND 0.00% OF THE TIME, RESPECTIVELY.

DURING THE 2014 MACROINVERTEBRATE ASSESSMENT IT WAS OBSEREVED THAT THERE WERE DARK GREEN BIOFILM COVERING THE MAJORITY OF ROCKS IN STREAM BED. LARGE AMOUNTS OF BROWN AND GREEN ALGAE OBSERVED. ORDOR CONSISTENT WITH RAW SEWAGE WAS PRESENT. DURING HABITAT ASSESSMENT IT WAS OBSERVED THAT THE BOTTOM OF STREAM AT 15 METER MARK TO THE 75 METER MARK WAS NOT VISIBLE DUE TO ALGAL BLOOM. THERE WAS A HIGH VOLUME OF TRASH PRESENT IN AND AROUND STREAM. POOLS OF STAGNANT WATER WITH IRON FLOCCULENT PRESENT WERE OBSERVED. LARGE AMOUNTS OF FISH SPECIES DIVERSITY AND QUANTITY WERE PRESENT. DURING THE 2012 DCSS, MACROPHYTES COVERED A MAJORITY OF THE STREAMBED, THERE WAS A BUFFER BREAK ON THE RIGHT BANK AND HIGH VOLUMES OF TRASH OBSERVED. THE SMELL OF SEWAGE WAS ALSO PRESENT.

IN 2010, 2012, AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

BECAUSE OF A FISH CONSUMPTION ADVISORY, PINEY BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

PINEY BRANCH FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for SOAPSTONE CREEK

ID: DCTSO01R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC-3,4A,5)

Water Information:	**SOAPSTONE CREEK**	
	Location: SOAPSTONE CREEK IS A TRIBUTARY OF BROAD BRANCH WHICH JOINS BROAD BRANCH JUST ABOVE ITS CONFLUENCE WITH ROCK CREEK NEAR DUMBARTON OAKS, NW	**Water Type:** RIVER **Size:** 0.8 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Fully Supporting	Navigation Secondary Contact Recreation and Aesthetic Enjoyment
	Not Supporting	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD
OTHER	Navigation	FAIR

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Copper	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Zinc	Protection of Human Health related to Consumption of Fish and Shellfish	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

SOAPSTONE CREEK'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 44.44%, 5.26% AND 5.26% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT

ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 5.26% AND 5.26% OF THE TIME, RESPECTIVELY

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2003 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 5.26%, 0.00% AND 5.26% OF THE TIME, RESPECTIVELY.

DURING THE 2012 DCSS A BUFFER BREAK ON THE LEFT BANK WAS PRESENT. THERE WAS ALSO ALGAE ON THE ROCKS AND A SANDY SUBSTRATE OBSERVED THROUGHOUT STREAMBED. DURING THE 2014 DCSS, RAW SEWAGE ODOR WAS PRESENT WITH STRONGEST ODOR PERSISTING FROM UPRIGHT SEWAGE PIPE ON LEFT BANK. LARGE BAR FORMATIONS CONSISTING MOSTLY OF SANDY SUBSTRATE DOMINATE STREAM BED. ALGAE OBSERVED ON ROCKY SUBSTRATES IN STREAM BED. SPECIFIC CONDUCTIVITY READINGS CONSISTENTLY HIGH DURING SPRING AND SUMMER ASSESSMENTS. LARGE NEWLY DOWNED TREE OBSERVED DURING SUMMER ASSESSMENT LYING ACROSS STREAM JUST ABOVE THE 25 METER MARK.

IN 2010, 2012, AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2003 HABITAT SCORE SUGGEST A FAIRLY SIGNIFICANT ORGANIC POLLUTION PROBLEM IN THE STREAM. THE DOMINANT TAXA FOUND WAS CHIRONOMIDAE (TOLERANT GENERALIST). THE STREAM'S HABITAT WAS MODERATELY IMPAIRED. 27 ORGANISMS WERE FOUND IN ENTIRE SAMPLE. THE STREAM POSSIBLY SUFFERS FROM ORGANIC AND TOXIC POLLUTION.

BECAUSE OF A FISH CONSUMPTION ADVISORY, SOAPSTONE CREEK DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

SOAPSTONE CREEK FULLY SUPPORTED ITS NAVIGATION USE.

Detail Report for TEXAS AVENUE TRIBUTARY

ID: DCTTX27R_00 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 4A)

Water Information:	**TEXAS AVENUE TRIBUTARY**	
	Location: TEXAS AVENUE IS AN ANACOSTIA RIVER TRIBUTARY OF A NOW ALMOST COMPLETELY SUBTERRANEAN STREAM. THE SURFACE PORTION OF THE STREAM ORIGINATES FROM A STORM DRAIN SOUTH OF THE INTERSECTION OF PENNSYLVANIA AVENUE AND BRANCH AVENUE, SE	**Water Type:** RIVER **Size:** 0.2 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Arsenic	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Particle distribution (Embeddedness)	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Illegal Dumps or Other Inappropriate Waste Disposal	Other flow regime alterations	
Impacts from Hydrostructure Flow Regulation/modification	Other flow regime alterations	
Loss of Riparian Habitat	Other flow regime alterations	
Residential Districts	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF

303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

TEXAS AVENUE TRIBUTARY'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 42.11%, 0.00% AND 36.84% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00% AND 36.84% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2002 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 0.00%, 5.26% AND 36.84% OF THE TIME, RESPECTIVELY.

DURING THE 2012 DCSS OBSERVATIONS INCLUDED DOWNED TREES, SEVERE EROSION ON BOTH BANKS, EXTENSIVE BAR FORMATIONS AND A LEFT BANK BUFFER BREAK. DURING THE 2014 DCSS OBSERVATIONS INCLUDED IRON FLOCCULANTS COATING STREAM BED WITH OXIDIZED SEDIMENT PRESENT. EXTREME EMBEDDEDNESS PRESENT IN 75 METER STRETCH WITH LITTLE TO ROCKY SUBSTRATE OBSERVED IN STREAM BED. ALSO, SULFUROUS ODOR PRESENT WHEN SEDIMENT WAS DISTURBED. LARGE AMOUNTS OF TRASH PRESENT IN AND AROUND THE STREAM. STREAM APPEARS TO BE A REGULAR DUMPING SITE FOR TRASH.

IN 2010, 2012, AND 2014 MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2002 STREAM'S HBI SCORE SUGGESTS SOME ORGANIC POLLUTION. A HIGH PERCENTAGLE OF GATHERER-COLLECTOR ORGANISMS SUGGESTS TOXIC AND ORGANIC POLLUTANTS, BECAUSE THEY ARE GENERALIST AND CAN THRIVE IN POLLUTED WATERS. NO SENSITIVE ORGANISMS WERE FOUND (EPT). THE DOMINANT TAXA SEEN WAS OLIGOCHAETA, (SEWAGE LOVING ORGANISMS). THE STREAM'S HABITAT WAS SEVERELY IMPAIRED. 11 ORGANISMS WERE FOUND IN THE SAMPLE COLLECTED. THIS STREAM WILL HAVE TO BE EVALUATED FOR WAYS TO PREVENT FURTHER BANK EROSION.

BECAUSE OF A FISH CONSUMPTION ADVISORY, TEXAS AVENUE TRIBUTARY DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

Detail Report for WATTS BRANCH DC

ID: DCTWB00R_01 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**WATTS BRANCH DC**	
	Location: ANACOSTIA RIVER TRIBUTARY, RUNS THROUGH KENILWORTH PARK WHICH IS A COVERED LANDFILL. SEGMENT 01 (TWB01) IS TOTALLY AFFECTED FROM ITS MOUTH TO 25 YARDS ABOVE THE FIRST LOWER BRIDGE IN THE PARK	**Water Type:** RIVER **Size:** 0.3 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Channelization	Other flow regime alterations	
Illegal Dumps or Other Inappropriate Waste Disposal	Other flow regime alterations	
Residential Districts	Other flow regime alterations	
Site Clearance (Land Development or Redevelopment)	Other flow regime alterations	
Wet Weather Discharges (Non-Point Source)	Other flow regime alterations	
Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	Other flow regime alterations	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d)

CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF 303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

LOWER WATTS BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 41.82%, 8.33% AND 13.56% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 8.33% AND 13.56% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.00%, 8.33%, 1.69% AND 13.56% OF THE TIME, RESPECTIVELY.

DURING THE 2013 DCSS LOW FLOW, IRON FLOCCULLANT RIGHT BANK EROSION AND HIGH VOLUMES OF TRASH WERE OBSERVED. THE STREAM IS STRAIGHT AND CHANNELIZED. THE LEFT BANK IS MOSTLY CONCRETE AND 35 METERS OF THE RIGHT BANK ARE CONCRETE. DURING THE 2014 BENTHIC MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENT, LARGE AMOUNTS OF TRASH AND HUMAN REFUSE WERE OBSERVED. ENTIRE STREAM WAS SHALLOW CONSISTING OF LOW FLOW THROUGHOUT. THE ENTIRE LEFT BANK IS AMORED WITH CONCRETE IN THE UPPER FLOOD PLAIN WITH 35 METERS OF CONCRETE ON THE RIGHT BANK. LARGE AMOUNTS OF FIN-FISH SPECIES DIVERSITY AND ABUNDANCE WERE PRESENT DURING THE SUMMER ASSESSMENT. DURING THE 2015 BENTHIC MACROINVERTEBRATE AND PHYSICAL HABITAT ASSESSMENT, LOW FLOW

WITH LITTLE TO NO RIFFLES WERE OBSERVED WITH IRON FLOCCULLANT PRESENT IN STANDING POOLS. RIGHT BANK EROSION AND HIGH VOLUMES OF TRASH WERE OBSERVED. THE STREAM IS STRAIGHT AND CHANNELIZED. THE LEFT BANK IS CONCRETE ON THE UPPER FLOOD PLAIN THE ENTIRE 75 METERS. LARGE AMOUNTS OF FIN-FISH SPECIES DIVERSITY AND ABUNDANCE WERE PRESENT DURING THE SUMMER ASSESSMENT. LARGE AND SMALL MOUTH BASS PRESENT, OBSERVED DURING SUMMER ASSESSMENT. BUFFER BREAK OBSERVED ON THE LEFT BANK AT THE 72 METER MARK.

IN 2010 TO 2015, MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2003 HBI SCORE SUGGESTS NO APPARENT ORGANIC POLLUTION. CHIRONOMIDAE (GENERALIST THAT CAN THRIVE IN POLLUTED WATERS) AND OLIGOCHAETA (SEWAGE LOVING ORGANISMS) ARE THE ONLY TWO TAXA FOUND. ONLY 5 ORGANISMS WERE FOUND IN THE SAMPLE COLLECTED AND THEY INCLUDED NO SENSITIVE ORGANISMS (EPT).

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA, WITH HIGH DIVERSITY. NO SENSITIVE ORGANISMS PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, LOWER WATTS BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

Detail Report for WATTS BRANCH DC

ID: DCTWB00R_02 **State:** DC - 2016 **Single Cat.(User Cat.):** 5(DC - 3,4A)

Water Information:	**WATTS BRANCH DC**	
	Location: PRINCE GEORGE'S COUNTY MARYLAND LINE TO KENILWORTH PARK (TWB05 AND TWB06). IT FLOWS THROUGH A DENSELY-POPULATED RESIDENTIAL AREA WITH A SMALL NUMBER OF COMMERCIAL BUILDINGS. WATTS BRANCH (MD & DC) DRAINS 2583 ACRES	**Water Type:** RIVER **Size:** 3.7 MILES **Next Scheduled Monitoring Date:** N/A

Use Information

	Attainment Status	Uses
Assessed:	Not Supporting	Primary Contact Recreation Secondary Contact Recreation and Aesthetic Enjoyment Protection and Propagation of Fish, Shellfish and Wildlife Protection of Human Health related to Consumption of Fish and Shellfish

Types of Assessment

Assessment Type	Uses	Assessment Confidence
PHYSICAL/CHEMICAL	Protection and Propagation of Fish, Shellfish and Wildlife	GOOD
	Protection of Human Health related to Consumption of Fish and Shellfish	GOOD
	Secondary Contact Recreation and Aesthetic Enjoyment	GOOD
PATHOGEN INDICATORS	Primary Contact Recreation	GOOD

Cause Information

Causes	Associated Uses	Pollutant?	Confidence
Chlordane	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDD	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDE	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
DDT	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	
Dieldrin	Protection of Human Health related to Consumption of Fish and Shellfish	Yes	

Escherichia coli	Primary Contact Recreation	Yes
Heptachlor epoxide	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Other flow regime alterations	Protection and Propagation of Fish, Shellfish and Wildlife	No
Polychlorinated biphenyls	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)	Protection of Human Health related to Consumption of Fish and Shellfish	Yes
Total Suspended Solids (TSS)	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes
Turbidity	Primary Contact Recreation Protection and Propagation of Fish, Shellfish and Wildlife Secondary Contact Recreation and Aesthetic Enjoyment	Yes

Observed Effects

Observation	Associated Uses
Benthic-Macroinvertebrate Bioassessments	Protection and Propagation of Fish, Shellfish and Wildlife

Source Information

Sources	Associated Causes	Confirmed?
Illegal Dumps or Other Inappropriate Waste Disposal	Other flow regime alterations Total Suspended Solids (TSS)	
Residential Districts	Other flow regime alterations Total Suspended Solids (TSS)	
Site Clearance (Land Development or Redevelopment)	Other flow regime alterations Total Suspended Solids (TSS)	
Wet Weather Discharges (Non-Point Source)	Other flow regime alterations Total Suspended Solids (TSS)	
Wet Weather Discharges (Point Source and Combination of Stormwater, SSO or CSO)	Other flow regime alterations Total Suspended Solids (TSS)	

Comments On:

Overall Assessment

**(USER CAT.) IN THE SUB-HEADER REFLECTS THE DISTRICT'S 2016 303(d) CATEGORY LISTINGS FOR THIS WATERBODY. FOR THE COMPLETE LIST OF

303(d) CATEGORIES AND CONTAMINANTS OF CONCERN FOR THIS WATERBODY SEGMENT SEE APPENDIX 3.10: 2016 303(d) LIST, FOUND IN THE 2016 DISTRICT OF COLUMBIA INTEGRATED REPORT.

UPPER WATTS BRANCH'S EVALUATIONS OF USE SUPPORT DECISIONS ARE BASED ON A FIVE YEAR STATISTICAL EVALUATION (2011-2015) OF AMBIENT WATER QUALITY DATA COLLECTED BY THE MAB.

THE PRIMARY CONTACT (SWIMMABLE) USE IS NOT SUPPORTED. E. COLI, PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 58.16%, 10.00% AND 14.41% OF THE TIME, RESPECTIVELY. PLEASE NOTE THE DISTRICT OF COLUMBIA WATER QUALITY STANDARDS PROHIBIT SWIMMING IN THE POTOMAC AND ANACOSTIA RIVERS AND ROCK CREEK UNTIL ALL THE PARAMETERS USED TO DETERMINE USE SUPPORT ARE BEING CONSISTENTLY ATTAINED (DCMR TITLE 21, CHAPTER 11, SECTION 1108). THE PARAMETERS USED TO SUPPORT THE PRIMARY CONTACT RECREATION DESIGNATED USE CAN BE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1104.8. THE DIRECTOR MAY ISSUE A DECISION THAT ALLOWS A SPECIAL SWIMMING EVENT IN THE POTOMAC RIVER. THE GUIDELINES FOR A SPECIAL SWIMMING EVENT ARE FOUND IN DCMR TITLE 21, CHAPTER 11, SECTION 1108.

THE SECONDARY CONTACT RECREATION USE IS NOT SUPPORTED. PH AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 10.00% AND 14.41% OF THE TIME, RESPECTIVELY.

THE AQUATIC LIFE USE IS NOT SUPPORTED. THE DECISION IS BASED ON THE DC STREAM SURVEY CONDUCTED IN 2010 AND CONVENTIONAL POLLUNTANT DATA. TEMPERATURE, PH, DISSOLVED OXYGEN AND TURBIDITY VIOLATED THE WATER QUALITY STANDARDS 0.0%, 10.00%, 0.85% AND 14.41% OF THE TIME, RESPECTIVELY.

DURING THE 2013, 2014 AND 2015 DCSS THE STREAM HAD A GREY COLORED CLAY BOTTOM AND FEW MATURE TRESS ON THE RIGHT BANK WAS OBSERVED SINCE THE STREAM RESTORATION PROJECT IN 2011 THROUGHOUT THE 75 METER REACH. SAV OBSERVED IN STREAMBED. DURING THE 2014 DCSS A BUFFER BREAK WAS OBSERVED ON THE LEFT BANK AT THE 0 METER MARK. FEW MATURE TREES ON THE RIGHT BANK WERE OBSERVED. THERE WERE NEW EVERGREENS AND ROOTMATS ON BOTH BANKS OBSERVED. PLANTED FLOOD PLAIN VEGETATION WITHIN RIGHT RIPARIAN ZONE STARTING TO TAKE ROOT. DURING THE 2015 PLANTED RIPARIAN VEGETATION IN FLOOD PLAIN ON LEFT BANK HAS FULLY TAKEN HOLD. NEW CONSTRUCTION OBSERVED OCCURING 300 METERS AWAY FROM RIGHT BANK.

IN 2010 TO 2015, MACROINVERTEBRATE SAMPLES WERE COLLECTED AND WILL BE ANALYZED AT A LATER DATE.

THE 2010 MACROINVERTEBRATE ASSESSMENT (SAMPLES COLLECTED IN 2009) REVEALED CHIRONOMIDAE AS THE DOMINANT TAXA. NO SENSITIVE ORGANISMS PRESENT.

BECAUSE OF A FISH CONSUMPTION ADVISORY, UPPER WATTS BRANCH DID NOT SUPPORT ITS FISH CONSUMPTION USE. DETERMINATION OF THE FISH CONSUMPTION USE WAS BASED ON A PUBLIC HEALTH ADVISORY ISSUED ON FEBRUARY 10, 2016, BY THE DEPARTMENT OF ENERGY AND ENVIRONMENT. THE ADVISORY URGES NON-CONSUMPTION OF CARP, EEL AND STRIPED BASS. CONSUMPTION ADVICE ON THE LIMITED CONSUMPTION OF OTHER SPECIES OF FISH CAUGHT IN ALL DISTRICT OF COLUMBIA WATERS IS ALSO PROVIDED.

NAVIGATION IS NOT A DESIGNATED USE.

REPORTS WITH MORE INFORMATION INCLUDE:

*ANALYSIS OF BIOLOGICAL SAMPLES: DISTRICT OF COLUMBIA PHYTOPLANKTON, ZOOPLANKTON AND BENTHIC MACROINVERTEBRATE SAMPLES, RHITHRON ASSOCIATES, OCTOBER 2010.

2011-2015
Statistical Summary Report
For
Total Summary Report

Waterbody	Station Data Used	Temp % Violation	pH % Violation	DO % Violation	Turb % Violation	Class A E. coli % Violation
DCAKL00L	KNG01, KNG02	0.00	0.90	13.76	65.14	23.96
DCANA00E SEG1	ANA19, ANA21, ANA24	0.00	0.00	5.97	9.90	17.24
DCANA00E SEG2	ANA01, ANA05, ANA08, ANA11, ANA14	0.00	1.20	16.67	34.52	36.59
DCPMS00E SEG1	PMS37, PMS44	0.00	4.39	0.00	11.86	9.35
DCPMS00E SEG2	PMS10, PMS21	0.00	8.38	0.00	11.22	12.07
DCPMS00E SEG3	PMS01	0.00	10.91	0.00	14.55	11.54
DCPTB01L	PTB01	0.00	25.42	0.00	1.69	7.84
DCPWC04E	PWC04	0.00	11.86	0.00	3.33	12.96
DCRCR00R SEG1	RCR09	0.00	1.72	0.00	18.97	50.00
DCRCR00R SEG2	RCR01	0.00	3.45	0.00	15.51	70.85
DCTBK01R	TBK01	0.00	0.00	0.00	5.56	27.78
DCTBR01R	TBR01	0.00	0.00	0.00	10.53	62.50
DCTCO01L	TCO01, TCO06	0.00	12.00	0.00	0.99	10.64
DCTDA01R	TDA01	0.00	0.00	0.00	15.79	61.11
DCTDO01R	TDO01	0.00	0.00	0.00	11.76	33.33
DCTDU01R	TDU01	0.00	0.00	10.00	20.00	33.33
DCTFB02R	TFB02	0.00	0.00	0.00	5.00	35.00
DCTFC01R	TFC01	0.00	0.00	15.00	15.00	55.56
DCTFD01R	TFD01	0.00	0.00	10.53	31.57	31.25

Waterbody	Station Data Used	Temp % Violation	pH % Violation	DO % Violation	Turb % Violation	Class A E. coli % Violation
DCTFE01R	TFE01	0.00	0.00	0.00	5.56	29.41
DCTFS01R	TFS01	0.00	0.00	0.00	26.32	31.58
DCTHR01R	THR01	0.00	0.00	15.79	15.52	77.17
DCTKV01R	TKV01	0.00	5.00	0.00	5.00	20.00
DCTLU01	TLU01	0.00	5.00	0.00	5.00	55.00
DCTMH01R	TMH01	0.00	5.00	0.00	10.00	36.84
DCTNA01R	TNA01	0.00	0.00	10.00	15.00	75.00
DCTNS01R	TNS01	0.00	5.26	5.26	10.52	57.89
DCTOR01R	TOR01	0.00	0.00	0.00	5.26	38.10
DCTPB01R	TPB01	0.00	0.00	0.00	10.53	40.00
DCTPI01R	TPI01	0.00	5.00	0.00	0.00	30.00
DCTPO01R	TPO01	0.00	0.00	0.00	5.00	50.00
DCTPY01R	TPY01	0.00	5.00	0.00	0.00	40.00
DCTSO01R	TSO01	0.00	5.26	0.00	5.26	44.44
DCTTX27R	TTX27	0.00	0.00	5.26	36.84	42.11
DCTWB00R SEG1	TWB01	0.00	8.33	1.69	13.56	40.74
DCTWB00R SEG2	TWB05, TWB06	0.00	10.00	0.85	14.41	57.55

2011-2015
Statistical Summary Report
For
Dissolved Oxygen (mg/L)

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCAKL00L	KNG01, KNG02	2.25	12.51	6.61	2.85	6.13	13.76
DCANA00E SEG1	ANA19, ANA21, ANA24	1.63	15.60	7.73	2.82	7.38	5.97
DCANA00E SEG2	ANA01, ANA05, ANA08, ANA11, ANA14	0.88	13.80	6.67	3.08	6.09	16.67
DCPMS00E SEG1	PMS37, PMS44	5.24	14.34	9.89	2.47	9.54	0.00
DCPMS00E SEG2	PMS10, PMS21	5.63	15.35	9.76	2.36	9.23	0.00
DCPMS00E SEG3	PMS01	6.60	15.01	10.34	2.36	10.02	0.00
DCPTB01L	PTB01	5.19	14.73	10.39	2.14	10.06	0.00
DCPWC04E	PWC04	5.81	15.95	10.14	2.35	10.53	0.00
DCRCR00R SEG1	RCR09	7.50	15.32	10.63	2.16	10.15	0.00
DCRCR00R SEG2	RCR01	5.84	13.98	9.72	2.21	9.27	0.00
DCTBK01R	TBK01	7.94	13.87	10.63	1.73	10.52	0.00
DCTBR01R	TBR01mi	6.03	15.62	10.49	2.69	10.33	0.00
DCTCO01L	TCO01, TCO06	5.02	16.25	10.02	2.20	9.85	0.00
DCTDA01R	TDA01	7.15	13.19	9.81	2.08	9.43	0.00
DCTDO01R	TDO01	7.53	15.13	10.25	2.19	9.81	0.00
DCTDU01R	TDU01	1.79	12.81	8.40	3.30	9.41	10.00
DCTFB02R	TFB02	7.21	15.65	9.58	2.41	8.56	0.00
DCTFC01R	TFC01	2.19	11.94	8.56	2.86	8.84	15.00
DCTFD01R	TFD01	4.32	11.99	7.92	2.44	8.78	10.53
DCTFE01R	TFE01	6.19	13.42	9.93	2.07	9.48	0.00
DCTFS01R	TFS01	7.19	13.79	10.20	1.82	9.96	0.00
DCTHR01R	THR01	2.20	15.73	8.13	2.81	8.20	15.79

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCTKV01R	TKV01	6.95	14.62	10.36	2.16	9.91	0.00
DCTLU01R	TLU01	6.78	14.08	9.84	2.12	9.81	0.00
DCTMH01R	TMH01	7.55	15.30	10.82	2.26	10.55	0.00
DCTNA01R	TNA01	4.56	12.50	8.54	2.33	8.40	10.00
DCTNS01R	TNS01	3.88	14.20	9.79	2.69	9.43	5.26
DCTOR01R	TOR01	6.36	14.44	10.28	2.24	10.81	0.00
DCTPB01R	TPB01	6.65	12.41	9.10	1.74	8.89	0.00
DCTPI01R	TPI01	7.33	15.60	10.62	2.58	9.63	0.00
DCTPO01R	TPO01	5.43	14.60	9.17	2.53	8.25	0.00
DCTPY01R	TPY01	5.61	13.95	9.64	2.44	9.31	0.00
DCTSO01R	TSO01	6.88	15.45	10.56	2.50	9.85	0.00
DCTTX27R	TTX27	4.93	11.97	8.73	1.67	8.66	5.26
DCTWB00R SEG1	TWB01	4.63	17.86	10.15	3.14	10.13	1.69
DCTWB00R SEG2	TWB05, TWB06	3.64	14.05	9.93	2.24	10.00	0.85

2011-2015
Statistical Summary Report
For
E. coli (MPN/100mL)

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCAKL00L	KNG01, KNG02	31	24196	605.00	2466.08	205.00	23.96
DCANA00E SEG1	ANA19, ANA21, ANA24	8	2613	293.82	499.49	124.50	17.24
DCANA00E SEG2	ANA01, ANA05, ANA08, ANA11, ANA14	30	4530	541.55	725.48	225.00	36.59
DCPMS00E SEG1	PMS37, PMS44	1	5748	193.66	659.20	41.00	9.35
DCPMS00E SEG2	PMS10, PMS21	1	5794	176.58	573.01	37.48	12.07
DCPMS00E SEG3	PMS01	1	980	127.23	234.24	23.00	11.54
DCPTB01L	PTB01	1	1553	126.24	252.79	26.00	7.84
DCPWC04E	PWC04	1	1756	168.04	296.89	51.50	12.96
DCRCR00R SEG1	RCR09	32	4352	672.48	782.67	399.00	50.00
DCRCR00R SEG2	RCR01	3	98000	8809.82	15273.20	2000.00	70.85
DCTBK01R	TBK01	24	5172	524.61	1180.63	209.00	27.78
DCTBR01R	TBR01	28	2430	917.38	809.32	637.50	62.50
DCTCO01L	TCO01, TCO06	1	2420	170.52	361.40	58.48	10.64
DCTDA01R	TDA01	13	13000	2020.22	3541.27	587.50	61.11
DCTDO01R	TDO01	32	1414	398.11	439.22	164.00	33.33
DCTDU01R	TDU01	23	2420	635.89	787.77	347.50	33.33
DCTFB02R	TFB02	2	2420	564.95	782.70	126.00	35.00
DCTFC01R	TFC01	46	2420	883.72	912.45	548.00	55.56
DCTFD01R	TFD01	4	2098	567.13	695.64	295.00	31.25
DCTFE01R	TFE01	1	3609	629.88	960.98	199.00	29.41
DCTFS01R	TFS01	27	1986	429.58	541.24	248.00	31.58
DCTHR01R	THR01	20	410000	17104.90	60557.09	1457.00	77.17
DCTKV01R	TKV01	16	2420	436.00	693.50	189.50	20.00

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCTLU01	TLU01	37	2421	790.10	856.25	413.00	55.00
DCTMH01R	TMH01	16	2420	519.95	760.76	91.00	36.84
DCTNA01R	TNA01	32	2421	973.10	791.63	668.00	75.00
DCTNS01R	TNS01	150	3873	1177.84	1160.40	435.00	57.89
DCTOR01R	TOR01	49	2420	634.43	714.89	328.00	38.10
DCTPB01R	TPB01	38	2420	649.45	762.55	206.50	40.00
DCTPI01R	TPI01	15	4611	757.85	1247.41	132.00	30.00
DCTPO01R	TPO01	18	1986	661.10	650.22	470.00	50.00
DCTPY01R	TPY01	24	5938	856.60	1406.59	302.50	40.00
DCTSO01R	TSO01	84	3784	930.78	1057.00	342.50	44.44
DCTTX27R	TTX27	11	2420	528.53	606.41	345.00	42.11
DCTWB00R SEG1	TWB01	8	2421	592.70	726.60	265.50	40.74
DCTWB00R SEG2	TWB05, TWB06	1	41000	2439.20	5601.67	520.00	57.55

2011-2015
Statistical Summary Report
For
pH

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCAKL00L	KNG01, KNG02	6.97	8.54	7.58	0.37	7.52	0.90
DCANA00E SEG1	ANA19, ANA21, ANA24	6.63	8.35	7.51	0.36	7.45	0.00
DCANA00E SEG2	ANA01, ANA05, ANA08, ANA11, ANA14	6.64	8.66	7.41	0.38	7.39	1.20
DCPMS00E SEG1	PMS37, PMS44	6.76	8.68	7.90	0.36	7.92	4.39
DCPMS00E SEG2	PMS10, PMS21	6.84	9.02	8.07	0.35	8.10	8.38
DCPMS00E SEG3	PMS01	6.83	9.48	8.10	0.40	8.17	10.91
DCPTB01L	PTB01	7.08	9.02	8.24	0.40	8.28	25.42
DCPWC04E	PWC04	7.28	8.73	7.94	0.38	7.91	11.86
DCRCR00R SEG1	RCR09	7.26	8.74	7.92	0.31	7.89	1.72
DCRCR00R SEG2	RCR01	7.16	9.02	7.82	0.35	7.80	3.45
DCTBK01R	TBK01	7.35	8.32	7.86	0.22	7.88	0.00
DCTBR01R	TBR01	7.27	8.26	7.91	0.26	7.92	0.00
DCTCO01L	TCO01, TCO06	7.20	9.00	8.12	0.33	8.09	12.00
DCTDA01R	TDA01	7.23	8.30	7.72	0.28	7.67	0.00
DCTDO01R	TDO01	7.25	8.30	7.81	0.28	7.73	0.00
DCTDU01R	TDU01	6.70	8.31	7.60	0.46	7.59	0.00
DCTFB02R	TFB02	7.14	8.38	7.77	0.34	7.84	0.00
DCTFC01R	TFC01	6.84	8.40	7.62	0.38	7.56	0.00
DCTFD01R	TFD01	6.49	8.36	7.33	0.58	7.11	0.00
DCTFE01R	TFE01	7.34	8.33	7.79	0.32	7.80	0.00
DCTFS01R	TFS01	7.12	8.45	7.85	0.39	7.86	0.00
DCTHR01R	THR01	7.11	8.26	7.74	0.25	7.76	0.00

