

Indicators of Stormwater Management Program Effectiveness

Fiscal Year 2009 (07/01/08 - 06/30/09)



December 2009

PEP09-08

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COMMUNICATIONS DESIGNER
REPROGRAPHIC COORDINATOR

**INDICATORS OF STORMWATER
MANAGEMENT PROGRAM EFFECTIVENESS:
FISCAL YEAR 2009**

**Preparation of this report was included in the
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AUTHORS:
Jennifer L. Tribo
John M. Carlock, AICP
Julia B. Hillegass

**ORGANIZATION NAME,
ADDRESS AND TELEPHONE**
Hampton Roads Planning
District Commission
723 Woodlake Drive
Chesapeake, Virginia 23320
(757) 420-8300
<http://www.hrpdcva.gov>

ABSTRACT

This document summarizes information stored in the Hampton Roads Regional Indicators of Stormwater Management Program Effectiveness database. This database tracks activities undertaken by the Cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach in implementing their local stormwater management programs. One of a series of Annual Reports, the document is used by the region's twelve localities with stormwater permits to assist in meeting permit requirements.

ACKNOWLEDGMENTS

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Preparation of this report was included in the HRPDC Unified Planning Work Program for FY 2010, approved by the Commission at its Executive Committee Meeting of June 17, 2009.

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1.0 INTRODUCTION

1.1 About this Report

This report summarizes the information contained in the Stormwater Management Program Effectiveness Indicator Tracking Program database for fiscal year 2009 (7/01/2008 – 6/30/2009) for the six permitted Phase I localities in the Hampton Roads region. The Phase I localities include the cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach. Data from previous fiscal years are referenced in order to show trends in the region's stormwater management programs. The body of this report includes descriptions of each indicator as well as graphical depictions of regional trends for these indicators through June 2009. Appendix A contains graphs of indicator trends for each permitted locality.

1.2 History of Local Stormwater Management Programs

Stormwater is considered a point source discharge under the Clean Water Act (CWA) and is subject to regulation through the National Pollutant Discharge Elimination System (NPDES) permit program. Virginia is authorized to implement the NPDES permit program and currently does so through the Virginia Department of Conservation and Recreation's Virginia Stormwater Management Program (VSMP) and VSMP municipal separate storm sewer system (MS4) permits.

In response to the Clean Water Act and the U.S. Environmental Protection Agency's Phase I stormwater regulations, the Virginia General Assembly established Virginia's Stormwater Management (SWM) Program in 1990 to address concerns associated with the quantity and quality of stormwater runoff from the developed landscape. As a part of Phase I, six localities within Hampton Roads were required to obtain municipal separate storm sewer system (MS4) Virginia Pollution Discharge Elimination System (VPDES) permits from the Virginia Department of Environmental Quality. The cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach received their first permits early in Calendar Year 1996. For this first permit term, the localities were required to monitor the chemical constituents of stormwater from selected stormwater outfalls.

While the chemical monitoring program was useful in determining that the stormwater runoff in Hampton Roads is comparable to other urban areas, it was not useful in communicating the effectiveness of local stormwater management programs. The high variability of the data, due to natural factors such as rainfall, made it very difficult to detect any actual trends in pollutant levels carried by stormwater runoff. In addition, the chemical monitoring program did not account for actions taken by local stormwater programs to reduce flooding and drainage problems. Due to these shortcomings, the permitted local governments of Hampton Roads proposed modifying their MS4 VPDES permits to replace the chemical monitoring requirement with a Stormwater Management Program Effectiveness Indicator Tracking Program for the second permit term. The

Virginia Department of Environmental Quality accepted the proposed Tracking Program in lieu of chemical monitoring and modified the MS4 VPDES permits accordingly when they were reissued in April 2001.

In the federal Phase II Stormwater Regulations enacted in 1999, the U.S. Environmental Protection Agency recognized the shortcomings of chemical monitoring. Rather than conduct a chemical monitoring program, Phase II communities are required to track the implementation of stormwater management measures. These management measures include public education and outreach, public involvement, illicit discharge detection and elimination, construction site runoff, post-construction runoff, and pollution prevention/good housekeeping activities. The Phase II Regulations recognize that this kind of tracking system provides a better measure of program effectiveness than chemical monitoring of stormwater outfalls.

In the past, three separate state agencies, the Virginia Department of Conservation & Recreation (DCR), the Department of Environmental Quality (DEQ), and the Chesapeake Bay Local Assistance Department (CBLAD), each managed separate stormwater programs. In 2004, the General Assembly passed HB1177, which amended and reenacted the Virginia Stormwater Management Act of 1990 to consolidate the three separate stormwater management programs into the Virginia Stormwater Management Program (VSMP) under the oversight of the Virginia Soil and Water Conservation Board (VSWCB) and DCR. The VSMP established a statewide approach to stormwater management that required changes in the manner by which localities and state agencies address stormwater management. The VSWCB and DCR continue to take steps to transition from the 1990 SWM Program to the VSMP as envisioned in HB 1177. In the meantime, while changes have been taking place, the Phase I municipalities have applied for their third MS4 permit.

The six Phase I localities submitted applications for renewal of their stormwater permits to the Department of Conservation and Recreation during the fall of 2005. Anticipating these applications and desiring to address the requirements of the permit program and the integrated state stormwater management program, which resulted from the passage of HB 1177, in a consistent fashion, the region's localities acted in Spring 2005 to retain consultant assistance through the HRPDC. A consultant was retained to assist the localities in addressing the new state requirements and to develop regionally consistent applications for the Phase I MS4 Permits. This effort involved extensive review of existing programs, state and federal regulations, and the preliminary results of EPA compliance audits of some MS4 programs. Through intensive consultant and staff efforts, the permit applications were developed.

1.3 Current Program Status

Ongoing permit negotiations with DCR continued through FY 2006, FY 2007, FY 2008, and FY 2009 in a cooperative fashion. Throughout this period, the localities have operated under the 2001 permits, which were administratively continued. Several iterations of draft permits have been reviewed by the Committee with comments and

recommended modifications provided to DCR following each review. In February 2006, DCR staff advised the Committee that detailed program plans, updating the localities' stormwater management plans originally prepared in the early 1990's, would be required to support the reapplications. Again, through a cooperative process, the Phase I localities developed MS4 Program Plans, which were submitted to DCR in May 2006. Additional permit review meetings have been held since that time. It is now expected that the new permits will be issued during FY 2010, following formal review by the U.S. Environmental Protection Agency and the public. The Phase I localities will continue to operate under the current permits until the new permits are issued.

In addition to the previously mentioned program modifications, DCR is also currently undertaking changes to the Virginia Stormwater Management Program (VSMP) Permit Regulations. Several sections of the regulations are being modified including the Stormwater Technical Criteria (4VAC 50-60-40), Local Program administration (4 VAC 50-60-100), and Stormwater Permit Fees (4 VAC 50-60-700). A Stormwater Technical Advisory Committee (TAC) was created to assist the Department in considering regulatory revisions. Regional and local government representatives participated on the TAC, which helped keep area local governments informed of the proposed changes and how those changes will impact local programs.

1.4 Indicator Tracking

The Stormwater Management Program Effectiveness Indicator Tracking Program was developed to help the region's local governments assess their achievement of common stormwater management goals developed by the Hampton Roads Regional Stormwater Management Program and adopted by the Hampton Roads Planning District Commission in 1999. These stormwater management program goals include:

- Manage stormwater quantity and quality to the maximum extent practicable (MEP).
 - Implement BMPs and retrofit flood control projects to provide water quality benefits.
 - Support site planning and plan review activities.
 - Manage pesticide, herbicide, and fertilizer applications.
- Implement public information activities to increase citizen awareness and support for the program.
- Meet the following needs of citizens:
 - Address flooding and drainage problems.
 - Maintain stormwater infrastructure.
 - Protect waterways.
 - Provide appropriate funding for the program.
- Implement cost-effective and flexible program components.
- Satisfy VPDES stormwater permit requirements.

- Enhance erosion and sedimentation control.
- Manage illicit discharges, spill response, and remediation.

The Tracking Program stores data on several indicators of stormwater management program effectiveness in a Microsoft Access database. The indicators that are recorded in the database can be grouped into one of four categories as illustrated in Table 1.

Table 1: Classification of Indicators

Indicator Group	Indicator
Water Quality	Pollutant Loadings
Physical and Hydrological	Greenlands Programs
Programmatic	Investigative Monitoring BMP Implementation Flooding and Drainage Control Flooding and Drainage Projects Erosion and Sediment Control Permitting and Compliance Operations and Maintenance
Socioeconomic	Public Information Programs

The region's localities have recently developed a new comprehensive tracking system, the Permit Administrative Reporting System (PARS) which will be valuable in administering the various permit components as well as the reporting requirements. The data previously stored in the Effectiveness Indicator Tracking Program is now being stored and tracked in PARS.

1.5 Conclusion

In October 2009, the cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, and Virginia Beach submitted their *Indicators of Stormwater Management Program Effectiveness* reports to DCR as part of their Fiscal Year 2009 Annual Reports. This document summarizes the information contained in the individual reports.

As ongoing permit negotiations take place with DCR, the Phase I localities in Hampton Roads are looking ahead to find innovative methods to meet anticipated requirements. Localities within Hampton Roads will continue to work in a cooperative fashion to find resourceful and improved solutions to regional stormwater management.

2.0 DESCRIPTION OF INDICATORS AND REGIONAL SUMMARY

2.1 Water Quality Nutrient Loadings

Stormwater pollutant loads for each of the local governments in Hampton Roads permitted by the Virginia Pollution Discharge Elimination System Program were estimated by CH2MHill in fiscal year 2001. The estimated pollutant loads were documented in a series of Technical Memoranda contained in each locality's annual report. Pollutant loadings for all Hampton Roads localities were calculated using updated land use and BMP data in FY 2006 or FY 2007. The calculations were performed by Hampton Roads Planning District Commission staff using PLOAD, a geographic information system (GIS) tool developed by CH2MHILL, which is based on the U.S. Environmental Protection Agency's (EPA's) Simple Method for the calculation of nonpoint source pollutant loads. The PLOAD tool uses GIS coverages of land use, sub-watershed boundaries, and BMP locations as well as look-up tables for event mean concentrations (EMCs), imperviousness, and BMP pollutant removal efficiencies. Pollutant loadings were not calculated in FY 2009 because they were estimated to be nearly identical to loadings calculated in FY 2006 and FY 2007. For all localities, the total acres of land disturbed and acres treated by new BMPs in 2009 accounted for less than 1% of the total land area.

The following table is a summary of the percent of pollutant load reduction that is attributable to the various BMPs employed by the localities. Percentages among the jurisdictions vary due to the differences in land area, land use, year of calculation, and the number and types of existing BMPs. A thorough description of the data components, methodology, and results of the Pollutant Load Analysis is presented in each jurisdiction's annual report.

Annual Percent Reduction of Pollutant Load Due to Existing BMPs.

	Total Suspended Solids (TSS)	Total Nitrogen (TKN)	Total Phosphorus (TP)
Chesapeake**	1.42%	0.35%	1.16%
Hampton *	3.20%	0.80%	1.40%
Newport News*	17.30%	4.60%	9.50%
Norfolk**	4.70%	2.00%	2.80%
Portsmouth**	2.10%	0.70%	1.10%
Virginia Beach *	14.55%	3.90%	9.50%

*Based on calculations computed in fiscal year 2006.

**Based on calculations computed in fiscal year 2007.

2.2 Greenlands

Greenlands are lands that are permanently protected from development or lands that are restored to a more natural state during redevelopment. They provide a water quality benefit by reducing the imperviousness of the watershed. Such lands may include parklands, refuges, wetlands, and lands protected by conservation easements. The database is structured to maintain the number of acres of greenlands to assess progress toward reducing the potential watershed imperviousness and nonpoint source pollution loads.

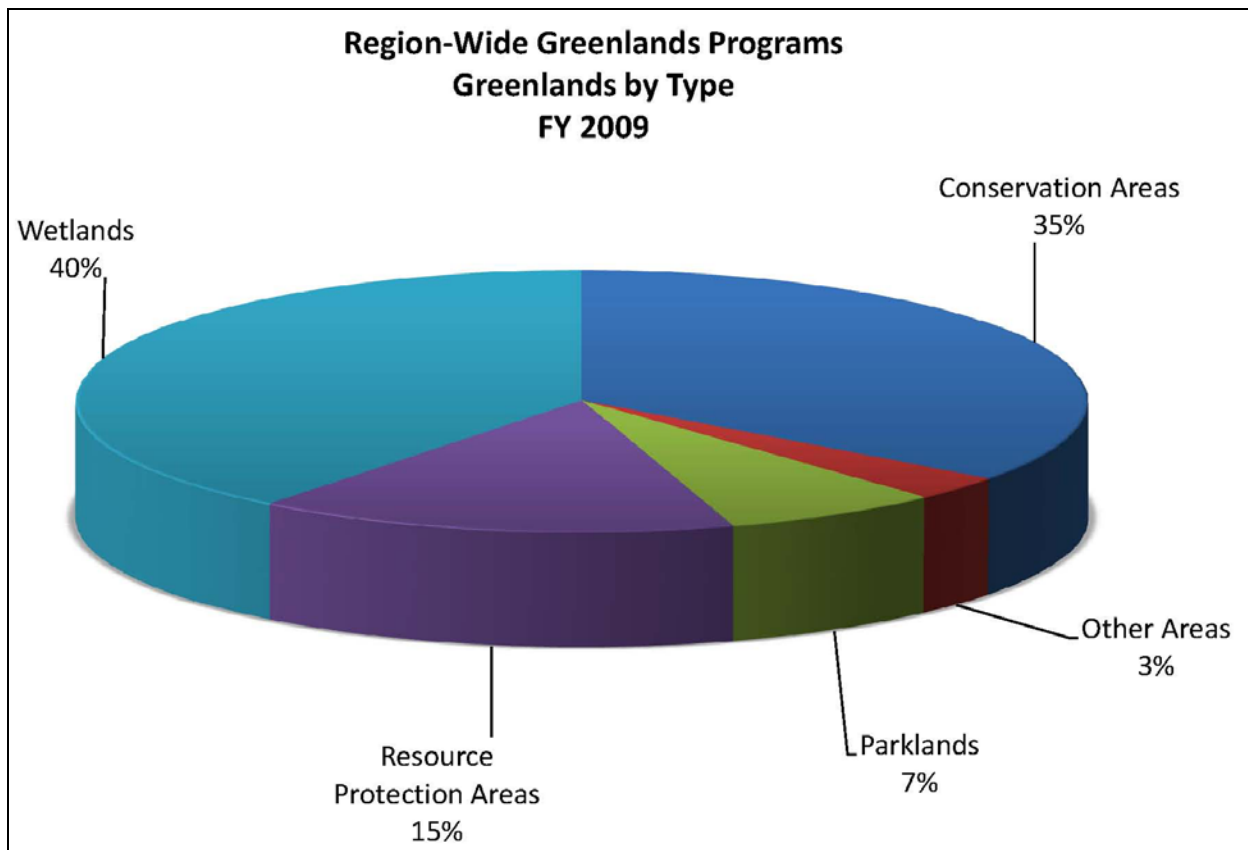


Figure 2-1: Region-Wide Greenlands by Type

As of fiscal year 2009, the localities estimate that 215,249 acres of greenlands have been preserved. A number of municipalities have increased open space land acquisition and conservation programs over the past six years, yet much of the increase in greenlands acreage over this time period is the result of improved calculation methods and the underestimation of greenlands totals in earlier years.

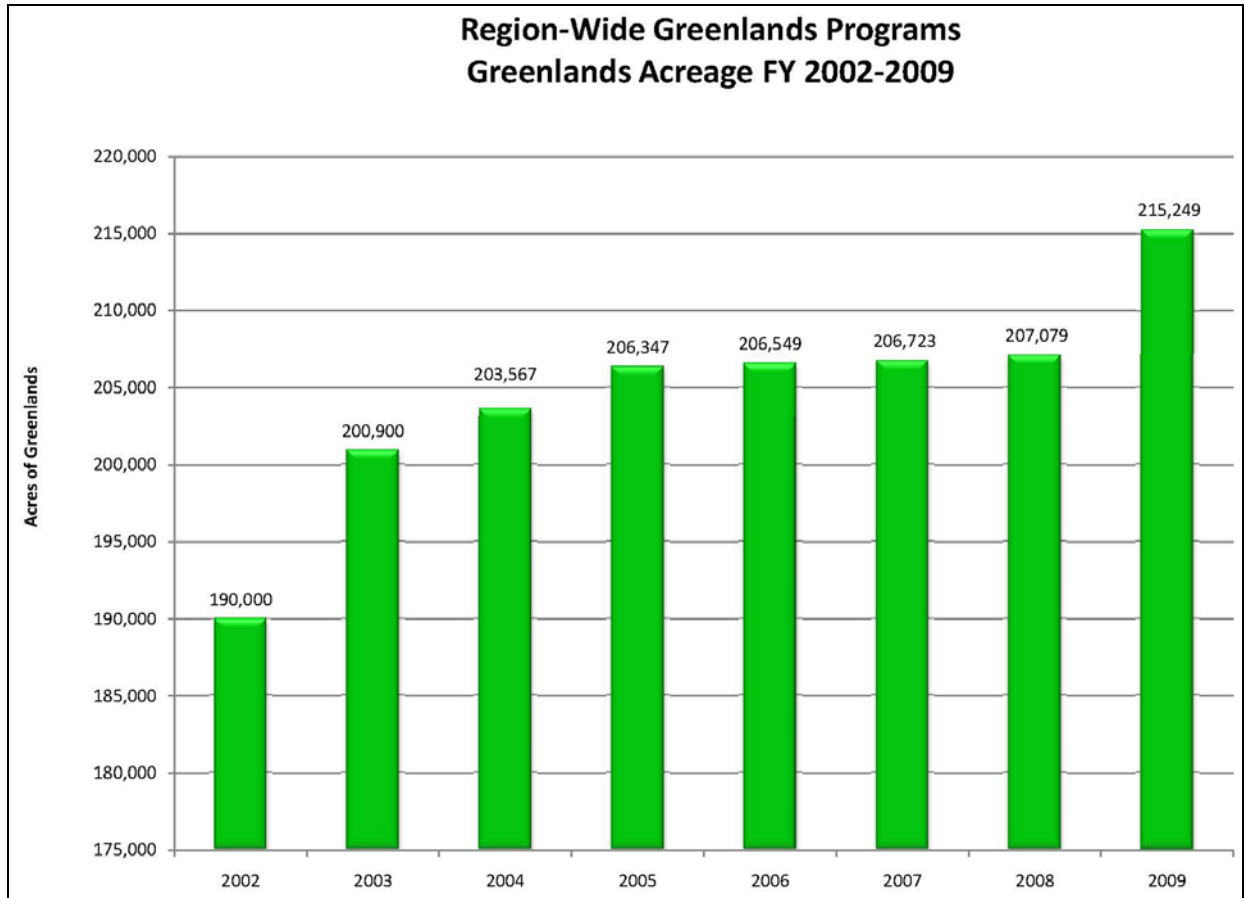


Figure 2-2: Region-Wide Acres of Greenlands

2.3 BMP Implementation

Stormwater best management practices (BMPs), also known as structural stormwater management facilities, help to minimize flooding and water quality impacts associated with development. Experience has shown that over time, lack of maintenance has caused BMPs to lose their effectiveness. In addition, older developed areas lack BMPs or the BMPs that have been installed do not include water quality protection measures. To measure the success of BMPs in flood and water quality protection, the database is structured to include information on:

- The number and types of BMPs installed or retrofitted for water quality.
- The number of developed acres served by BMPs by land use.
- Inspection and maintenance activities.

This information will allow the estimation of pollutant removal by BMPs and the ascertainment of whether BMPs are functioning properly.

During fiscal year 2009, the permitted local governments of Hampton Roads conducted over 2,500 inspections of stormwater facilities. In addition, 189 municipal stormwater facilities were installed and 395 facilities were maintained.