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCTKV01R	TKV01	7.12	8.72	7.77	0.35	7.76	5.00
DCTLU01	TLU01	7.10	8.62	7.72	0.33	7.73	5.00
DCTMH01R	TMH01	7.24	8.55	7.84	0.29	7.79	5.00
DCTNA01R	TNA01	7.35	8.33	7.78	0.30	7.74	0.00
DCTNS01R	TNS01	7.44	8.61	7.81	0.32	7.83	5.26
DCTOR01R	TOR01	7.32	8.44	7.87	0.32	7.80	0.00
DCTPB01R	TPB01	7.05	8.40	7.54	0.38	7.50	0.00
DCTPI01R	TPI01	7.48	8.54	7.90	0.27	7.84	5.00
DCTPO01R	TPO01	7.25	8.47	7.66	0.26	7.62	0.00
DCTPY01R	TPY01	7.13	8.58	7.72	0.34	7.70	5.00
DCTSO01R	TSO01	7.43	8.63	7.81	0.27	7.81	5.26
DCTTX27R	TTX27	7.12	7.95	7.53	0.29	7.52	0.00
DCTWB00R SEG1	TWB01	7.37	9.22	7.92	0.37	7.86	8.33
DCTWB00R SEG2	TWB05, TWB06	7.31	8.82	7.92	0.38	7.83	10.00

2011-2015
Statistical Summary Report
For
Temperature (°C)

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCAKL00L	KNG01, KNG02	0.55	28.99	15.98	8.68	16.55	0.00
DCANA00E SEG1	ANA19, ANA21, ANA24	0.52	30.75	17.67	8.89	18.74	0.00
DCANA00E SEG2	ANA01, ANA05, ANA08, ANA11, ANA14	0.22	30.90	17.39	8.50	17.98	0.00
DCPMS00E SEG1	PMS37, PMS44	0.08	29.73	15.78	9.27	16.57	0.00
DCPMS00E SEG2	PMS10, PMS21	0.06	32.00	17.73	9.04	18.90	0.00
DCPMS00E SEG3	PMS01	0.15	29.11	15.80	9.30	17.66	0.00
DCPTB01L	PTB01	0.30	29.61	15.69	9.23	16.44	0.00
DCPWC04E	PWC04	0.92	30.28	16.00	9.66	16.03	0.00
DCRCR00R SEG1	RCR09	0.98	25.54	13.43	7.57	13.23	0.00
DCRCR00R SEG2	RCR01	1.30	25.33	13.51	7.40	13.30	0.00
DCTBK01R	TBK01	2.29	22.54	12.74	6.75	11.35	0.00
DCTBR01R	TBR01	0.68	23.69	12.73	7.17	12.50	0.00
DCTCO01L	TCO01, TCO06	1.09	29.59	17.43	8.31	17.44	0.00
DCTDA01R	TDA01	4.14	22.75	13.27	6.19	12.43	0.00
DCTDO01R	TDO01	3.71	22.10	13.85	5.91	13.00	0.00
DCTDU01R	TDU01	2.16	23.23	12.83	7.07	11.64	0.00
DCTFB02R	TFB02	1.95	22.82	13.37	6.42	14.36	0.00
DCTFC01R	TFC01	2.19	22.83	12.83	6.62	11.67	0.00
DCTFD01R	TFD01	1.01	22.94	11.83	6.98	10.89	0.00
DCTFE01R	TFE01	2.42	24.52	13.68	7.25	12.31	0.00
DCTFS01R	TFS01	0.93	23.66	12.29	7.27	12.58	0.00
DCTHR01R	THR01	3.68	25.48	14.14	6.68	13.52	0.00

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCTKV01R	TKV01	0.96	22.71	12.03	6.96	11.55	0.00
DCTLU01	TLU01	4.43	22.89	13.76	5.79	12.87	0.00
DCTMH01R	TMH01	1.05	22.88	12.25	6.94	11.33	0.00
DCTNA01R	TNA01	4.60	24.61	13.99	6.55	14.25	0.00
DCTNS01R	TNS01	3.02	19.60	13.30	5.74	15.85	0.00
DCTOR01R	TOR01	1.54	24.37	13.69	7.44	15.40	0.00
DCTPB01R	TPB01	3.11	20.90	13.29	6.10	14.87	0.00
DCTPI01R	TPI01	1.18	20.17	13.04	6.23	15.69	0.00
DCTPO01R	TPO01	3.38	21.49	14.55	5.94	16.82	0.00
DCTPY01R	TPY01	2.51	21.41	13.98	6.47	16.69	0.00
DCTSO01R	TSO01	2.61	20.34	13.28	6.16	15.33	0.00
DCTTX27R	TTX27	3.97	20.20	13.67	5.22	14.82	0.00
DCTWB00R SEG1	TWB01	1.91	25.91	14.51	7.29	14.17	0.00
DCTWB00R SEG2	TWB05, TWB06	1.97	24.59	13.84	6.65	13.45	0.00

2011-2015
Statistical Summary Report
For
Turbidity (NTU)

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCAKL00L	KNG01, KNG02	9.20	253.10	28.83	25.90	23.06	65.14
DCANA00E SEG1	ANA19, ANA21, ANA24	0.00	77.70	13.02	12.97	9.37	9.90
DCANA00E SEG2	ANA01, ANA05, ANA08, ANA11, ANA14	2.30	233.00	25.01	24.39	17.72	34.52
DCPMS00E SEG1	PMS37, PMS44	0.00	78.20	11.03	12.81	7.47	11.86
DCPMS00E SEG2	PMS10, PMS21	0.00	116.40	9.33	14.53	4.75	11.22
DCPMS00E SEG3	PMS01	0.00	161.26	16.28	31.34	4.04	14.55
DCPTB01L	PTB01	0.00	27.30	6.72	4.43	6.10	1.69
DCPWC04E	PWC04	0.00	33.70	5.42	6.40	3.58	3.33
DCRCR00R SEG1	RCR09	0.00	175.90	14.31	29.10	2.70	18.97
DCRCR00R SEG2	RCR01	0.60	380.91	20.22	54.04	4.10	15.51
DCTBK01R	TBK01	0.00	28.50	3.43	7.07	0.70	5.56
DCTBR01R	TBR01	0.00	39.80	4.65	11.68	0.19	10.53
DCTCO01L	TCO01, TCO06	0.00	26.50	7.42	5.49	6.29	0.99
DCTDA01R	TDA01	0.00	26.60	4.49	9.12	0.30	15.79
DCTDO01R	TDO01	0.01	25.20	4.98	7.63	2.20	11.76
DCTDU01R	TDU01	1.90	90.70	18.52	26.77	7.25	20.00
DCTFB02R	TFB02	0.00	138.49	10.87	30.63	0.74	5.00
DCTFC01R	TFC01	2.50	33.10	9.77	9.20	6.33	15.00
DCTFD01R	TFD01	1.60	927.07	75.11	210.33	14.90	31.57
DCTFE01R	TFE01	0.00	24.80	3.33	7.47	0.00	5.56
DCTFS01R	TFS01	0.50	620.00	66.94	154.21	8.10	26.32
DCTHR01R	THR01	1.10	91.50	12.39	16.38	6.20	15.52

Waterbody	Station Data Used	Min. Value	Max Value	Avg. Value	Std. Dev.	Median Value	% Violation of WQ Std.
DCTKV01R	TKV01	0.00	367.91	18.62	82.22	0.00	5.00
DCTLU01R	TLU01	0.00	115.02	6.16	25.63	0.20	5.00
DCTMH01R	TMH01	0.00	400.83	22.88	89.29	0.04	10.00
DCTNA01R	TNA01	0.00	70.00	10.44	18.18	3.44	15.00
DCTNS01R	TNS01	0.00	25.27	3.80	7.53	0.40	10.52
DCTOR01R	TOR01	0.00	70.70	4.82	15.97	1.47	5.26
DCTPB01R	TPB01	0.00	53.10	7.15	12.75	2.13	10.53
DCTPI01R	TPI01	0.00	16.87	1.92	4.56	0.00	0.00
DCTPO01R	TPO01	0.00	48.70	4.52	10.96	1.35	5.00
DCTPY01R	TPY01	0.00	11.36	1.06	2.73	0.00	0.00
DCTSO01R	TSO01	0.00	27.03	2.93	6.47	0.30	5.26
DCTTX27R	TTX27	5.80	197.31	40.66	56.47	17.90	36.84
DCTWB00R SEG1	TWB01	0.00	240.00	13.05	32.71	4.90	13.56
DCTWB00R SEG2	TWB05, TWB06	0.00	442.90	18.04	54.14	3.51	14.41

From: MacKnight, Evelyn <MacKnight.Evelyn@epa.gov>
Sent: Thursday, February 25, 2016 1:24 PM
To: Burrell, Collin (DOEE); Searing, Mary (DOEE); Shulterbrandt, Nicoline (DOEE); Bradbury, Sarah (DOEE); Onyullo, George (DOEE)
Cc: Richardson, William; drago, helene; Peck, Michelle
Subject: Start discussions on DC's 2016 IR

Collin,
Thank for your public release of your draft 2016 Integrated Report. EPA has some questions that we would like to discuss with you and your staff ASAP.
Specifically we would like to discuss the follow issues:

1. Movement of 2014 Rock Creek Watershed E. coli category 5 listings to category 4a – do current TMDLs adequately address these impairments and was the public sufficiently notified?
2. Anacostia tribs TSS listings in 4a – are these waters adequately covered in Anacostia TSS TMDL
3. EPA 303(d) Vision: To provide adequate public notice of DOEE's 303(d) Vision Prioritization plans and process, information should have been included in the IR narrative including DDOE's TMDL development plans from now to 2022 and its list of priority waters.
4. Hickey Run priority ranking

In addition, EPA has yet to receive public engagement and prioritization 303(d) Vision write ups from DOEE which were FY15 106 grant commitments. EPA staff are available at the following times to discuss in greater detail:

Tuesday, March 1: 1pm
Wednesday, March 2: 3:30pm
Friday, March 4: 10am, 2pm, 3pm

Thanks.

Evelyn

Associate Director, Office of Standards, Assessment, and TMDLs (3WP30)
Water Protection Division
U.S. EPA Region III
Tel (215) 814-5717
Fax (215) 814-2318
macknight.evelyn@epa.gov

From: Jennifer Chavez <jchavez@earthjustice.org>
Sent: Friday, March 18, 2016 12:38 PM
To: Brown, Lucretia (DOEE)
Subject: Draft 2016 IR - Request for documentation

Dear Ms. Brown,

In connection with the public notice and comment period for the Draft 2016 Integrated Report on Water Quality, I write to request an electronic copy of the documentation for the water quality assessment referenced in the following paragraph from the Draft Integrated Report:

> "The District has adopted water quality standards for dissolved oxygen, water clarity and chlorophyll a in accordance with the Chesapeake Bay Water Quality Criteria Guidance Document published in 2003 (US EPA, 2003) for the Potomac Tidal Fresh and Anacostia Tidal Fresh (Chesapeake Bay Program waterbody name). DDOE WQD worked with the Chesapeake Bay Program to assess the tidal waters in the District using the 2003 guidance document and all the addendums published through 2009. For the 2016 listing year, these segments are in Category 4a because the Chesapeake Bay TMDL was established in December 2010."

Thank you in advance for your assistance.

Best wishes,

Jennifer C. Chavez
Staff Attorney
Earthjustice Washington, DC Office
1625 Massachusetts Av. NW, Suite 702
Washington, DC 20036
T: 202.667.4500
F: 202.667.2356
earthjustice.org

EARTHJUSTICE

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EARTHJUSTICE

March 21, 2016

Via e-mail to: 2016draftir.doee@dc.gov
Collin Burrell, Associate Director
DOEE Water Quality Division
1200 First Street, NE, 5th Floor
Washington, DC 20002

Re: Comments on the 2016 District of Columbia Draft Integrated Report

Dear Mr. Burrell:

The attached comments are submitted to the District Department of Energy and Environment (DOEE) on behalf of Anacostia Riverkeeper and Potomac Riverkeeper Network.

If you have any questions about these comments or would like to discuss, please do not hesitate to contact me at jchavez@earthjustice.org, or 202-667-4500.

Sincerely,

/s/ Jennifer C. Chavez

Staff Attorney
Earthjustice

Comments on Draft 2016 District of Columbia Integrated Report on Water Quality

Prepared by Bill Painter, for Jennifer Chavez, Earthjustice
March 18, 2016

De facto, illegal change in criterion-frequency of numeric WQC for certain parameters though use of "10% rule" as a water quality interpretation procedure

The 2016 Draft Integrated Report (DIR) improperly excludes from the Clean Water Act section 303(d) list waters that exceed the District's EPA-approved criteria in up to 10% of measured samples. As explained below, this amounts to an un-approved and therefore impermissible change to the District's approved criteria.

Table 3.1 (p84) of the DIR, titled "Threshold For Conventional Pollutants and Pathogens," lays out the data interpretation methods that were used when determining whether or not numeric water quality criteria (WQC) for a certain water quality parameters have been attained; which, in turn, determines whether waterbodies for which a given designated use (DU) has been set as a goal can or cannot support said DU. In addition to "pathogens" data, the specified methodology set forth in Table 3.1 is to be used when dealing with data for DO, turbidity, pH, and temperatures, according to a footnote to Table 3.1.

Table 3.1 explains that a waterbody would be deemed able to fully support the DU to which WQC for these five (5) specified parameters apply if, "For any pollutant[1], standard[2] exceeded[3] in ≤ 10% of measurements." Conversely, a waterbody would be considered to fail to support a DU "if standard exceeded in >10% of measurements."

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[1] Actually, none of the "pollutants" labeled as "conventional pollutants" – DO, pH, turbidity, and temperature – meet the definition of "pollutant" in the Clean Water Act. Rather, they are "response indicators," i.e., water quality parameters that reflect changes in waterbody conditions that result from loadings of "pollutants." Dissolved oxygen is an indicator of effects of a number of pollutants, including but not limited to, BOD, COD, and nutrients. The indicator pH reflects loadings of acidic and basic compounds. Turbidity is an indicator of a waterbody's response to input of sediments, organic material, and other pollutants. Temperature is an indicator of heat inputs to a waterbody.

[2] The word "standard" is apparently being used here with reference to a numeric water quality criterion (WQC), as opposed to a water quality standard (WQS). Along with designated uses and narrative WQC, numeric WQC are the core components of "water quality standards" according to US EPA regulations and guidance. In turn, numeric WQC consist of 3 components: 1) a criterion-magnitude (usually a concentration), 2) a criterion-duration, and a criterion-frequency. More specifically, "standard" seems to be used here with reference to just one of the three elements of a numeric WQC—the criterion-magnitude.

[3] "Exceedance" is most commonly used in EPA documents to mean waterbody conditions worse than those specified by the combination of the 3 elements of a numeric water quality criterion—criterion-magnitude, criterion-duration, and criterion-frequency. Here, "exceedance" seems to be intended to mean any time a single measurement of a water quality parameter surpasses the criterion-magnitude of an applicable numeric WQC. (In the case of pH WQC, the District of Columbia appears to use "exceed" to mean a single pH reading falling outside the pH range specified by DC's numeric WQC for pH). In keeping with terminology used in some EPA documents, "digression" is used in these comments to mean what the District seems to mean when using "exceedance"—a single measurement that is inconsistent with an applicable numeric WQC's criterion-magnitude. "Exceedance" is used in these comments to refer to waterbody conditions worse than those described by the combination of an applicable criterion-magnitude and criterion-frequency.

In order to determine if use of this "10% rule" is appropriate when dealing with a particular numeric WQC, the wording of said WQC in a state's WQS regulations needs to be closely examined. The most relevant numeric WQC in this instance are the following:

1) Dissolved oxygen:
    a. Instantaneous minimum 5.0 mg/L (Feb 1--May 31)
    b. Instantaneous minimum 5.0 mg/L (June 1—January 31)
2) Turbidity:
    a. Increase above ambient (NTU) 20
3) pH:
    a. Greater than 6.0
    b. And less than 8.5
4) Temperature (C):
    a. Maximum 32.2
    b. Maximum change above ambient 2.8
5) E. coli (CFU):
    a. Single Sample Value 410

It is important to note that all the above WQC have clearly articulated criterion-magnitudes. Not all of the WQC have expressly-stated criterion-durations. And, none of the WQC includes mention of an applicable criterion-frequency.

With regard to the criterion-durations, the most precisely stated are those for dissolved oxygen, which are expressed as an "instantaneous minimum" concentrations, in mg/L. Because of the use of "instantaneous," the District has made it clear that a digression (see footnote 3) of one of these WQC has occurred if the concentration of DO goes below the criterion-magnitude/concentration for even a fraction of a second. And, since no criterion-frequency has been mentioned, then a single digression constitutes an exceedance of the DO criterion, which means the DU to which the WQC applies is not fully supported according to Table 3.1 in the draft DC Integrated Report.

Unfortunately, Table 3.1 makes it clear that, in assembling its draft Integrated Report, the District has included on its 303(d) list (waters not meeting applicable WQS) only those waterbodies or portions of waterbodies in which the instantaneous DO concentration has gone below the criterion-magnitude more than 10% of the time. By using the "greater than 10% of measurements" data interpretation rule to determine if a DO criterion has not been met – and, therefore aquatic life use is not supported – the District has changed the criterion-frequency for these DO WQC from "zero" to "10% of the time." This constitutes a de facto illegal modification of the criterion-frequency for the two DO WQC cited in these comments.

In order to use the "10% of measurements" rule in a manner consistent with Section 303(d) of the CWA and the attendant EPA regulations, the District would first need to modify, through formal rulemaking, these DO WQC so as to read "instantaneous minimum of __mg/L no more than 10% of the time." And, before such revised WQC could be used in assembly of DC's 303(d) list, the WQC would need to have been approved by US EPA. Meanwhile, DC's 2016 303(d) list needs to be revised to include all waterbodies in which the DO concentration went

below that specified DO criterion/magnitude-concentration for even an instant, ever. Consequently, if the measured DO concentration in any grab sample from a given waterbody is below 5.0 mg/L, that waterbody must go on the DC 303(d) list.

If a state intends to specify a criterion-duration greater than an instant/second they need to: 1) articulate a term indicating some characteristic of sets of one or more data points, such as "average," "mean," "geometric mean," "median," "75th percentile," and 2) indicate a time interval within which each such set must fall—a minute, 30 minutes, an hour, 24 hours, 7 days, 14 days, 30 days, 90 days, 365 days, etc.

Without inclusion of both of these two elements in the wording of a numeric WQC, said criterion must be considered to have a criterion-duration of an instant (i.e., a second or less).

The problems associated with indiscriminate use of a "10% of measurements" rule in 303(d) list assembly were pointed out in EPA guidance issued a decade ago. In Section IV.G of the 2006 Integrated 303(d)/305(b) Reporting Guidance, EPA said.

> "Past EPA guidance (1997 305(b) and 2000 CALM) recommended making non attainment decisions, for 'conventional pollutants' — TSS, pH, BOD, fecal coliform bacteria, and oil and grease— when more than '10% of measurements exceed the water quality criterion.' (However, EPA guidance has not encouraged use of the '10% rule' with other pollutants, including toxics.) Use of his rule when addressing conventional pollutants, is appropriate if its application is consistent with the manner in which applicable WQC are expressed. An example of a WQC for which an assessment based on the ten percent rule would be appropriate is the EPA acute WQC for fecal coliform bacteria, applicable to protection of water contact recreational use. This 1976-issued WQC was expressed as, '...no more than ten percent of the samples exceeding 400 CFU per 100 ml, during a 30-day period.' Here, the assessment methodology is clearly reflective of the WQC.
>
> **On the other hand, use of the ten percent rule for interpreting water quality data is usually not consistent with WQC expressed** either **as: 1) instantaneous maxima not to be surpassed at any time**, or 2) average concentrations over specified times. **In the case of "instantaneous maxima (or minima) never to occur" criteria use of the ten percent rule typically leads to the belief that segment conditions are equal or better than specified by the WQC, when they in fact are considerably worse.** (That is, pollutant concentrations are above the criterion-concentration a far greater proportion of the time than specified by the WQC.) Conversely, use of this decision rule in concert with WQC expressed as average concentrations over specific times can lead to concluding that segment conditions are worse than WQC, when in fact they are not."
>
> Memorandum of Diane Regas, EPA OWOW, *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b) and 314 of the Clean Water Act* (July 29, 20050) (emphasis added, internal citations omitted).

Clearly, the use of the "10% of measurement rule" in developing 303(d) list is not appropriate with the DC WQC for DO cited earlier in these comments, given that they are expressed as instantaneous minima. As for the WQC for the other 4 parameters mentioned in Table 3.1 of DC's draft IR for 2016, regardless of whether terms such as "instantaneous" or "never to surpass" are included in the wording of a criterion," they all strongly imply a criterion-duration of an instant. For instance, the first of the temperature WQC mentioned above is worded much like the just-discussed DO WQC, "Temperature (C): Maximum 32.2." This wording gives no indication of meaning that the stated 32.2 criterion-maximum is an average value. Not only is the word "average" not mentioned, but also there is nothing to suggest a specific period over which measured temperatures should be averaged. Consequently, this WQC for temperature must be treated as an instantaneous maximum value, which means use of the "10% of measurements" rule is not acceptable. Likewise, the "10% measurements rule" should not be use for the temperature criterion expressed as a "maximum change above ambient." (As noted previously, neither of these temperature WQC contains an explicit or implicit criterion-frequency, these instantaneous maximum values cannot be surpassed, ever.)

The turbidity criterion is stated as an "increase above ambient." The two pH criteria are expressed as "greater than __" and "less than __," respectively. Though "instantaneous" does not appear in any of these three WQC, there is absolutely nothing in the way they are worded that suggests that the criterion-magnitudes in the pH WQC should be treated as average, rather than instantaneous, values. Consequently, use of a "10% of measurements rule is not acceptable when dealing with pH data.

Finally, there is the "single sample value" of 410 MPN/100ml for E. coli included in Table 3.1. Given that it only takes a second to collect a single grab sample of water, one must conclude that the criterion-magnitude is meant to be an instantaneous value. Hence, the "10% of measurements rule" may not be used when dealing with this WQC for E. coli.

Consistent with the above discussion, any waterbody that had a %-exceedance rate of anything above zero and below 10% must be added to the 2016 303(d) list.

<u>Possible Improper Use of a Rigid, Across-the-Board Minimum Data Set Size Cutoff To Exclude Waters From Being Assessed With Regard to Certain WQC</u>

In Table 1.1 (p. 12) of its draft 2016 Integrated Report, the District reports that it did not make a support/non-support decision for "swimming" on any of the 38.4 miles of rivers and streams in its jurisdiction. Rather, it indicated that there was "insufficient information" on 33.5 miles and that 4.9 miles were "not assessed."[4] Given that one of the E. coli WQC that DC says it uses to make support/non-support determinations for "swimming" is a "Single Sample Value," then the fact that DC says it was unable to make such a determination for any of its rivers and streams

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[4] The definitions the District used for "insufficient information" and "not assessed" is not clear. It would seem that if DC had determined that, for a given waterbody, it had "insufficient information," and therefore, had concluded that it could not make a reliable use support/use non-support decision, that it would be reasonable to say that said waterbody had not "assessed" with regard to its swimming designated use. Could it be that DC is using "not assessed" to mean "not monitored"? The meaning of these two terms should be clarified in the final 2016 IR regard to this point.

implies that DC collected not one single grab sample and analyzed it for E. coli concentration. This is hard to believe, and would represent a troubling failure of the city to make even a minimal effort to determine whether any of its rivers and streams had E. coli levels high enough to protect the health of those persons using these waters for "swimming" (primary contact recreation). Another possibility is that DC did generate E. coli data, but concluded that none of the data met necessary QA/QC protocols. This too is very hard to believe.

Rather, the most likely cause for this failure to make swimmable use support status determinations for any DC rivers or streams is that DC employed a rigid minimum data set requirement. This theory is supported by the fact that the criterion-duration for the chronic DC WQC for E. coli reads "(Geometric Mean (Maximum 30 day geometric mean for 5 samples)."

EPA addressed the issue of minimum data set requirements in Section IV.D.C of its 2006 303(d)/305(b) Integrated Reporting guidance[5] as follows:

> "EPA encourages the collection of adequate data to make well-grounded attainment determinations. EPA has not established, required, nor encouraged the establishment of rigid minimum sample set size requirements in the WQS attainment status determination process. EPA is particularly concerned with application of such thresholds state-wide, without regard to key factors like the manner in which applicable WQC are expressed, variability in segment-specific conditions, and fluctuations in rates of pollutant loading. Rather if employed, target sample set sizes should not be applied in an assessment methodology as absolute exclusionary rules, and even the smallest data sets should be evaluated and, in appropriate circumstances, used. While it may be appropriate to identify target sample sizes as a methodology is developed, states should not exclude from further consideration data sets that do so solely because they not meet a target sample size. A methodology may provide for an initial sample size screen, but should also provide for a further assessment of sample sets that do not meet the target sample size.
> (EPA suggests that states avoid setting target sample set sizes higher than the amount of data available at most sites.)
>
> Assessments based on larger sample sets are more likely to yield accurate conclusions than assessments based on smaller sample sets. For example, smaller sample sets are more prone to lead to erroneously concluding that at a WQC has not been exceeded, because they result in a lower probability of detecting WQSs exceedances that have actually occurred. (EPA, *Consolidated Assessment and Listing Methodology – Toward a Compendium of Best Practices* (CALM) July 2002, pp. 4-9).
>
> Any target sample set size thresholds must be consistent with the state's EPA-approved water quality standards. Hence, when making an determination based on comparison of ambient data and other information to a numeric WQC expressed as an "average" concentration over a specified period of time, a statement of a desired number of samples may be appropriate. Still, the methodology should provide decision rules for concluding nonattainment in cases where the target data quantity expectations are not met, but the

[5] Available at: https://www.epa.gov/sites/production/files/2015-10/documents/2006irg-report.pdf and on file with the author.

available data and information indicate a reasonable likelihood of a WQC exceedance (e.g., available samples with major digressions from the criterion concentration, corroborating evidence from independent lines of evidence such as biosurveys or incidence of waterborne disease, indications that conditions in the waterbody and loadings of the pollutant into the waterbody have remained fairly stable over the period in question).

Even a very small set of samples may be sufficient to indicate impairment, particularly when the duration/averaging periods of relevant WQC are quite short (an hour or less). For example, one grab sample meeting QA/QC specifications with a concentration higher than the criterion - concentration for a toxic compound could well be grounds for concluding that a WQC expressed as a concentration not be surpassed at any time had been exceeded. A single sample with a concentration that digressed from (was above) the criterion-concentration would be a particularly strong indicator of exceedance of such a criterion if it was the only sample that had been collected. In such a situation, the rate of digression in the sample set (in this instance a set of one) was 100%. This means that, if the timing of the sample was picked randomly, the chances are good that if additional samples had been taken over the period of concern, the vast majority of those would also have had concentrations above the criterion-concentration."

In addition to the common-sense reasons for not using rigid data set size cutoffs laid out in the just-quoted EPA guidance pertaining to 303(d) listing and 305(b) reporting, there is a legal reason for not treating the 5 samples/measurements over 30 days data set target as legally binding upon the 303(d) listing program is that this language in DC's WQ Standards was "approved" by EPA under the authority vested in it under Section 303(c) of the federal Clean Water Act, which deals with establishment of water quality standards. Relevant EPA regulations define a Water Quality Standard as follows: "A water quality standards defines the water quality goals for a waterbody, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." (CWA Sec. 303(c)(2)(A). That is, WQS set forth the desired condition of categories of waterbodies, and specific waterbodies.

On the other hand, it is Section 303(d) of the Act that deals with state development, and EPA approval/disapproval, of state 303(d) lists, which are required by the CWA to consist of waters failing to meet any applicable WQS. As such, 303(d) lists/305(b) reports set forth what is known about the actual condition of particular waterbodies and portions thereof, in contrast to WQS, which articulates the condition that the public wishes waterbodies to attain.

Also it is important to know that, currently, when EPA approves or disapprove a state's (or in this case the District's) water quality standards, that approval or disapproval applies only to the WQS itself and not to the jurisdiction's methodology for making determinations about a water body's WQS attainment status.[6] Rather, EPA exercises its authority to disapprove some element(s) of a jurisdiction's 303(d) list of waters, and to add waters to the list if the state or the District fails to add said waters after EPA has indicated it believes those water bodies belong on

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[6] In 2000, EPA formally proposed make 303(d) assessment methodologies expressly subject to EPA approval/disapproval. For several reasons, those regulations were never finalized.

the jurisdiction's 303(d) list. In this way, through its authority to act on 303(d) lists themselves, EPA *indirectly* addresses what it sees as inappropriate state WQS assessment methods. In contrast, EPA's approval of a particular WQS cannot be read as an approval of the jurisdiction's related methodology for assessing waters.

Response to Comments on the District of Columbia's draft 2016 Integrated Report

The District Department of the Environment Water Quality Division solicited comments on the first draft 2016 Integrated Report (Sections 303(d) and 305(b)) from February 19, through March 21, 2016. Following is a listing of the authors of the comments received. Copies of the comments received are attached.

Author(s)	Affiliation	Date of Submission
Evelyn MacKnight	US EPA, Region 3	February 25, 2016
Jennifer Chavez	Earthjustice	March 21, 2016
Jennifer Chavez	Earthjustice	March 18, 2016

Response to Comments

Subject	Source (Affiliation)	Comment Summary	Response
Listing and Methodology	Evelyn MacKnight (US EPA, Region 3)	Movement of 2014 Rock Creek Watershed E. coli category 5 listings to category 4a – do current TMDLs adequately address these impairments and was the public sufficiently notified?	DOEE reviewed the July 2014 approved Rock Creek E. coli TMDL and determined that it did not cover the tributaries. Based on this comment, the Category 5 List has been revised by adding the Rock Creek tributaries as impaired by E. coli.
Listing Methodology	Evelyn MacKnight (US EPA Region 3)	Are the Anacostia tributaries' TSS listings in 4a – covered by the adequately covered in approved Anacostia River TSS TMDL?	Yes, the July 2007 approved TSS TMDL includes the Anacostia River tributaries.
Listing and Methodology	Evelyn MacKnight (US EPA Region 3)	Hickey Run priority ranking	The current draft list reflects a change in the category 5 Hickey Run Chlorine (total residual) TMDL development priority ranking to "low" and a TMDL establishment date of 2022. Planning continues to address the impairment.
General Comment	Evelyn MacKnight (US EPA Region 3)	EPA 303(d) Vision: To provide adequate public notice of DOEE's 303(d) Vision Prioritization plans and process, information should have been included in the Integrated Report (IR) narrative including DDOE's TMDL development plans from now to 2022 and its list of priority waters.	The District will republish the Draft 2016 IR for another 30- day public comment period with the District's 303(d) Program New Vision Stakeholders Engagement and Prioritization Strategies included.
Listing Methodology	Jennifer Chavez (Earthjustice)	Improper change to the DC WQS criteria.	DOEE notes that the 2006 Integrated Report Guidance has not *encouraged* the use of the 10 percent rule with other pollutants, including toxics – and because of that our application of the 10% rule could be correctly viewed as too broad. Currently, DOEE is reviewing alternative methods for evaluating water quality data to make use attainment decisions. Coupled with this, we are also collecting data and assembling information that we plan to use to properly establish *frequency* in those cases where none is currently specified in our water quality standards. DOEE plans to implement the decisions made following these efforts for the next Integrated Report. However, DOEE's current priority for TMDLs is meeting the 2009 Consent Decree schedule for revising TMDLs. As such, resources are focused on that activity.

Subject	Source (Affiliation)	Comment Summary	Response
			With specific reference to the Dissolved Oxygen (DO), the District's WQS specifically reference the CBP ambient criteria at page 50 and it specifies, the magnitude and duration terms. Pages 161-to-165 include information on the basis for defining the criteria for all Chesapeake Bay segments, which the District's waters are a part of.
Listing Methodology	Jennifer Chavez (Earthjustice)	Improper use of a rigid, across-the-board minimum data set size cutoff to exclude waters from being assessed with regard to certain water quality criteria.	DC waterbodies were assessed for the swimming use for the 2016 IR. Assessments of the swimming use were included in the February draft document at Tables 3.5, 3.9, and 3.12, in the Individual Assessments for waterbodies, and the percent violations tables of the February draft IR. Tables 1.1 to 1.3 (p.12) of the February draft IR have been updated to show the waterbodies were assessed.
General Comment	Jennifer Chavez (Earthjustice)	The definitions of insufficient information and not assessed are not clear.	"Insufficient information" is used to mean that some data has been collected, but not in quantity necessary to make a determination. "Not assessed" is used to mean no data has been collected as it was not required to monitor. Based on the comment, the document was reviewed and Tables 1.1 to 1.3 and the" not assessed" values were updated.
General Comment	Jennifer Chavez (Earthjustice)	Is DC using "not assessed" to mean "not monitored"?	DOEE is using "not assessed" to mean not monitored. Where a WQS does not specify a designated use, that waterbody will not be monitored or assessed for that designated use.
General Comment	Jennifer Chavez (Earthjustice)	None of the "pollutants" labeled as "conventional pollutants"- DO, pH, turbidity, and temperature-meet the definition of "pollutant" in the CWA.	While pH is a CWA section 304(a)(4) conventional pollutant, DO, turbidity, and temperature are characteristics that impact the WQ criteria and so are treated as pollutants. The definition of criteria in the WQS draws a connection between parameters, criteria and designated uses, so parameters such as DO, temperature and turbidity can be used to make use support decisions. "The term "water quality criteria" is used in two sections of the CWA, Sections 304(a)(1) and 303(c)(2). This term has a different program impact in each section. In Section 304, the term has a different regulatory, scientific assessment of ecological effects. Criteria presented in this document are such scientific assessments. If water quality criteria associated with specific stream uses are adopted by a State as water quality standards under section 303, they become enforceable maximum acceptable pollutant concentrations in ambient waters within that State. Water quality criteria adopted in State water quality standards could have the same numerical values as criteria developed under Section 304. A parameter can be a

Subject	Source (Affiliation)	Comment Summary	Response
			pollutant." [Source US EPA Quality Criteria for Water, 1986].
General Comment	Jennifer Chavez (Earthjustice)	The word "standard" is apparently being used with reference to a numeric water quality criterion, as opposed to a water quality standard.	Yes, DDOE may have used "standard" interchangeably with the word "criteria" because criteria are part of the standard. Please see response immediately above. In many situations States and the District might want to adjust water quality criteria developed under section 304 to reflect local environmental conditions and human exposure patterns before incorporation into water quality standards. It is not until their adoption as part of State or District water quality standards that criteria become regulatory.[source US EPA Quality Criteria for Water, 1986].
General Comment	Jennifer Chavez (Earthjustice)	"Exceedance" seems to be intended to mean any time a single measurement of a water quality parameter surpassed the criterion-magnitude of an applicable numeric water quality criterion.	An exceedance is a situation in which ambient conditions are inconsistent with those desired conditions described by the combined three elements of a numeric WQC (magnitude, duration, and frequency). Put another way, it describes a situation where the rate of excursions is higher than that specified by the criterion-frequency. For example, an exceedance would have occurred if a WQC for a certain parameter says "the one-hour average concentration shall not surpass 40 ug/L more often than once in 3 years, on average" and during a given 3 year (1095 day) period there are two or more one hour periods in which the average concentration was 41 ug/L or higher. Waters on which one or more exceedances are failing to meet WQS, and therefore must be placed on the state's, territory's or tribes' section 303(d) list. By contrast, occurrence of a digression or an excursion does not, in and of itself, constitute a failure to meet applicable WQS. Our current WQS is based on Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll a for the Chesapeake Bay and Its Tidal Tributaries, April 2003. There is no frequency indicated in Table III-6. Subsequent to this document the District follows the 2006 version, referenced by Earthjustice. Like all other jurisdictions the District is still collecting information to ensure the current frequency is developed for future WQS.

Subject	Source (Affiliation)	Comment Summary	Response
		In connection with the public notice and comment period for the Draft 2016 Integrated Report on Water Quality, I write to request an electronic copy of the documentation for the water quality assessment referenced a paragraph from the Draft Integrated Report	The data for the Anacostia and Potomac Tidal Fresh listings were collected using a real time data capture systems and can be retrieved at https://stormcentral.waterlog.com/SiteDetails.php?a=54&site=177&pa=dcwater Based on the comment the statement was reviewed.

Categorization of District of Columbia Waters

Category 1- All designated uses are supported, no use is threatened.

No DC waters fit this category.

Category 2- Available data and/or information indicate that some, but not all, designated uses are supported.

No DC waters fit this category.

Category 3- There is insufficient available data and/or information to make a use support determination.

Category 4- Available data and/or information indicate that at least one designated use is not being supported or is threatened, but a TMDL is not needed.

See subcategories below:

Category 4A- TMDLs needed to result in a designated use attainment have been approved or established by EPA.

Category 4B- TMDL not required. Other pollution control requirements (such as permits, strategies) are expected to address waterbody/pollutant combinations and result in attainment of the water quality standards in a reasonable period of time.

Category 4C- Impaired or threatened waters for one or more designated uses. TMDL is not required as impairment is not caused by a pollutant.

Category 5- Available data and/or information indicate that a designated use is not being supported or is threatened, and a TMDL is needed.

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LIST OF IMPAIRED WATERBODIES
Category 3

Category 3- There is insufficient available data and/or information to make a use support determination.

303d Assessment Year[1]	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment
2014	02070010	DCTWB00R	Upper Watts Branch-segment 2	DDD DDE DDT Heptachlor Epoxide PAH 1,2,3
2014	02070010	DCTWB00R	Lower Watts Branch-segment 1	DDD DDE DDT Heptachlor Epoxide PAH 1,2,3
2014	02070010	DCAKL00L	Kingman Lake	DDD DDE Dieldrin Heptachlor Epoxide Copper Zinc
2014	02070010	DCTDU01R	Fort DuPont Creek	Copper Zinc
2014	02070010	DCTPB01R	Popes Branch	DDD DDT

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303d Assessment Year[1]	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment
				Dieldrin Arsenic Copper Zinc
2014	02070010	DCPWC04E	Washington Ship Channel	Chlordane DDD DDE DDT Dieldrin Heptachlor Epoxide PAH 1,2,3
2014	02070010	DCTOR01R	Oxon Run	Chlordane DDT Heptachlor Epoxide PAH 1,2,3 Arsenic Copper Zinc
2014	02070008	DCTDA01R	Dalecarlia Tributary	Chlordane DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTNA01R	Nash Run	DDD DDE

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303d Assessment Year[1]	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment
				DDT Copper Zinc
2014	02070010	DCTHR01R	Hickey Run	DDD DDT Dieldrin Heptachlor Epoxide Arsenic Copper Zinc
2014	02070010	DCTDO01R	Dumbarton Oaks	DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTFE01R	Fenwick Branch	Chlordane DDE DDD PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTKV01R	Klingle Valley Creek	Chlordane DDD DDE DDT

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303d Assessment Year[1]	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment
				PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTLU01R	Luzon Branch	DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTMH01R	Melvin Hazen Valley Branch	Chlordane DDD DDE DDT Heptachlor Epoxide PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTPI01R	Pinehurst Branch	Chlordane DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc

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303d Assessment Year[1]	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment
2014	02070010	DCTPY01R	Piney Branch	DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTPO01R	Portal Branch	Chlordane DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCTSO01R	Soapstone Creek	DDD DDE DDT PAH 1,2,3 Arsenic Copper Zinc
2014	02070010	DCPTB01L	Tidal Basin	Chlordane DDD DDE DDT Dieldrin Heptachlor Epoxide PAH 1,2,3

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303d Assessment Year[1]	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment
2014	02070010	DCTBK01R	Battery Kemble Creek	Arsenic Copper Zinc

1Note:These pollutants moved from Category 4a to Category 3. Current fish tissue studies conducted in the District were based on fish caught in the Anacostia and Potomac Rivers, not the tributaries. The Tetratech study did not detect the pollutant, but a TMDL exists for the pollutant. More information is needed to determine if the pollutant is the cause of non-attainment.

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LIST OF IMPAIRED WATERBODIES
Category 4A

Category 4A- TMDLs needed to result in a designated use attainment have been approved or established by EPA.

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
2008	02070010	DCPTF[1]	Potomac Tidal Fresh	DO, Chla	Dec 2010
2008	02070010	DCATF[1]	Anacostia Tidal Fresh	DO, Chla	Dec 2010
2006	02070010	DCANA00E	Lower Anacostia River- segment 1	Trash	Sep 2010
2006	02070010	DCANA00E	Upper Anacostia River- segment 2	Trash	Sep 2010

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTWB00R	Upper Watts Branch-segment 2	E. coli Chlordane Dieldrin Total PCBs Total Suspended Solids	Oct 2003 (Revised Jul 2014) Oct 2003 Jul 2007
1998	02070010	DCTWB00R	Lower Watts Branch-segment 1	E. coli Chlordane Dieldrin Total PCBs Total Suspended Solids	Oct 2003 (Revised Jul 2014) Oct 2003 Jul 2007

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCAKL00L	Kingman Lake	BOD* E. coli Chlordane DDT Total PCBs PAH 1,2,3 Arsenic Oil and Grease Total Suspended Solids	Oct 2003 Oct 2003 (Revised Jul 2014) Oct 2003
1998	02070010	DCTDU01R	Fort DuPont Creek	E. coli Arsenic	Oct 2003 (Revised Jul 2014) Oct 2003
1998	02070010	DCTFD01R	Fort Davis Tributary	BOD E. coli Arsenic	Oct 2003 Oct 2003 (Revised Jul 2014) Oct 2003

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTFS01R	Fort Stanton Tributary	E. coli PAH 1,2,3 Total PCBs Arsenic	Oct 2003 (Revised Jul 2014) Oct 2003
1998	02070010	DCTFC01R	Fort Chaplin Tributary	E. coli Arsenic	Oct 2003 (Revised Jul 2014) Oct 2003
1998	02070010	DCTPB01R	Popes Branch	E. coli DDE Chlordane Heptachlor Epoxide PAH 1,2,3 Total PCBs	Oct 2003 (Revised Jul 2014) Oct 2003

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTTX27R	Texas Avenue Tributary	E. coli Chlordane DDD DDE DDT Dieldrin Heptachlor Epoxide PAH 1,2,3 Total PCBs Arsenic	Oct 2003 (Revised Jul 2014) Oct 2003
1998	02070010	DCRCR00R	Upper Rock Creek-segment 2	E. coli Copper Lead Mercury Zinc	Feb 2004 (Revised Jul 2014) Feb 2004

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCRCR00R	Lower Rock Creek- segment 1	E. coli Copper Lead Mercury Zinc	Feb 2004 (Revised Jul 2014) Feb 2004
1998	02070010	DCTOR01R	Oxon Run	E. coli Dieldrin	Dec 2004 (Revised Jul 2014) Dec 2004
1998	02070010	DCPWC04E	Washington Ship Channel	E. coli pH	Dec 2004 (Revised Jul 2014) Dec 2010
1998	02070010	DCTBK01R	Battery Kemble Creek	E. coli	Dec 2004 (Revised Dec 2014)

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070008	DCTDA01R	Dalecarlia Tributary	E. coli Dieldrin Heptachlor Epoxide PCBs	Dec 2004 (Revised Dec 2014) May 2005
1998	02070010	DCTCO01L	Chesapeake and Ohio Canal	E. coli	Dec 2004 (Revised Jul 2014)
2014	02070010	DCTCO01L	Chesapeake and Ohio Canal	pH	Dec 2010
1998	02070010	DCTNA01R	Nash Run	E. coli Chlordane Dieldrin Heptachlor Epoxide PAH 1,2,3 Total PCBs Arsenic	Oct 2003 (Revised Jul 2014) Oct 2003

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCPMS00E	Upper Potomac River- segment 3	E. coli Total PCBs Nitrogen Phosphorus Total Suspended Solids	Dec 2004 (Revised Dec 2014) Oct 2007
2014	02070010	DCPMS00E	Upper Potomac River- segment 3	pH	Dec 2010
1998	02070010	DCPMS00E	Middle Potomac River- segment 2	E. coli Total PCBs	Dec 2004 (Revised Dec 2014) Oct 2007
2014¥	02070010	DCPMS00E	Middle Potomac River- segment 2	pH	Dec 2010
1998	02070010	DCPMS00E	Lower Potomac River- segment 1	E. coli Total PCBs	Dec 2004 (Revised Dec 2014) Oct 2007

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTFB01R	Foundry Branch	E. coli	Dec 2004 (Revised Dec 2014)
1998	02070010	DCTBR01R	Broad Branch	Chlordane Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTDO01R	Dumbarton Oaks	Chlordane Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTFE01R	Fenwick Branch	DDT Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTHR01R	Hickey Run	E. coli Chlordane DDE PAH 1,2,3 Total PCBs	Oct 2003 (Revised Jul 2014) Oct 2003
1998	02070010	DCTKV01R	Klingle Valley Creek	Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTLU01R	Luzon Branch	Chlordane Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTMH01R	Melvin Hazen Valley Branch	Dieldrin Total PCBs	Feb 2004

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTNS01R	Normanstone Creek	Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTPI01R	Pinehurst Branch	Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTPO01R	Portal Branch	Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCTPY01R	Piney Branch	Chlordane Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCTSO01R	Soapstone Creek	Chlordane Dieldrin Heptachlor Epoxide Total PCBs	Feb 2004
1998	02070010	DCPTB01L	Tidal Basin	E. coli Total PCBs	Dec 2004 (Revised Jul 2014) Dec 2004
2002	02070010	DCPTB01L	Tidal Basin	pH	Dec 2010

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCANA00E	Lower Anacostia River- segment 1	BOD	June 2008
				E. coli	Oct 2003 (Revised Jul 2014)
				Chlordane DDD DDE DDT Dieldrin Heptachlor Epoxide PAH 1,2,3 Total PCBs Arsenic Copper Zinc	Oct 2003
				Total Suspended Solids	July 2007
				Oil and Grease	Oct 2003
				Nitrogen Phosphorus	Oct 2007

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
1998	02070010	DCANA00E	Upper Anacostia River- segment 2	BOD	June 2008
				E. coli	Oct 2003 (Revised Jul 2014)
				Chlordane DDD DDE DDT Dieldrin Heptachlor Epoxide PAH 1,2,3 Total PCBs Arsenic Copper Zinc	Oct 2003
				Total Suspended Solids	July 2007
				Oil and Grease	Oct 2003
				Nitrogen Phosphorus	Oct 2007
2014	02070010	DCTDU01R	Fort DuPont Creek	Total Suspended Solids	Jul 2007

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LIST OF IMPAIRED WATERBODIES
Category 4A

303d Listing Year	Geographic Location	WBID	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	TMDL Establishment Date
2014	02070010	DCTFC01R	Fort Chaplin Tributary	Total Suspended Solids	Jul 2007
2014	02070010	DCTFD01R	Fort Davis Tributary	Total Suspended Solids	Jul 2007
2014	02070010	DCTFS01R	Fort Stanton Tributary	Total Suspended Solids	Jul 2007
2014	02070010	DCTTX27R	Texas Avenue Tributary	Total Suspended Solids	Jul 2007

*BOD means biochemical oxygen demand
¥The 1998 Middle Potomac Segment 2 listing for pH has been revised to a 2014 listing year based on current monitoring data consideration.
Note:
All Category 4A TMDLs will be revised in accordance with the ANACOSTIA RIVERKEEPER V EPA ((798 F.Supp.2d 210) 2012) Consent Decree, with the exception of the Middle Potomac River (segment 2) pH TMDL, the Lower Anacostia River trash TMDL, and the Upper Anacostia River trash TMDL.

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LIST OF IMPAIRED WATERBODIES
Category 4B

Category 4B- TMDL not required. Other pollution control requirements (such as permits, strategies) are expected to address waterbody/pollutant combinations and result in attainment of the water quality standards in a reasonable period of time.

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LIST OF IMPAIRED WATERBODIES
Category 4C

Category 4C- Impaired or threatened waters for one or more designated uses. TMDL is not required as impairment is not caused by a pollutant.

No DC waters fit this category

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LIST OF IMPAIRED WATERBODIES

Category 5

Category 5- Available data and/or information indicate that a designated use is not being supported or is threatened, and a TMDL is needed.

303d Listing Year	Geographic Location	WBID[1]	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	Priority Ranking for TMDL Development	Targeted for TMDL within 2 years	TMDL Establishment Date
2002	02070010	DCTHR01R	Hickey Run	Chlorine (total Residual)	Low	No	Dec 2022
2014	02070010	DCANA00E	Upper Anacostia River –Segment 2	DO	Medium	No	Dec 2022
2014	02070010	DCRCR00R	Lower Rock Creek- segment 1	Total Suspended Solids	Medium	No	Dec 2022
2014	02070010	DCTFC01R	Fort Chaplin Tributary	DO	Medium	No	Dec 2022
2014	02070010	DCTFD01R	Fort Davis Tributary	DO	Medium	No	Dec 2022
2014	02070010	DCTHR01R	Hickey Run	DO	Medium	No	Dec 2022
2014	02070010	DCTBR01R	Broad Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTDO01R	Dumbarton	E. coli	High	No	Dec 2022

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LIST OF IMPAIRED WATERBODIES

Category 5

303d Listing Year	Geographic Location	WBID[1]	WB Name	Pollutant(s) or Pollutant Categories Causing Impairment	Priority Ranking for TMDL Development	Targeted for TMDL within 2 years	TMDL Establishment Date
			Oaks				
2014	02070010	DCTFE01R	Fenwick Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTKV01R	Klingle Valley Creek	E. coli	High	No	Dec 2022
2014	02070010	DCTLU01R	Luzon Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTMH01R	Melvin Hazen Valley Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTNS01R	Normanstone Creek	E. coli	High	No	Dec 2022
2014	02070010	DCTPI01R	Pinehurst Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTPO01R	Portal Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTPY01R	Piney Branch	E. coli	High	No	Dec 2022
2014	02070010	DCTSO01R	Soapstone Creek	E. coli	High	No	Dec 2022

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District of Columbia
Department of Energy & Environment

303(d) Program New Vision

Prioritization Strategy
(2016-2022)

DRAFT

May 2016

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Summary

As part of the implementation of the US EPA "Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act (CWA) Section 303(d) Program" (Vision), the Department of Energy & Environment (DOEE) is required to develop a prioritization strategy to express CWA 303(d) Program priorities in the context of specific District of Columbia's (District) broader, overall water quality goals and values. This strategy provides a framework for identifying high, medium, and low priority waters for total maximum daily loads (TMDL) development efforts, and alternative actions that are best suited to the broader water quality goals and values in the District.

The Vision's Prioritization goal states that "for the 2016 integrated reporting cycle and beyond, States review, systematically prioritize, and report priority watersheds or waters for restoration and protection in their biennial integrated reports to facilitate State strategic planning for achieving water quality goals."

The intent of the Vision's *Prioritization Goal* is for states, including the District, to express their Clean Water Act's Section 303(d) Program priorities in order to ensure that the available District resources are used efficiently to achieve water quality goals.

In determining priority waters for restoration and protection in the District, a "universe" is first compiled comprising of new Category 5 listings, the existing TMDLs which are earmarked for revisions (for various reasons, e.g., court order or new information, etc.), and TMDL development projects that stakeholders would like to be prioritized.

As a first prioritization step, each item in the universe's subsets is evaluated for priority ranking by using a combination of "mechanisms" and "factors." *Mechanisms* are the primary level factors that include protection of human health and aquatic life, support non-violations of the District's water quality standards, etc. - and are rated as *high*, *medium*, or *low*. *Factors* are secondary level considerations that, amongst others, examine the severity of impairment to the designated use classification(s) – and are also rated as *high*, *medium*, or *low*. Where both mechanisms and factors are rated as high, those waters would be deemed high priority. The result of this priority ranking and similar analyses are then summarized and put in a list consistent with Section 303(d) of the CWA. Impairments that are candidates for *alternative* are also annotated in the list at this stage. In the second step, the listings of ranked priorities are assigned a schedule for TMDL development based on a matrix approach. The matrix consists of six criteria: urgency, potential impact, actionable/ feasible, resources, stakeholder interest and readiness, and integration, each of which, if ranked as high earns 3 points; medium, 2 points; and low, 1 point. The points awarded are then summed up and the project that receives the highest total points is then slated as the one to move forward first. The results of both steps one and two are then consolidated into a preliminary list called "Pre-303(d) list" and made available for an initial public comments. A revised "Pre-303(d) list" following public comments is called "draft 303(d) List." Upon completion, a draft Integrated Report (IR) incorporating "draft 303(d) List" will be made available to the public for comment for 30days. If no comments are received on the "draft 303(d) List", the list will be considered final and submitted to EPA.

Consistent with this strategy, the District's overall TMDL development priority for the fiscal year (FY) 2016 through 2022 will be dominated by the need to satisfy the 2009 TMDL consent decree.

DOEE will publish this draft *Prioritization Strategy* to solicit feedback. Comments received will be considered and used to revise the document as appropriate before submittal to EPA for approval. After EPA approval this strategy will become final and implemented

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1. Introduction

As part of the implementation of the "*Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program"* (Vision)[1], the Department of Energy & Environment (DOEE) is required to develop a prioritization strategy to express CWA 303(d) Program priorities in the context of specific District of Columbia's (District) broader, overall water quality goals and values. This strategy provides a framework for identifying high, medium, and low priority waters for total maximum daily loads (TMDL) development efforts, including alternative actions that are best suited to the broader water quality goals and values in the District.

1.1. Background[2]

On December 5, 2013, the U.S. Environmental Protection Agency (EPA) announced a new collaborative framework for managing CWA 303(d) program responsibilities, entitled *"A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program[3]"* (Vision). This new Vision reflects the successful collaboration among states and the EPA, which began in August 2011. The vision enhances the overall efficiency of the CWA 303(d) program. For example, it encourages states to focus attention on priority waters. It also provides states with the flexibility to use available tools beyond TMDLs to effectively restore and protect water quality. There is no "one size fits all" approach to restoring and protecting water resources; flexibility allows each state, including the District, to more efficiently develop tailored strategies to implement their CWA 303(d) Program responsibilities within the context of its own water quality goals. While the Vision provides a new framework for implementing the CWA 303(d) Program, it does not alter state and EPA responsibilities or authorities under the CWA 303(d) regulations. The Vision's Prioritization goal states:

> "*States should review, systematically prioritize, and report priority watersheds or waters for restoration and protection in their biennial integrated reports to facilitate state strategic planning for achieving water quality goals*."

Priorities are important because they provide the foundation to guide the planning and implementation of the other Vision goals. Specifically, the CWA 303(d) program priorities are essential to ensure that the available resources are used efficiently to achieve water quality goals and that allocation is not done in an ad hoc way, but in a manner respectful of the entirety of the District's water quality values.

The Vision expects states, including the District to engage their general public and stakeholders in the establishment of CWA 303(d)-related priorities. EPA also expects states and the District to articulate how input from the public is considered and addressed as part of their rationale for supporting prioritization.

2. Definition and Principles of Prioritization

2.1. Definition

Prioritization is the process of evaluating[4] a group of projects/activities and ranking them in their order of importance or urgency.

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[1] http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/vision_303d_program_dec_2013.pdf
[2] http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/programvision.cfm
[3] A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program (PDF)
[4] Evaluation is the process of taking different possible courses of action, setting them side by side and drawing a conclusion as to their respective merits.

2.2. Principles of Prioritization

Principles are statements of *values* that guide actions. Principles are used to frame a concise set of criteria which, in turn, are used to develop priorities or ranking. The following principles guide DOEE's approach to its Vision prioritization:

1. **Transparency:** Prioritization should be clear and contain robust and transparent selection criteria developed to maximize measurable water quality improvements and positive environmental impacts.
2. **Engagement:** Constructive engagement, supported by timely and accurate information containing analysis based on reliable data, enables dialogue and genuine discussions, which, in turn, increases the chance of quality *prioritization* decision-making.
3. **Resources:** Consideration of resource implications of doing a TMDL project/activity, including, but not limited to, whether or not the resource requirements of the project are within budgetary limits; the period over which resources will be needed; DOEE's institutional and technical capacity to implement the plan; and benefits.
4. **Impact:** Prioritizing TMDLs for development starts by considering the scope and severity of water pollution and risks to public health and aquatic life[5]. Also consideration should be given to whether or not the proposed TMDL development/activity has additional strategic significance or impacts (e.g., risk to threatened or endangered species).
5. **Influence:** *Priorities* should reflect input of stakeholders' involvement.
6. **Inclusiveness:** Prioritization is effective when a wide range of stakeholders are *engaged* in their diversity, uniqueness and perspective. Accounting for all these and developing a unified set of *priorities* requires balance and judgment.
7. **Time:** Prioritization is multi-dimensional, in part, because values, which are at the core of it, are. Time is the other dimension. The time dimension involves consideration of scheduling issues (such as re-programming to meet court orders) to determine what comes first, and what follows later. Timing and phasing are key factors in aligning priorities.
8. **Alignment:** TMDL development *priorities* should fit within DOEE's overall strategic water quality improvement agenda and be in accord with the new Vision goals.
9. **Implementation Potential:** Assessing the implementation potential of a TMDL project/activity is a real challenge. Three factors that are closely related to the potential for a successful TMDL project/activity implementation include the following: assessment data reliability; organizational resources readiness; consistent application of *prioritization* appraisal criteria; and uncertainty.

2.3. Prioritization Best Practices

Best practices are effective procedures that reliably tend to lead to a desired result. They are chosen to fit with goals, including what needs to be done and how. Since not each and every best practice is related to each and every issue of interest, or necessarily aimed at the same target outcomes, they should always be reviewed and updated.

The following are some best practices that apply to the District's 303(d) prioritization.

It is good practice to:

1. Give careful consideration to the criteria for prioritizing projects and agree on them in advance;
2. Systematically evaluate all potential projects at the same time - to minimize bias;

[5] **Hall, *et. al.* (2014).** An ecological function and services approach to total maximum daily load (TMDL) prioritization. Environmental Monitoring and Assessment, Vol. 186, Issue 4, pp 2413-2433.

3. Schedule priorities;
4. Allow limited priority overrides due to executive prerogative on special cases;
5. Ensure that the people impacted by priorities are informed and know what those priorities are; and
6. Review periodically the priority status of projects.

3. Strategy Goal and Objective

3.1 Goal

The strategy goal is to ensure that DOEE and stakeholders review, systematically prioritize, and report priority watersheds or waterbodies for restoration and protection in the bi-annual Integrated Report (IR) to facilitate strategic planning for achieving water quality goals.

3.2 Objective

The strategy objective is to identify where DOEE and stakeholders should focus resources for TMDLs development in fiscal year (FY) 2016 through FY2022.

4. General 303 (d) Prioritization Framework

4.1. Framework Elements

The following are examples of how the framework elements may apply to DOEE:

1. **Mechanism for Prioritization** - Protection of human and aquatic life, consent decree.
2. **Factors Considered in Prioritization** - Funding availability, indicators used in Recovery Potential Screening, pollutants/impairments, sources.
3. **Consideration of EPA National and Regional Priorities** - An explanation of how the District collaborates with the Region on prioritization and how EPA's priorities fit into its framework. This does not mean that the District must choose EPA priorities as their designations; rather the District should recognize EPA's priorities as an important factor in the prioritization process.
4. **Plan for Where the State Will Begin Work** - This could be general, and may be based on monitoring or permitting cycles, or other appropriate processes.
5. **Statement on Flexibility** - Reflecting the District's approach to changing priorities.
6. **Description of Shifts or Changes** - Evaluate the past prioritization scheme compared to what the District will be doing under the new Vision by explaining what is different or new compared to what stays the same.

4.2. Other Considerations

1. **Public Engagement Approach** - An explanation regarding how the District will involve stakeholders in the process and share the final designated priorities. At a minimum, priorities should be clearly identified in the 2016 Integrated Report (2016 IR) for the public to provide comments. DOEE's Stakeholders' Engagement Strategy (SES) is incorporated herein by reference.
2. **Integration Approach** - Deals with how DOEE will use a combination of District-wide programs and other on-the-ground projects to achieve water quality benefits; and the extent to which water quality improvement efforts are harmonized with other relevant District and Federal programs; namely:
    a. **When and how the District will Review and Update the Prioritization Scheme** - Assessment is a critical piece of the new Vision; the District will consider and adapt new information on the status of waters, interest and engagement from stakeholders and partners, and the effectiveness of their chosen scheme.

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b. **Choice of Priority Designations** - Once the District has completed the process of determining its 303(d) priorities, the information should be included as an appendix/update to the strategy document.
c. **Availability of the Prioritization Framework to the Public** - The District plans to make the prioritization documents available to the public (via DOEE's website, public notice in the DC Register, including joint public-notice with the 2016 IR) to facilitate transparency and stakeholder engagement.