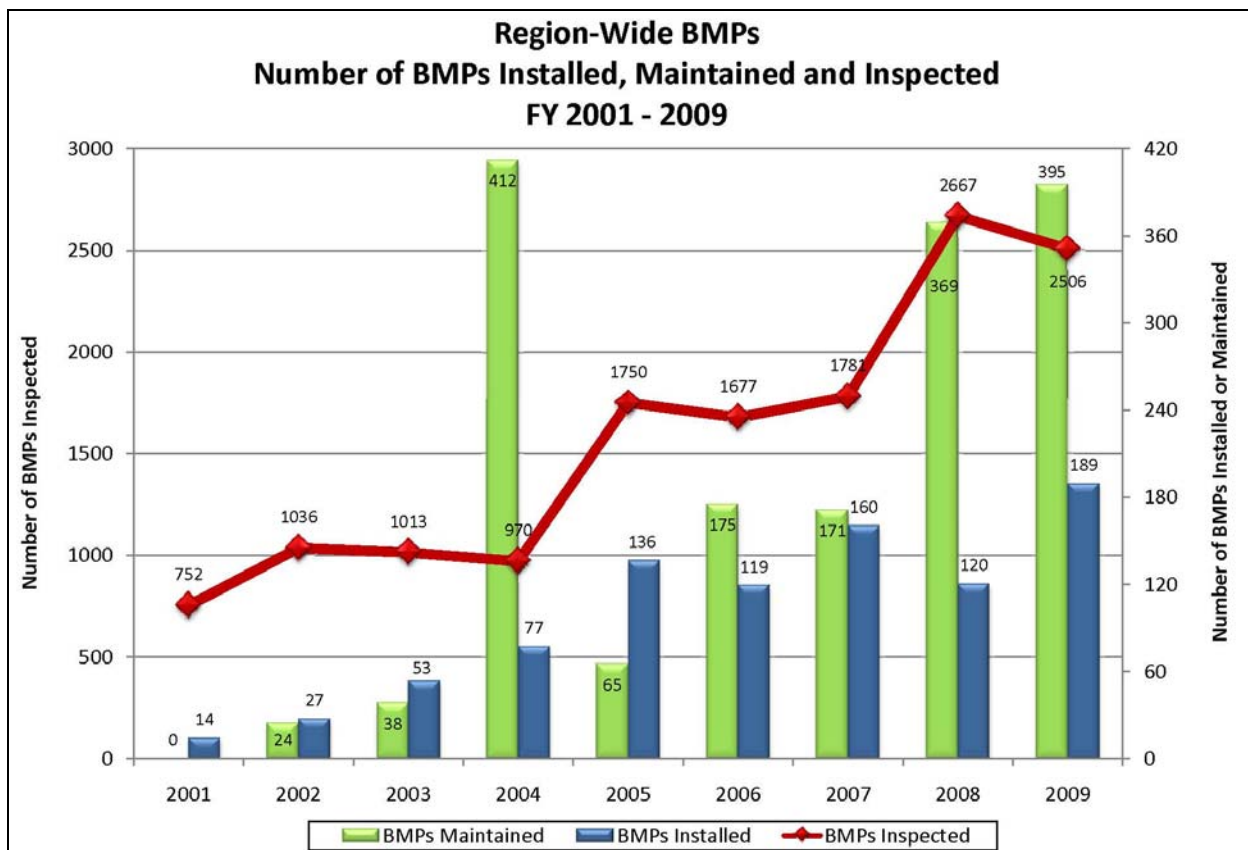


Figure 2-3: Region-Wide BMP Trends

2.4 Erosion and Sediment Control

Every local government in the Commonwealth of Virginia is required to administer an Erosion and Sediment Control Program. The Erosion and Sediment Control Law requires that land disturbing activities exceeding 10,000 square feet submit an Erosion and Sediment Control Plan and meet minimum standards. Under the Chesapeake Bay Preservation Act, the threshold is decreased to 2,500 square feet in a Chesapeake Bay Preservation Area. In addition, the new VSMP requires permits for all land disturbances greater than 2,500 square feet in all Chesapeake Bay Preservation Areas.

The minimum standards specify practices that reduce the amount of sediment leaving a construction site and minimize downstream flooding and streambank erosion. The level of enforcement and compliance limits the effectiveness of local erosion and sediment control programs. To monitor the extent of land-disturbing activities, the database is designed to include information on the number of approved erosion and sediment control plans and disturbed acreage. The number of inspections and enforcement actions are also included to evaluate enforcement and the level of compliance with the local erosion and sediment control regulations.

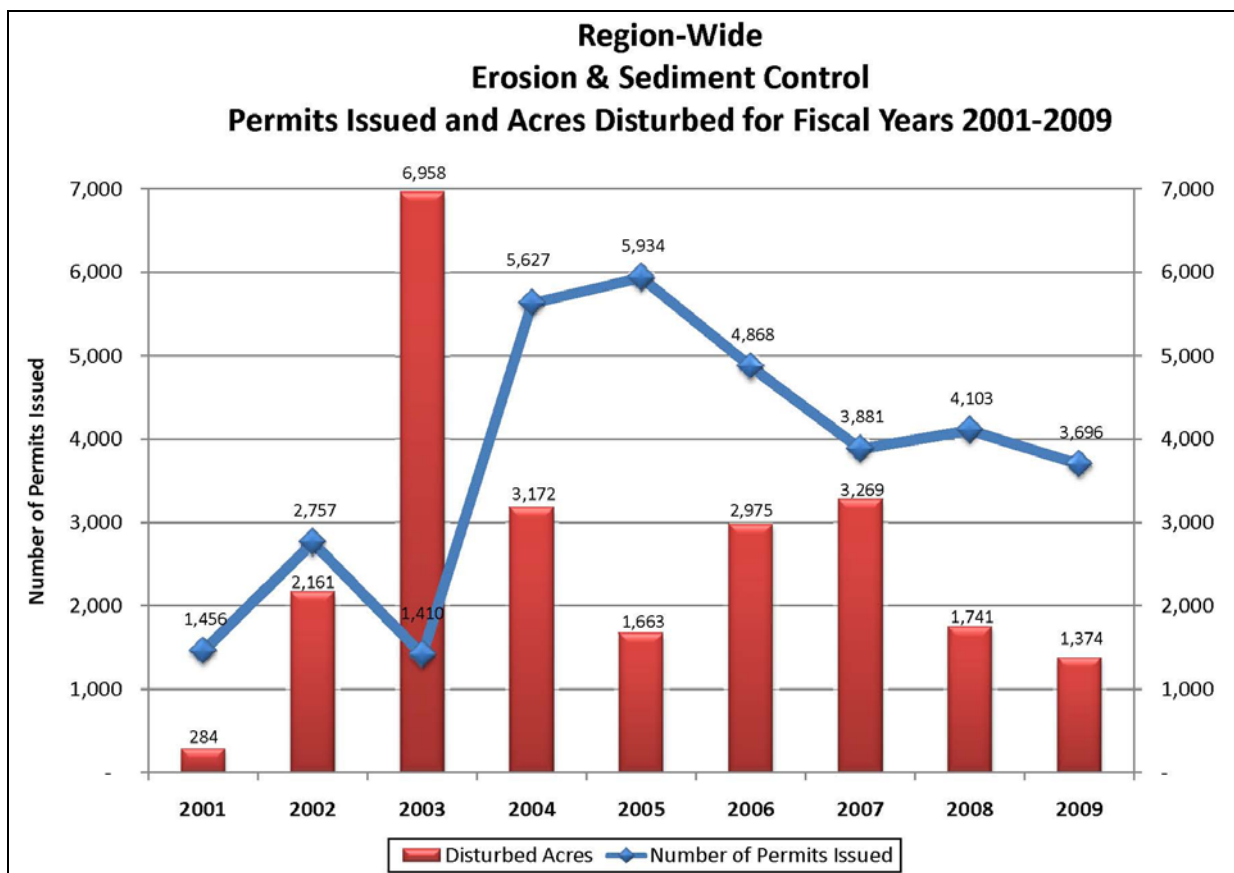


Figure 2-4: Region-Wide Erosion and Sediment Control Permits

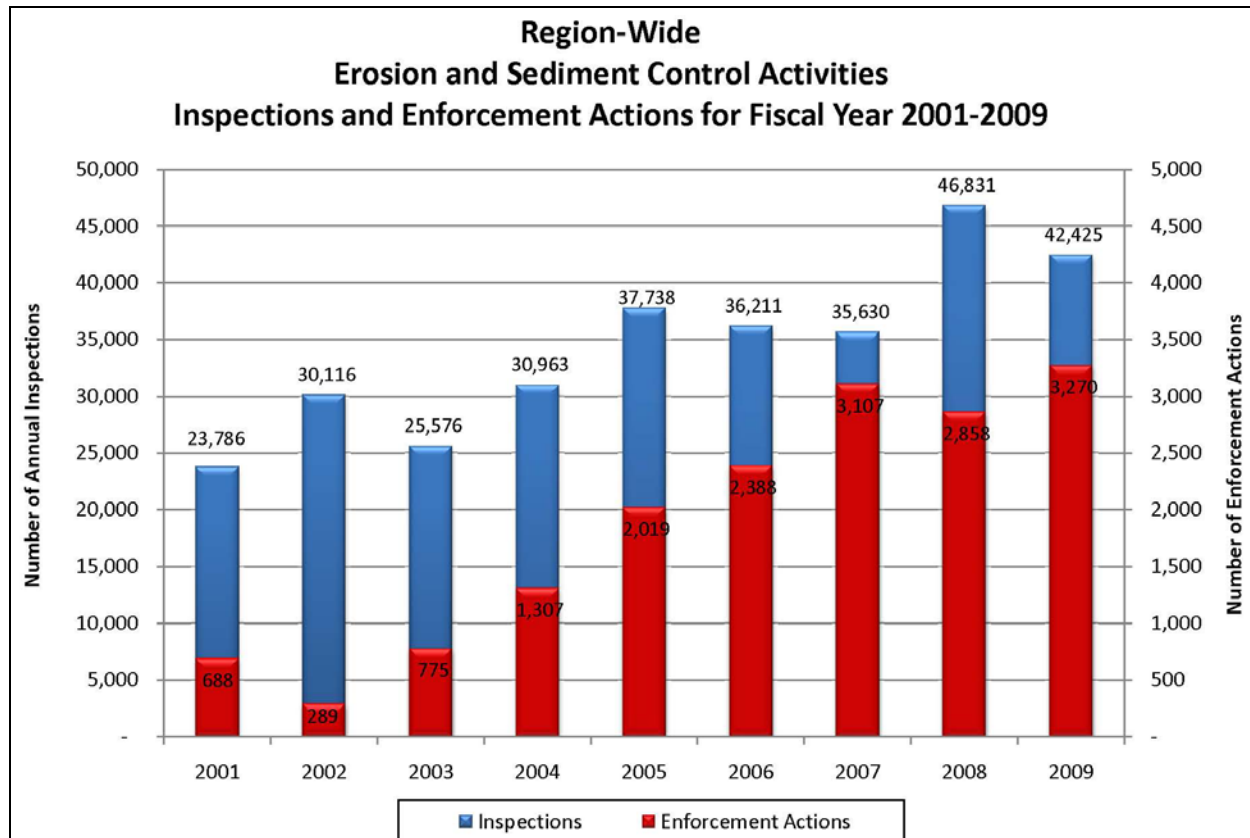


Figure 2-5: Region-Wide Erosion and Sediment Control Inspections and Enforcement Actions

In fiscal year 2009, the six Phase I localities in Hampton Roads issued nearly 4,000 erosion and sediment control permits, conducted 42,425 inspections, and carried out over 3,200 enforcement actions. Projects requiring an erosion and sediment control permit disturbed approximately 1,300 acres.

2.5 Flooding and Drainage Responses

Calls and complaints received from citizens can be an indicator of the performance of a stormwater program. Responsiveness of a stormwater program, in the form of inspections and resulting maintenance activities, to citizen inquiries can also be an indicator of effective administration of the stormwater program. The database is structured to collect data on the number of citizen calls and responses.

Between fiscal years 2001 and 2009, the Hampton Roads Phase I municipalities have responded to an average of 12,150 citizen inquiries per year. In fiscal year 2009, the region responded to over 10,000 citizen requests for service. Since tracking began, the Phase I localities have responded to 109,347 inquiries.

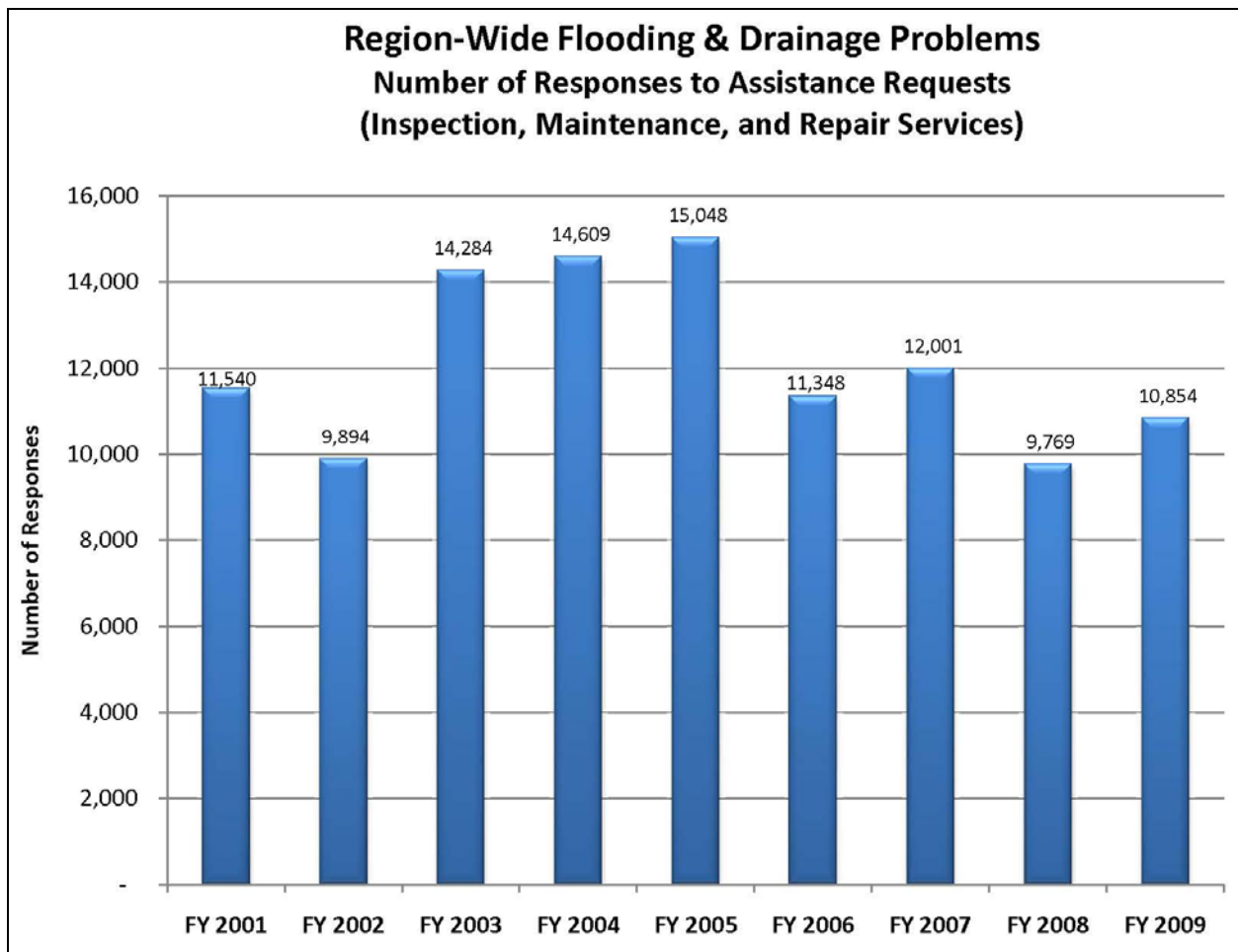


Figure 2-6: Region-Wide Response to Flooding and Drainage Problems

2.6 Flooding and Drainage Projects

An important function of a local stormwater program is to correct flooding and water quality problems. These projects may be included in the local Capital Improvement Program. These projects may involve retrofitting areas, installing BMPs, or restoration activities. To help determine whether a stormwater program is actively performing this important function, the database is designed to include the number and cost of flooding and drainage projects.

During fiscal year 2009, the localities allocated over \$17 million toward 104 stormwater management improvement projects. Over the past nine years, the Hampton Roads Phase I communities have constructed over 1,000 stormwater management projects requiring an investment of over \$170 million.

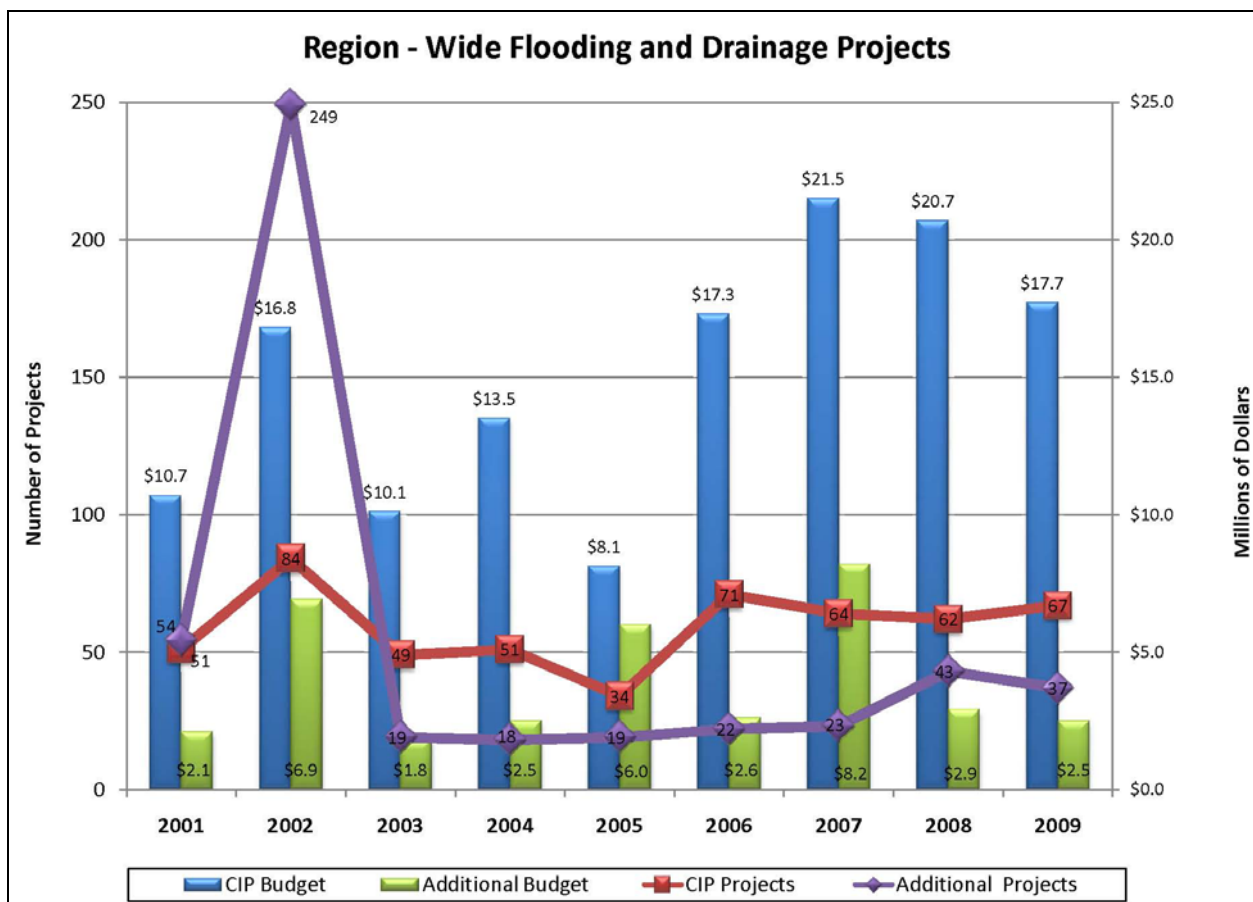


Figure 2-7: Region-Wide Stormwater Projects

2.7 Investigative Monitoring

Non-stormwater discharges, such as hazardous material spills, wastewater cross connections, and other illicit discharges can represent a significant source of pollution. Implementing an effective illicit discharge/connection management program to control these sources can result in considerable improvements to water quality. In order to assess whether an illicit discharge/connection program is being effectively implemented, the database is structured to allow the collection of information on investigative and corrective actions. These actions include screening inspections and measures taken to locate and eliminate illicit discharges/connections.