5. Detailed District's Priority and Ranking Assignment Scheme

The District assigns TMDL development priority in two main steps, namely: an *Initial Ranking and Scheduling Step,* and the *Integrated Report Step*; with each step having sub-steps as follows:

Step 1: *Initial Ranking and Scheduling Step*

a. Assessment:

Assessment identifies water bodies requiring TMDLs and consolidates these into an IR form pursuant to Sections 303(d), 305(b), 314 and 319 of the Clean Water Act.

Section 303(d) and the implementing regulations at 40 CFR 130.7 require states and the District to identify those water bodies that are not meeting surface water quality standards and to prioritize and schedule them for the development of TMDLs. The 303(d) listing process classifies waters impaired by point and non-point sources of pollutants into the following categories.

- *Category 1*: Waters with the status that all designated uses are being met.
- *Category 2*: Waters that meet some (at least three) of their designated uses, but there is insufficient data to determine if remaining designated uses are met.
- *Category 3*: Waters for which insufficient data exists to determine whether any designated uses are met.
- *Category 4*: Waters that are impaired or threatened but a TMDL is not needed. (*This category and its sub-categories may include TMDLs that may or may not need to be revised for one reason or another, including court orders, consent decrees, availability of new information.)*
- *Category 5*: Waters that are impaired or threatened and need new TMDLs to be developed. (*The development of new TMDLs is the primary driver for prioritization and ranking*.)

Section 305(b) codifies the process in which water bodies are evaluated with respect to their capacity to support designated uses as defined in each of the states'/District's surface water quality standards. These uses include aquatic life support, fish and shellfish consumption, and primary (e.g., swimming) and secondary (e.g., boating) contact recreation. Where possible, the causes and sources of use impairment are also identified.

Section 314 is mostly concerned with lakes and reservoirs and has little or no relevance in the District's assessment scheme.

Section 319 grants and State Revolving Funds (SRF) are given to watershed clean-up projects that are consistent with TMDL Program requirements.

a (i). Priority Assignment Process

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The District defines its Section 303(d) list *initial* priority assignment in terms of broader programmatic primary factors (or *mechanisms*) and secondary factors (hereinafter referred to simply as *factors*).

Mechanisms are based on consideration of primary factors such as severity of impairment to the designated use classification(s) for a water body. There are also secondary factors (or simply, "*factors*") which are used to modify the initial prioritization to an overall or final prioritization. *Factors* may either elevate a water body into a higher priority group (e.g., public interest, executive prerogative needs) or reduce the priority ranking (e.g., funding availability, cleanup action in progress). Together, both mechanisms and factors help to provide structure to the prioritization process by explaining, for example, the extent or complexity of impairment. They help to describe the availability of information (e.g., monitoring data, models), and thus indicate whether or not priority decisions are made based on substantial or scanty information. At the same time, factors are meant to be:

- Flexible for each water body;
- Subject to periodic review to reflect new scientific information, newly developed water quality criteria;
- Accommodative of changing stakeholder considerations or concerns; and
- Cognizant of efficient and effective use and allocation of resources.

Mechanisms' and factors' levels are rated as *high*, *medium,* and *low* as briefly described below:

Mechanisms' Rating Levels and Description:

- **High level**: Includes protection of human health and aquatic life; factors supporting non-violations of the District's water quality standards, recreational use; programmatic geographic focus; funding.
- **Medium level**: Includes, partnership with stakeholders e.g., federal agencies; issue complexities; national water quality initiatives; environmental justice.
- **Low level**: Includes, a variety of technical screening tools (e.g., EPA's Recovery Potential Tool).

Factors' Rating Levels and Description:

- **High level**: Includes, funding availability; specific pollutant that is causing or contributing to water quality impairment; data availability; restoration potential.
- **Medium level**: e.g., straight-to-implementation via NPDES Permit; water quality trends.
- **Low level**: e.g., pollutant source.

A list of *mechanisms* and *factors* and their ratings that DOEE uses to prioritize District's waters, is provided in Appendix A, Table 1 and Table 2.

A generalized ranking scheme based on combining *mechanisms* and *factors* information into an initial priority designation for TMDL projects, is shown in Table 3.

Table 3: Combination of *Mechanisms* and *Factors* to assign overall priority level

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		Levels of Factor(s) (Complexity/Cost/Other Considerations)		
Levels of Prioritization Mechanisms		High	Medium	Low
	High	High	High	Medium
	Medium	High	Medium	Low
	Low	Medium	Low	Low

a (ii). Rank Schedule Assignment Process

This strategy uses a prioritization matrix approach to evaluate the relative order of importance of candidate TMDL development projects by deriving a criteria-based numerical value for the priority (rank) of each project or activity. See Appendix B.

b. Pre-303(d) List development

Pre-303(d) list is developed by consolidating *priority* and *ranking*/ *scheduling* information into a single list. The list will be shared with stakeholders. The comments received, and any additional information will be considered and the Pre-303(d) list may be revised, as appropriate. Stakeholders can identify specific projects of interest through a process outlined in Appendix F. The revised Pre-303(d) list will be used to develop the *draft 303(d) list* to be incorporated into the draft Integrated Report.

Step 2: *Integrated Report Step*

Upon completion, the draft IR incorporating the revised Pre-303(d)[6] list will be made available to the public for comment. If a comment is received on the priority and schedule assignment, consultation, or in some cases the prioritization matrix scheme (Appendix B), will be used to resolve the issue(s). If no comments are received on the "draft 303(d) List", the list will be considered final and will be submitted to EPA.

Appendix C shows a detailed process flow diagram (scheme) of the two steps discussed herein. The diagram also indicates that stakeholder input is considered in the prioritization process.

6. Changes and Shifts from Past Efforts

6.1. Past TMDL Development Efforts in the District

Before the Vision, the District managed its TMDL development priority process based on "Pace" framework; consent decree requirements; and to meet the Chesapeake Bay (Bay) TMDL Program needs.

6.1.1. The "Pace" Framework

"Pace" refers to the number of TMDLs that needed to be established consistent with national policy[7], i.e. generally within 8-13 years of listing of a waterbody as impaired. Under the "pace" framework, the District's priority was based on human health concerns, risk to aquatic life, programmatic needs (e.g., waste load allocations needed for permits), and availability of EPA-approved models and other technical

[6] A revised "Pre-303(d) list" that is incorporated in the IR is called a "draft 303(d) List."
[7] Perciasepe, R. 1997. New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs). http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/ratepace.cfm. *Last Accessed June 2011*. *Last Accessed June 2015.*

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tools. Also within the "pace" framework, high priority TMDLs are typically developed within two years, medium priority within two to five years, and low priority more than five years.

Issues with the "pace" framework include the following:

1. It fails to properly reflect significant variability in types of TMDLs, or state/District listing methods.
2. It does not give credit to more robust TMDLs that better support implementation and water quality outcomes, i.e., "implementation-ready."
3. It does not take into account water quality improvement (output vs. outcome).
4. It improperly conveys the notion that states and the District require litigations to drive TMDLs development; i.e., the development of new TMDLs will not occur without litigation.
5. It incorrectly implies that as historic litigation driven TMDL consent decrees taper off, that TMDL "pace" (i.e. rate at which at which TMDLs are developed) will diminish.
6. It puts less emphasis on robust consultation of stakeholders and systematically incorporating their views in TMDL development process.
7. It places little emphasis on the integration among the CWA programs (303(d), 305(b), 314 and 319), or other collaborations.
8. It is weak in flexibly aligning TMDLs development with available resources.

DOEE is working collaboratively with stakeholders and EPA to develop strategies for each of the six Vision goals to address these issues – in order to improve the TMDLs development environment in the District.

6.1.2. Consent Decree

From FY2010 through FY2022, DOEE set its TMDL work load priority to revisions to satisfy the requirements of the settlement agreement reached between EPA and Anacostia Riverkeepers, Friends of the Earth, and Potomac Riverkeepers (Case No.: 1:09-cv-00098-JDB of January 15, 2009) that certain District TMDLs did not have a daily load expression established as required by *Friends of the Earth vs. the Environmental Protection Agency, 446 F.3d 140, 144* (D.C. Cir. 2006). The consent decree deadline is January 1, 2017.

Meeting consent decree dates remain a top priority in the District.

6.1.3. The Chesapeake Bay (Bay)TMDL Program Framework

The Bay TMDL is required under the federal Clean Water Act and responds to consent decrees in Virginia and the District of Columbia from the late 1990s. It represents a keystone commitment of a federal strategy to restore and protect the Bay, and covers approximately 64,000-square-mile watershed that includes all the jurisdiction partners (the District of Columbia and large sections of six states: Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia.

The TMDL set limits that are necessary to meet applicable water quality standards in the Bay and its tidal rivers. The limits (for total nitrogen (TN), total phosphorus (TP), and sediment) are based on state-of-the-art modeling tools, and involve extensive monitoring data, peer-reviewed science, and close interaction with jurisdiction partners.

Because the Bay TMDLs are an important part of the District's water quality improvement strategy, no changes are expected on the District's commitments to the Bay TMDL programs and efforts.

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6.2. Shifts and Changes

This strategy shifts the prioritization process from past practice in the following ways:

1. It places greater emphasis on systematic coordination of watershed and Municipal Separate Storm System (MS4) implementation action plans (collaborative non-point source management and implementation plans) by:
    a. Incorporating 319 Program elements into TMDL implementation plans (Appendix D).
    b. Programmatic needs (e.g., waste load allocations needed for MS4 permits).
    c. Increased number of stakeholder meetings to discuss and review water quality improvement (e.g., meeting stakeholders to review the District's performance against the Bay commitments, MS4 implementation plans).
2. It enhances the current 303(d) list development and TMDL development priority planning process by incorporating a new two-step public solicitations and notices:
    a. Step 1- which involves an initial publication of a *Pre-Draft 303(d) List* for public comment gives stakeholders a chance to familiarize themselves with what the 303(d) list will look like. It also ensures that stakeholders are made part of the 303(d) process as early as possible.
    b. Step 2 - which comprises using initial comments received following the publication of the *Pre-Draft 303(d) list* to refine the draft IR, provides stakeholders a second opportunity to re-engage, and also to verify that their views have been considered.
3. It includes an *alternative* provision, which allows for "*direct-to-implementation*" projects. This makes it easier to deal with those impairment cases where the development of a TMDL would be inappropriate.
4. It introduces a pathway to "*direct prioritization*" in which stakeholders can petition the Director of DOEE in special cases to have a project included in the priority list at any stage in the process (Appendix F). This provides additional opportunities to stakeholders to engage management on specific priority outcomes. Stakeholders can submit their priorities of interest(s) at any time, however, they will only be considered for the next IR.

7. Statement on Flexibility

This prioritization strategy term runs from 2016 to 2022 and will be flexible in the following respects (to account for new listings in the intervening period before 2022, including court orders and consent decrees, exercise of executive prerogative, and/or local public demand):

1. Aware that the development of this prioritization strategy in support of the Vision in the District will NOT be completed in time for adoption for the 2016 Listing Methodology, DOEE will:
    a. Include language in the 2016 Listing Methodology to recognize the shift in focus to the Vision's new prioritization approach; and that the changes that emerge following the adoption of the Vision's new prioritization approach will be applied in full in the 2018 listing/delisting.
        - The rationale: At this time, the District's TMDLs development priority is dominated by the need to satisfy the consent decree (see Appendix E). Under this scenario, it is clear that even if the District were to use the Vision prioritization approach, the final priority outcome would not change.
2. New 303(d) listings concerning pollutants that threaten human health and aquatic life will be added and prioritized in each IR's cycle.

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3. Applicable new federal regulations, criteria or guidance will be incorporated as they become available. For waters with impairments related to new national and regional concerns, monitoring and assessment will be adjusted and, if necessary, re-prioritized to protect and restore the District's waters.
4. Adaptive management:
   In consultation with stakeholders and EPA, DOEE will incorporate the principles of adaptive management so that lessons learned are used to inform the next steps of prioritization plans.

8. Plan for Where the District Will Begin Work

In order of priority, DOEE will begin work by addressing TMDLs:

1. That are subject to court order deadlines or consent decree agreement(s);
2. TMDL projects in which DOEE's and EPA's national and/or regional priorities intersect and where opportunities for collaboration exist.

Collaboration enhances efficiency and resources mobilization, and helps ensure that successful restoration will be more likely.

9. Implementation

This strategy will be implemented by DOEE's Natural Resources Administration (NRA) Divisions: Water Quality Division (WQD), Stormwater Management Division (SWMD), and Watershed Protection Division (WPD). Implementation will be coordinated:

1. To ensure prioritization consistency and integration across (CWA's 303(d), 305(b), and 319) programs in support of the new Vision;
2. To provide feedback to stakeholders on key outcomes of prioritization through robust engagement and other DOEE's existing communication protocols.

10. This Strategy's Priorities

This strategy's priorities include:

1. The District's FY2016-to-FY2022 Priority List (Appendix E).
2. Anacostia River Watershed in the District as the geographic focus for TMDL development.
3. Improving DOEE's data infrastructure by developing:
   - Data Management Plan.
   - Data Analysis Plan.
   - Data Sharing Plan.

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APPENDICES

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APPENDIX A

Table 1: Prioritization Mechanisms

	MECHANISM	MECHANISM LEVEL		
		High	**Medium**	**Low**
1.	Protection of human health and aquatic life	✓		
2.	Supporting DOEE's implementation and or revision of existing TMDLs and water quality improvement plans	✓		
	a) Court order/consent decree TMDLs			
	b) The Long-Term Control Plan (LTCP) and the Green Infrastructure (GI) projects			
	c) The MS4 TMDL Implementation Plan (MS4 TMDL-IP)			
	d) Implementation of the Chesapeake Bay TMDL WIPs			
	e) Anacostia River watershed and related restoration plan(s)			
3.	Geographic focus	✓		
	a) Anacostia River watershed			
4.	Partnerships and stakeholder interests		✓	
	a) Federal agency partnerships			
	b) Other partnerships			
5.	Issue complexity (e.g., modeling)		✓	
6.	Participation of volunteers and watershed groups		✓	
7.	National Water Quality Initiatives (NWQI)		✓	
	a) General			
	b) Specific national priorities			
	i. Nutrients			
8.	Regional priorities		✓	
	a) The Chesapeake Bay TMDLs			
9.	Protections of the District's waterbodies with sources upstream (i.e., watersheds in Maryland)		✓	
10.	Other strategic frameworks		✓	
	a) Environmental Justice (EJ)			
11.	Screening Tools			✓
	a) Recovery Potential Tool			
	b) USGS' SPARROW			
	c) WATERSCAPE			
12.	Emerging mechanisms			✓

Table 2: Prioritization Factors

	FACTOR	FACTOR LEVEL		
		High	**Medium**	**Low**
1.	Funding availability	✓		
2.	Pollutant causing impairment	✓		
3.	Available quality data	✓		
4.	Restoration potential	✓		
5.	Regulatory tools		✓	
6.	Straight to implementation		✓	
7.	Water quality and watershed related programs activities		✓	
8.	Water quality standards		✓	
9.	Water quality characteristics and trends		✓	
10.	Watershed characteristics		✓	
11.	Water quality/watershed models		✓	
12.	Pollutant sources			✓
13.	Other strategic frameworks			✓
14.	Screening tools			✓
15.	Emerging mechanisms			✓
16.	Funding availability			✓

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APPENDIX B

GENERAL PRIORITIZATION MATRIX
for
Use with Stakeholders on TMDLs Development

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How to Use this Prioritization Analysis Matrix

The Process:

1. As a group freely discuss all the project activities/projects that need to be prioritized.
2. Review list of activities/projects to determine relevance to disparities, reduce redundancy or duplication and clarify meaning. Consolidate activities/projects, if appropriate.
3. As a group, use the Prioritization Matrix below to rank order activities/projects. Rank activities/projects for each criterion using the following scale:

   High = 3 points; Medium = 2 points; Low = 1 point
   [This scale range is deliberately kept small because the line between high, medium, or low can be very thin]

4. Assign total points for each activities/projects.
5. Sum up all the total points for each project/activity to determine the priority score. Record the results in the provided worksheet.
6. Analyze the results and identify the top three activities/projects.
7. Continue discussions until DOEE and stakeholders achieve a consensus on the top three activities/projects.
8. Document the results of the consensus on priority, if consensus is achieved. If not, keep trying.

Criteria:

1. **Urgency:**
   a. Is this a priority project/activity that needs to be addressed in the next 1 year?
   b. Is this a priority project/activity that needs to be addressed in the next 2 years?
   c. Is this a priority project/activity that needs to be addressed in the next 3 years, or longer?
2. **Potential Impact:**
   a. Is it likely that addressing this critical issue will have a significant impact on one or more stakeholders?
   b. Is there a reason or reasons to believe you can be successful on this issue?
   c. Is it likely that addressing this critical issue will have a significant impact on one or more specific populations?
3. **Actionable/Feasible:**
   a. Are there opportunities for action to address the critical issue?
   b. Is there room to make meaningful improvement on the issue?
   c. Is this a priority issue subject to a court order/consent decree?
4. **Resources** (*funds, staff, water quality values/technical complexity interface, and expertise*)**:**
   a. Are resources readily available or likely resources can be obtained to address the critical issue?
   b. Are there stakeholder resources to work on the issue?
   c. If not, are there alternative ways to get the needed resources?
5. **Stakeholder Interest and Readiness:**
   a. Is this a critical issue identified as important by stakeholders?
   b. Are people in the community interested in the issue?
   c. Is there stakeholder definitive push to move this initiative forward?
6. **Integration:**
   a. Is there opportunity for collaboration?
   b. Is there opportunity to build on existing initiatives?
   c. Will this duplicate efforts?

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Prioritization Analysis Matrix
(An Example)

Issue(s) to be Ranked/Scheduled:

Revision of consent decree TMDLs and their priority/ranking

Goal:

DOEE is collaborating with EPA and other stakeholders to revise toxic TMDLs to satisfy the requirements of the settlement agreement reached between the United States Environmental Protection Agency (EPA) and Anacostia Riverkeepers, Friends of the Earth, and Potomac Riverkeepers (Case No.: 1:09-cv-00098-JDB of January 15, 2009) that certain District TMDLs did not have a daily load expression established as required by *Friends of the Earth vs. the Environmental Protection Agency, 446 F.3d 140, 144* (D.C. Cir. 2006).

The settlement agreement requires the establishment of daily loads in District TMDLs by January 1, 2017.

Activity	Urgency	Potential Impact	Actionable/ Feasible	Resources	Stakeholder Readiness	Integration	Total Points
Sample Project/Activity #1: Toxics TMDLs revision	3	2	3	1	3	2	**14**
Sample Project/Activity #2: TSS TMDL revision.	3	2	3	2	3	3	**16**
Sample Project/Activity #3: Bacteria TMDLs revision	3	3	3	2	3	3	**17**

Note: High = 3 points; Medium = 2 points; Low = 1 point

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Prioritization Analysis Matrix Sample Worksheet

Critical Issue: _____

Goal: _____

Activity	Urgency	Potential Impact	Actionable /Feasible	Resources	Stakeholder Readiness	Integration	Total Points
Project/Activity #1:							
Project/Activity #2:							
Project/Activity #3:							
Project/Activity #4:							
Project/Activity # n:							

Note: High = 3 points; Medium = 2 points; Low = 1 point

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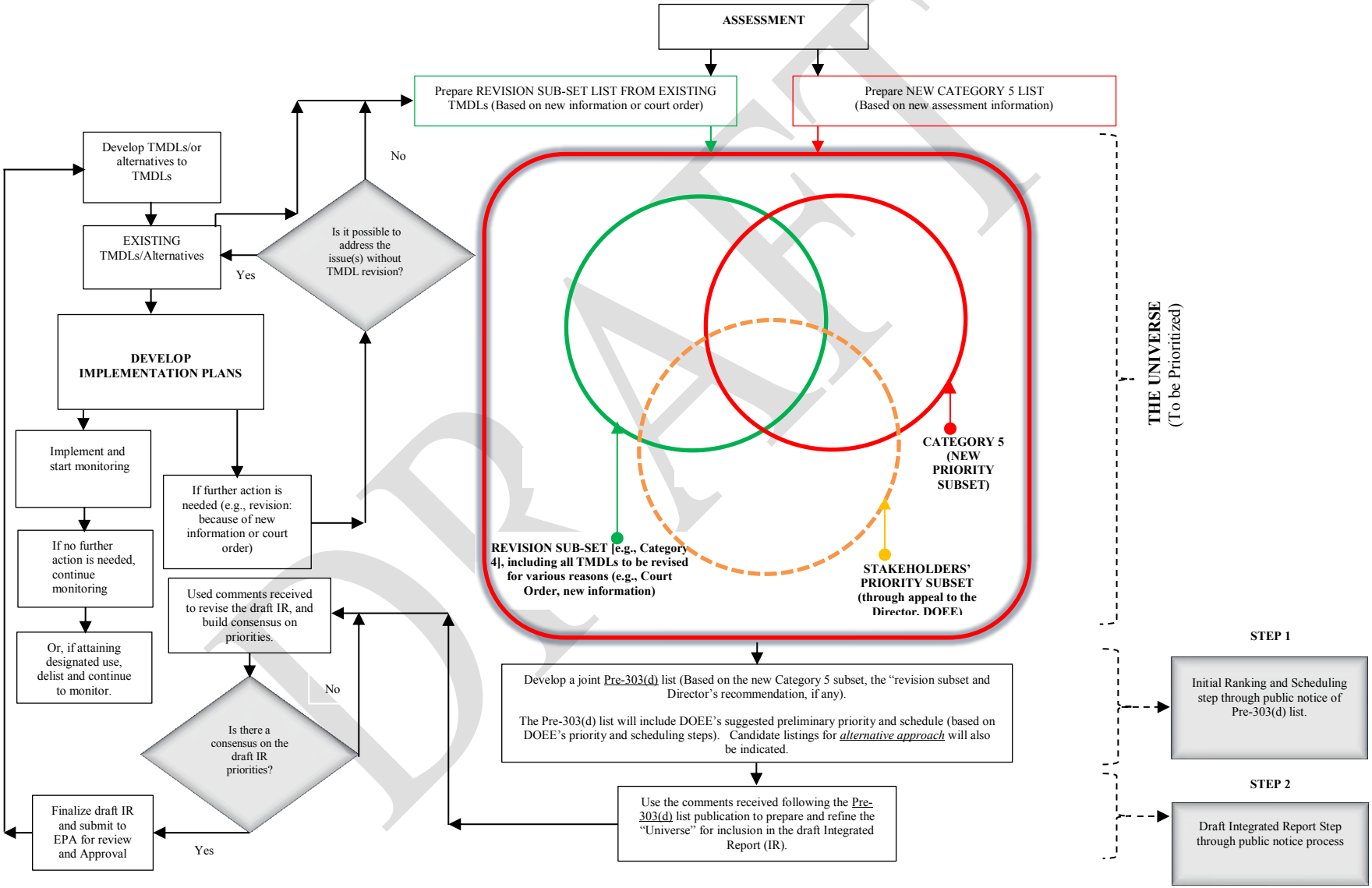
APPENDIX C

DOEE's PROPOSED SCHEME TO IMPLEMENT THE 303(D) NEW VISION'S PRIORITIZATION GOAL



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APPENDIX D

The 319 Program Elements, Integration and Reporting

Table 4: Key Elements of an effective Section 319 & DOEE's Non-Point Source (NPS) program

Key Elements of an Effective NPS Program	How NPS addresses them in the District
1. Explicit short- and long-term goals, objectives, and strategies	• Annual grant solicitation for actions on high priority waters and District- wide stewardship goals. • 5 year goals in NPS Strategy.
2. Strengthened partnerships	• WPD process is a joint effort of multiple programs within DOEE (WQD, SWMD & WPD). • Grants are provided to local, community groups, NGOs. • WPD process is used to facilitate partnerships with federal agencies either through coordinating environmental projects for waters of common interest (e.g., NWQI, or by use of pass through funding to other agencies.
3. Integration of programs	• WPD factors in approved TMDLs. Partnerships include federal programs such as NWQI.
4. Resource allocation for protection and restoration	• Performance Partnership Agreement/ Performance Partnership Grant (PPA/PPG) annual commitments. • NPS Five-Year priority. • WPD annual process for allocating resources. DOEE's decisions regarding funding of the CWA Sections 303(d) are also considered.
5. Identification and prioritization of waters	• NPS Strategy – Five-year priority for waterbodies and actions. • b) Use WPD process for prioritizing waterbodies and identifying actions.
6. Adaptive management to achieve and maintain water quality standards	• WPD annual actions development considers previous activities and data collection and uses these to decide on best next steps to address areas of concern.
7. Efficient and effective implementation	WPD has an established process that effectively identifies priority waterbodies needing actions. Implementation occurs through: • PPA/PPG commitments • EPA grant administration • WPD/DOEE project funding mechanisms
8. Review, evaluation, and revision using measures of success	WPD process includes review and analysis step prior to annual grant solicitation. Projects are also subject to revision depending on ongoing communication and quarterly reporting.

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Table 5: 303(d) New Vision's Goals & 319 Program Integration Interface

Schedule	The New 303(d) Vision Goal	How the District's WPD Addresses the Goal
2014	**Engagement** – inclusive, transparent, feedback loops	WPD selects priority watersheds based on community interest and restoration opportunities. Final WPD/Nonpoint Source (NPS) priorities and actions shared with stakeholders online.
	Assessment – initiate ongoing statewide statistical surveys	**Alternative approach:** WPD process targets water quality assessments reported in DOEE's Integrated Report and DOEE TMDL plan. Additional WPD's assessment and evaluation are also used.
2016	**Integration** – coordinate actions with other CWA programs; other agencies	WQD and SWMD participate in the WPD process. Increased internal CWA program integration including permitting, compliance, and water quality standards programs are also used.
	Prioritization – Priorities identified in the Integrated Report	WPD process provides for an annual review of priority waters and actions. Results of this review are incorporated in the NPS strategy and Integrated Report.
	Protection – Identify protection planning priorities and schedules for healthy waters consistent with the high priorities identified	Currently, no water body in District falls under the "Protection" goal. Instead, the WPD targeting process identifies water bodies for purposes of restoration. Restoration actions on waterbodies are identified in the NPS Strategy and posted on the DOEE's web page.
2018	**Alternatives** – Incorporate adaptive management and use alternative approaches to develop TMDLs implementation plans.	WPD actions are annually reviewed and are water body specific; includes elements of TMDL implementation.
2022	**Assessment** – Identify the extent of impaired and healthy waters within the District of Columbia	Assessment results and reviews are components of DOEE's Integrated Report. The Integrated Report's assessments results are subsequently incorporated in the NPS strategy.

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Section 319 Reporting and Accountability

DOEE's NPS Program is accountable for implementing the District's requirements under CWA Sections 303(d) and 319. WPD demonstrates this accountability through numerous reports and obligations, including the following:

- Grants Reporting and Tracking System (GRTS)[8] reporting on WPD grants, contracts.
- PPA and PPG work plans and reports.
- Annual NPS Report.
- Integrated Report.
- Web posting of TMDLs, BMPs, Project Reports, Annual WPD priorities in grant solicitation, and other Nonpoint Source pages on DOEE's website.
- Annual EPA 319 Progress Evaluation.
- PPA and PPA work plan development and grant review process.
- Participation in annual WPD process.
- EPA review and approval of DOEE's 303(d) impaired waters list.
- Public participation:
    - Outreach events – public presentations/fairs/ Questions &Answers (Q&A) sessions at community meetings.
    - WPD water body targeting is based on active community engagement and restoration opportunities.
    - Chesapeake Bay Program participation.

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[8] http://iaspub.epa.gov/apex/grts/f?p=110%3A199

APPENDIX E

Table 6: District's FY2016-to-FY2022 Priority List (The Consent Decree is incorporated herein by reference for specific schedules).

Assessment Unit ID	Assessment Unit Name	Cause Name
DCAKL00L_00	Kingman Lake	Arsenic
DCAKL00L_00	Kingman Lake	Chlordane
DCAKL00L_00	Kingman Lake	DDT
DCAKL00L_00	Kingman Lake	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCANA00E_01	Anacostia River	Arsenic
DCANA00E_01	Anacostia River	Chlordane
DCANA00E_01	Anacostia River	Copper
DCANA00E_01	Anacostia River	DDD
DCANA00E_01	Anacostia River	DDE
DCANA00E_01	Anacostia River	DDT
DCANA00E_01	Anacostia River	Dieldrin
DCANA00E_01	Anacostia River	Heptachlor Epoxide
DCANA00E_01	Anacostia River	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCANA00E_01	Anacostia River	Zinc
DCANA00E_02	Anacostia River	Arsenic
DCANA00E_02	Anacostia River	Chlordane
DCANA00E_02	Anacostia River	Copper
DCANA00E_02	Anacostia River	DDD
DCANA00E_02	Anacostia River	DDE
DCANA00E_02	Anacostia River	DDT
DCANA00E_02	Anacostia River	Dieldrin
DCANA00E_02	Anacostia River	Heptachlor Epoxide
DCANA00E_02	Anacostia River	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCANA00E_02	Anacostia River	Zinc
DCRCR00R_01	Rock Creek	Copper
DCRCR00R_01	Rock Creek	Lead
DCRCR00R_01	Rock Creek	Mercury
DCRCR00R_01	Rock Creek	Zinc
DCRCR00R_02	Rock Creek	Copper
DCRCR00R_02	Rock Creek	Lead
DCRCR00R_02	Rock Creek	Mercury
DCRCR00R_02	Rock Creek	Zinc
DCTBR01R_00	Broad Branch	Chlordane
DCTBR01R_00	Broad Branch	Dieldrin
DCTBR01R_00	Broad Branch	Heptachlor Epoxide
DCTBR01R_00	Broad Branch	Polychlorinated Biphenyls (PCBs)
DCTDA01R_00	Dalecarlia Tributary	Dieldrin
DCTDA01R_00	Dalecarlia Tributary	Heptachlor Epoxide
DCTDO01R_00	Dumbarton Oaks	Chlordane
DCTDO01R_00	Dumbarton Oaks	Dieldrin
DCTDO01R_00	Dumbarton Oaks	Heptachlor Epoxide
DCTDO01R_00	Dumbarton Oaks	Polychlorinated Biphenyls (PCBs)
DCTDU01R_00	Fort Dupont Creek	Arsenic
DCTFC01R_00	Fort Chaplin Run	Arsenic
DCTFD01R_00	Fort Davis Tributary	Arsenic

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Assessment Unit ID	Assessment Unit Name	Cause Name
DCTFE01R_00	Fenwick Branch	DDT
DCTFE01R_00	Fenwick Branch	Dieldrin
DCTFE01R_00	Fenwick Branch	Heptachlor Epoxide
DCTFE01R_00	Fenwick Branch	Polychlorinated Biphenyls (PCBs)
DCTFS01R_00	Fort Stanton Tributary	Arsenic
DCTFS01R_00	Fort Stanton Tributary	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCTHR01R_00	Hickey Run	Chlordane
DCTHR01R_00	Hickey Run	DDE
DCTHR01R_00	Hickey Run	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCTKV01R_00	Klingle Valley	Dieldrin
DCTKV01R_00	Klingle Valley	Heptachlor Epoxide
DCTKV01R_00	Klingle Valley	Polychlorinated Biphenyls (PCBs)
DCTLU01R_00	Luzon Branch	Chlordane
DCTLU01R_00	Luzon Branch	Dieldrin
DCTLU01R_00	Luzon Branch	Heptachlor Epoxide
DCTLU01R_00	Luzon Branch	Polychlorinated Biphenyls (PCBs)
DCTMH01R_00	Melvin Hazen Valley Branch	Dieldrin
DCTMH01R_00	Melvin Hazen Valley Branch	Polychlorinated Biphenyls (PCBs)
DCTNA01R_00	Nash Run	Arsenic
DCTNA01R_00	Nash Run	Chlordane
DCTNA01R_00	Nash Run	Dieldrin
DCTNA01R_00	Nash Run	Heptachlor Epoxide
DCTNA01R_00	Nash Run	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCTNS01R_00	Normanstone Creek	Dieldrin
DCTNS01R_00	Normanstone Creek	Heptachlor Epoxide
DCTNS01R_00	Normanstone Creek	Polychlorinated Biphenyls (PCBs)
DCTOR01R_00	Oxon Run	Dieldrin
DCTPB01R_00	Popes Branch (Hawes Run)	Chlordane
DCTPB01R_00	Popes Branch (Hawes Run)	DDE
DCTPB01R_00	Popes Branch (Hawes Run)	Heptachlor Epoxide
DCTPB01R_00	Popes Branch (Hawes Run)	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCTPI01R_00	Pinehurst Branch	Dieldrin
DCTPI01R_00	Pinehurst Branch	Heptachlor Epoxide
DCTPI01R_00	Pinehurst Branch	Polychlorinated Biphenyls (PCBs)
DCTPO01R_00	Portal Branch	Dieldrin
DCTPO01R_00	Portal Branch	Heptachlor Epoxide
DCTPO01R_00	Portal Branch	Polychlorinated Biphenyls (PCBs)
DCTPY01R_00	Piney Branch	Chlordane
DCTPY01R_00	Piney Branch	Dieldrin
DCTPY01R_00	Piney Branch	Heptachlor Epoxide
DCTPY01R_00	Piney Branch	Polychlorinated Biphenyls (PCBs)
DCTSO01R_00	Soapstone Creek	Chlordane
DCTSO01R_00	Soapstone Creek	Dieldrin

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Assessment Unit ID	Assessment Unit Name	Cause Name
DCTSO01R_00	Soapstone Creek	Heptachlor Epoxide
DCTSO01R_00	Soapstone Creek	Polychlorinated Biphenyls (PCBs)
DCTTX27R_00	Texas Avenue Tributary	Arsenic
DCTTX27R_00	Texas Avenue Tributary	Chlordane
DCTTX27R_00	Texas Avenue Tributary	DDD
DCTTX27R_00	Texas Avenue Tributary	DDE
DCTTX27R_00	Texas Avenue Tributary	DDT
DCTTX27R_00	Texas Avenue Tributary	Dieldrin
DCTTX27R_00	Texas Avenue Tributary	Heptachlor Epoxide
DCTTX27R_00	Texas Avenue Tributary	Polycyclic Aromatic Hydrocarbons (PAHs) (Aquatic Ecosystems)
DCTWB00R_01	Watts Branch	Chlordane
DCTWB00R_01	Watts Branch	Dieldrin
DCTWB00R_02	Watts Branch	Chlordane
DCTWB00R_02	Watts Branch	Dieldrin

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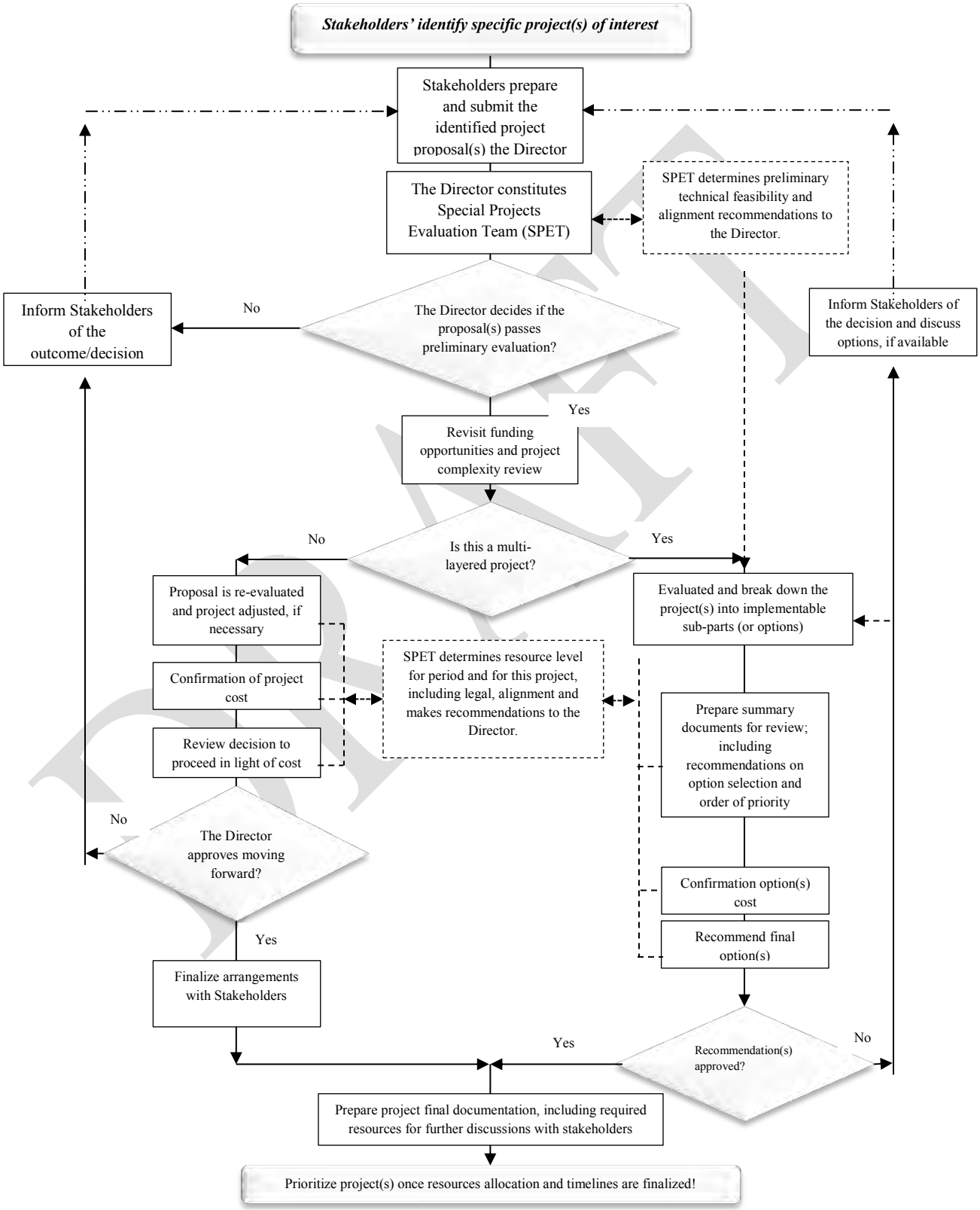
APPENDIX F

Process for Stakeholders to Submit TMDL Priority of their interest to the Director



District Department of Energy and Environment (DOEE)

303(d) Program New Vision

Stakeholders Engagement Strategy (SES)

(2016-2022)

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April 2016

DEPARTMENT OF ENERGY & ENVIRONMENT
GOVERNMENT OF THE DISTRICT OF COLUMBIA

Summary

- A stakeholder is an individual or group with an interest in the District's Department of Energy & Environment's (DOEE's) broader environmental management mandate, stewardship, and services.

- DOEE has a large and diverse stakeholder group. DOEE therefore recognizes that it should engage with different stakeholders for different reasons and that it should enable diverse interests and individuals to contribute to DOEE policy making, including engaging in constructive dialogue in which all voices have an opportunity to contribute.

- This stakeholder engagement strategy outlines DOEE's approach to communicating and working with stakeholders for water resource related topics. It is an integral part of developing an understanding of its stakeholders. This helps DOEE shape regulations and future plans and priorities.

- Stakeholder engagement is a key part of DOEE's regulatory activities and an important contributor to DOEE's mandate and responsibility to the residents of the District of Columbia.

- DOEE also recognizes the level of interest and the degree of influence on the agency varies among its stakeholders. Because different issues have different stakeholders, DOEE engagement will vary as appropriate. As issues emerge, DOEE will develop new relationships to better manage change in service provided to District residents.

- DOEE will publish this draft *Engagement Strategy* to solicit feedback. Public comments will be incorporated into Section 6 of this draft strategy to ensure stakeholders' contributions are not just visible, but are also items for implementation and further action.

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1. Introduction

As part of the implementation of the "*Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act (CWA) Section 303(d) Program*," the District's Department of Energy & Environment (DOEE) is required to develop a strategy to "engage" stakeholders[1]. This "Stakeholder Engagement Strategy" outlines DOEE's engagement framework, consultation approaches, and includes metrics by which outcomes will be measured.

1.1 Background[2]

On December 5, 2013, the U.S. Environmental Protection Agency (EPA) announced a new collaborative framework for managing CWA 303(d) program responsibilities, entitled *"A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program[3]"* (Vision). This new Vision reflects the successful collaboration among states and the EPA, which began in August 2011. The vision enhances the overall efficiency of the CWA 303(d) program. For example, it encourages states to focus attention on priority waters. It also provides states with the flexibility to use available tools beyond Total Maximum Daily Loads (TMDLs) to effectively restore and protect water quality. There is no "one size fits all" approach to restoring and protecting water resources; flexibility allows each state, including the District of Columbia (the District), to more efficiently develop tailored strategies to implement their CWA 303(d) Program responsibilities within the context of its own water quality goals.

Accountability is ensured through new CWA 303(d) Program measures by which the success of implementation efforts is tracked. This ensures restoration and protection of the nation's streams, rivers and lakes is achieved. While the Vision provides a new framework for implementing the CWA 303(d) Program, it does not alter state and EPA responsibilities or authorities under the CWA 303(d) regulations.

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[1] Within the meaning of this strategy, a stakeholder is an individual or group with interest in DOEE, its mandate and its services as it implements the CWA 303(d) Program, including Sections 319 and 305. Stakeholder engagement is a key part of DOEE's regulatory activities and an important contributor to DOEE's objectives. See Appendix B for a list of categories of DOEE stakeholders. See Appendix C for a "Snapshot of the District of Columbia's community."

[2] http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/programvision.cfm

[3] A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program (PDF)

2. Stakeholder Engagement Framework

2.1 Definition of Stakeholder Engagement

Stakeholder engagement is the process of involving people in the decisions that affect their lives. It lends transparency to the process and increases accountability. It illustrates the value of stakeholders and provides them with a sense of ownership and shared responsibilities for decision making. More importantly, stakeholder engagement helps build trust in the decisions DOEE makes consistent with its mandate.

Stakeholder engagement is a key part of DOEE's plan to deliver on the six goals of the Vision. DOEE will use collaboration, partnerships and innovative media initiatives to bring this plan to fruition.

2.2 The spectrum of stakeholder engagement[4]

The International Association of Public Participation (IAP2) is the gold standard framework for best management practices in planning public engagement in a decision making process. A standard approach in the IAP2 framework is that the level of engagement is determined from within the best practices spectrum. Informing is at one end of the spectrum; empowerment is at the other (Fig. 1).

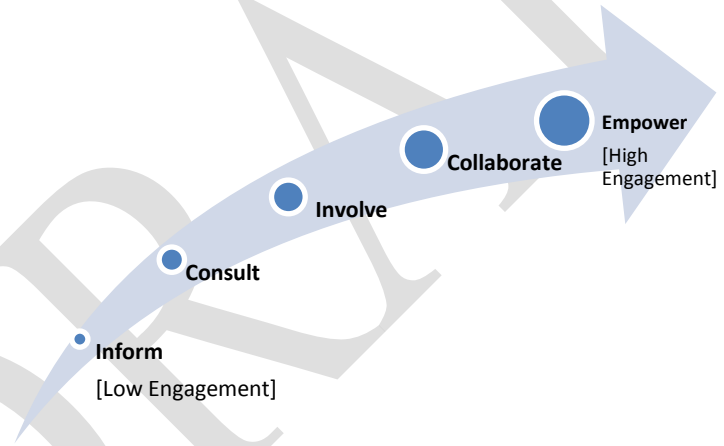

Figure 1: A diagrammatic representation of IAP2 Public Participation Spectrum.

The meaning of each level of participation in the spectrum is as follows:

- **Informing:** takes place when a decision has already been made or action is required, and the stakeholders are being informed to ensure that those affected are aware of the facts.
- **Consultation:** learning about stakeholders' views.
- **Involving:** a deepening of the consultation process, i.e., using stakeholders as advisors on an ongoing basis.
- **Collaboration:** working in partnership with the stakeholders to reach a decision.
- **Empowerment**: putting decision-making responsibility in the hands of the stakeholders.

[4] https://www.iap2.org.au/documents/item/84

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In all engagement processes, DOEE will lead in determining the level of stakeholder participation. See appendix A.

3. Principles of Stakeholder Engagement

The following principles guide DOEE's approach to stakeholder engagement:

1. **Transparency:** Engagement should be clear in scope and purpose.
2. **Consistent communication:** Engagement should promote dialogue and enable genuine discussion. It should be supported by timely and accurate information, providing a space to weigh options and develop a common understanding.
3. **Enhanced understanding of program objectives:** Ensuring stakeholders are well informed increases the probability decisions in a consistent manner, rooted in scientific understanding.
4. **Influence:** Engagement should be reflected in outcomes; stakeholders should be able to identify the impact of their involvement.
5. **Inclusiveness:** Engagement should be accessible and balanced; it should capture a full range of values and perspectives. Mechanisms and frameworks that support an accessible and inclusive engagement program include:

    - Stakeholder Advisory Panel;
    - District government inter-agency forums;
    - Regularly scheduled meetings with federal agencies;
    - A range of avenues for the public to provide feedback on new policies and projects;
    - Workshops with local schools and organizations;
    - A network of neighborhood service centers that provide information on current state of engagement;
    - Targeted outreach to the broad range of cultural groups in the District; and
    - Platforms to facilitate online engagement.

These principles are informed by the IAP2 core values[5] and reflect DOEE's values of quality, partnership, integrity, and respect.

DOEE will:

1. Ensure engagement is timely, accessible, and consistent;
2. Undertake engagement activities to overcome barriers to stakeholder participation and build their capacity play a role in the decision-making process.
3. Review and evaluate, with the stakeholders, the effectiveness of this engagement strategy.
4. Implement any statutory consultation required by the District or federal laws.

[5] http://www.iap2.org/?page=A4

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4. Strategy Goal and Objectives

4.1 Goal

To ensure that DOEE stakeholders have an opportunity to contribute to the full range of the *Section 303(d) Vision Program* goals[6] (engagement, prioritization, protection, integration, alternatives, and assessment, including evaluation of accomplishments) in a manner that meets their needs.

4.2 Objective

To ensure a stakeholder's opportunity to participate is meaningful and effective.

Specific engagement objectives include:

1. Providing opportunities for stakeholders to participate in DOEE's decision-making process to ensure outcomes that benefit District residents;
2. Building a strong foundation for understanding and working with stakeholders to promote confidence in DOEE's decision-making process;
3. Developing and sustaining partnerships and utilizing modern approaches to empower stakeholders to achieve the Section 303(d) Long-Term Vision goals.

5. Stakeholder Engagement Approaches

DOEE will offer a range of opportunities and activities for stakeholders to provide feedback to help inform and improve DOEE's environmental decision-making, policies and actions.

Specific engagement opportunities and activities include:

1. Stakeholder meetings: workshops, seminars, talks, conversations, community and/or local events, drop-in sessions, and roundtables.
2. Public exhibitions, etc.
3. Information sharing using traditional and new media, e.g., websites, social media, and public libraries).
4. Online consultation portal.
5. Stakeholder/community reference groups.
6. Advisory panels, non-governmental organizations (NGOs) fora, and outreach to volunteers and other interest groups.
7. High school/college outreach workshops.
8. Stakeholders/community satisfaction surveys.
9. Notifications/signage.
10. Neighborhood service centers and community centers.

[6] http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/upload/vision_303d_program_dec_2013.pdf

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6. This Strategy's Priorities[7]

DOEE's specific priorities to make sure that the new Vision's stakeholder engagement goal is realized in the District include the following:

1. Establishing a Stakeholder Advisory Panel (SAP).
2. Strengthening partnerships.
3. Holding community forums or open houses.
4. Providing support and services to stakeholders (e.g., gathering a task force to target a specific, ongoing issue).
5. Creating volunteer opportunities.
6. Giving public presentations.
7. Getting the word out.
8. Letting someone else open the door for us (DOEE).
9. Inviting the community to contact us (DOEE).
10. Performing stakeholder surveys to evaluate achievement and progress.
11. Developing a DOEE policy on stakeholder engagement.
12. Strengthening data collection, data quality, utilization and sharing.

7. Implementation

This strategy will be implemented by DOEE's Natural Resources Administration (NRA) Divisions: Water Quality Division (WQD), Stormwater Management Division (SWMD), and Watershed Protection Division (WPD). NRA will:

1. Coordinate the execution of this strategy's priorities (section 6 above) to ensure consistency and integration across programs and services offered by NRA in support of the Section 303d New Vision.
2. Deliver feedback to stakeholders on key outcomes of engagement through DOEE's existing communication protocols.
3. Ensure this strategy is integrated with the other goals of the Section 303(d) New Vision.
4. Review the strategy as necessary.

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[7] See **Appendix D** for details on additional *Strategic Areas* under consideration.

Appendix A: Stakeholder Matrix on Engagement Processes

Engagement Level	Goal	Communication	What DOEE will do	Engagement Approach
INFORM	Inform or educate stakeholders.	One-way (DOEE to stakeholder – no invitation to reply).	DOEE will keep stakeholders informed.	Forums Periodic meetings Surveys Campaigns Digital media Social media Integrated Reports (IR) [issued every 2 years]
CONSULT	Gain information and feedback from stakeholders to inform decision made internally.	Limited two-way: DOEE will share documents, or ask questions and receive stakeholders' comments or answers.	DOEE will keep stakeholders informed, listen to their concerns, consider their insights and provide feedback on its decision.	Regulatory impact assessments Surveys One-to-one meetings Periodic meetings IR
INVOLVE	Work directly with stakeholders to ensure their concerns are fully understood and considered in decision-making.	Two-way or multi-way between DOEE and stakeholders. Learning on both sides, but each act separately.	DOEE will work with stakeholders to ensure their concerns are understood, to develop alternative proposals and provide feedback about how stakeholders' views influenced the decision-making.	Forums Periodic Meetings Surveys Campaigns Digital media Social media IR
COLLABORATE	Partner with or convene a network of stakeholders to develop mutually agreed solutions and joint plan of action.	Two-way or multi-way: Learning, negotiation and decision-making on both sides. Stakeholders work together to take action.	DOEE will look to stakeholders for direct advice and participation in finding and implementing solutions to shared challenges.	Projects; Memorandum of Understanding (MOU), IR; Memorandum of Agreement; Joint Funding Agreement; Grants; etc.
EMPOWER	Delegate decision-making on a particular issue to stakeholders.	Stakeholders have formal role in decision-making or decision-making is partly or wholly delegated to stakeholders.	DOEE will implement what stakeholders decide.	Partnerships IR

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Appendix B: Categories of DOEE Stakeholders

Category	Sub-category
Employee	Senior Management Staff Consultants Staff Forum
Customer	Engineers Scientists Consultants District of Columbia Building Industry Association (DCBIA) District of Columbia Water and Sewer Authority (DC Water) Companies Public
Technical Services Providers	Vendors of materials/ services Agencies, companies, etc. Consultants/engineers
Government and Regulators	Federal government regulators (e.g., EPA) Surrounding local government departments (e.g., DC Water)
Political	Federal Government • United States Congress DC Government • Council of the District of Columbia (DC Council) • Executive Office of the Mayor (EOM)
Partners	Local Authorities (e.g., Prince George's County) Other Government Departments Awarding Organizations
Local District Wards and Communities	Community/Ward Representatives/Leader Community Job Training Centers (e.g., THEARC) Coordinators
Academic	Universities • University of District of Columbia (UDC) • University of Maryland (UM) Approved training providers (e.g., US Army Corps of Engineers)
Media	Print Broadcast Digital (Bloggers, etc.)
Industry and Trade Associations	DCBIA
Local Non-Governmental Organizations	Anacostia Riverkeeper Potomac Riverkeeper Anacostia Watershed Society (AWS) DC Environmental Network Anacostia Watershed Citizens Advisory Committee (AWACS)
National Non-Governmental Organizations (with Chapters in the District)	Earthjustice Natural Resources Defense Council (NRDC)
Non-Governmental Organizations (with Specific Regional Mandates)	Interstate Commission on Potomac River Basin (ICPRB) Metropolitan Washington Council of Governments (MWCOG)
Others	To be identified

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Appendix C: A Snapshot of the District's Community[8,9]

Category	Description
National/ International Stakeholders Nexus	District of Columbia: • Has a total land area of 69 square miles. • Is the nation's (United States of America's) capital and is home to the three branches of US Federal Government (The Legislature (the House and the Senate; the Judiciary; and the Executive (under which are 16 Departments and approximately 121 agencies and quasi-agencies)). The federal footprint is approximately 30% of the total physical land area (21 square miles). The District also hosts 187 accredited foreign embassies. • Is home to over 658,000 residents and provides over 760,000 jobs. Including visitors and students, it is estimated that there are more than one (1) million people in the District during the day. • Is one of the fastest growing local government areas in Washington Metropolitan Area (WMA) in terms of residential population in the last 10 years. The July 2014 population estimate was 658,893 people. • It is also home to many national museums, creative and performing arts, and businesses. • Is the Headquarters of the United States Environmental Protection Agency (EPA). • The District bequeathed the "Daily Means Daily" mantra to the nation following the *U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015, (April 25 2006,)*).
Demographic Profile	• Median age of 33.8 years – some 2.5 years younger than the metropolitan area average. • Nearly half of city residents are aged between 18 and 44 years, compared to less than 37% in all of the United States (The 2010 Census). • 82 % of city residents live in family households with a partner and/or children or other relatives or non-relatives; over 17.7% of city residents live alone in one-person households. • 25% of city residents are currently attending an educational institution, including more than one (1) in 7 of those aged 15 and over undertaking a postsecondary course. • 55% of residents have a bachelor degree or higher and 24 % of the city resident workforce work is in a professional occupation.
Cultural Diversity	• 14% of city residents were born overseas. Residents born in Africa now comprise 2.5 % and Asia another 2.5 % of the population of the city, respectively. Currently, nearly 17 % of the city workforce was born overseas. • 18 % of the resident population speaks a language other than English. Apart from English, the most common languages spoken at home are Spanish, French, Chinese, Korean and Tagalog.
Residents, Workers and Transportation	• 66 % of residents who work do so at a location within the city. • 63 % of households in the city own a car, compared to 94% for the WMA. • The number of walk-to-work workers increased by 2.5 % and those bicycling has gone up by 2.3 % in the last 5 years.
Housing	• 42% of the city households own their dwellings (the 2010 Census).

[8] Most of the data and information were provided by DC Office of Planning (DCOP) on 06/12/15 (Courtesy: Dr. Joy Phillips).
[9] http://quickfacts.census.gov/qfd/states/11000.html

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Appendix D: An Expanded "Low Hanging Fruit" Version of the Strategic Direction

1. Involving stakeholders in the planning process.
During the design and development of problem-solving projects, WQD, SWMD and WPD personnel will engage key stakeholders as follows: holding focus groups and meetings, convening steering committees, and conducting surveys, etc. In meetings, conversations and surveys, DOEE wants to focus on getting the stakeholders talking about what they see as local resources as well as local problems and suggested responses. The goal is to inform program design and build a base of long-term support – based on trust; shared responsibility for decisions or actions; come up with solutions; cost-saving; improved working relationships; and enhanced communication and coordination.

"Stakeholders need to be involved at each stage of the watershed planning process. Their knowledge of local social, economic, political, and ecological conditions provides the yardstick against which proposed solutions must be measured. Also, the goals, problems, and remediation strategies generated by stakeholders define what's desirable and achievable. Weaving stakeholder input, legal requirements, and resource protection strategies into an integrated tapestry for managing surface water and groundwater resources is what the watershed approach is all about."

http://www.epa.gov/owow/watershed/outreach/documents/stakeholderguide.pdf

Objective key measure(s):

a. DOEE developing its own version of "Outreach" Guidance and documents, or simply incorporate by reference all relevant EPA documents.
b. Number of outreach initiatives

2. Assembling stakeholder's advisory panel.
Adding stakeholders' voices is often useful. A "Stakeholder Advisory Board" can be an effective vehicle for adding stakeholders' voices. A "Stakeholder Advisory" board may comprise key members who meet regularly to discuss a variety of local problems and how they are being resolved. Representatives can include Riverkeepers, other environmentalists or their representatives and volunteers, thereby ensuring accountability to District citizens and residents. This added voice brings both diversity and outside perspective into the inside and helps keep DOEE grounded and focused on the stakeholders DOEE is serving.

Objective key measure(s):

a. DOEE assembling a "Stakeholder Advisory Board/Panel."
b. Number of stakeholder advisory board's meetings held.
c. Number of advisory board recommendations that are incorporated in decision making.

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3. Holding stakeholder/community forums or open houses.
Some problem-solving initiatives require holding open houses to help educate the public and to brainstorm solutions to problems. These meetings are typically held in the early evening and may have open agendas or be focused on an urgent problem (e.g., the on-going dialogue with stakeholders regarding the MS4 Implementation Plan). Stakeholders may also use these gatherings to discuss other topical public issues amongst themselves. DOEE officials may also use these opportunities to answer questions or complaints, highlight successes, address issues and begin discussions on new or emerging initiatives.

Objective key measure(s):

a. Number of "open houses" held.
b. Number of invitations received by DOEE staff to attend "open houses."
c. Number of invitations sent by DOEE staff to stakeholders to attend "open houses."

4. Gathering a task force to target a specific ongoing issue.
A task force/ Tiger Team or standing committee can successfully be used to target a specific problem. For example, DOEE can create a task force to address problems associated with illegal dumping sites. At monthly meetings, members may focus on new sites, track clean-ups, and come up with a strategic plan to prevent further dumping.

Objective key measure(s):

a. Number of task force groups/ Tiger Teams constituted.
b. Number of issues raised and resolved, or not resolved.
c. Number of invitations sent by DOEE staff to stakeholders to attend "open houses."

5. Creating opportunities for volunteers.
Volunteers can strengthen bonds between DOEE and the communities it serves. Volunteers can perform tasks, conduct surveys and act as mentors or tutors to younger and budding volunteers. Some problem-solving initiatives use volunteers to identify areas in their community in need of attention (e.g., site cleanup, illegal dumping). Here in the District, volunteers have participated in removing trash from rivers in response to trash menace and the trash TMDL. They have helped remove litter and clean up schools, streets, and parks. They have also participated in DOEE's own "all-hands-on-deck" community clean-ups. These kinds of volunteer participation are great ways of making volunteers, particularly the young, learn to take responsibility in creating a healthier environmental setting not just for them, but also for the entire District community. Volunteerism also inculcates into the participants concrete skills that people like and easily support. Learned skillsets can easily be built into practical and specific problem-solving skills, which could then be extended and integrated into deepening DOEE's community outreach.

Sample "Involving Youth in your Agency Sustainability Activities" Guidance:

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http://www.ca-ilg.org/document/involving-youth-your-agencys-sustainability-activities

Objective Key Measure(s):

a. Development of a clear DOEE volunteer support strategy.
b. Number of volunteer groups supported.
c. Number of volunteer activities organized by DOEE in support of, or jointly in collaboration with, volunteers.

6. Giving presentations at public meetings and agencies.
Public meetings hosted by DOEE's technical "Administrations," such as the NRA, and Environmental Services Administration (ESA), are a great place for practitioners to talk about their programs. To get stakeholder/community buy-in, the lead technical personnel give presentations about the project's goals and objectives and then invite stakeholder/community representatives to offer their views.

Objective Key Measure(s):

a. Number of presentations held.
b. Number of public meetings held.
c. Number of project's information made available online.

7. Perform stakeholders/community surveys.
A survey gathers information from hundreds and potentially thousands of stakeholders, giving planners and practitioners a detailed picture of a community's priorities, expectations, and awareness. Survey design should be simple and as readily accessible as possible. The surveys, where appropriate, should be conducted using low-cost online survey tools (e.g., http://www.surveymonkey.com) and used to evaluate impact(s) of, say, a potential decision, on DOEE's communities/stakeholders. Assessment of impact(s) on a community is a critical input in decision-making.

Sample "Making Decision Process Visible" Guidance:

http://www.ca-ilg.org/making-decision-process-visible

http://www.ca-ilg.org/sites/main/files/file-attachments/part_2_making_the_decision_process_visible_1.pdf

Objective Key Measure(s):

a. Number of surveys conducted.
b. Number of different topics on which surveys are conducted.
c. Support for analysis of survey responses received.
d. Number of survey results incorporated in decision-making and made visible.

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8. Getting the word out.
DOEE can use a number of methods to share information (e.g., success stories) with stakeholders and obtain feedback. These methods include using local media, websites, newsletters, listservs, emails, public libraries, campaigns/events, new media (Facebook, Twitter, etc.). By regular sharing information with and receiving feedback from stakeholders on problem-solving strategies, alternative solutions, implementation outcomes, and other results, DOEE can demonstrate to stakeholders that it is their real partner on issues that matter to them. For example, DOEE project staff can create an online journal (or "blog"), say, "Successes and Issues in District Watersheds" (http://whatishappeninginyourdcwatershed.blogspot.com/), that details the project's successes and failures and invites stakeholders and the general public to engage in discussions.