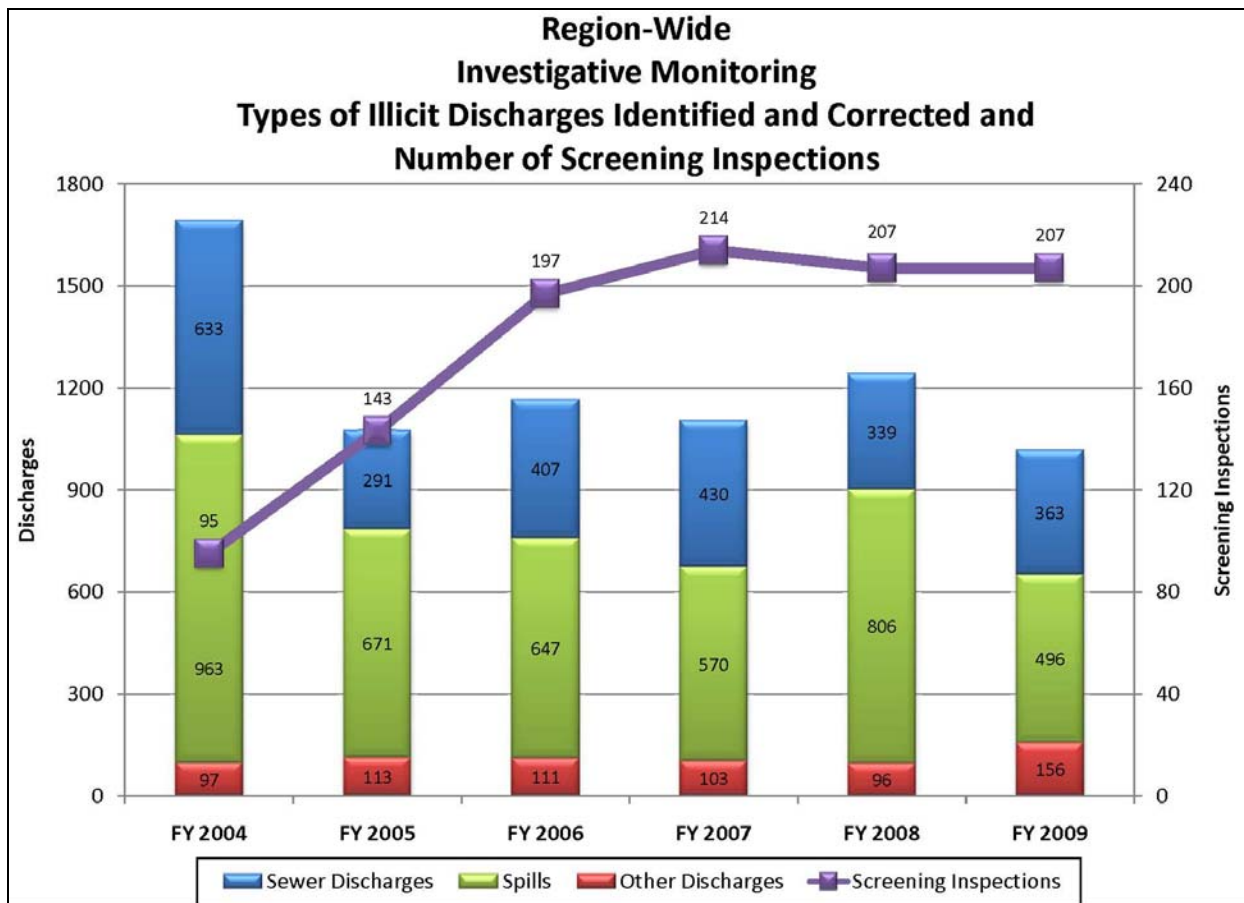


Figure 2-8: Region-Wide Investigative Monitoring

2.8 Operations and Maintenance

Operation and maintenance activities are crucial to a stormwater conveyance system's ability to reduce flooding and minimize the amount of pollutants that are discharged into the region's waterways. Operation and maintenance activities include street sweeping and cleaning and repairing both catch basins and drainage facilities. By monitoring these activities, the proper functioning of the stormwater system can be assessed, and the amount of sediment that was prevented from being discharged by the stormwater system can be estimated.

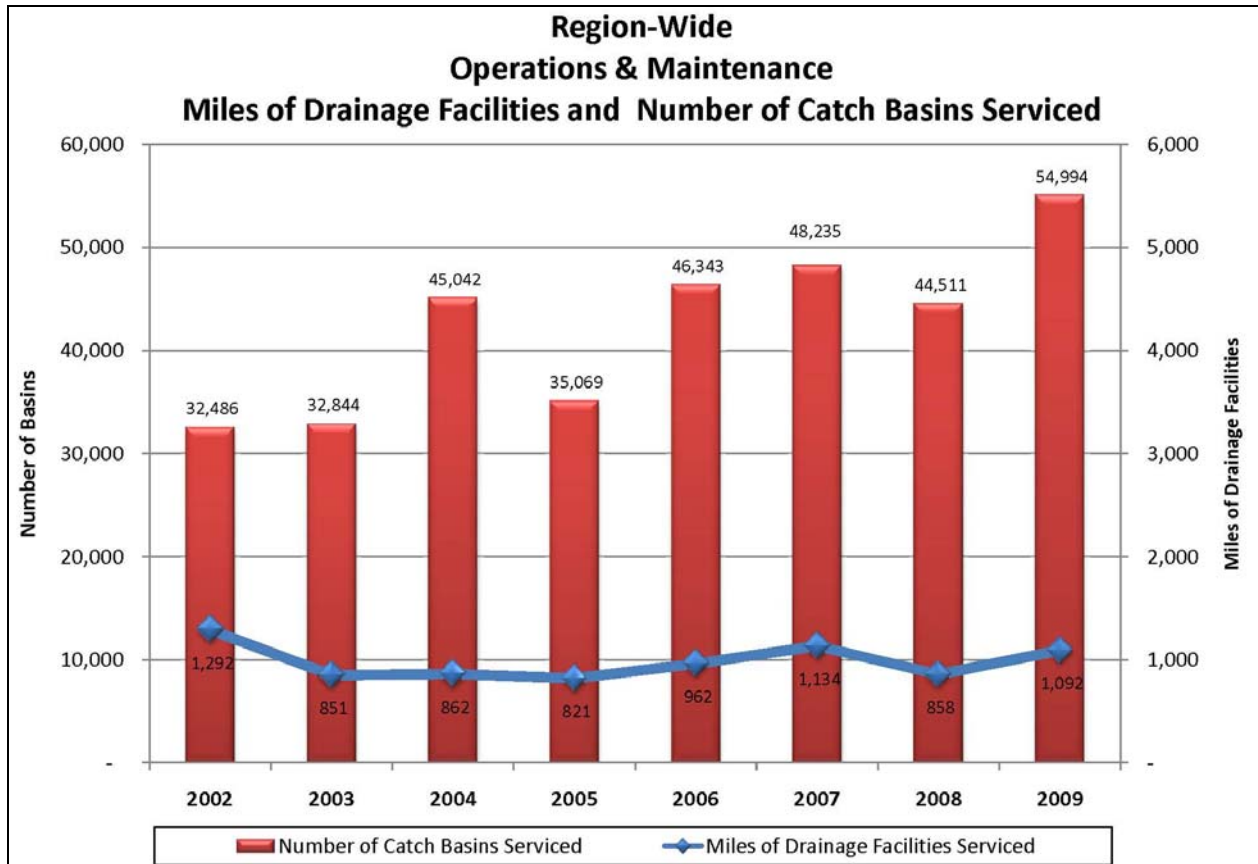


Figure 2-9: Region-Wide Operations and Maintenance

In Fiscal Year 2009, the Phase I local governments cleaned a nearly 55,000 catch basins and serviced 1,092 miles of drainage facilities. In addition, the localities swept over 90,000 miles of streets. These activities prevented an estimated 40,897 tons of material from polluting the region's waterways.

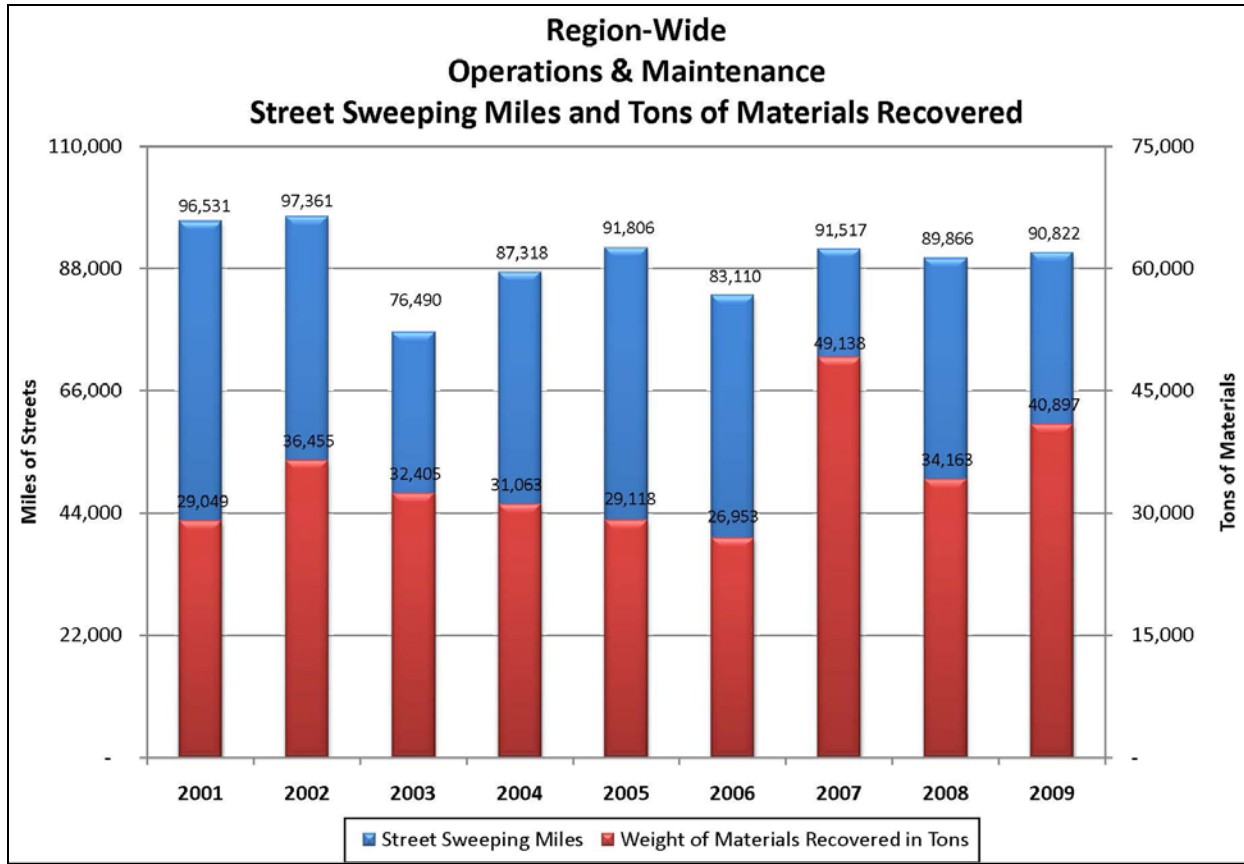


Figure 2-10: Region-Wide Street Sweeping

2.9 Permitting and Compliance

In general, development increases the amount of runoff and pollution in a watershed. In an effort to monitor development activity, the number of approved site and subdivision plans, and their associated developed or redeveloped acres, are maintained in the database.

During fiscal year 2009, the permitted Phase I local governments of Hampton Roads issued 8,794 construction permits and approved 1,625 development plans. Construction and development acreage for fiscal year 2009 is estimated at 1,373 acres.

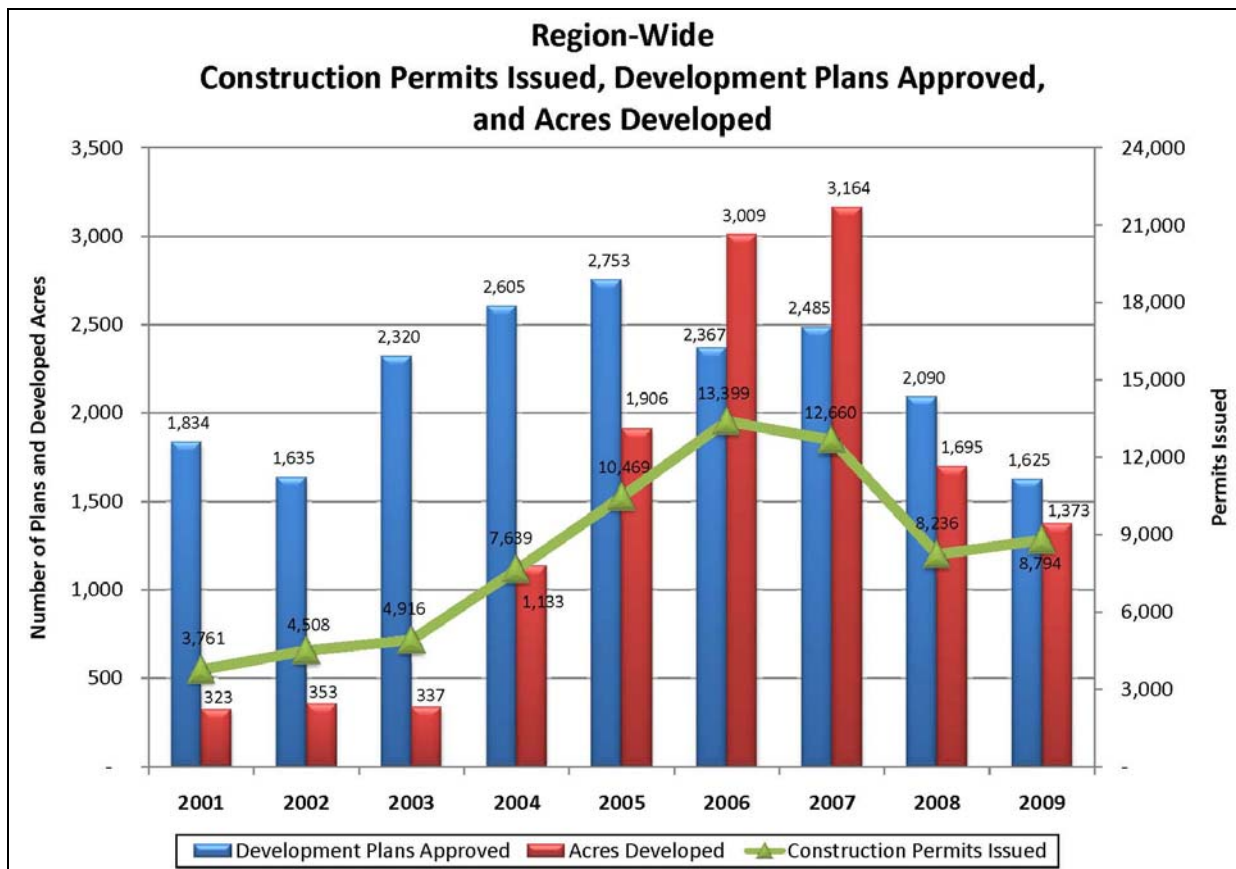


Figure 2-11: Region-Wide Permitting and Compliance

2.10 Environmental Knowledge

Informing individuals about stormwater issues and measures they can take to reduce pollution is important to gaining public support of a stormwater program. It also helps protect water quality. The database maintains information on public education and outreach activities to help assess whether a stormwater program is adequately carrying out this function. The parameters that are examined include: number of publications produced and distributed, public outreach activities, media campaigns, riparian restoration activities by citizens, stream cleanup activities, and web site hits.

During Fiscal Year 2009, the permitted Phase I local governments of Hampton Roads, both individually and cooperatively through the HR STORM regional stormwater education program, carried out a number of activities to enhance the environmental knowledge of their citizens. Through these efforts, approximately 80,125 stormwater education publications were distributed, and approximately 308,000 people were reached through a variety of public education outreach activities. These activities included demonstrations, workshops, presentations, stream cleanups, and other educational events in which demonstration give-away items were distributed.

In addition, the HRPDC, on behalf of HR STORM, contracted with Cox Media, WVEC, WGNT, and Metro Networks for advertising. Through Cox Media, HR STORM ads appeared on channels with high viewership such as the Weather Channel, ESPN2, and national news carriers like CNBC and MSNBC, as well as niche channels such as Home and Garden Television (HGTV). Metro Traffic aired spots during different drive times, reminding citizens about the need for proper auto maintenance and disposal of auto related chemicals, as well as of leaves and lawn maintenance, pet waste disposal and more.

Media Spots Released, Fiscal Year 2009

TV and Radio Spots				Web Banner Ads		
MEDIA	ADS	REACH	FREQUENCY	IMPRESSIONS	CLICK-THRUS	CTR (Click-Thru Rate)
Cox Cable	248	77.2%	3.1	106,485	100	.09%
MetroTraffic	502	100%	3.4			
WGNT – CW *African-American	31	27.2% 65.5%	2.6 2.4	2,934	5	.17%
WVEC – 13	110	59%	2.93	160,063	120	.07%
Project Green				300,611	164	.05%

The media campaign was created to reflect the demographics of Hampton Roads. According to the Nielsen Norfolk Designated Marketing Area (DMA)®, thirty percent of households are African-American. Thirty percent of WGNT and WVEC viewers and 26% of Cox Media's cable subscribers are African-American. *Only WGNT was able to provide reach and frequency numbers based on demographic.

In addition to the media campaign, HR STORM also provides stormwater education messages, publications, and recently aired stormwater ads on its website at <http://www.hrstorm.org>, which received 9,497 page views in fiscal year 2009. Also during the year, 222 citizens called 58-STORM, the region's automated stormwater information line.

Other noteworthy program components this year include the following:

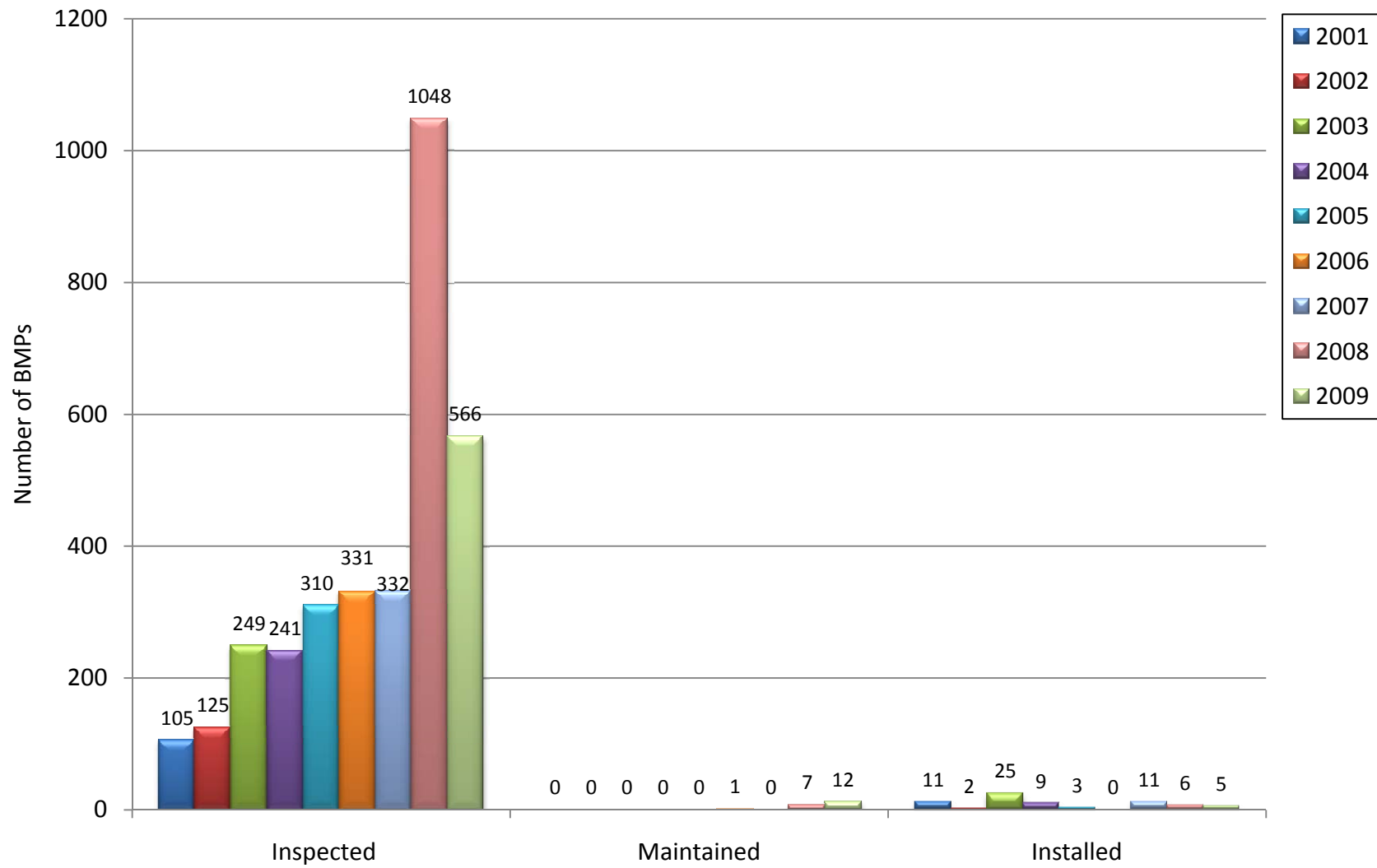
- Over 60,000 "Scoop the Poop" inserts were mailed with animal license renewal bills, distributed at Treasurer's Offices, included in local newsletters, and distributed in pet adoption kits.
- HR STORM awarded \$2,041 in mini-grants to fund watershed restoration and soil erosion prevention, reaching over 500 youth.
- An email marketing campaign for the Mini-Grant program dramatically increased applications received.
- The revised online ad campaign topped national averages in click-thru rates (CTR).
- Social media extended the reach of HR STORM messages throughout the year.