Sample "Getting Word out" Guidance and documents:

http://www.ca-ilg.org/getting-word-out

http://www.ca-ilg.org/sites/main/files/file-attachments/part_3_getting_the_word_out_1.pdf

Samples "Providing & Storing Detailed Information" Guidance:

http://www.ca-ilg.org/providing-storing-detailed-information

http://www.ca-ilg.org/sites/main/files/part_1_no_page_numbers.pdf

Sample "Emerging Technologies" Guidance:

http://www.ca-ilg.org/sites/main/files/file-attachments/part_5_no_page_numbers.pdf

http://www.ca-ilg.org/overview/emerging-technologies

Objective Key Measure(s):

a. Number of campaigns held.
b. Creation of a website for sharing success stories.
c. Traffic/number of visitors to the website.
d. Number of issues of newsletters shared with the stakeholders/public.
e. Setting up of listserv.
f. Number of articles/advertisements in local media.
g. Number of issues/subject matter of the advertisements.
h. Development of DOEE's own guidance documents similar to the above examples.

9. Letting someone else open the door for DOEE.
To gain credibility with District wards, neighborhoods and community groups, NRA divisions will work to form relationships with respected community members and let them introduce NRA staff to their wards and neighborhoods. For example, DC Council members or neighborhood leaders should be appropriately approached and encouraged to help introduce DOEE events at their respective Wards and neighborhood events.

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Objective Key Measure(s):

a. Number of "open houses" held.
b. Number of invitations received by DOEE staff to attend "open houses."
c. Number of invitations sent by DOEE staff to stakeholders to attend "open houses."

10. Inviting Stakeholders to contact DOEE.
Make staff accessible to the stakeholders and the community at large. Include contact information and/or feedback forms on websites and in brochures.

Sample "Inviting Public Input" Guidance and documents:

http://www.ca-ilg.org/overview/inviting-public-input

http://www.ca-ilg.org/sites/main/files/file-attachments/part_4_inviting_public_input_1.pdf

Objective Key Measure(s):

a. DOEE's own version of "Inviting Public/Stakeholder Input" guidance and documents.

11. Develop DOEE policy on Stakeholder Engagement and related issues.
DOEE believes that having a stakeholder engagement policy will signal agency commitment and help strengthen and improve DOEE's overall communication and involvement with its stakeholders.

Objective Key Measure(s):

a. DOEE's own version of "Inviting Public/Stakeholder Input" Guidance and documents.

12. Strengthening data collection, data quality, utilization and sharing.
Data is or will be the new currency of communicating with DOEE's stakeholders. Many of the District's stakeholders are digitally empowered. DOEE should enhance this digital empowerment by collecting and sharing high quality data with its stakeholders. Quality enhancement should occur both in the geographic and monitoring data spaces.

Objective Key Measure(s):

a. Support and develop finer-scale mapping that meet federal geospatial data standards and to improve water resources planning.
b. Support and allocate funds to acquire modern laboratory equipment with capabilities to meet both the requirements of 40 CFR Part 136 and the "Most Sensitive Methods."
c. Support the establishment of Water Quality Exchange (WQX) and Integrated Compliance Information System–National Pollutant Discharge Elimination System (*ICIS-NPDES*) data flows to facilitate both Quality Assurance/ Quality Control (QA/QC) and public sharing of water quality monitoring data.

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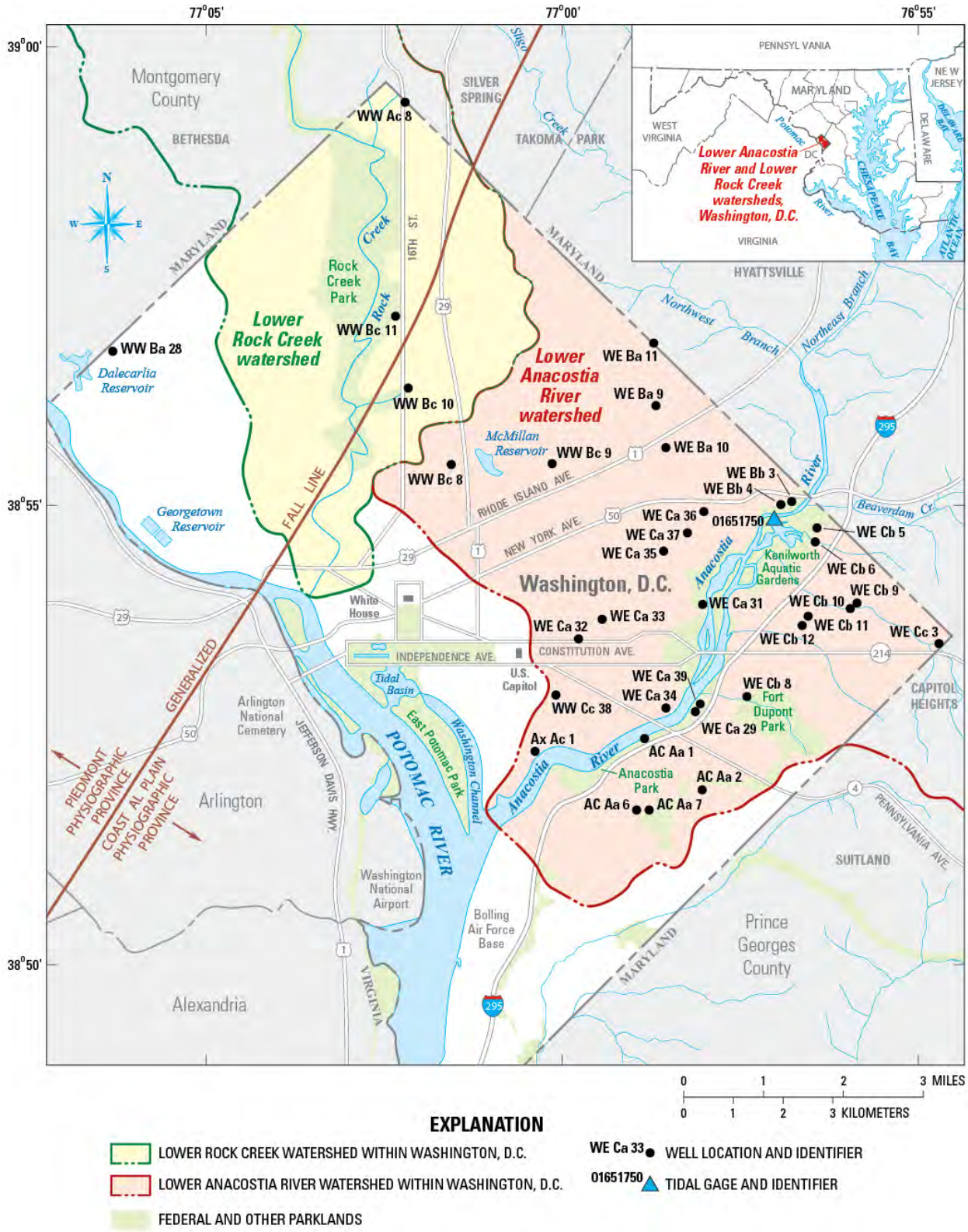
Appendix 5.1. List of monitoring wells.

USGS site name	USGS site number	DOEE well number	Site location
AC Aa 1**	385225076590101	DCMW001-03	Anacostia Park Recreation Center
AC Aa 2	385157076580301	DCMW010-05	28th Street SE (near Hillcrest Drive and Park Drive)
AC Aa 6	385138076585901	DCMW001-08	Ft. Stanton Park (shallow)
AC Aa 7	385138076585902	DCMW002-08	Ft. Stanton Park (deep)
AX Ac 1**	385219077002201	DCMW006-04	Earth Conservation Corps (ECC)
WE Ba 9	385606076584101	DCMW012-05	Taft Recreation Center
WE Ba 10	385534076582101	DCMW007-05	Langdon Park
WE Ba 11*	385649076584201	DCMW003-08	Ft. Totten
WE Bb 3	385504076563801	DCMW001-02	New York Ave. (shallow)
WE Bb 4	385504076563802	DCMW004-02	New York Ave. (deep)
WE Ca 29	385238076581501	DCMW005-02	Anacostia Park
WE Ca 31	385355076575901	DCMW002-03	Langston Golf Course
WE Ca 32	385332076594701	DCMW001-04	Massachusetts Avenue and 7th Street
WE Ca 33	385349076592801	DCMW006-05	Reservation 210 (Maryland and F Street)
WE Ca 34**	385245076583501	DCMW005-05	RFK near Barney Circle
WE Ca 35	385429076583601	DCMW004-04	U.S. National Arboretum Azalea Hill
WE Ca 36	385460076574801	DCMW003-04	U.S. National Arboretum Weather Station
WE Ca 37	385446076581001	DCMW005-04	U.S. National Arboretum Administration Building
WE Ca 39	385241076580901	DCMW001-14	DDOE Aquatic Education Center
WE Cb 5	385443076562801	DCMW002-02	Kenilworth Aquatic Gardens (shallow)
WE Cb 6	385443076562802	DCMW003-02	Kenilworth Aquatic Gardens (deep)
WE Cb 8	385252076572801	DCMW002-04	Ft. DuPont Park
WE Cb 9**	385355076555501	DCMW001-05	Lederer Gardens #1
WE Cb 10	385354076555901	DCMW002-05	Lederer Gardens #2
WE Cb 11	385332076564101	DCMW003-05	Clay and Flint (shallow)
WE Cb 12	385332076564102	DCMW004-05	Clay and Flint (deep)
WE Cc 3	385327076544801	DCMW008-05	Watts Branch Park
WW Ac 8*	385929077020901	DCMW004-08	16th Street NW and Eastern Ave.
WW Ba 28*	385644077061101	DCMW007-08	Dalecarlia Parkway NW at Warren Place NW
WW Bc 8	385519077012601	DCMW009-05	Banneker Recreation Center
WW Bc 9	385527077000701	DCMW011-05	Edgewood Recreation Center
WW Bc 10*	385619077020701	DCMW005-08	Piney Branch Parkway
WW Bc 11*	385707077021801	DCMW006-08	Carter Barron Amphitheater
WW Cc 38	385257077001101	DCMW001-13	Capitol Hill Day School



Appendix 5.2. Map showing locations of monitoring wells and tide gage, Washington, D.C.

Appendix 5.3.a. Manual water-level measurements for monitoring wells, October 2014 through November 2015.

[NAVD88, North American Vertical Datum of 1988; DDOE, District Department of Environment; USGS, U.S. Geological Survey; ft, feet; --, no value measured]

DDOE well number	USGS site number	USGS site name	Date	Altitude of water level (ft., NAVD88)
DCMW010-05	385157076580301	AC Aa 2	10/6/2014	116.10
			6/4/2015	119.28
DCMW001-08	385138076585901	AC Aa 6	10/6/2014	134.80
			6/4/2015	134.90
DCMW002-08	385138076585902	AC Aa 7	10/6/2014	114.22
			6/4/2015	114.23
DCMW007-05	385534076582101	WE Ba 10	10/6/2014	65.50
			6/4/2015	68.47
DCMW003-08	385649076584201	WE Ba 11	10/6/2014	75.02
			6/4/2015	76.25
DCMW001-02	385504076563801	WE Bb 3	10/6/2014	1.30
			6/4/2015	1.52
DCMW004-02	385504076563802	WE Bb 4	10/6/2014	0.65
			6/4/2015	-0.07
DCMW005-02	385238076581501	WE Ca 29	10/6/2014	4.51
			6/5/2015	4.97
DCMW002-03	385355076575901	WE Ca 31	10/6/2014	0.61
			6/4/2015	3.83
DCMW001-04	385332076594701	WE Ca 32	10/6/2014	58.03
			6/4/2015	58.07
DCMW006-05	385349076592801	WE Ca 33	10/6/2014	44.23
			6/4/2015	44.28
DCMW004-04	385429076583601	WE Ca 35	10/6/2014	24.98
			11/13/2014	23.78
			1/8/2015	22.44
			2/27/2015	22.07
			7/10/2015	20.55
			8/17/2015	21.05
			9/11/2015	20.72
			10/29/2015	20.86
			11/24/2015	18.91
DCMW003-04	385460076574801	WE Ca 36	10/6/2014	35.17
			11/13/2014	34.65
			1/8/2015	32.39
			2/27/2015	33.81
			3/30/2015	33.86
			4/20/2015	33.95
			6/5/2015	33.52
			7/10/2015	33.38

DDOE well number	USGS site number	USGS site name	Date	Altitude of water level (ft, NAVD88)
DCMW003-04	385460076574801	WE Ca 36	8/17/2015	33.15
			9/11/2015	33.14
			10/29/2015	33.05
			11/24/2015	32.60
DCMW005-04	385446076581001	WE Ca 37	10/6/2014	46.22
			6/5/2015	47.08
DCMW001-14	385241076580901	WE Ca 39	10/6/2014	-22.52
			11/13/2014	-25.09
			1/8/2015	-28.10
			2/27/2015	-22.25
			3/30/2015	-23.65
			4/20/2015	-30.92
			7/10/2015	-36.85
			8/17/2015	-40.99
			9/11/2015	-41.78
			10/29/2015	-38.98
			11/24/2015	-43.36
DCMW002-02	385443076562801	WE Cb 5	10/6/2014	5.64
			6/4/2015	6.32
DCMW003-02	385443076562802	WE Cb 6	10/6/2014	5.26
			6/4/2015	5.73
DCMW002-04	385252076572801	WE Cb 8	10/7/2014	-1.07
			11/13/2014	-4.49
			1/8/2015	-7.37
			2/27/2015	-6.66
			3/2/2015	-6.46
			3/30/2015	-6.64
			4/20/2015	-8.50
			6/5/2015	-13.21
			7/10/2015	-14.82
			8/17/2015	-16.36
			9/11/2015	-17.31
			10/01/2015	-17.45
			10/20/2015	-18.03
			11/24/2015	-19.21
DCMW002-05	385354076555901	WE Cb 10	10/7/2014	31.44
			6/5/2015	31.84
DCMW003-05	385332076564101	WE Cb 11	10/7/2014	44.54
			6/5/2015	46.26
DCMW004-05	385332076564102	WE Cb 12	11/6/2013	36.86
			7/18/2014	37.20
DCMW008-05	385327076544801	WE Cc 3	10/7/2014	72.94
			6/5/2015	73.23
DCMW004-08	385929077020901	WW Ac 8	10/6/2014	241.94
		WW Ac 8	6/4/2015	242.78

DDOE well number	USGS site number	USGS site name	Date	Altitude of water level (ft, NAVD88)
DCMW004-08	385929077020901	WW Ac 8	10/6/2014	241.94
		WW Ac 8	6/4/2015	242.78
DCMW007-08	385644077061101	WW Ba 28	10/6/2014	183.58
			6/4/2015	183.98
DCMW009-05	385519077012601	WW Bc 8	10/6/2014	111.70
			6/4/2015	113.14
DCMW011-05	385527077000701	WW Bc 9	10/6/2014	115.84
			6/4/2015	115.32
DCMW005-08	385619077020701	WW Bc 10	10/6/2014	98.02
			6/4/2015	98.54
DCMW006-08	385707077021801	WW Bc 11	10/6/2014	227.73
			6/4/2015	232.81
DCMW001-13	385251011001101	WW Cc 38	10/6/2014	6.65
			11/13/2014	4.94
			1/8/2015	3.11
			2/27/2015	2.14
			3/30/2015	2.14
			4/20/2015	1.66
			6/4/2015	-0.30
			7/10/2015	-0.95
			8/17/2015	-1.63
			9/11/2015	-2.00
			10/29/2015	-2.55

Appendix 5.3.b. Manual Water-Level Measurements**.**

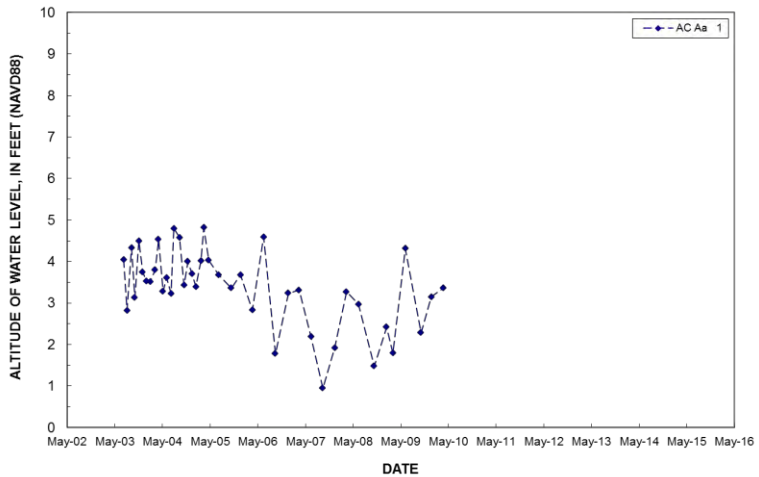


Figure 1-A. Graph of manual water-level measurements for well DCMW001-03 (AC Aa 1) (Monitoring discontinued.).

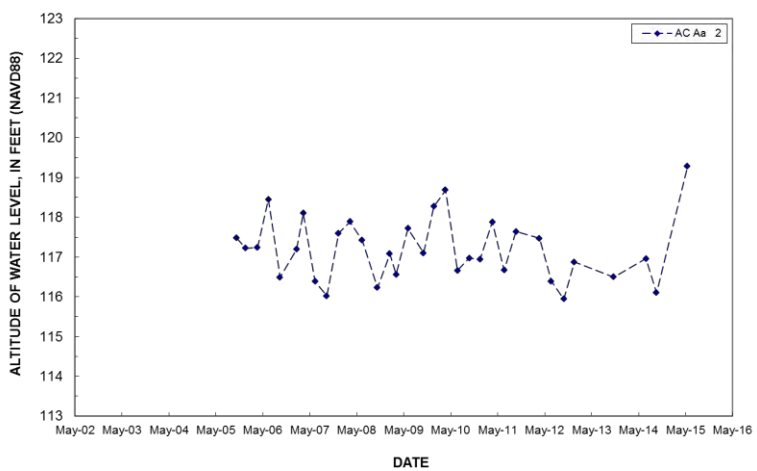


Figure 1-B. Graph of manual water-level measurements for well DCMW010-05 (AC Aa 2).

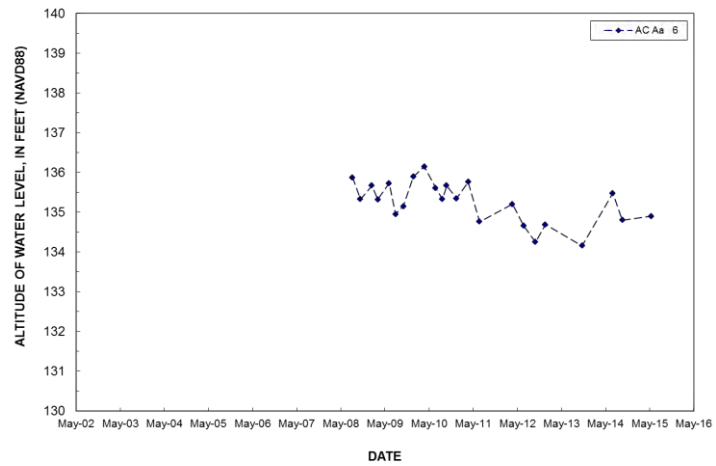


Figure 1-C. Graph of manual water-level measurements for well DCMW001-08 (AC Aa 6).

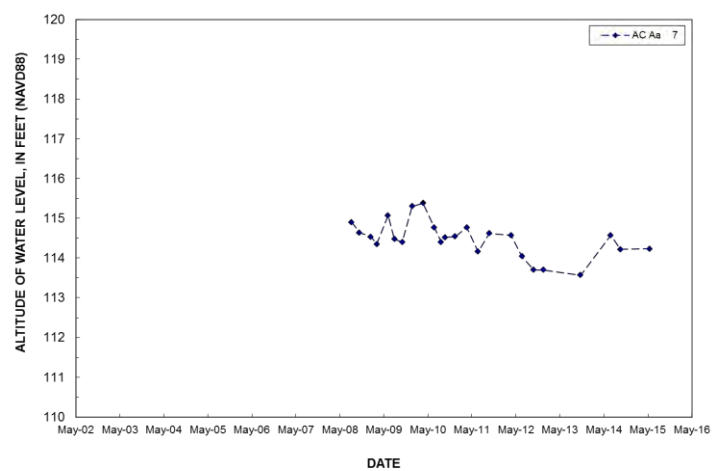


Figure 1-D. Graph of manual water-level measurements for well DCMW002-08 (AC Aa 7).

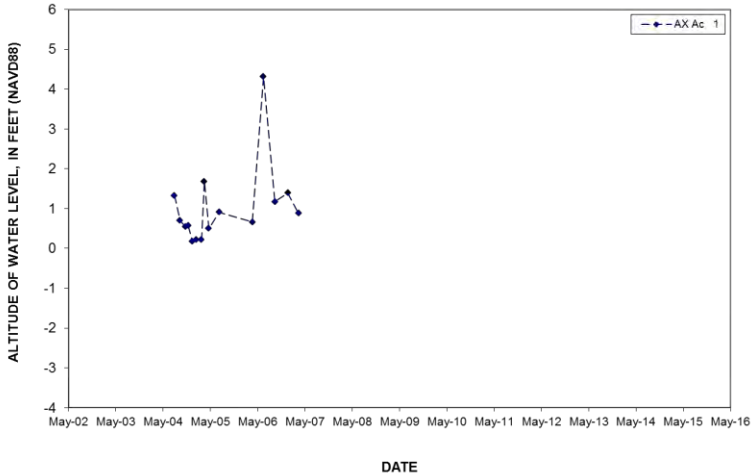


Figure 1-E. Graph of manual water-level measurements for well DCMW006-04 (AX Ac 1). (Monitoring discontinued.)

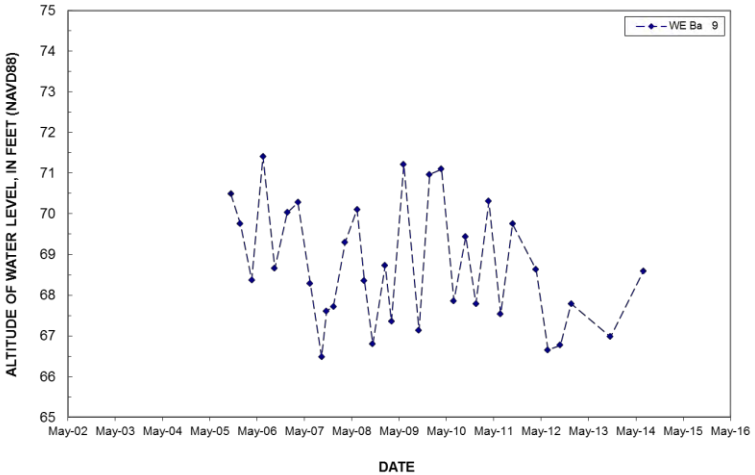


Figure 1-F. Graph of manual water-level measurements for well DCMW012-05 (WE Ba 9). (Monitoring discontinued.)

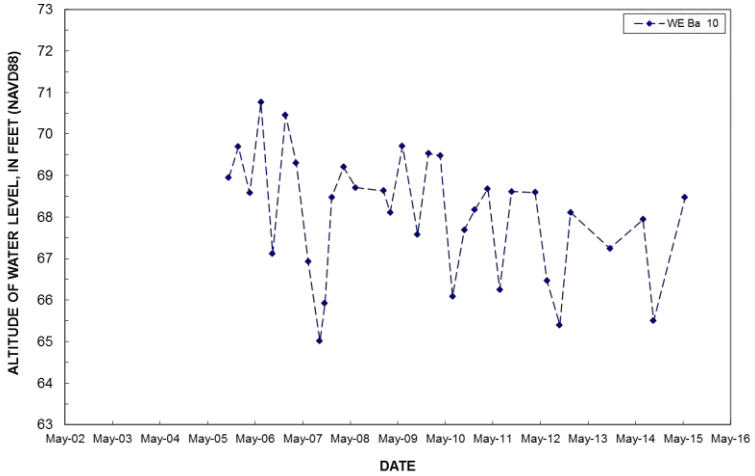


Figure 1-G. Graph of manual water-level measurements for well DCMW007-05 (WE Ba 10).

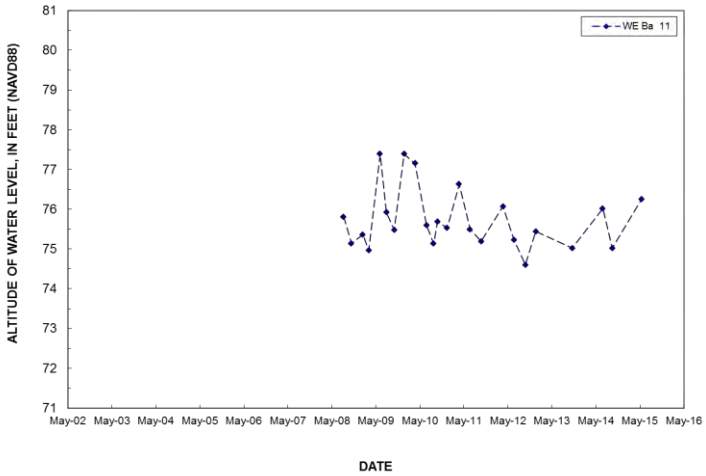


Figure 1-H. Graph of manual water-level measurements for well DCMW003-08 (WE Ba 11).

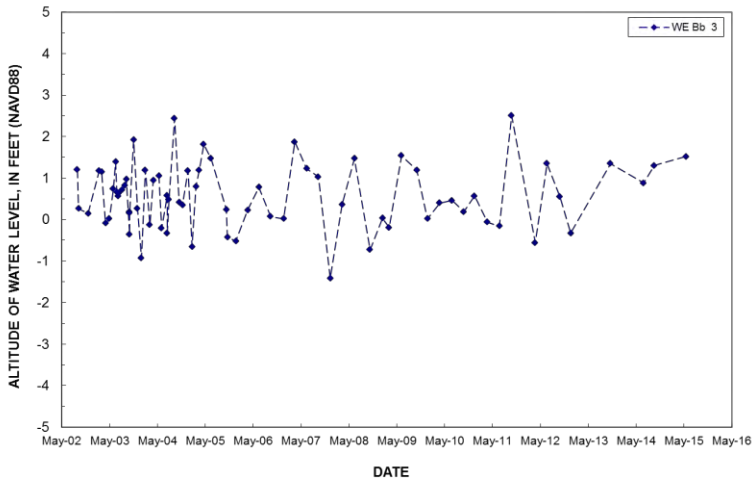


Figure 1-I. Graph of manual water-level measurements for well DCMW001-02 (WE Bb 3).

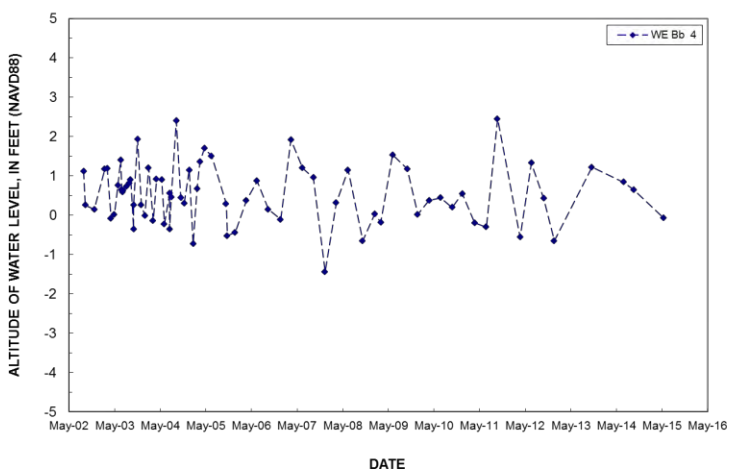


Figure 1-J. Graph of manual water-level measurements for well DCMW004-02 (WE Bb 4).

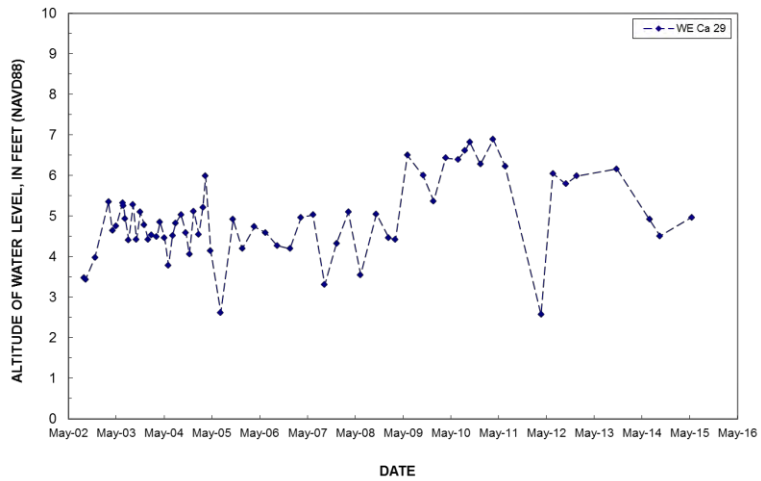


Figure 1-K. Graph of manual water-level measurements for well DCMW005-02 (WE Ca 29).

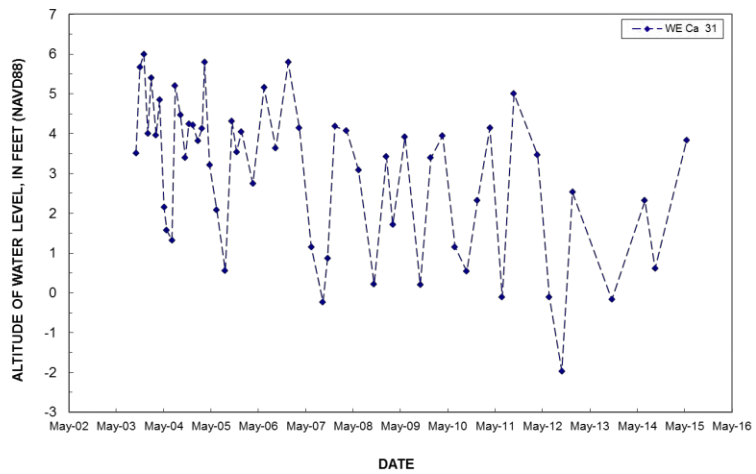


Figure 1-L. Graph of manual water-level measurements for well DCMW002-03 (WE Ca 31).

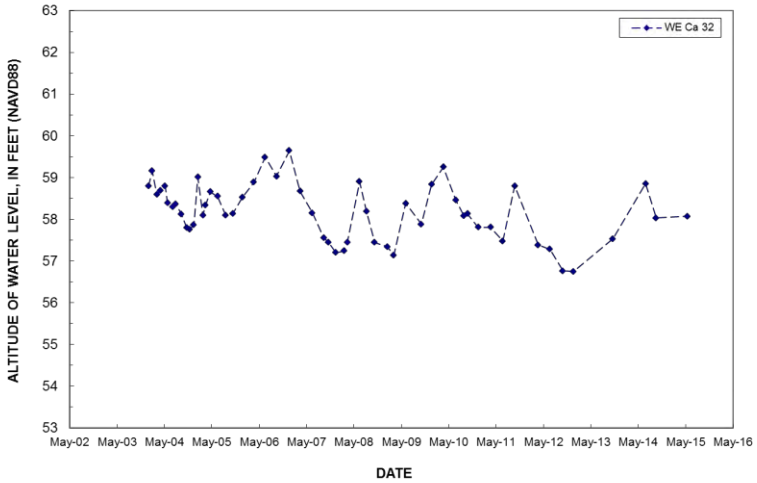


Figure 1-M. Graph of manual water-level measurements for well DCMW001-04 (WE Ca 32).

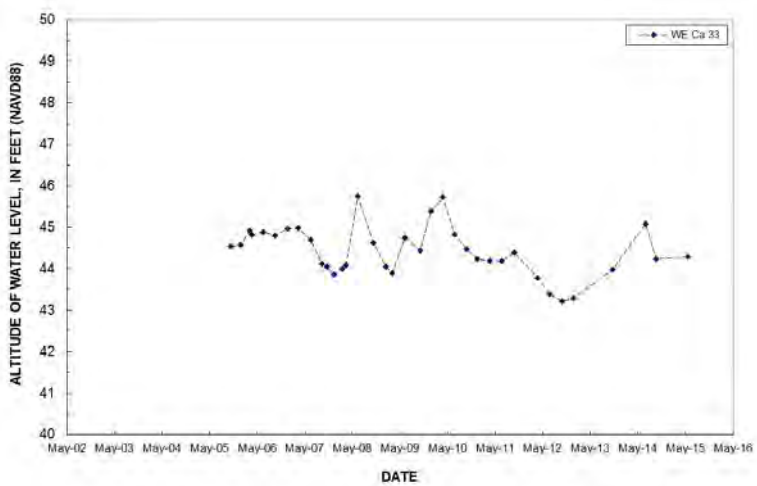


Figure 1-N. Graph of manual water-level measurements for well DCMW006-05 (WE Ca 33).

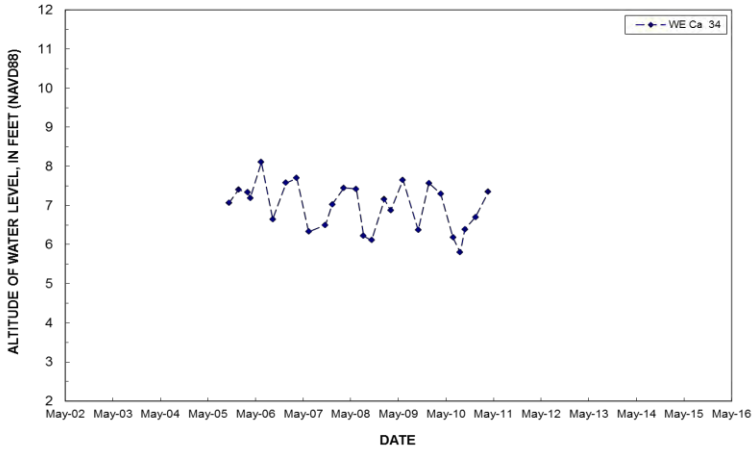


Figure 1-O. Graph of manual water-level measurements for well DCMW005-05 (WE Ca 34) (Monitoring discontinued.)

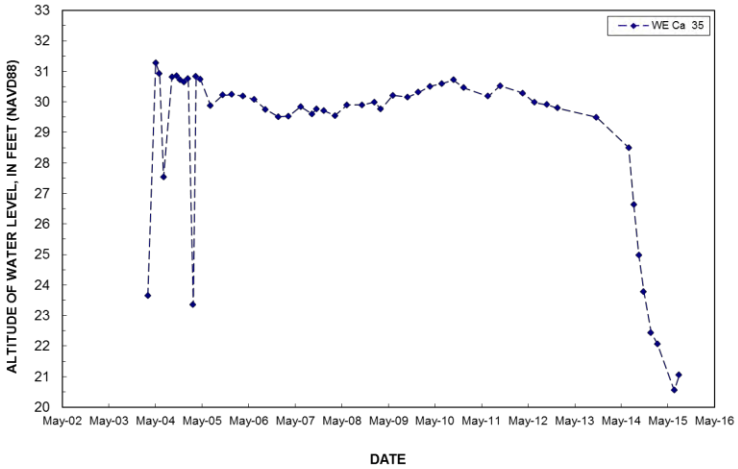


Figure 1-P. Graph of manual water-level measurements for well DCMW004-04 (WE Ca 35).

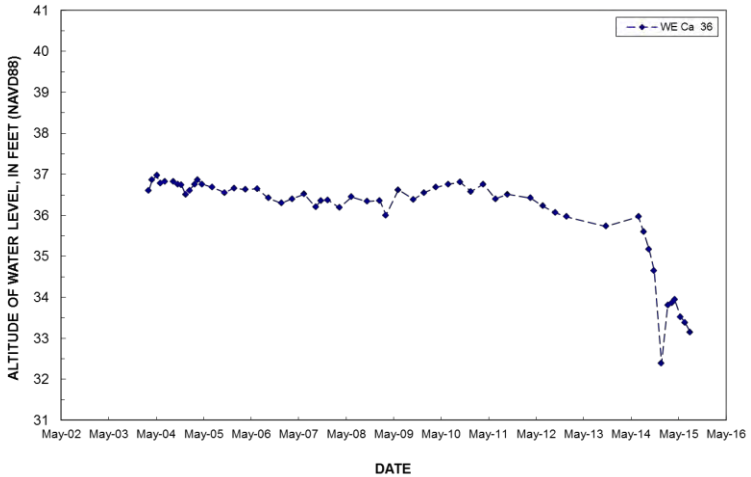


Figure 1-Q. Graph of manual water-level measurements for well DCMW003-04 (WE Ca 36).

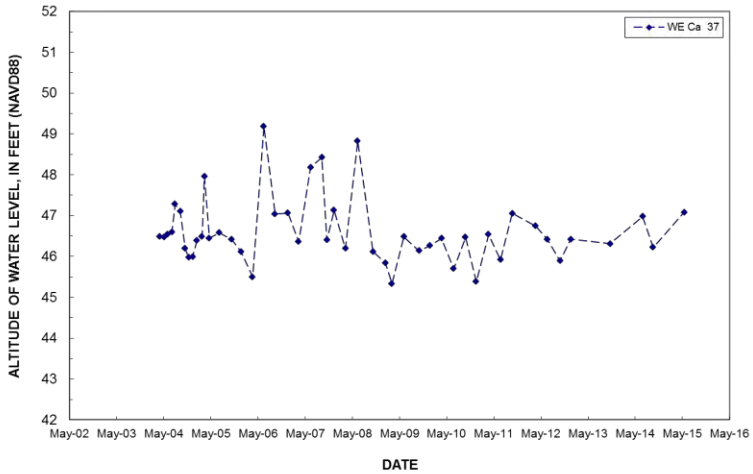


Figure 1-R. Graph of manual water-level measurements for well DCMW005-04 (WE Ca 37).

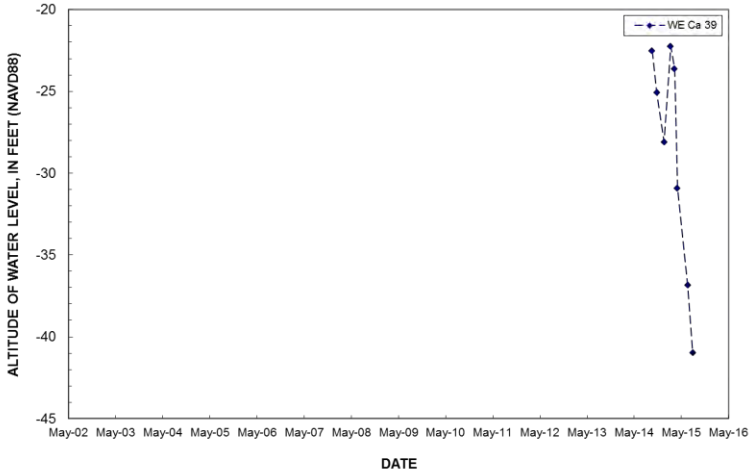


Figure 1-S. Graph of manual water-level measurements for well DCMW005-04 (WE Ca 39).

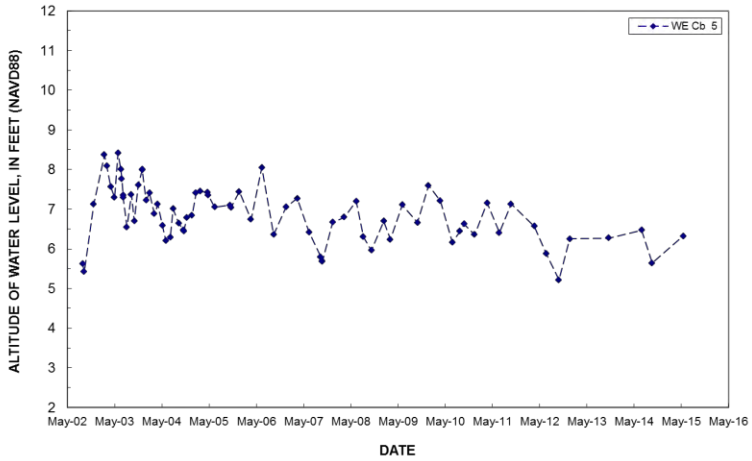


Figure 1-T. Graph of manual water-level measurements for well DCMW002-02 (WE Cb 5).

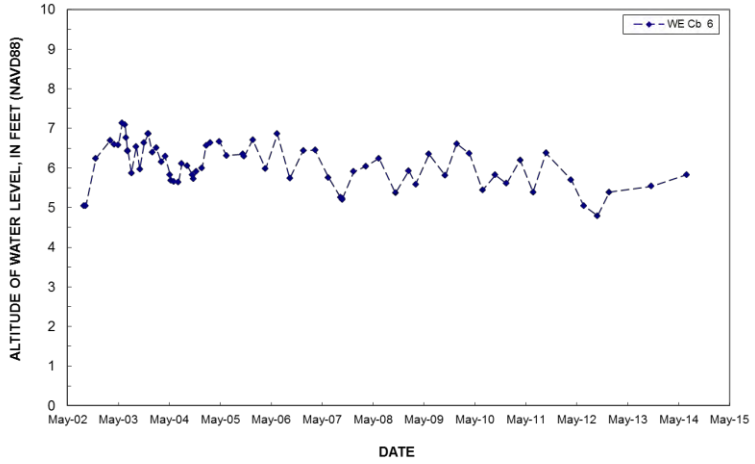


Figure 1-U. Graph of manual water-level measurements for well DCMW003-02 (WE Cb 6).

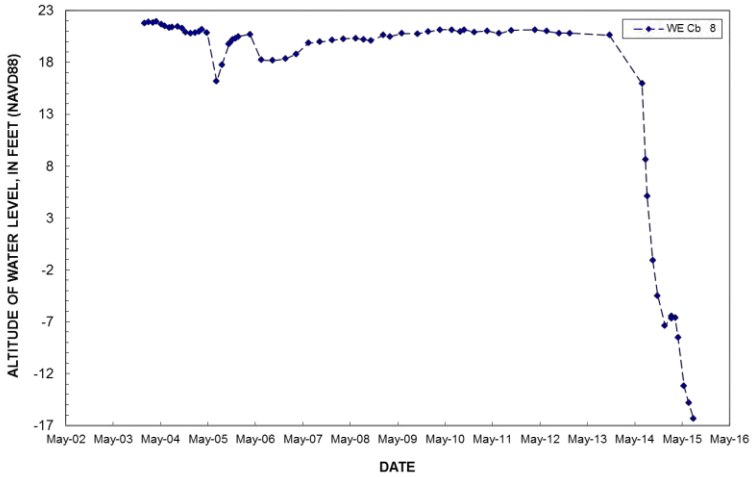


Figure 1-V. Graph of manual water-level measurements for well DCMW002-04 (WE Cb 8).

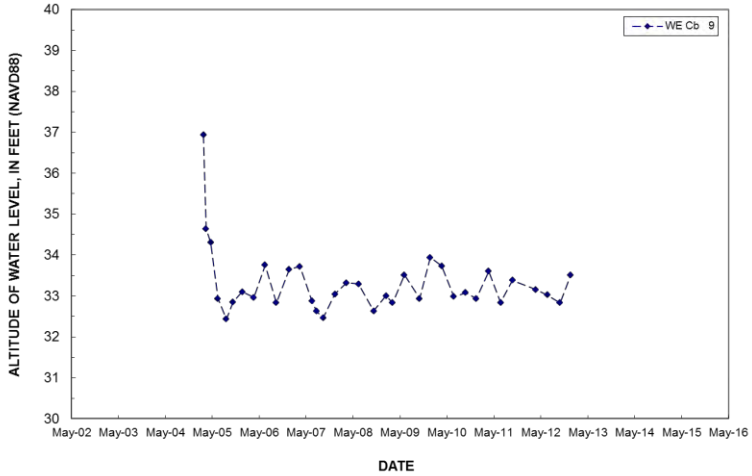


Figure 1-W. Graph of manual water-level measurements for well DCMW001-05 (WE Cb 9) (Monitoring discontinued.).

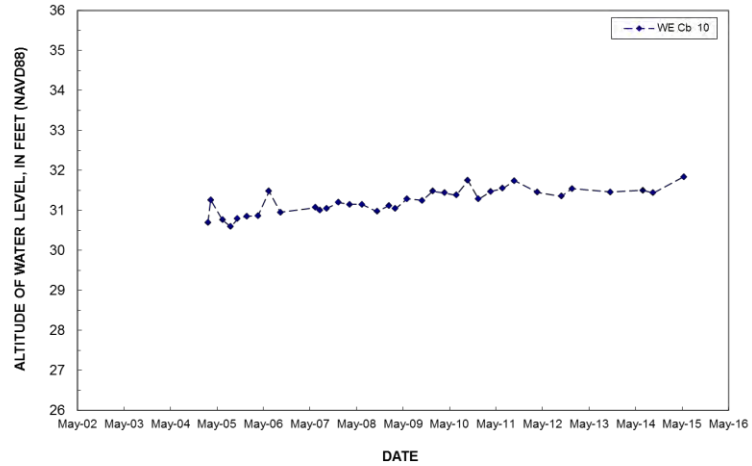


Figure 1-X. Graph of manual water-level measurements for well DCMW002-05 (WE Cb 10).

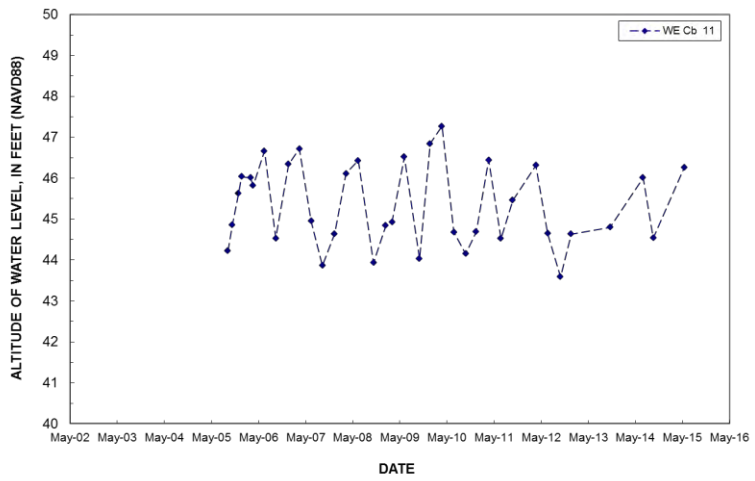


Figure 1-Y. Graph of manual water-level measurements for well DCMW003-05 (WE Cb 11).

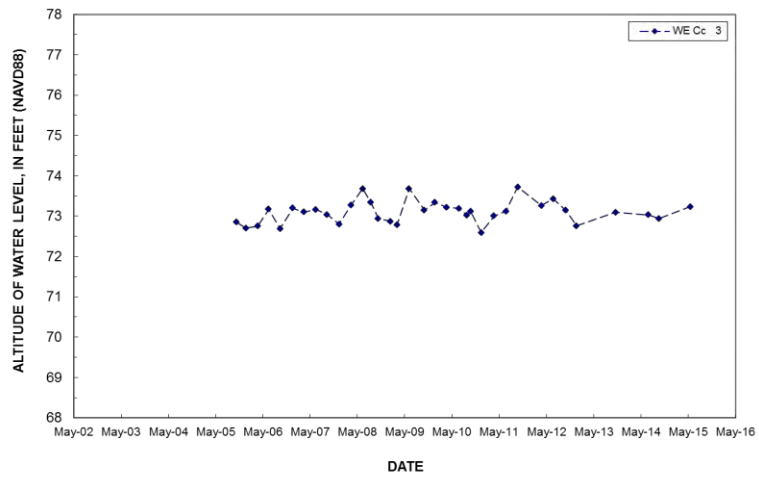


Figure 1-AA. Graph of manual water-level measurements for well DCMW008-05 (WE Cc 3).

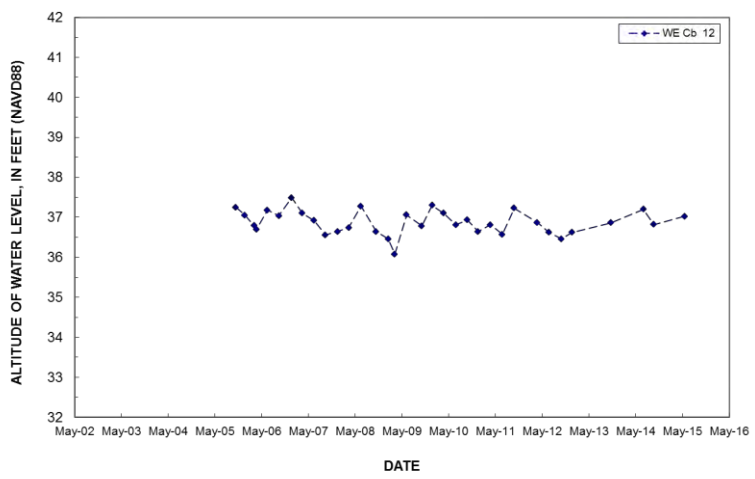


Figure 1-Z. Graph of manual water-level measurements for well DCMW004-05 (WE Cb 12).

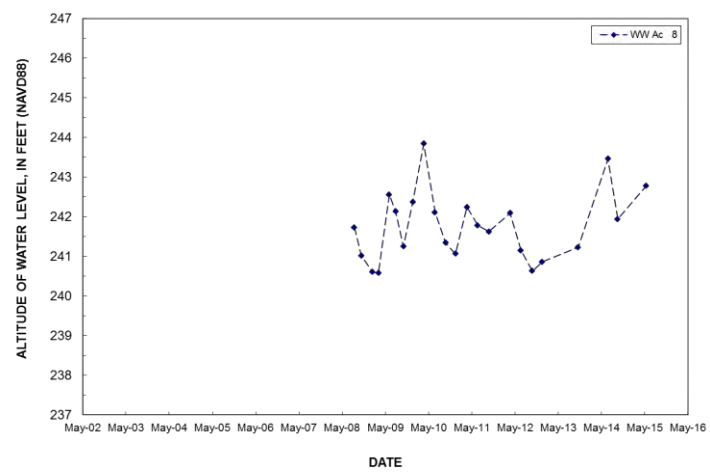


Figure 1-AB. Graph of manual water-level measurements for well DCMW004-08 (WW Ac 8).

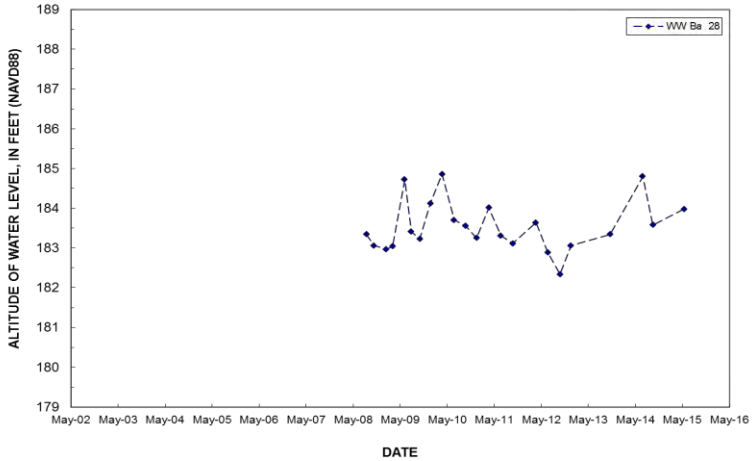


Figure 1-AC. Graph of manual water-level measurements for well DCMW007-08 (WW Ba 28).

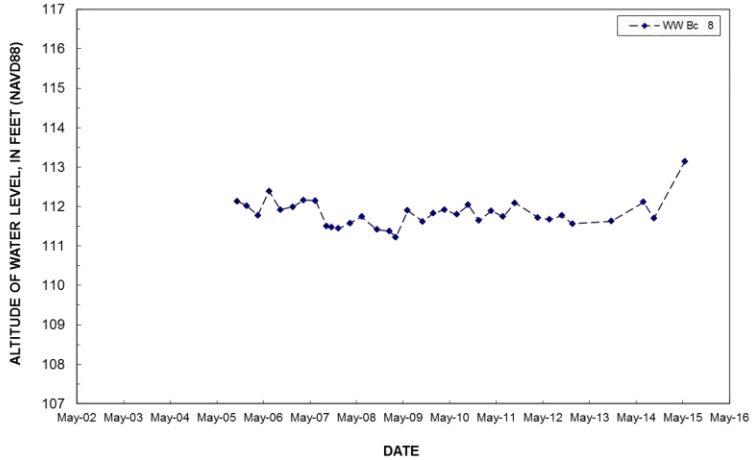


Figure 1-AD. Graph of manual water-level measurements for well DCMW009-05 (WW Bc 8).

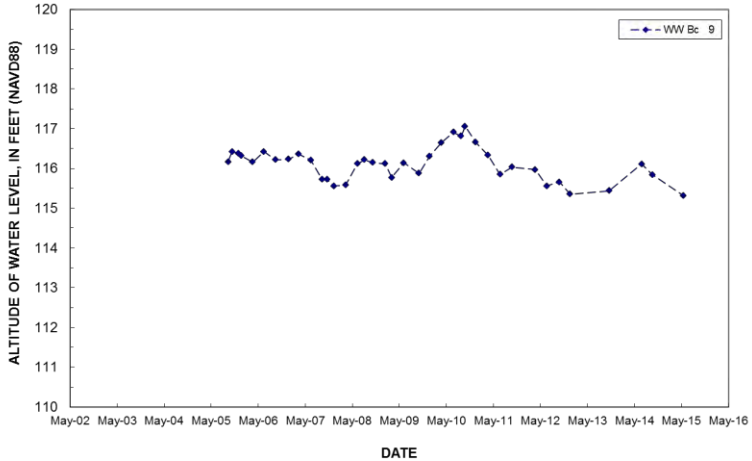


Figure 1-AE. Graph of manual water-level measurements for well DCMW011-05 (WW Bc 9)

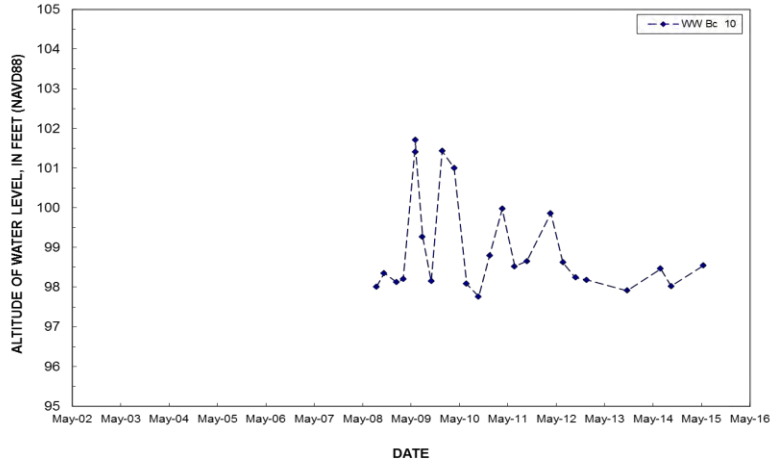


Figure 1-AF. Graph of manual water-level measurements for well DCMW005-08 (WW Bc 10)

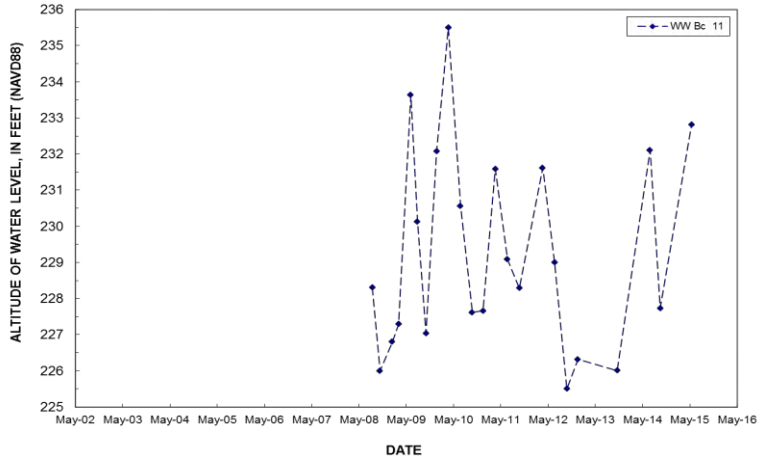


Figure 1-AG. Graph of manual water-level measurements for well DCMW006-08 (WW Bc 11)

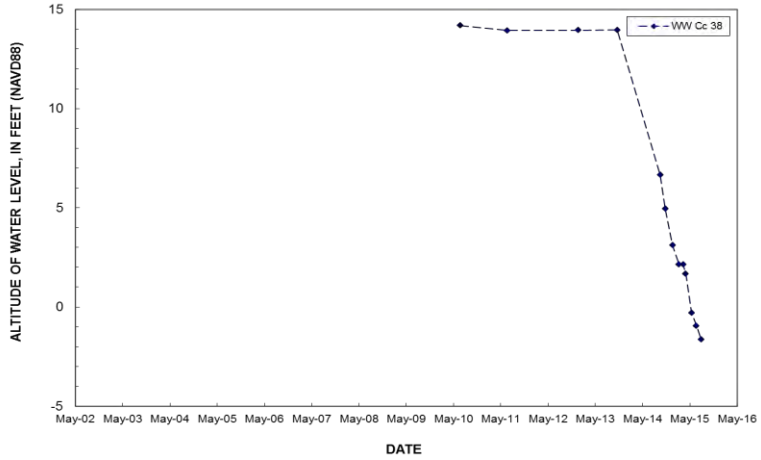


Figure 1-AH. Graph of manual water-level measurements for well DCMW001-13 (WW Cc 38).

Appendix 5.4 Tide Gage Data.

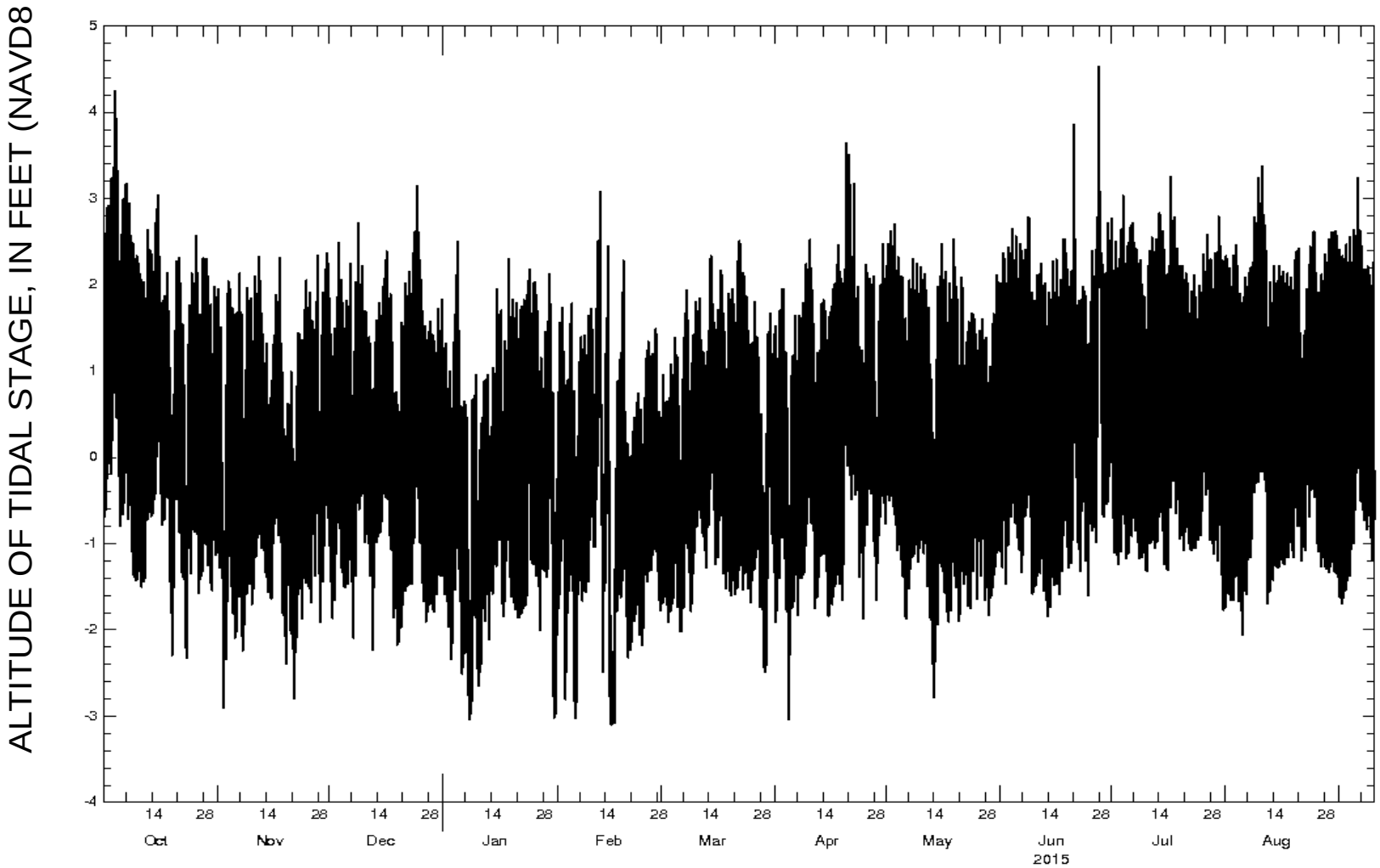


Figure 1. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., October 1, 2014 through September 10, 2015, in feet (NAVD88). [These data are provisional and subject to revision.]