A complete description of the activities of HR STORM is available in a separate report, "HR STORM: Hampton Roads Regional Stormwater Education Initiative Fiscal Year 2008-2009 Annual Report".

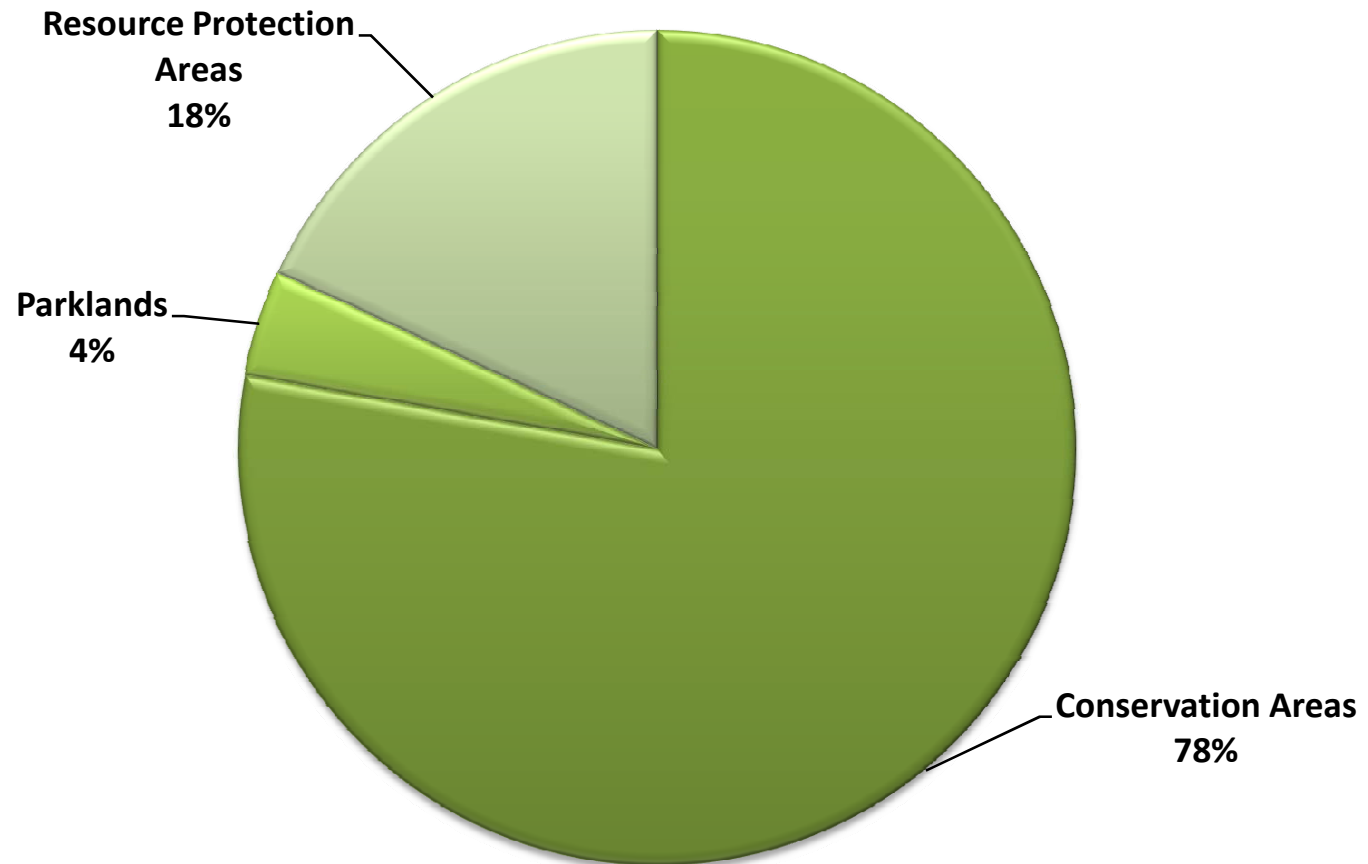
**APPENDIX A:
GRAPHICAL SUMMARY OF INDICATOR DATA FOR EACH LOCALITY**

City of Chesapeake

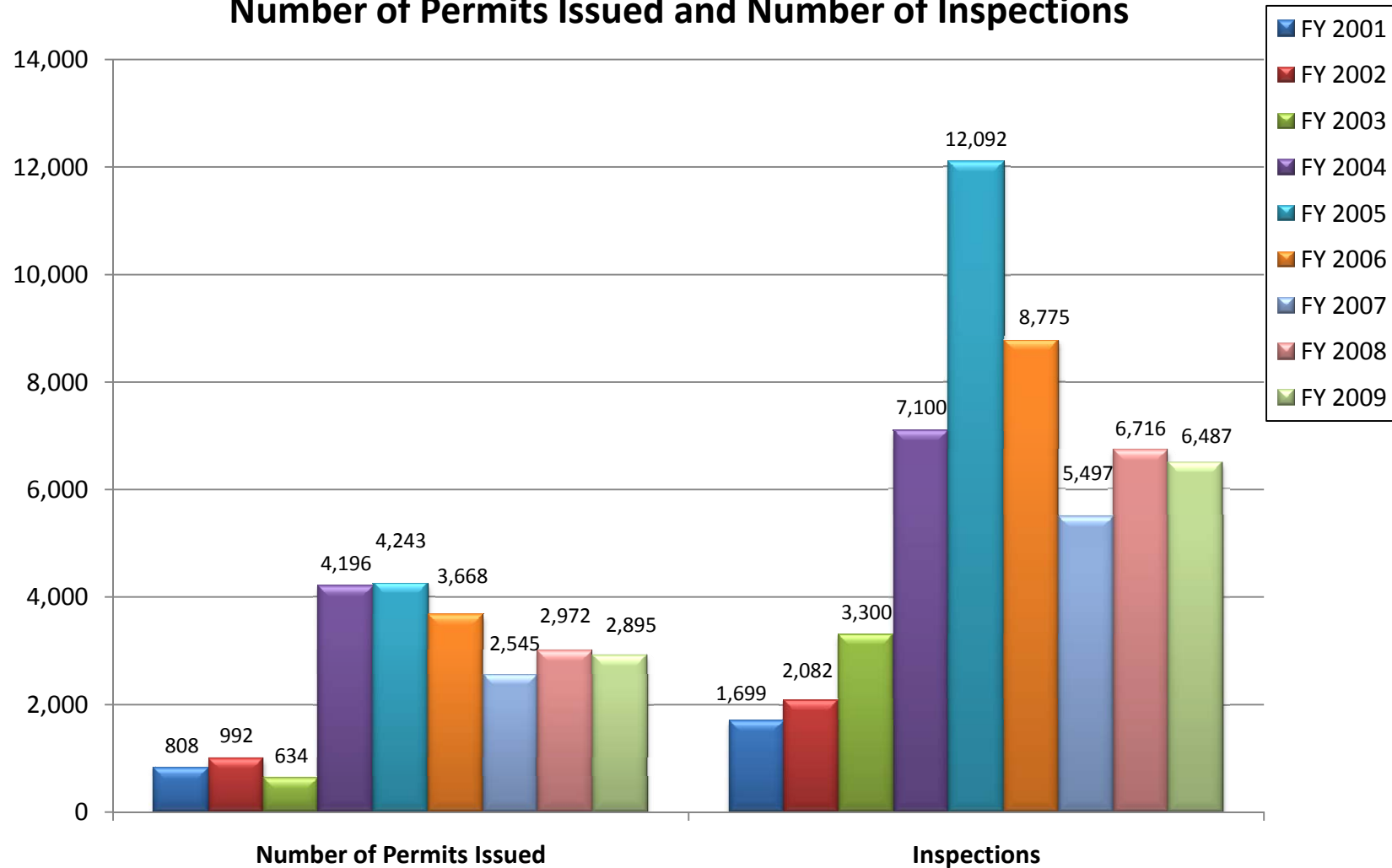
Chesapeake BMPs Installed, Maintained and Inspected



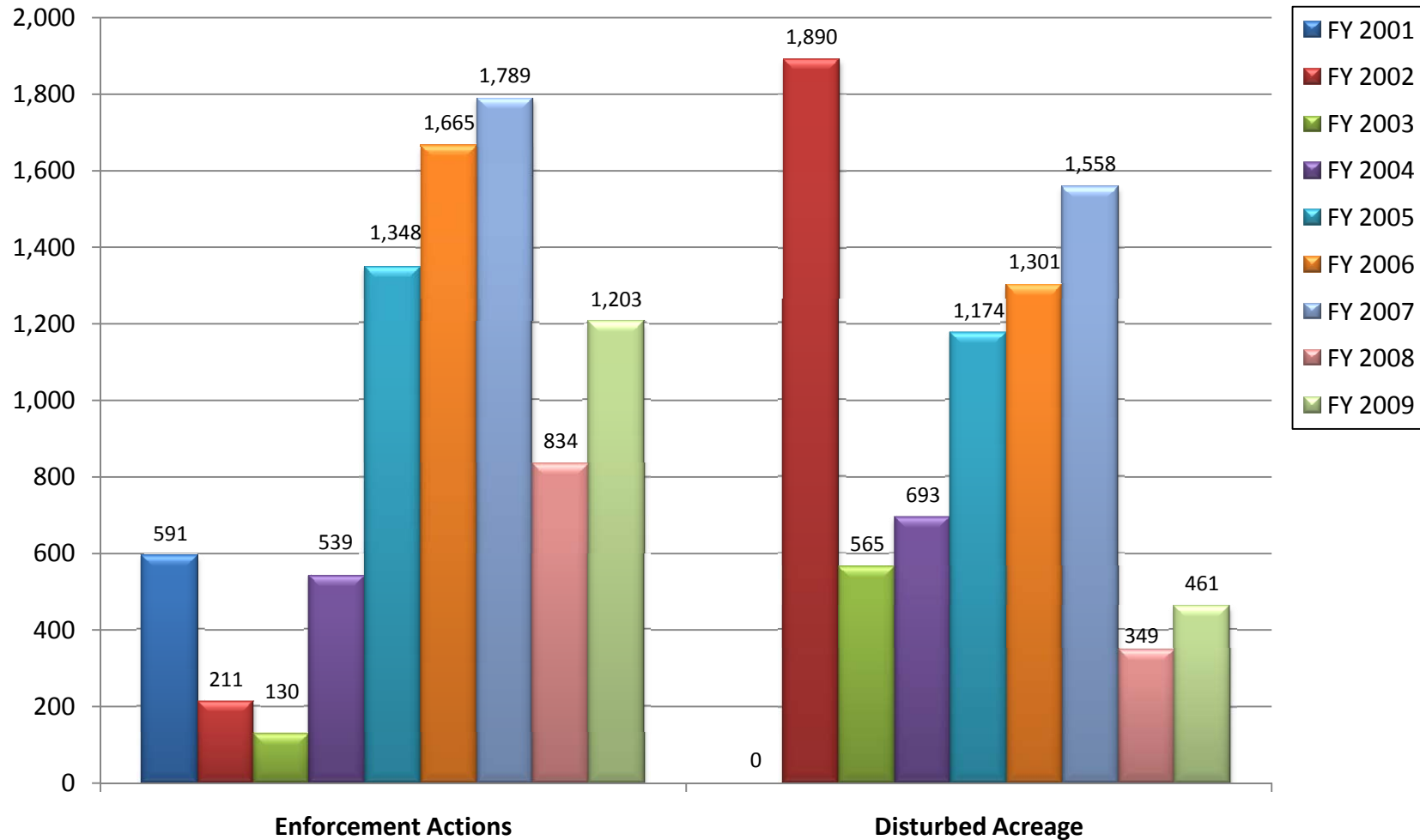
City of Chesapeake Components of Greenlands



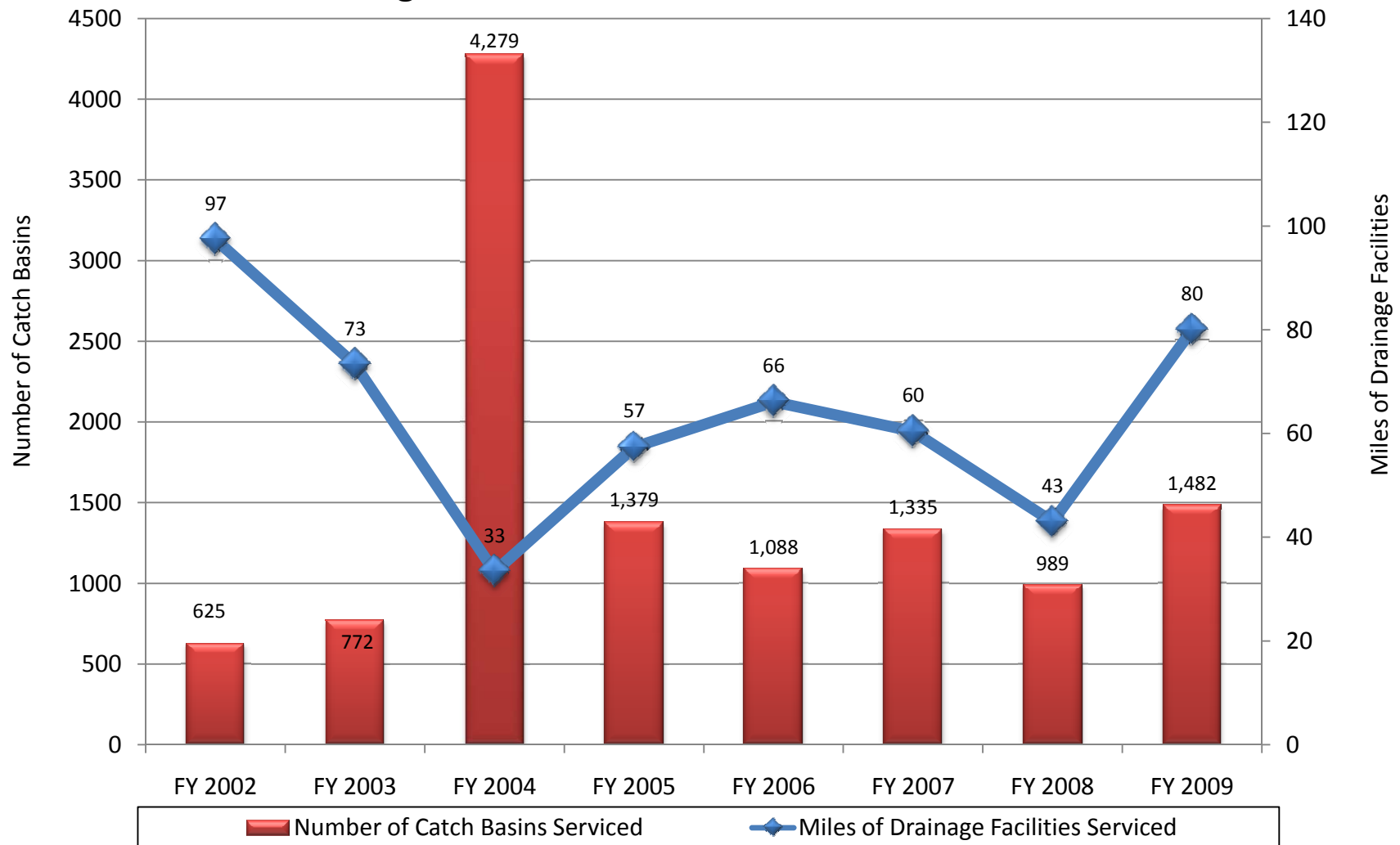
Chesapeake
Erosion and Sediment Control Activities
Number of Permits Issued and Number of Inspections



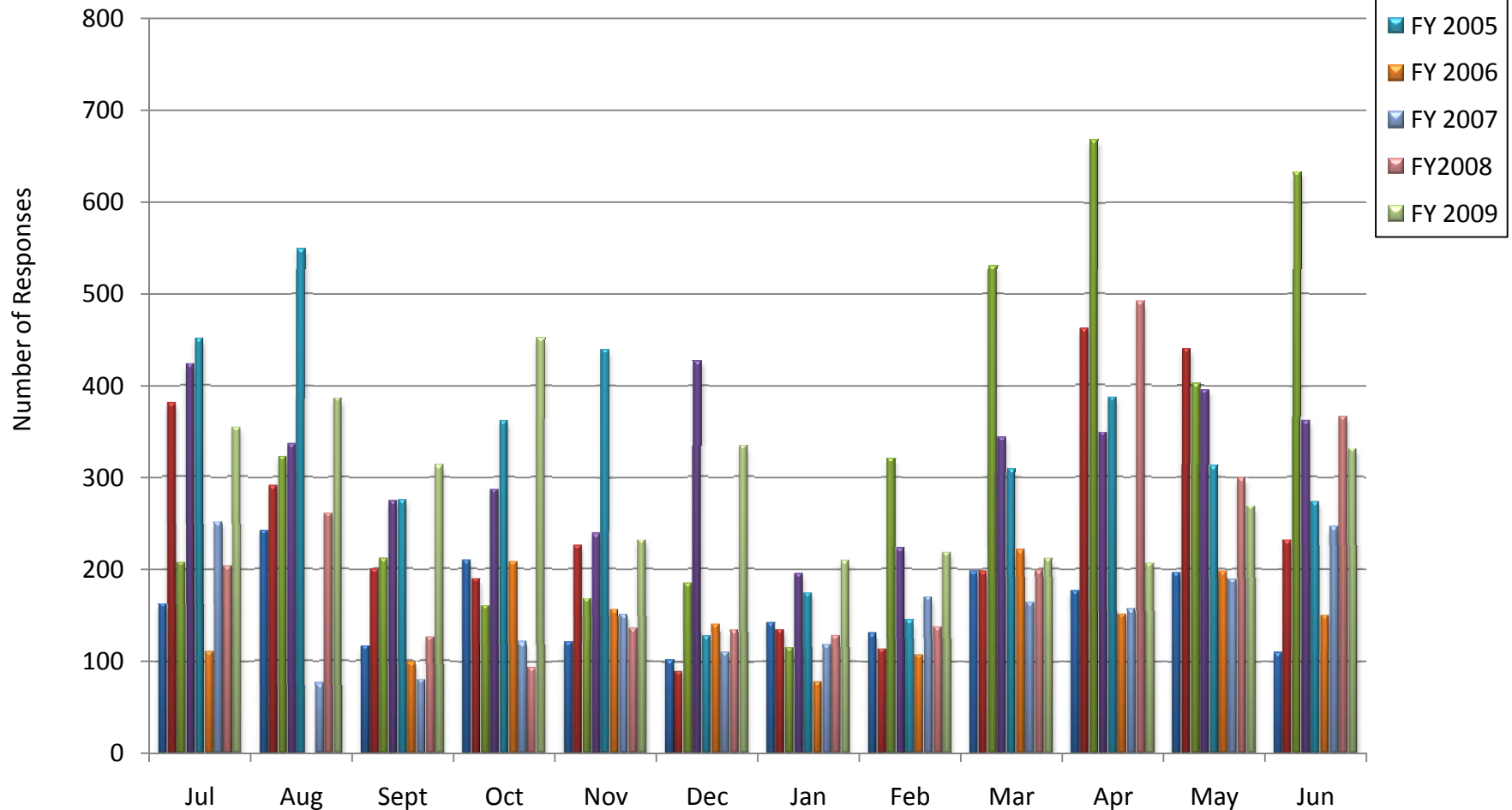
Chesapeake
Erosion and Sediment Control Activities
Number of Enforcement Actions and Disturbed Acreage