Appendix 5.4 Tide Gage Data.

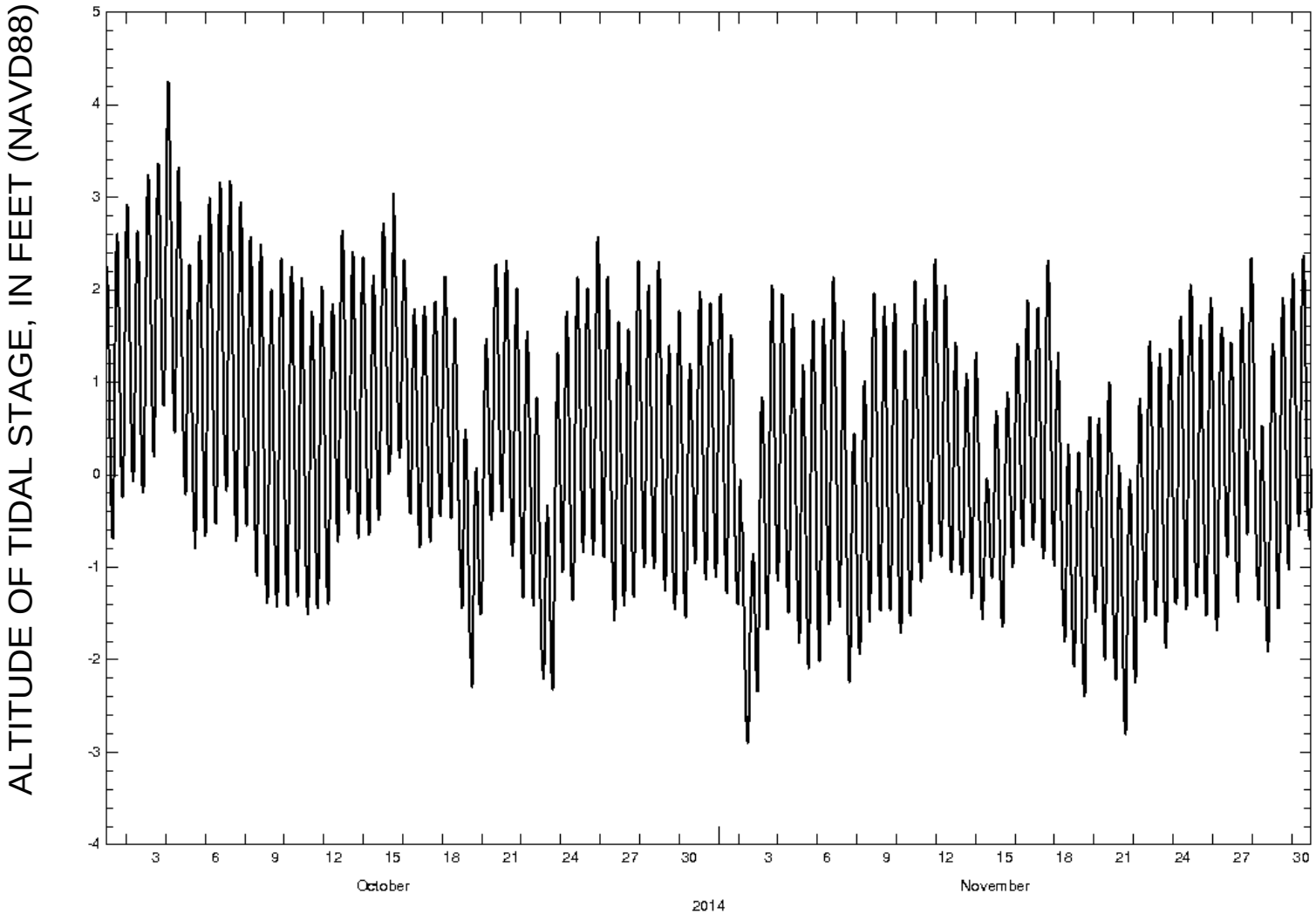


Figure 2. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., October 1, 2014 through November 30, 2014, in feet (NAVD88). [These data are provisional and subject to revision.]

Appendix 5.4 Tide Gage Data.

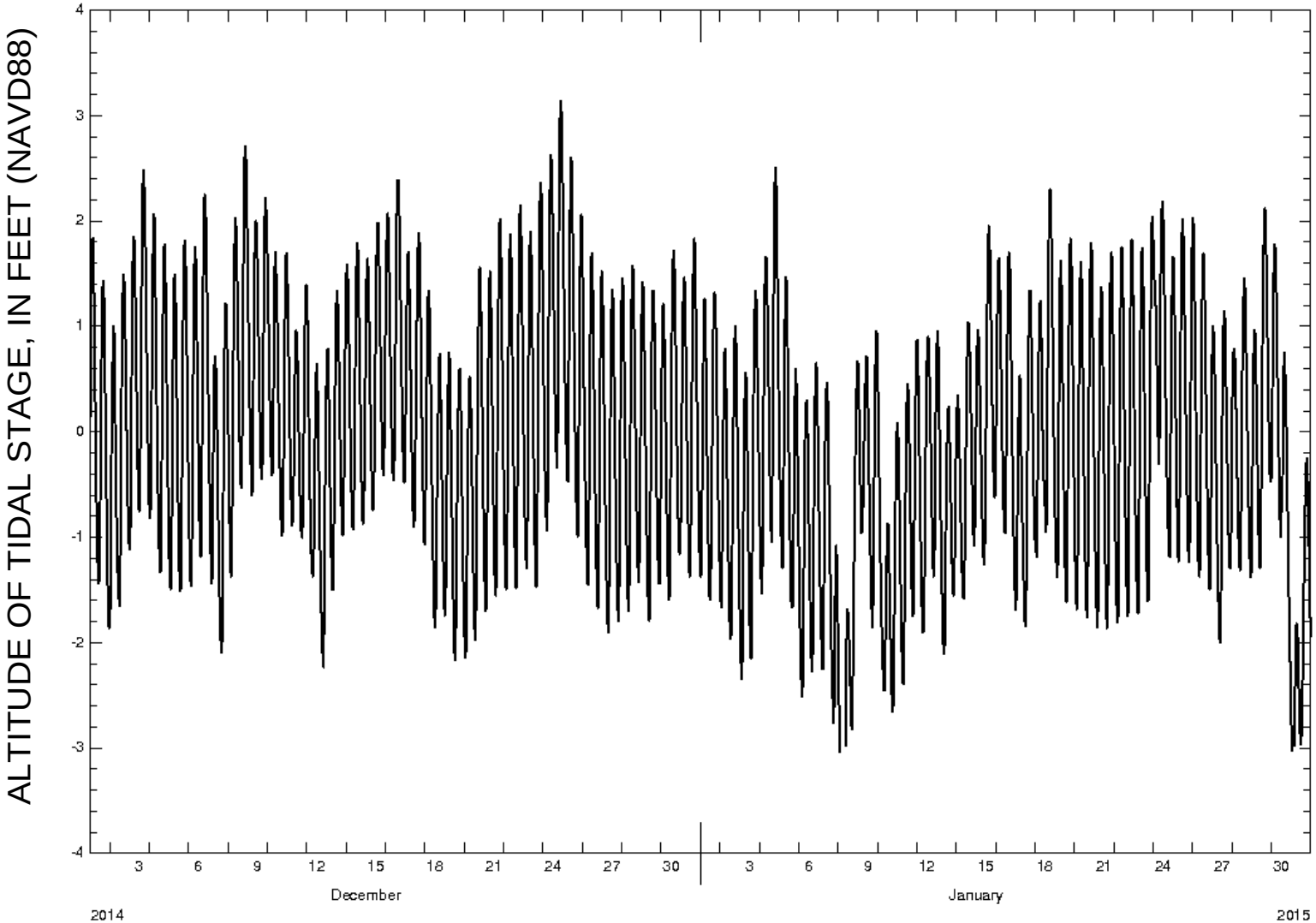


Figure 3. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., December 31, 2014 through January 31, 2015, in feet (NAVD88). [These data are provisional and subject to revision.]

Appendix 5.4 Tide Gage Data.

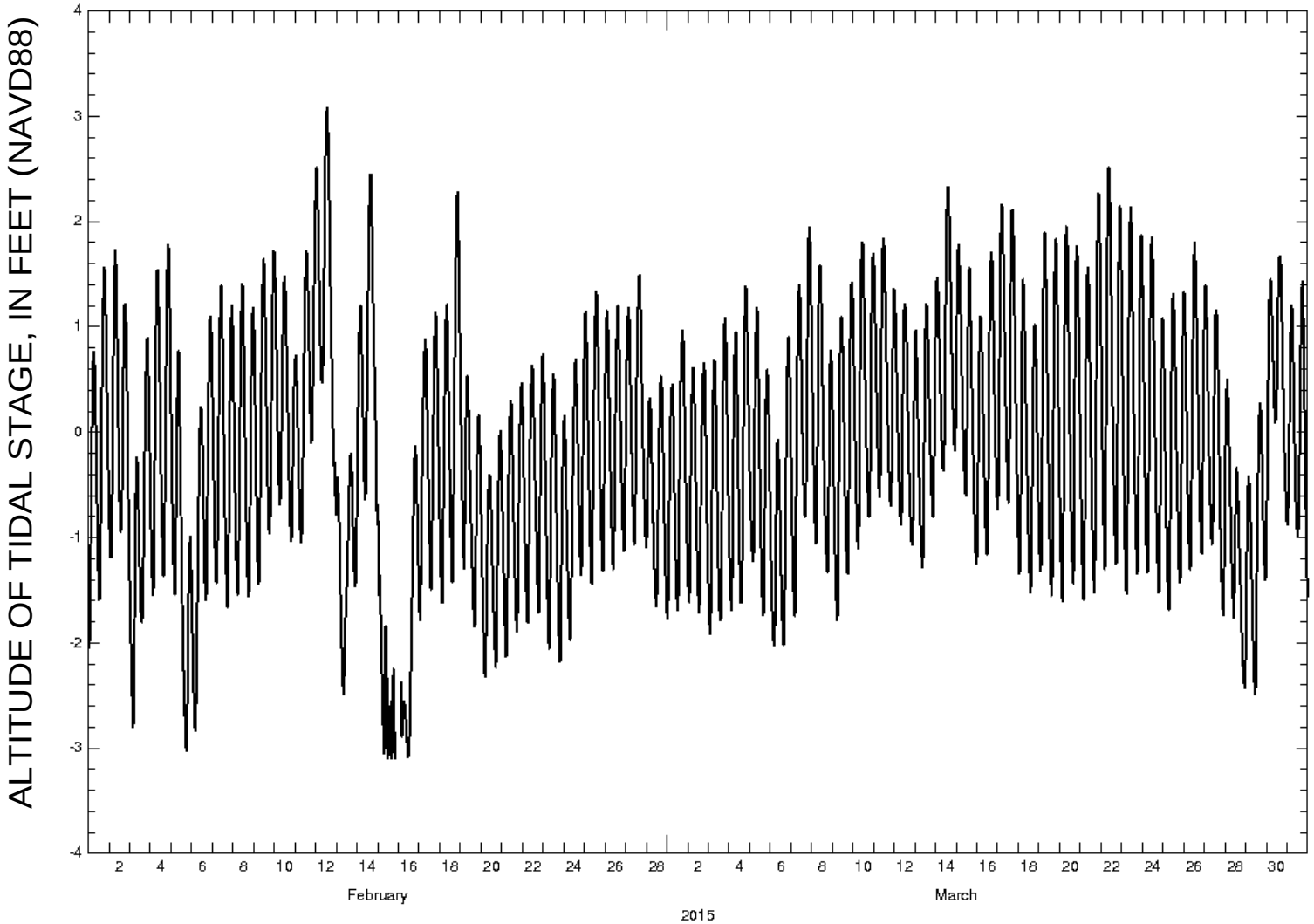


Figure 4. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., February 1, 2015 through March 31, 2015, in feet (NAVD88). [These data are provisional and subject to revision.]

Appendix 5.4 Tide Gage Data.

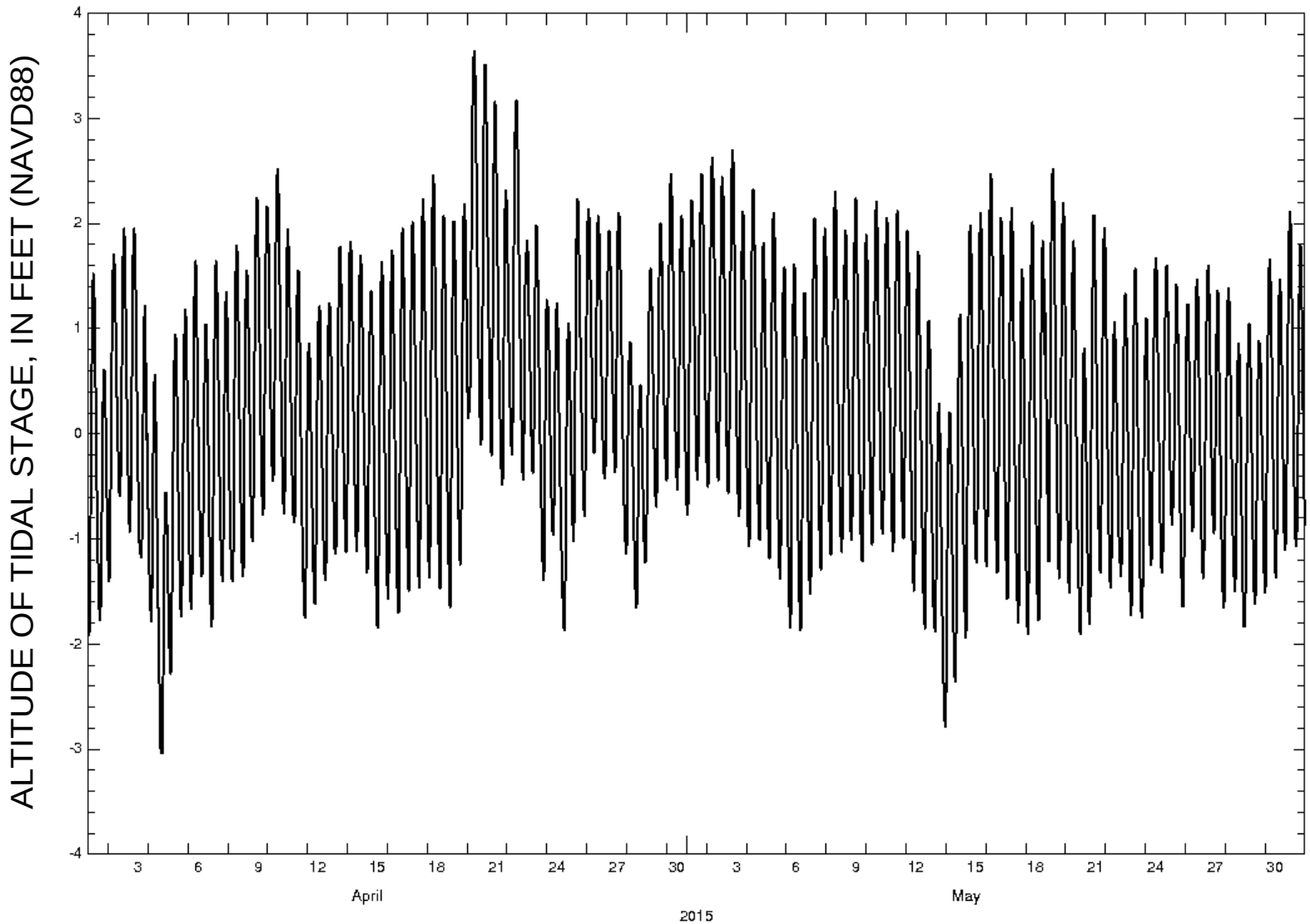


Figure 5. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., April 1, 2015 through May 31, 2015, in feet (NAVD88). [These data are provisional and subject to revision.]

Appendix 5.4 Tide Gage Data.

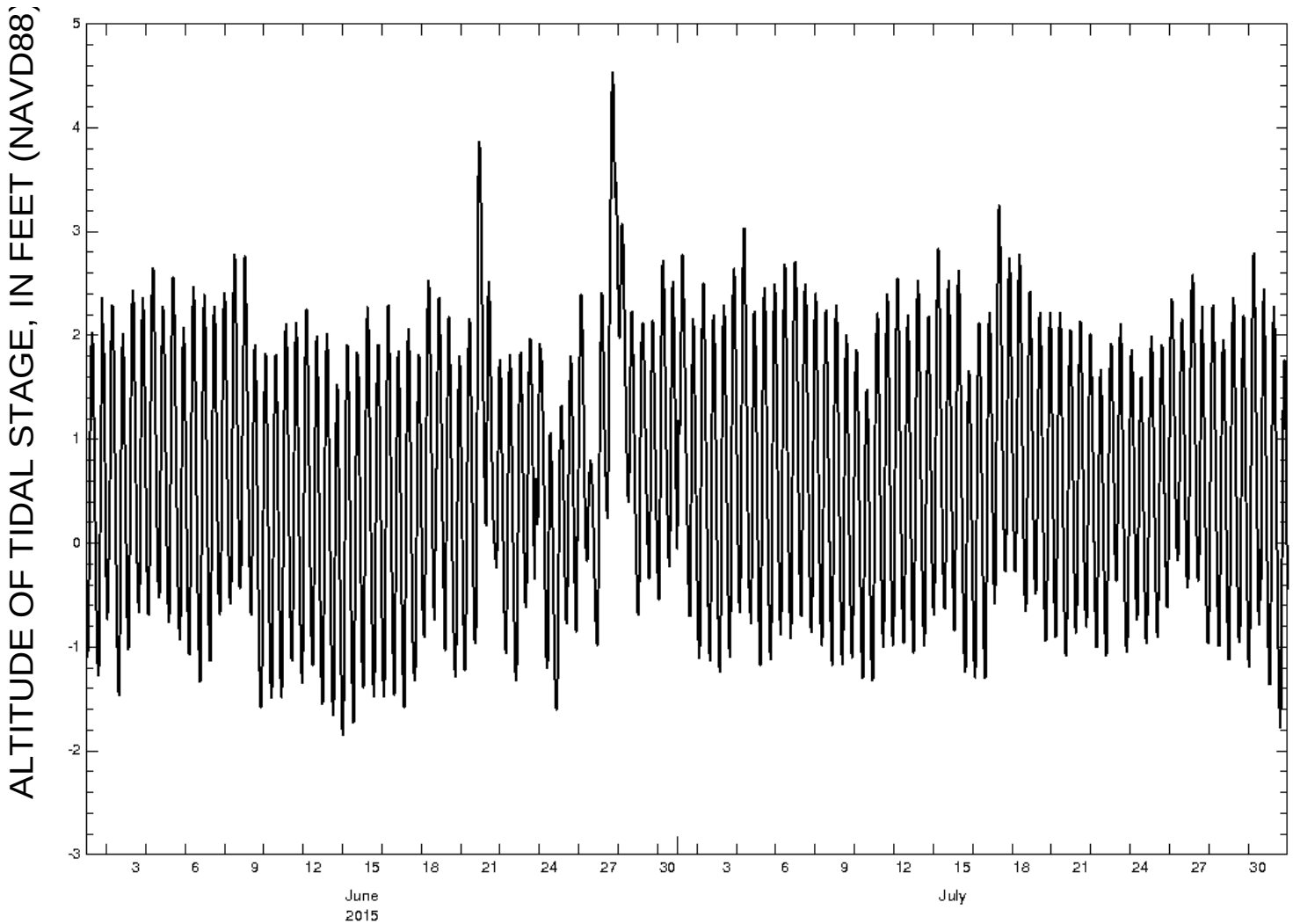


Figure 6. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., June 1, 2015 through July 31, 2015, in feet (NAVD88). [These data are provisional and subject to revision.]

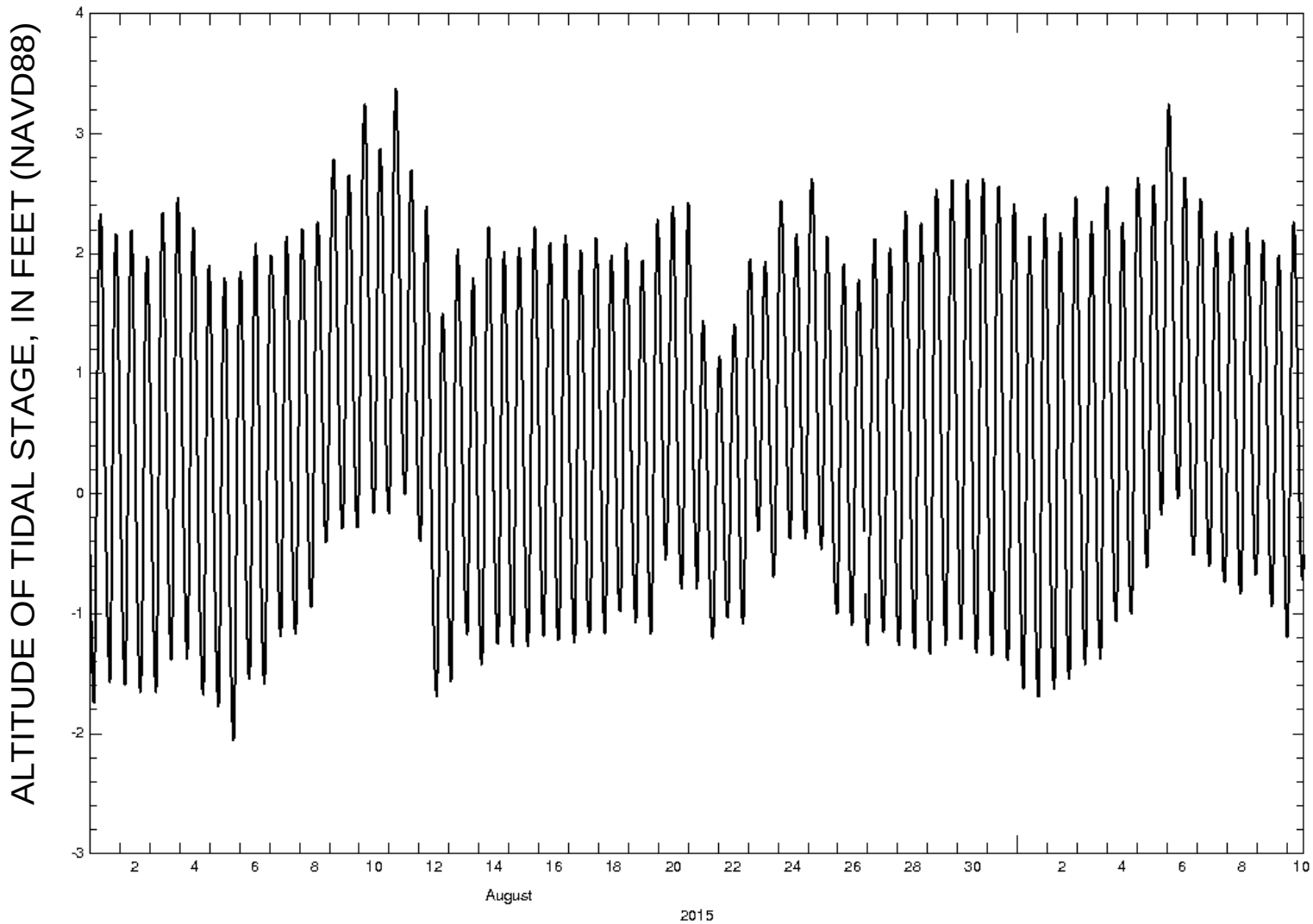


Figure 7. Altitude of tidal stage at U.S. Geological Survey station 01651750 ANACOSTIA RIVER AQUATIC GARDENS AT WASHINGTON, D.C., August 1, 2015 through September 10, 2015, in feet (NAVD88). [These data are provisional and subject to revision.]

Appendix 5.5. Major Sources of Ground Water Contamination.

Sources	Ten Highest-Priority Sources (✓)	Relative Priority	Factors[a]
Animal Feedlots	NA	--	--
Containers		L	A, B, D, E
CERCLIS Sites	✓	H	A, B, D, E, F, G, H
De-icing Applications		M	A, D, F, G, H
Federal Superfund (NPL)	✓	H	A, B, D, E, F, G, H
Fill	T	H	A, D, E, F, G, H
Graveyards		M	--
Landfills (permitted)	T	M	A, B, D, E, F, G, H
Landfills (unpermitted)	✓	U[b]	A, B, D, E, F, G, H
Material Transfer Operations		M	A, B, D, E, F, H
Material Stockpiles		L	A, B
Mining and Mine Drainage	NA	--	--
Pesticide Applications	✓	M	A, B, C, F, G, H
Pipeline and Sewer Lines	✓	M	F, H
Radioactive Disposal Sites	NA	--	--
RCRA Sites	✓	M	A, B, D, E, F, G, H
Septic Tanks		--	--
Shallow Injection Wells		M	A, F, G
Storage Tanks (above ground)		M	A, B, D, F, G, H
Storage Tanks (underground)	✓	H	A, B, D, E, F, G, H
Storm Water Drainage Wells		M	E, F, I
Surface Impoundments		L	A, B
Transportation of Materials	✓	M	A, B, C, D, E, G, H
Urban Runoff		M	F, H
Waste Tailings	NA	--	--
Waste Piles		M	A, D, E

A. Human health and/or environmental risk (toxicity)
B. Size of the population at risk
C. Location of the sources relative to drinking water sources
D. Number and/or size of contaminant sources
E. Hydrogeologic sensitivity
F. State findings, other findings
G. Documented from mandatory reporting
H. Geographic distribution/occurrence
I. Assigned for pipelines and sewer lines and is a combination of the age and construction material of the lines (in D.C., there still are brick lines at least 100 years old).

[a] Unknown. The locations and nature of the materials disposed in unpermitted landfills are not yet known.

NA - Not Applicable
L - Low
M - Medium
H - High
(–) - Not a Priority

Appendix 5.6. Summary of District Ground Water Related Programs.

Programs or Activities	Check	Implementation Status	Responsible State Agency
Ambient ground water monitoring system	✓	Partly established	DOEE
Aquifer vulnerability assessment[1]	✓	Fully established	DOEE
Aquifer mapping[2]	✓	Under development	DOEE
Aquifer characterization	✓	Partly developed	DOEE
Comprehensive data management system [3]	✓	Partly developed	DOEE
Emergency Response	✓	Fully established	HSEMA
EPA-endorsed Core Comprehensive State Ground Water protection Program (CSGWPP)	✓	Under development	DOEE
Ground water discharge permits	✓	Under development	DOEE
Ground water Best Management Practices	✓	Under development	DOEE
Ground water legislation	✓	Fully established	DOEE
Ground water classification	✓	Fully established	DOEE
Ground water quality standards	✓	Fully established	DOEE
Interagency coordination for ground water protection initiatives	✓	Under development	DOEE
Land Remediation and Development (Brownfields Revitalization Program)	✓	Fully established	DOEE
Nonpoint Source Controls	✓	Under development	DOEE
Pesticide State Management Plan	✓	Fully established	DOEE
Pollution Prevention Program	✓	Under development	DOEE

Programs or Activities	Check	Implementation Status	Responsible State Agency
State RCRA Program incorporating more stringent requirements than RCRA Primacy (except for corrective action)	✓	Fully established	DOEE
State septic system regulations			
Underground storage tank installation requirements	✓	Fully established	DOEE
Underground Storage Tank Remediation Fund	✓	Fully established	DOEE
Underground Storage Tank Permit Program	✓	Fully established	DOEE
Underground Injection Control Program			
Vulnerability assessment for drinking water/wellhead protection	✓	Fully established	DOEE
Well abandonment regulations	✓	Pending	DOEE
Wellhead Protection Program (U.S. EPA-approved)			
Well installation regulations	✓	Pending	DOEE

HSEMA – Homeland Security Emergency Management Agency
DOEE –Department of Energy and Environment

Appendix 5.6. Shallow Aquifer Quality/ Contamination.

Aquifer: Shallow Aquifer				
Source Type	Present in reporting area	Number of sites in area	Number of sites that are listed and/or have confirmed releases	Number with confirmed ground water contamination
NPL	Yes	1	1	1
CERCLIS (non-NPL)	Yes	24	14	11
DOD/DOE	Yes (a)	47	9	8
UST- Total opened and closed	Yes	2877 (b) (g)	1788 (g)	498 (g)
UST Active/Opened	Yes	608 (b)	152 (c)	99 (c)
RCRA Corrective Action	Yes	2	2	1
Underground Injection	Yes (d)	57(h)	—	53
State Sites (Voluntary Clean Lands Program)	Yes (e)	22	22	13
Nonpoint Sources	(f)	—	—	---
Other	Yes	26	26	26
Totals		3664	2014	710

NPL - National Priority List
CERCLIS (non-NPL) - Comprehensive Environmental Response, Compensation, and Liability Information System
DOE - Department of Energy
DOD - Department of Defense
UST - Underground Storage Tanks
RCRA - Resource Conservation and Recovery Act

(a) Only DOD facilities. The number represents the number of facilities. Within a facility, there are several areas of concern resulting from distinct sources (e.g., LUST, landfill, maintenance shops, etc). Ground water contamination assessment is on going for the majority of the sites. Numbers were provided by the Hazardous Waste Division.

(b) Data represent the number of UST sites or facilities known to DC from previous and current annual registration. This value includes sites with heating oil and hazardous materials tanks. Numbers were provided by the Underground Storage Tank Branch, DDOE.

(c) There is on-going groundwater contamination assessment/remediation and monitoring by responsible parties for more than 60 percent of the opened LUST cases pending closure. These cases include heating oil contaminated sites.

(d) There are a total of 147 inventoried active wells in the District of Columbia. The majority (131 wells) are part of aquifer remediation systems at 53 active remediation sites. There are 14 storm water drainage wells at two facilities, basically roof-top drainage systems, and two septic systems at two facilities. (Data provided by the USEPA Region 3 Underground Injection Program).

(e) Source type data make no distinction between State and non-State sites.

(f) See Nonpoint Source Section

(g) Most of these sites are not closed, either the USTs were removed or abandoned in-place or the soil and/or groundwater contamination was remediated and the LUST case closed.