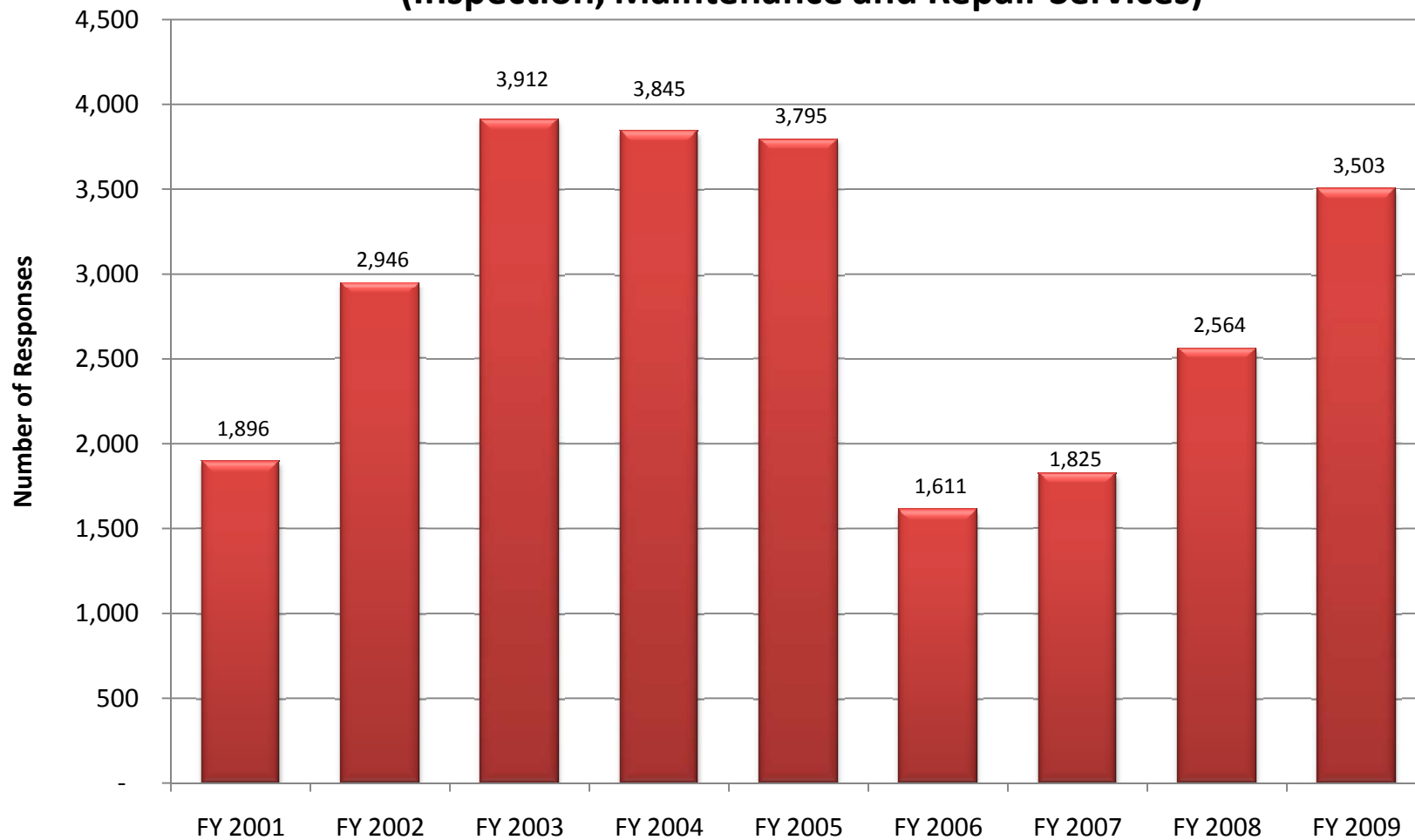
Chesapeake Operations and Maintenance Drainage Facilities Serviced and Catch Basins Cleaned



Chesapeake Flooding and Drainage Problems Responses to Assistance Requests (Inspection, Maintenance and Repair Services)



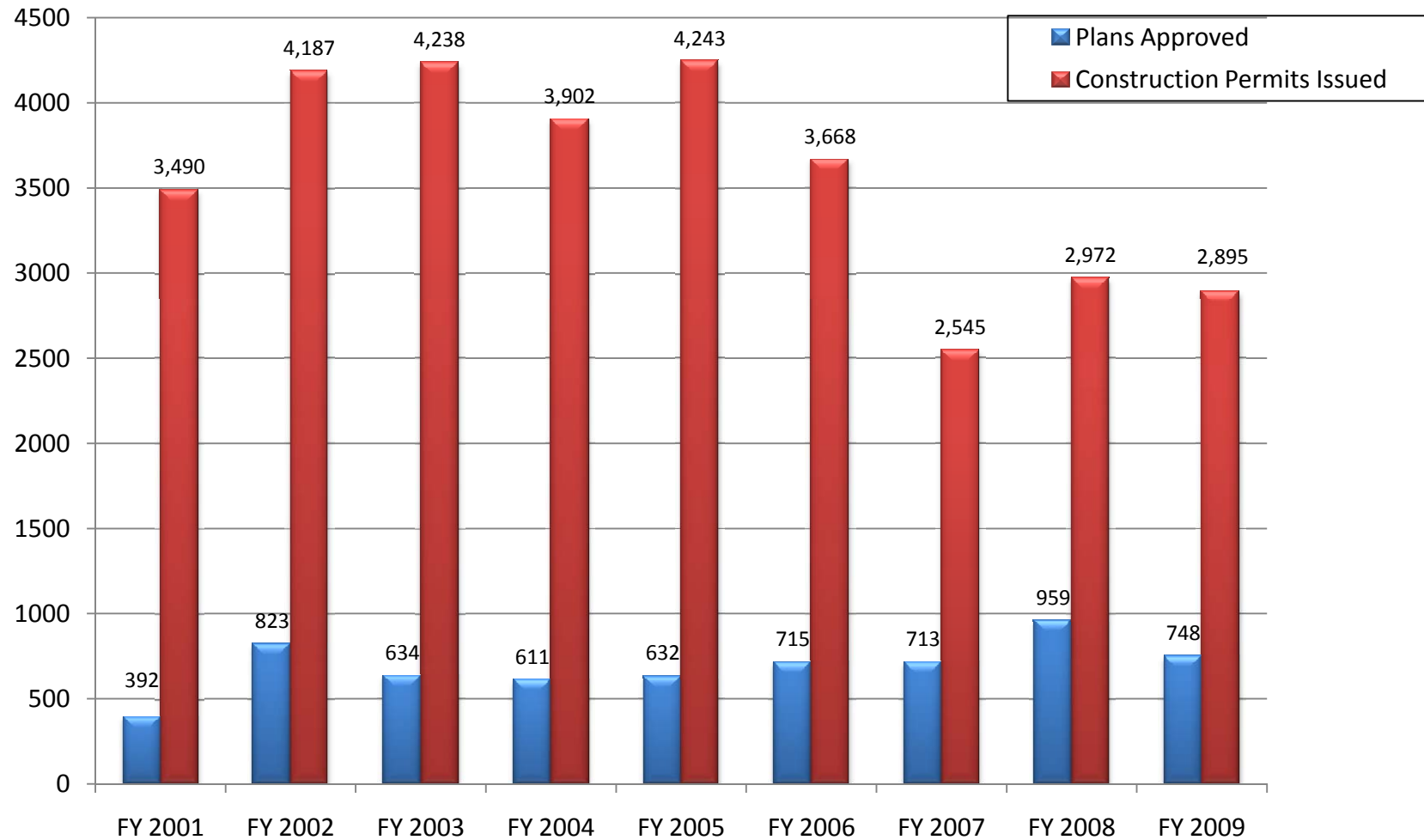
**Chesapeake
Flooding and Drainage Problems
Responses to Assistance Requests
(Inspection, Maintenance and Repair Services)**



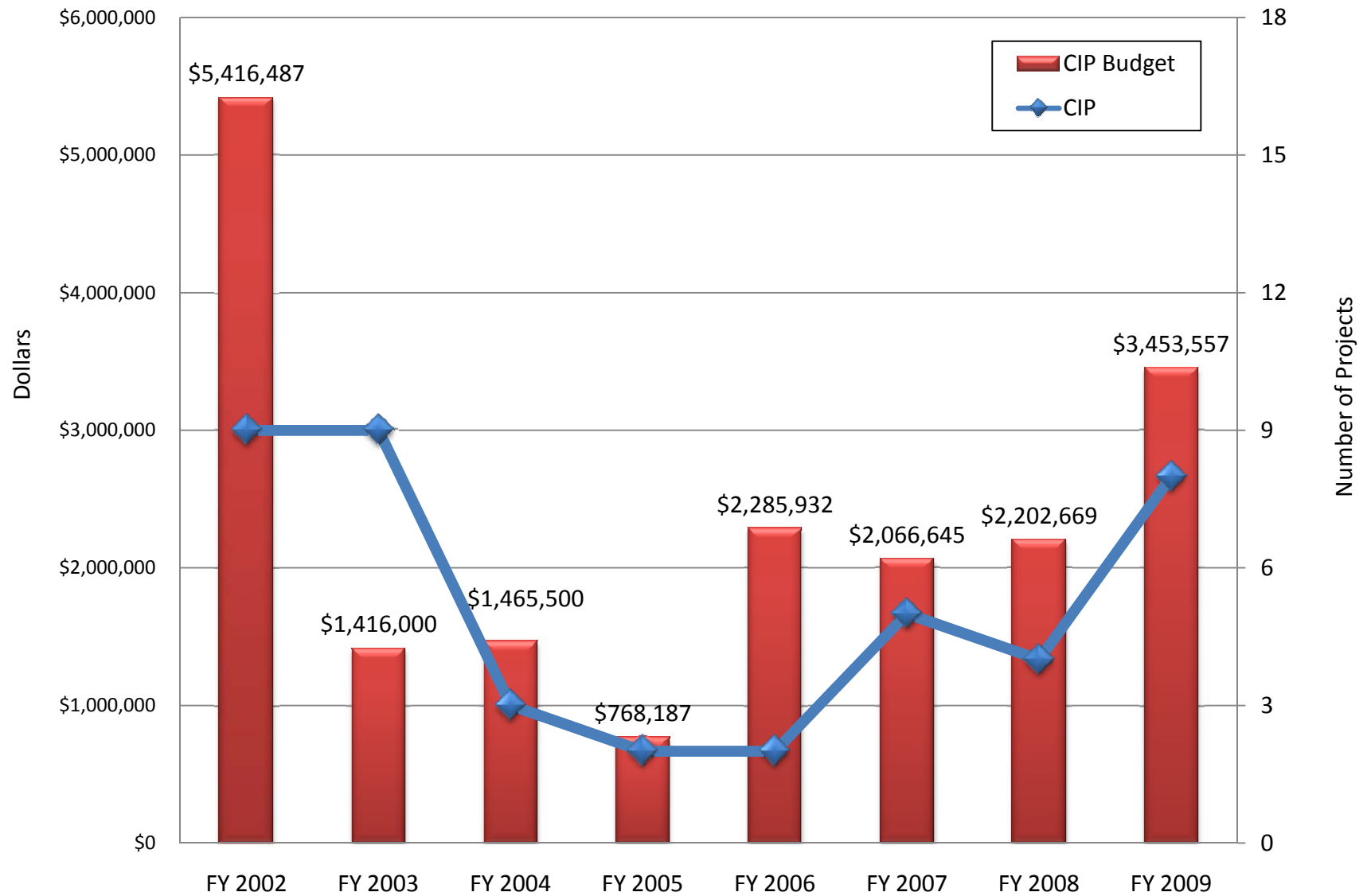
Chesapeake

Permitting & Compliance

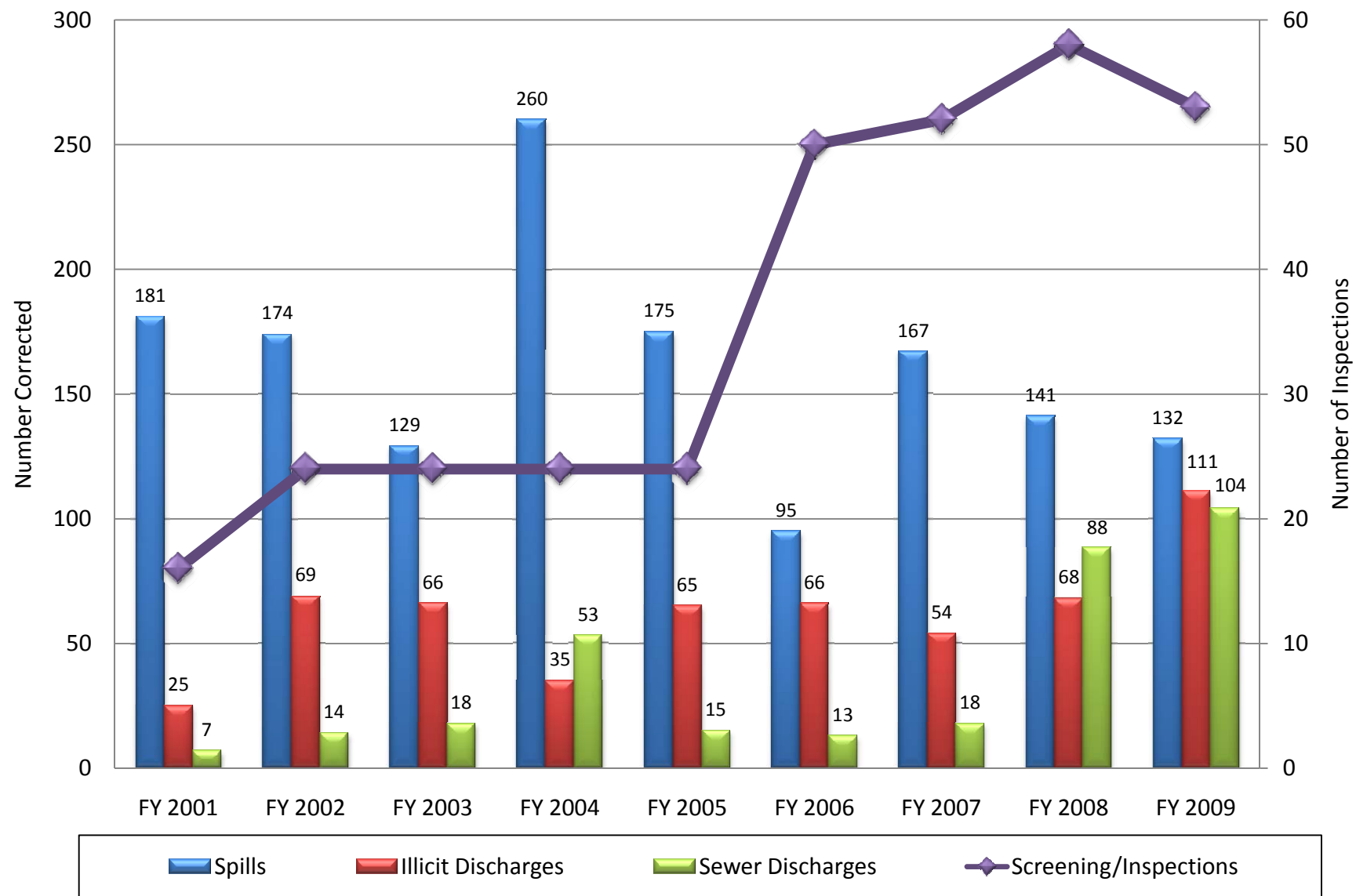
Number of Plans Approved and Construction Permits Issued



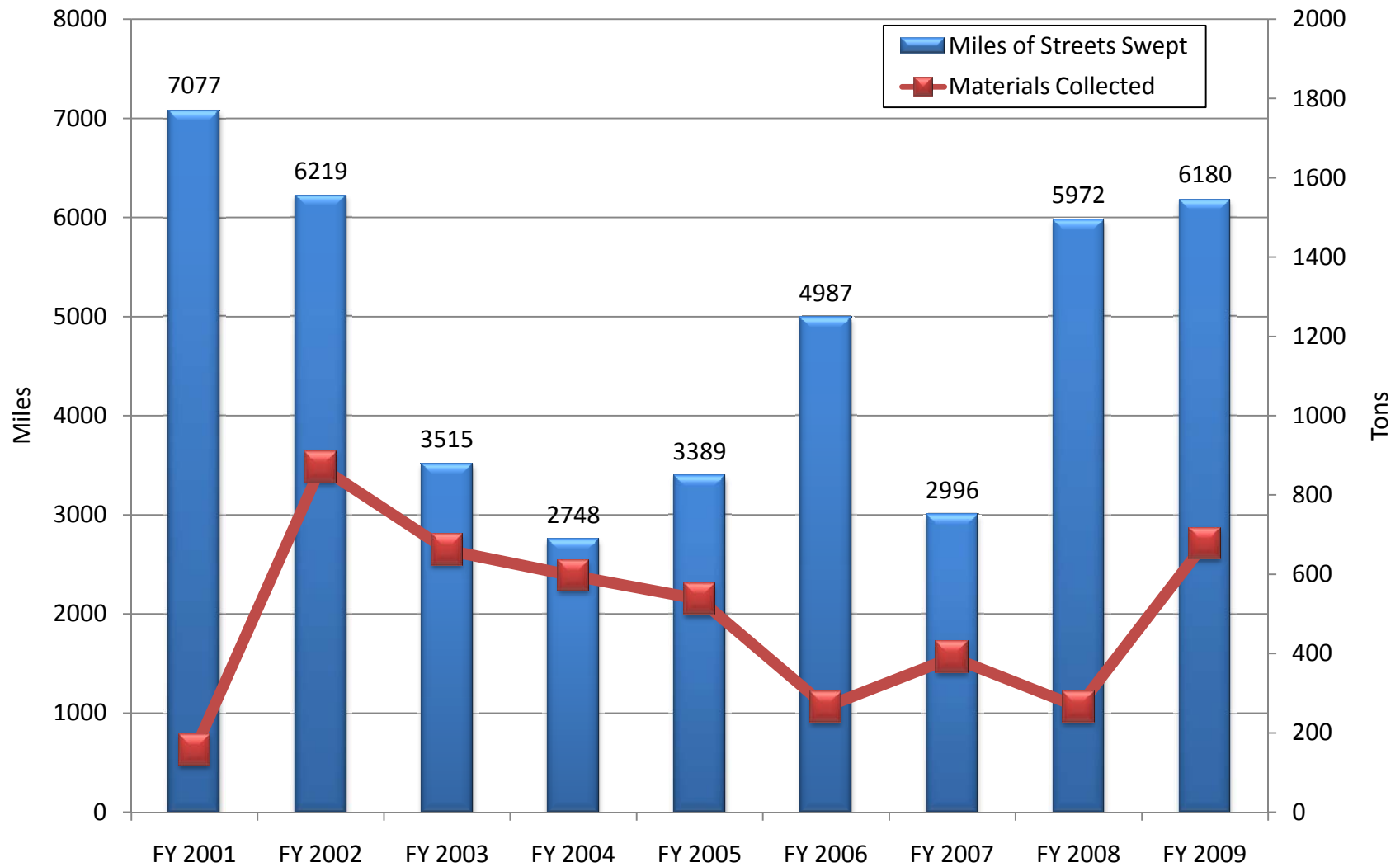
Chesapeake Flooding and Drainage Projects



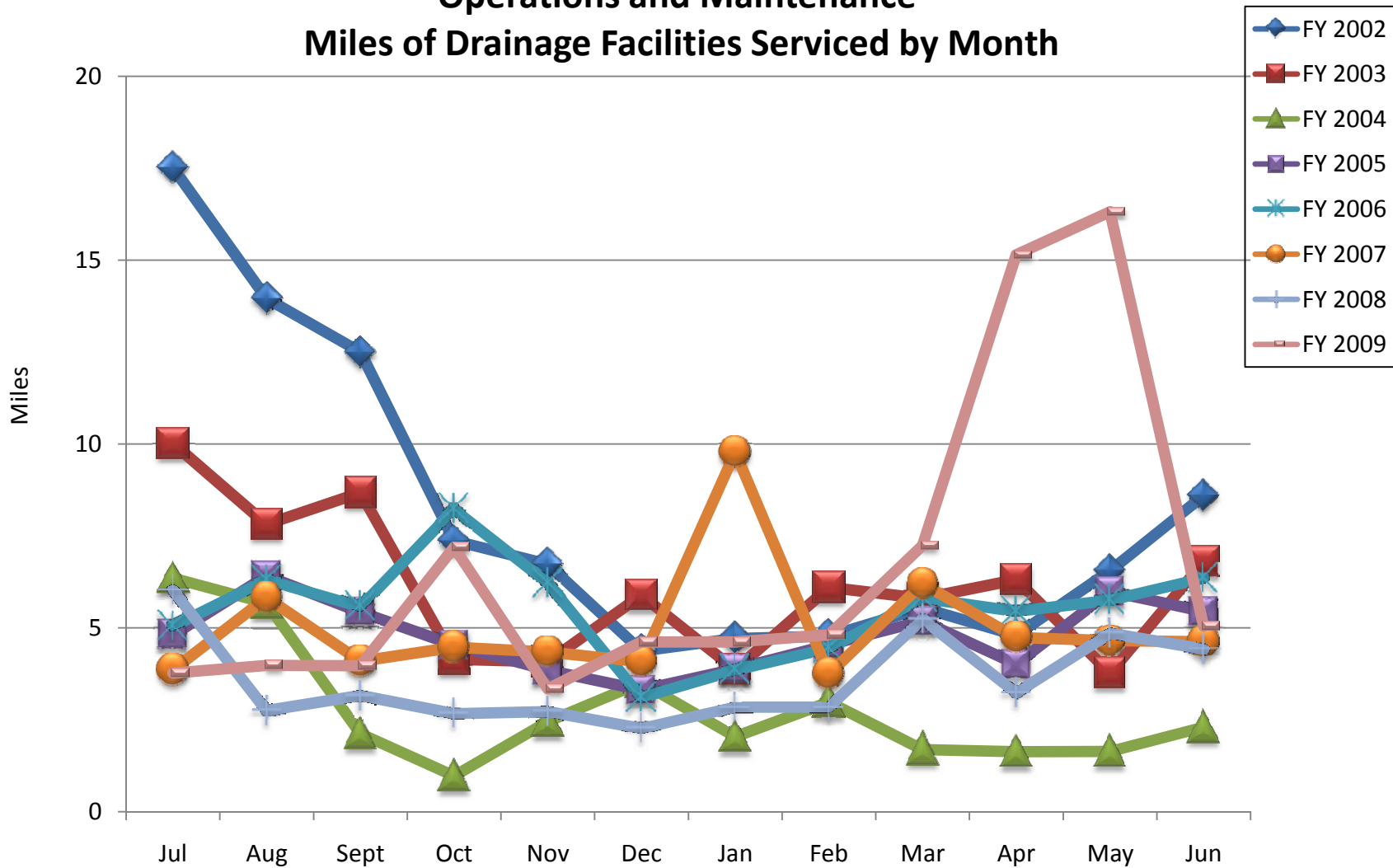
Chesapeake Illicit Discharges Detection and Elimination



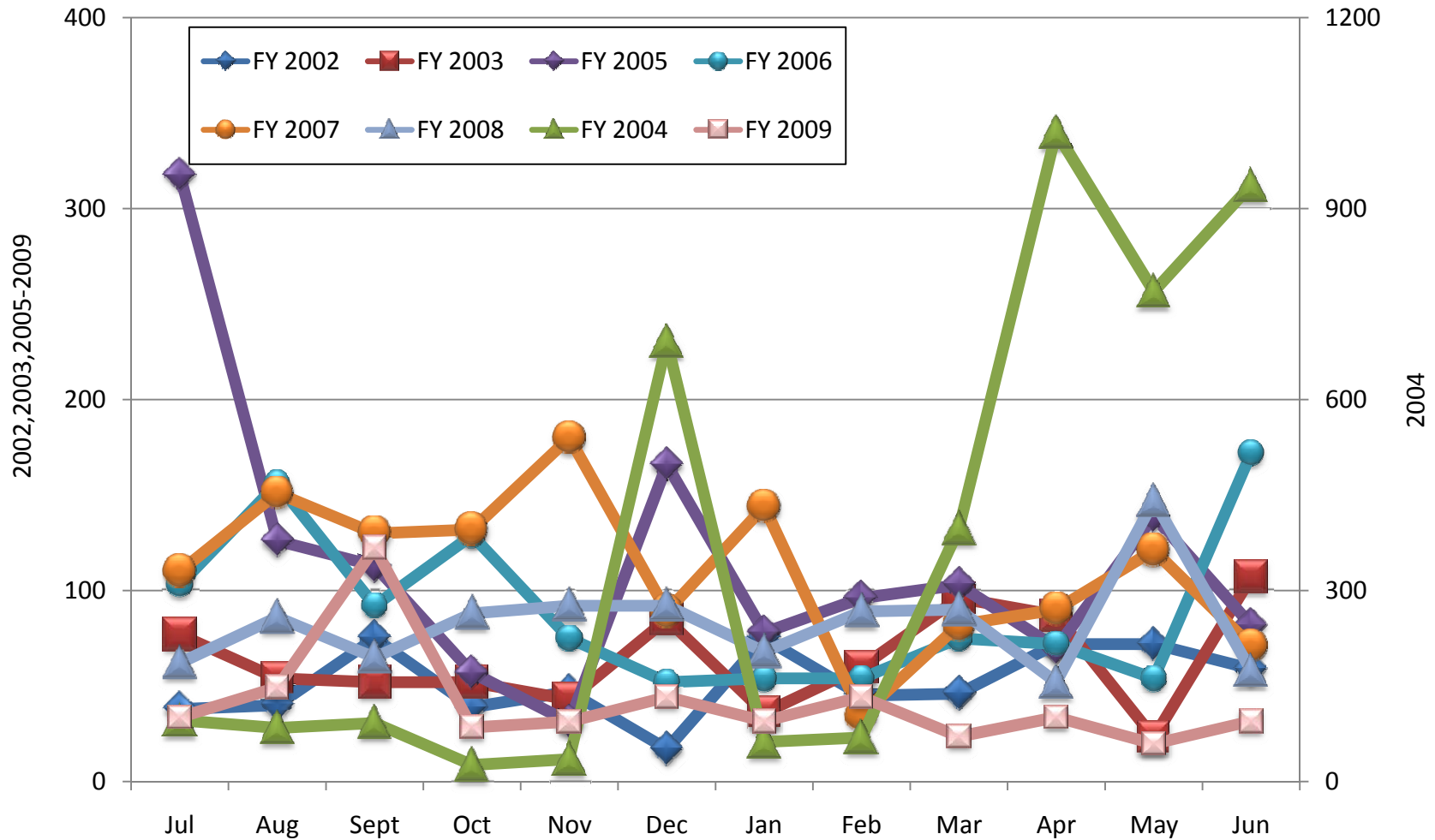
Chesapeake Operations and Maintenance Street Sweeping



**Chesapeake
Operations and Maintenance
Miles of Drainage Facilities Serviced by Month**



Chesapeake Operations & Maintenance Number of Catch Basins Service by Month



Public Outreach Through Media Chesapeake

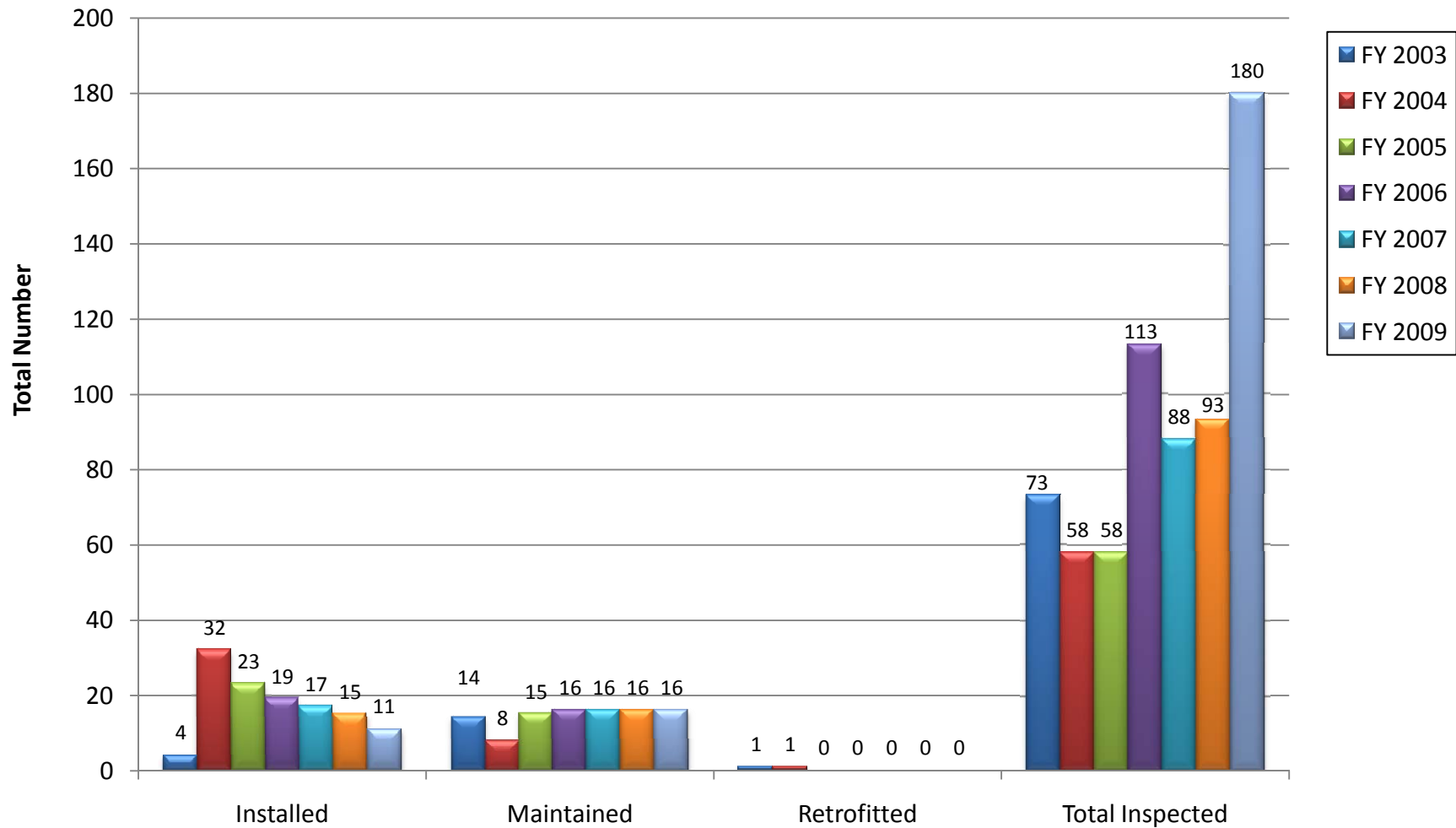
SpotType	Number Of Spots	Citizens Reached	Spot Name
Print	12	504000	Stormwater Pollution
Television	50	75000	Stormwater Pollution - PSA
Total	62	579000	

**Publications
Chesapeake**

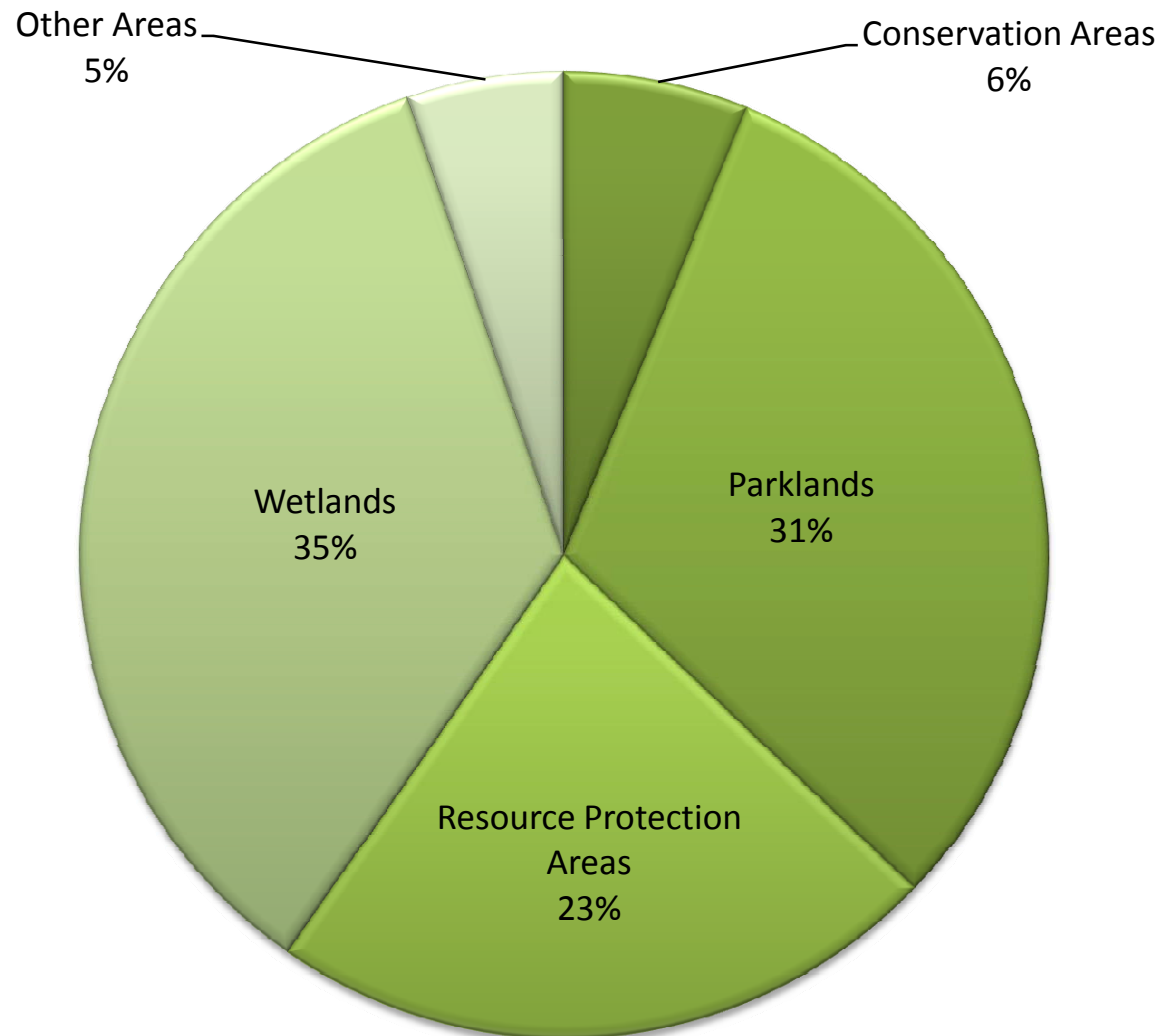
Topic	Number Distributed	Comments
General Stormwater Information	1400	Soil Booklets
General Stormwater Information	4000	Public Works Newsletter
Totals	5400	

City of Hampton

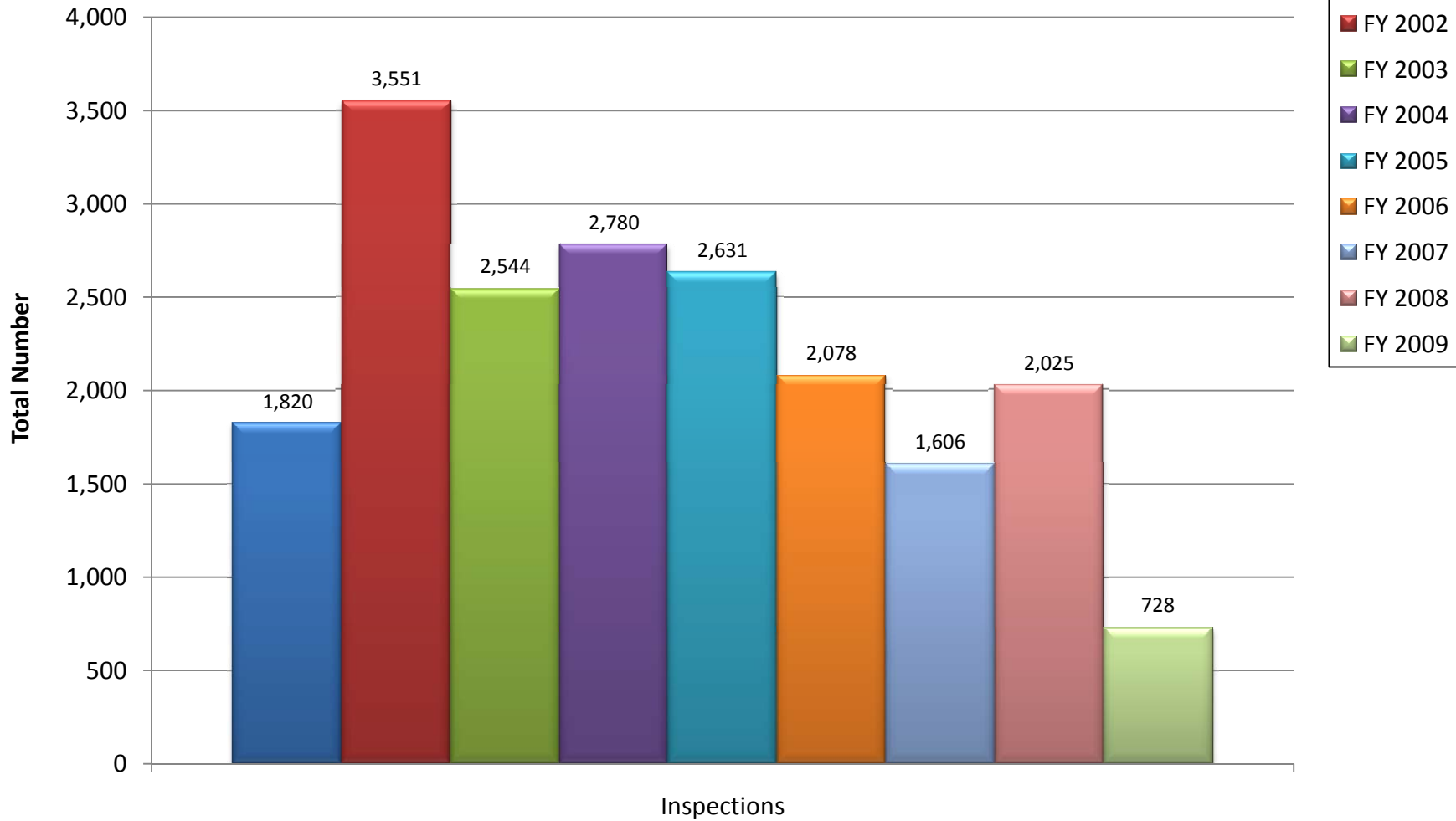
Hampton BMP Implementation Number of BMPs Installed, Retrofitted, Inspected and Maintained



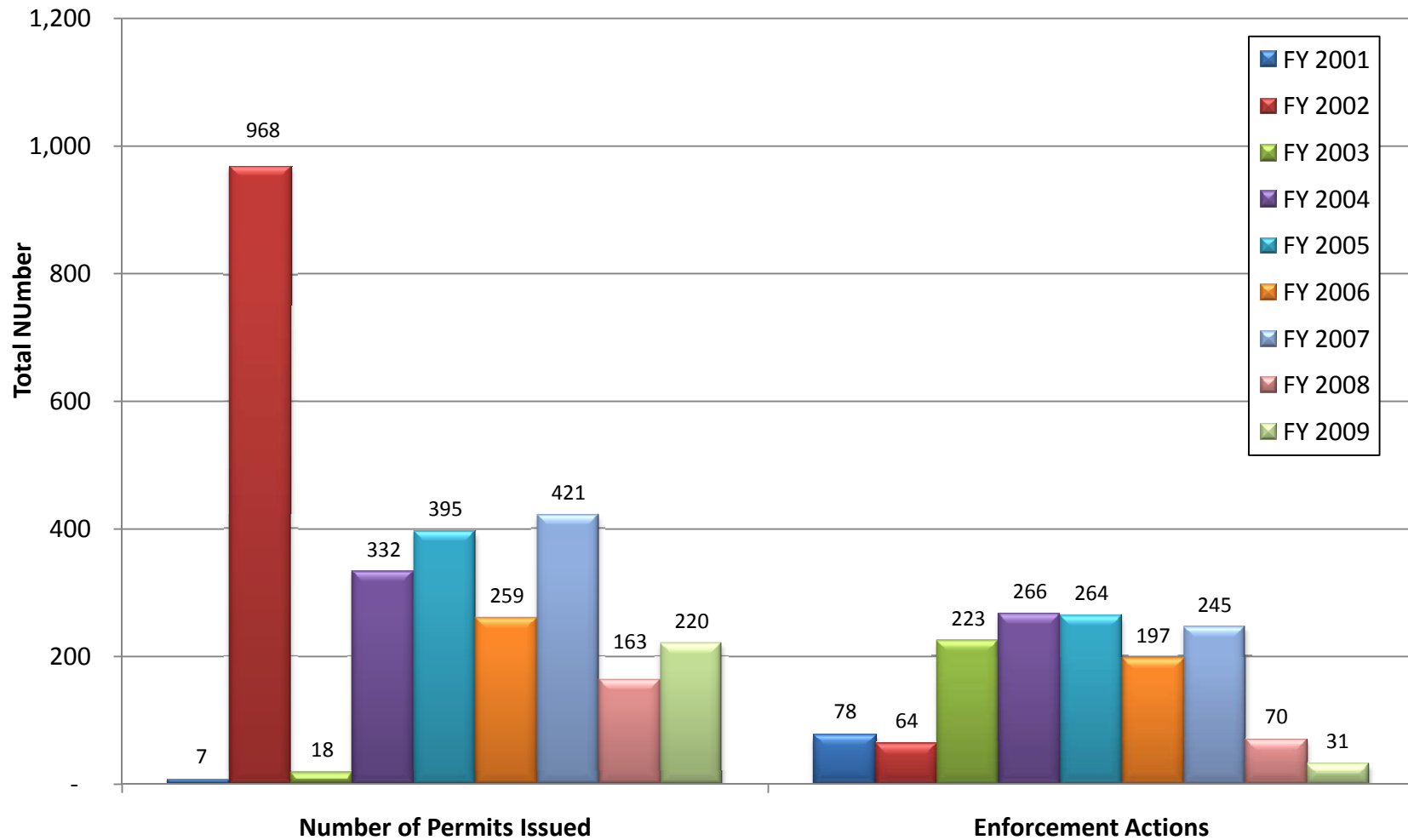
Hampton Green Areas Protected (FY 2009)



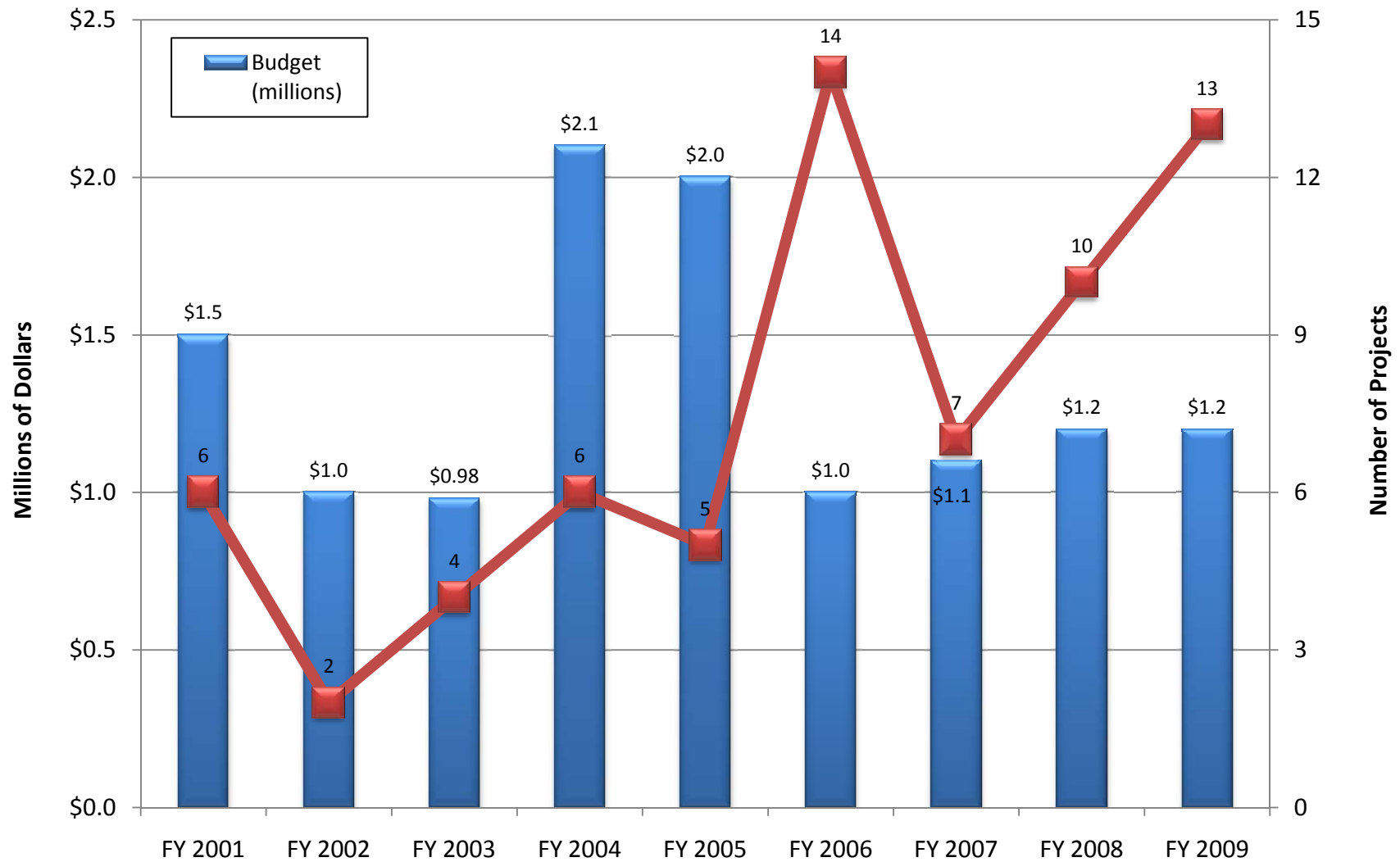
Hampton Erosion and Sediment Control Activities Number of Inspections



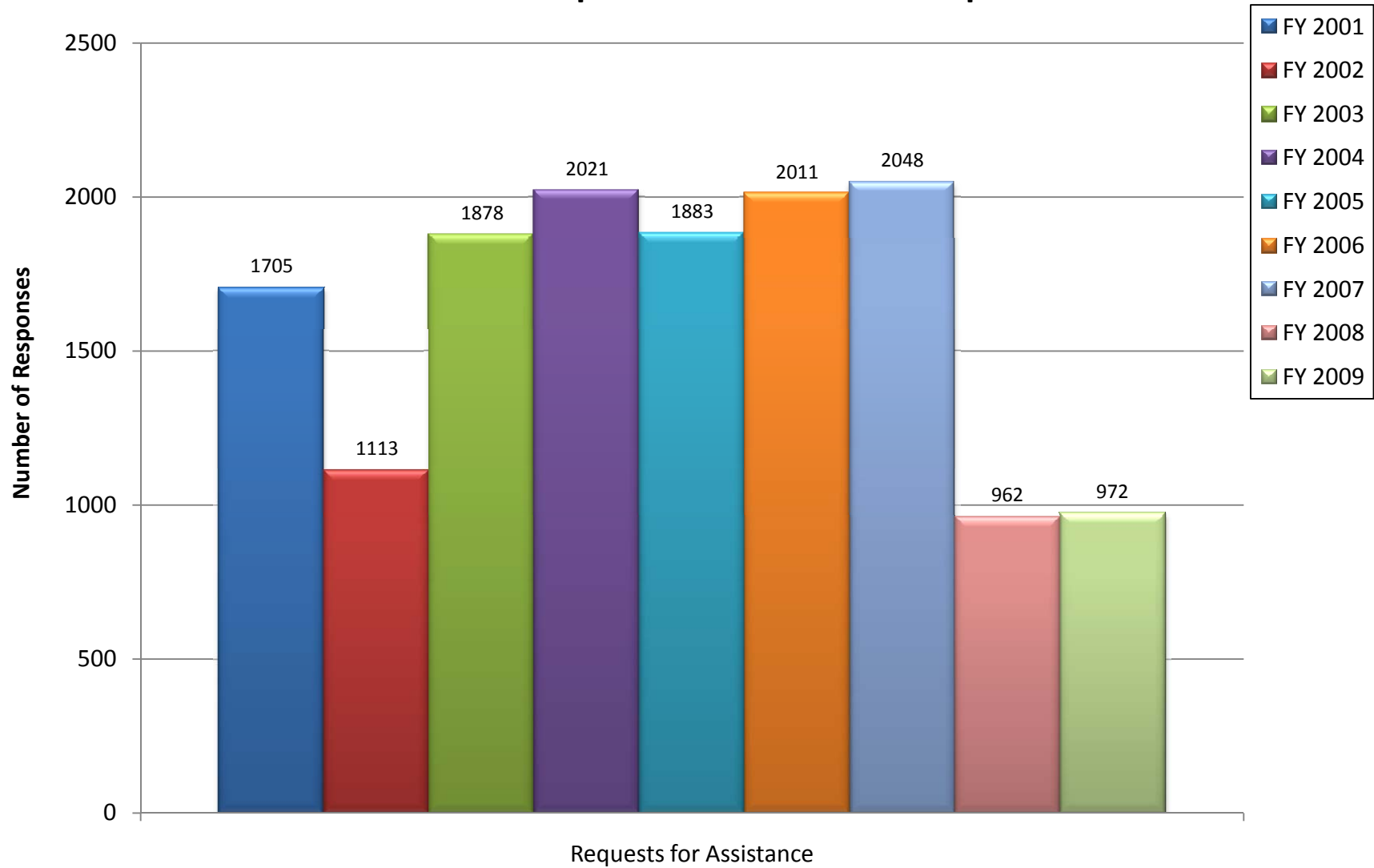
Hampton
Erosion and Sediment Control Activities
Number of Permits Issued & Number of Enforcement Actions



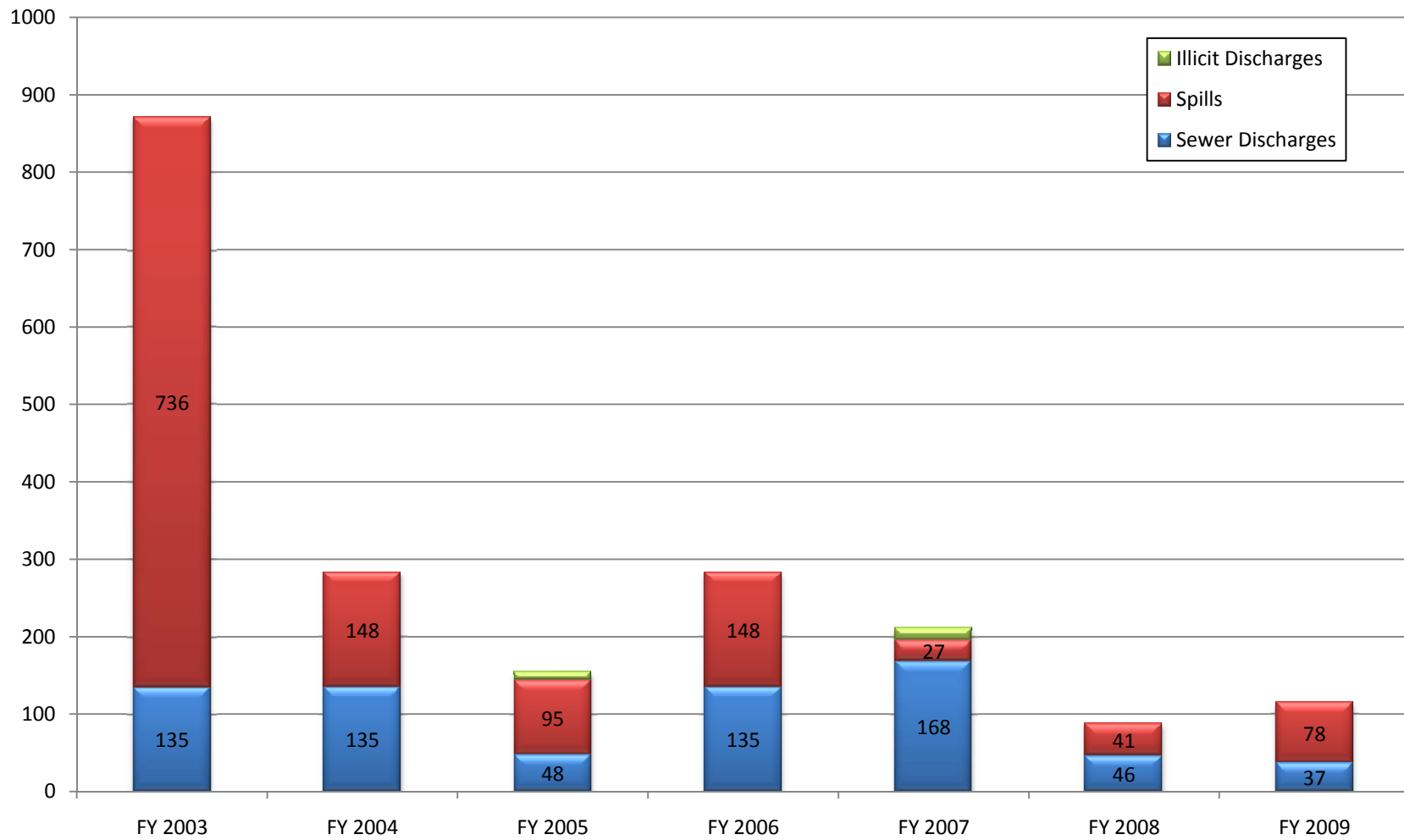
Hampton Flooding and Drainage Projects



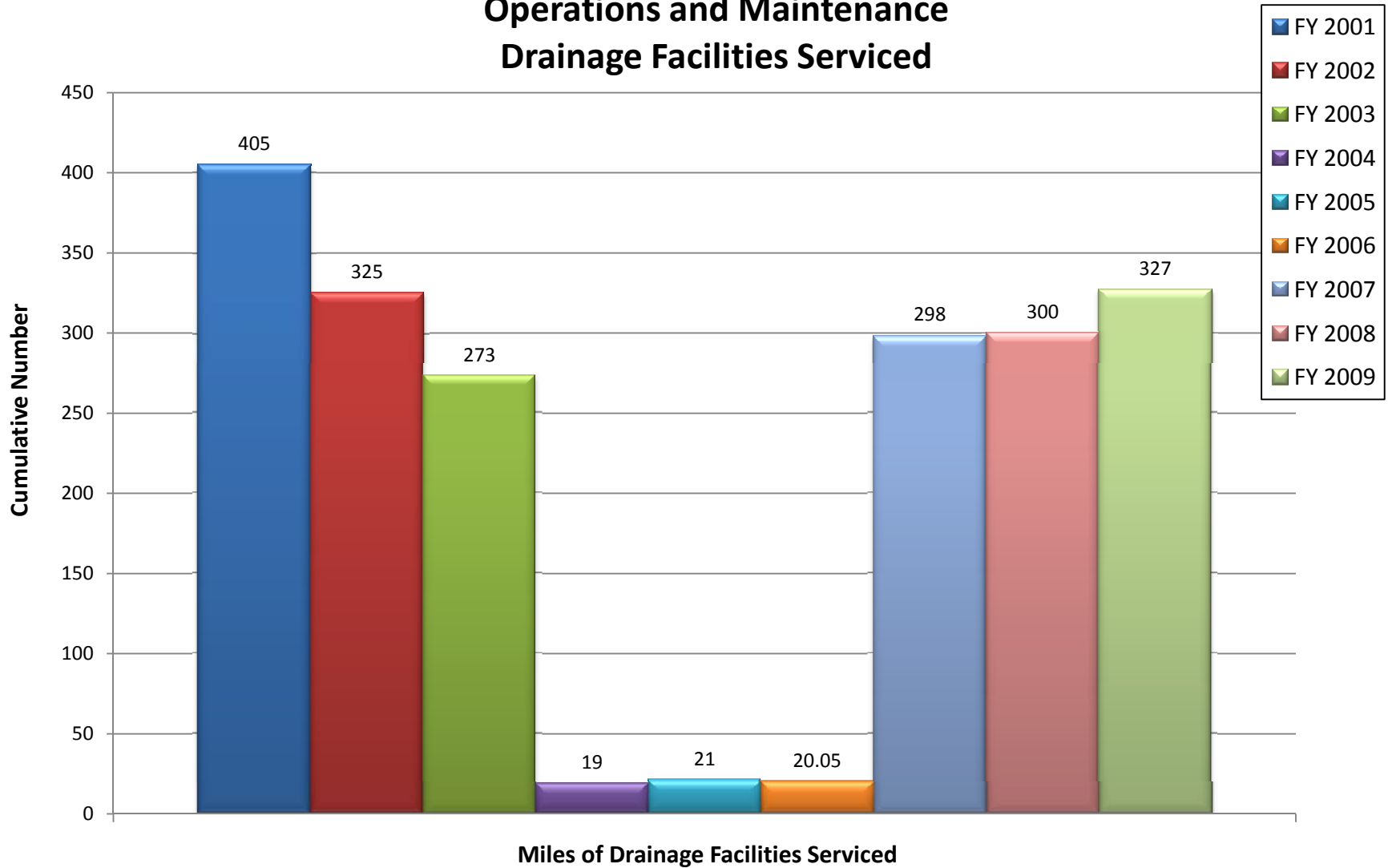
Hampton Flooding and Drainage Problems Number of Responses to Assistance Requests



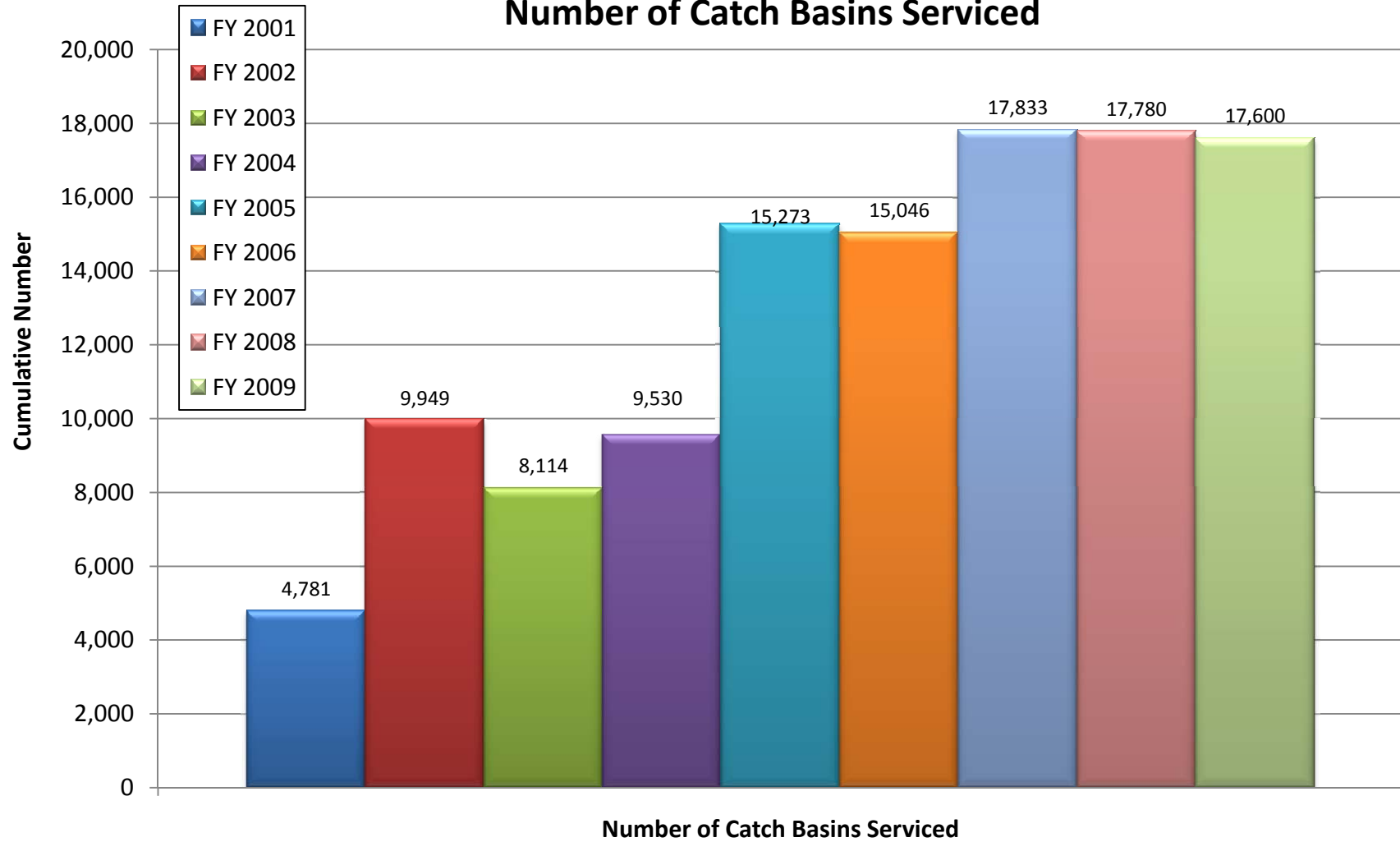
Hampton Investigative Monitoring Number of Discharges by Type of Discharge



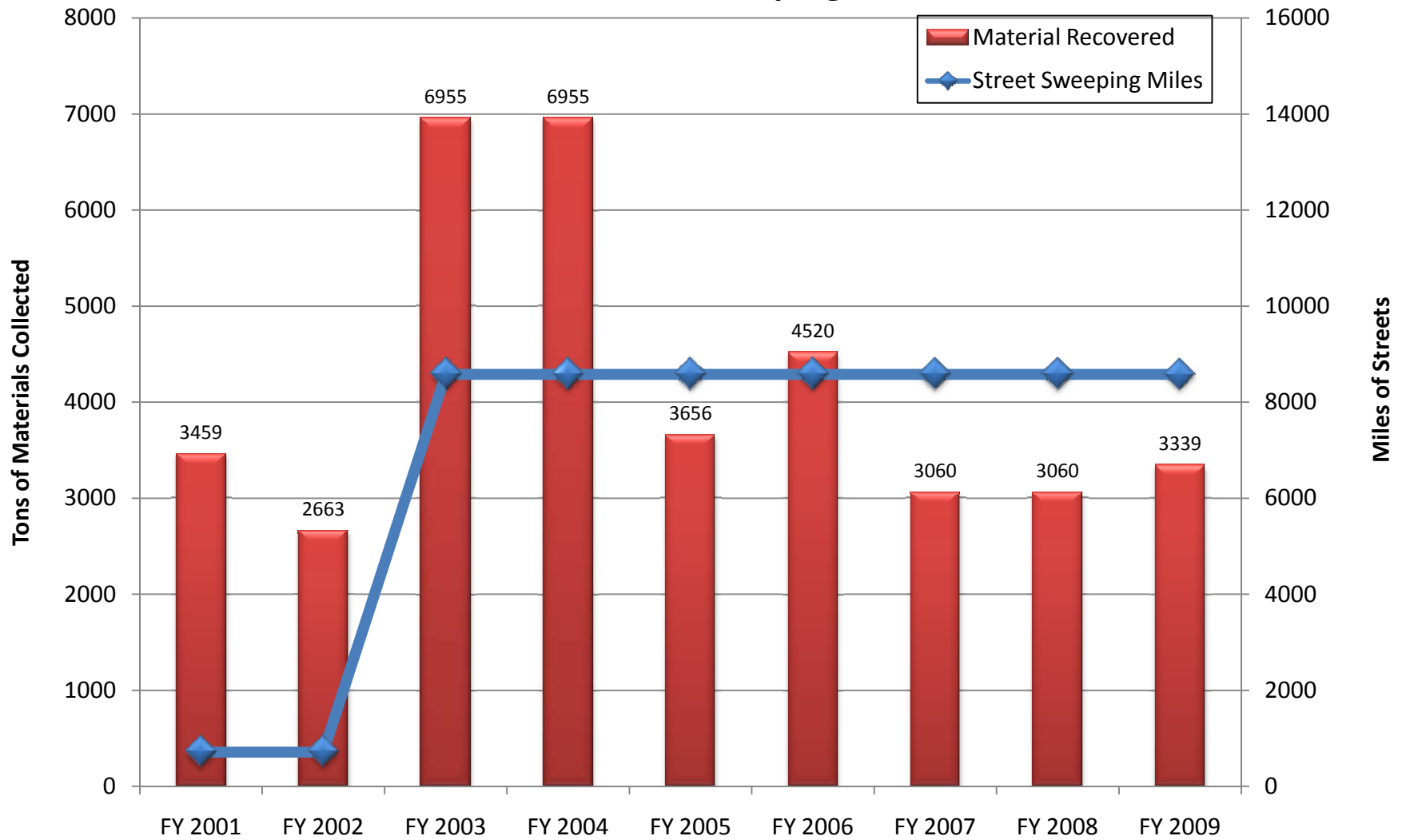
Hampton Operations and Maintenance Drainage Facilities Serviced



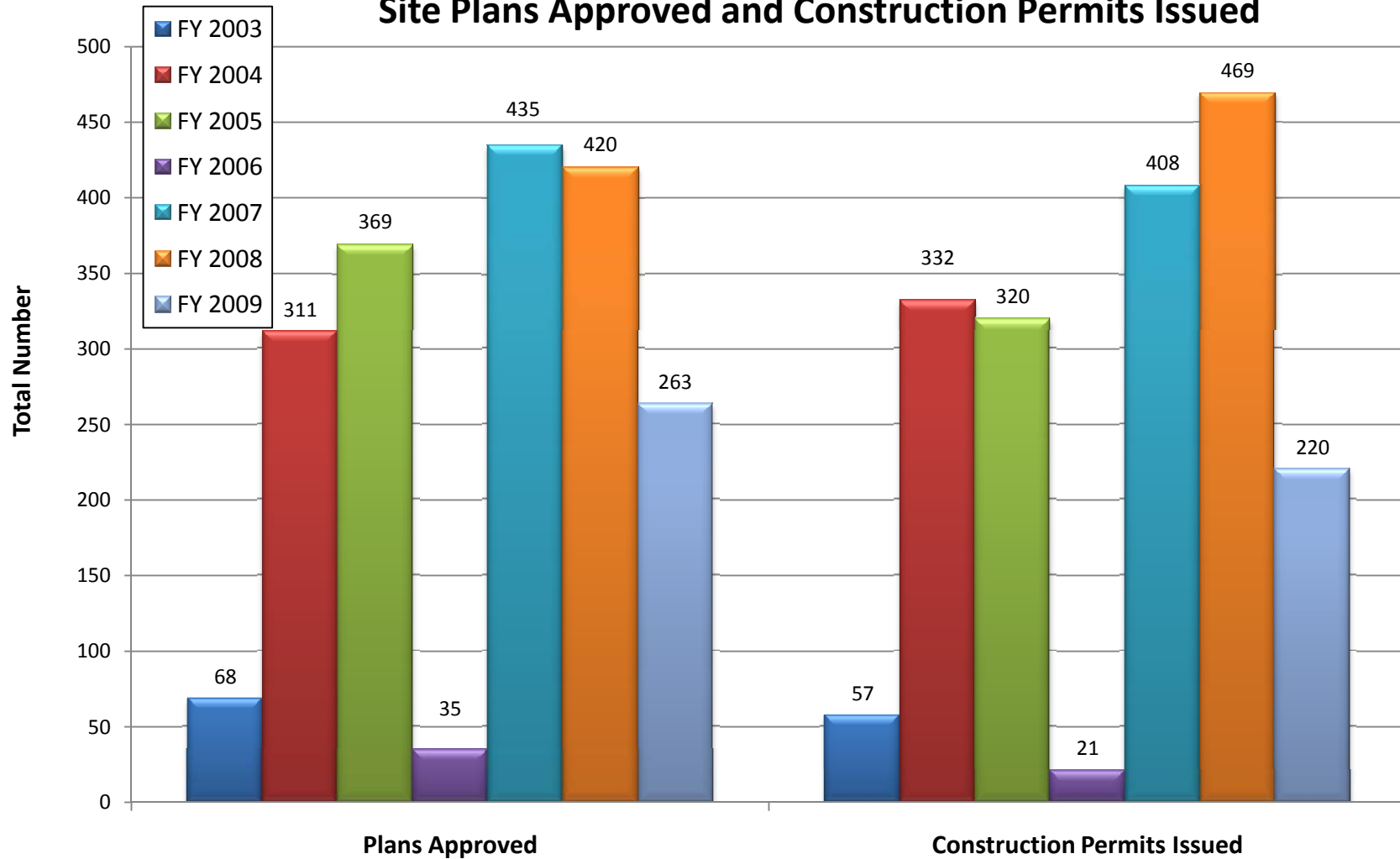
Hampton Operations and Maintenance Number of Catch Basins Serviced



Hampton Operations and Maintenance Street Sweeping

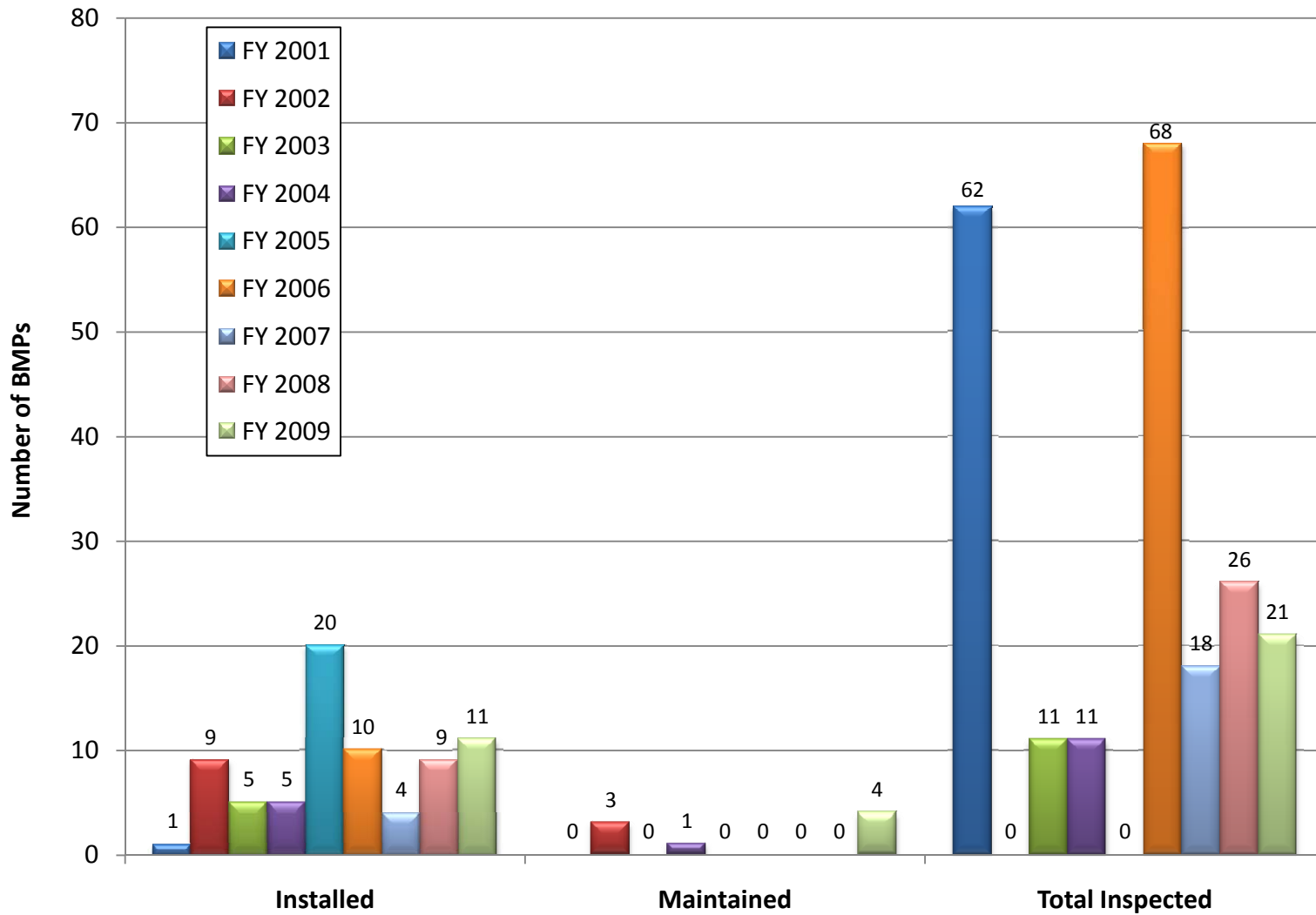


Hampton Permitting & Compliance Site Plans Approved and Construction Permits Issued

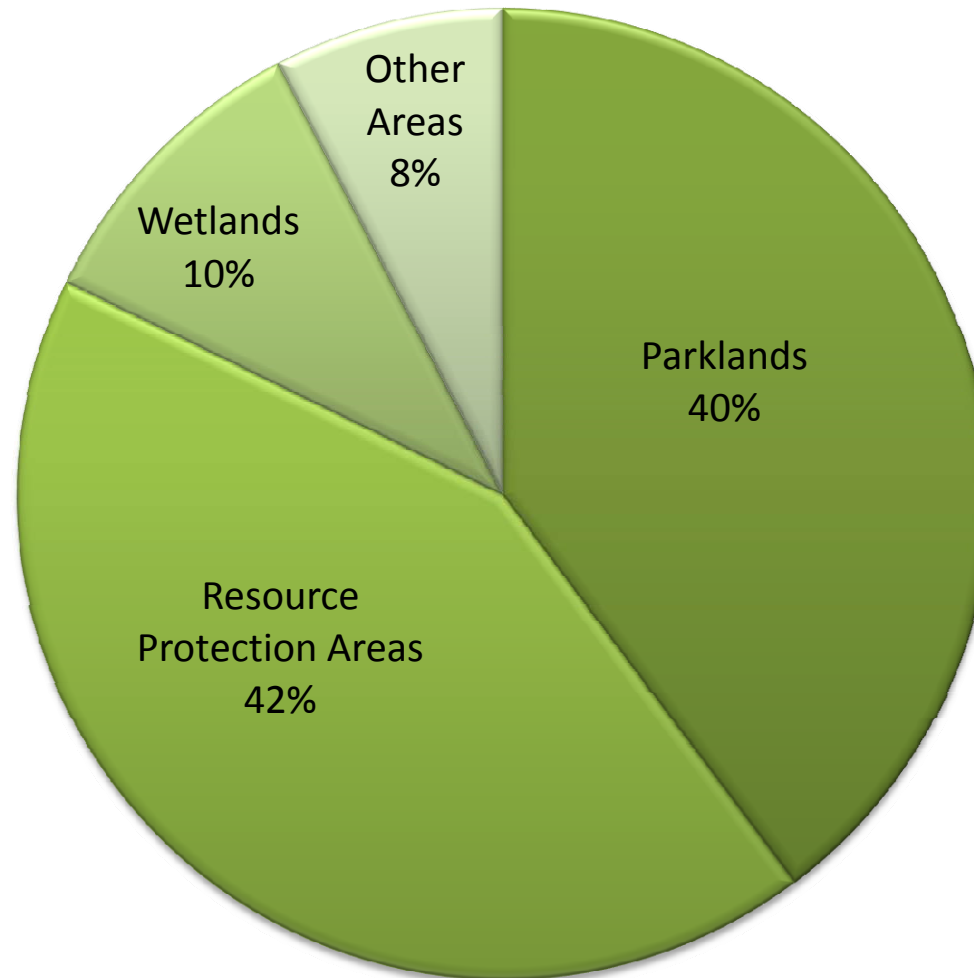


City of Newport News

Newport News Total Number of BMPs Installed, Maintained, and Inspected



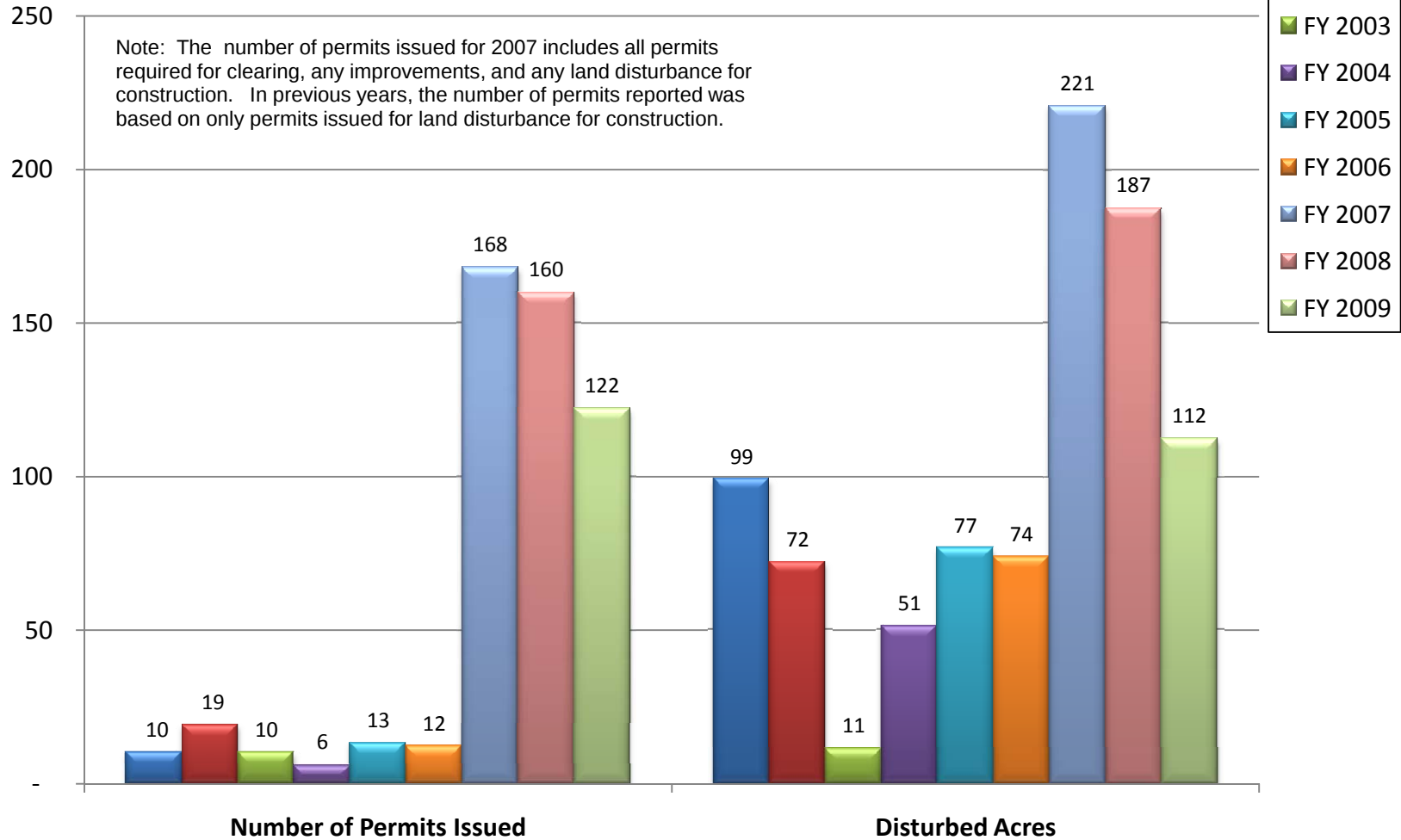
**Newport News
Greenlands Protected & Restored
FY 2009**



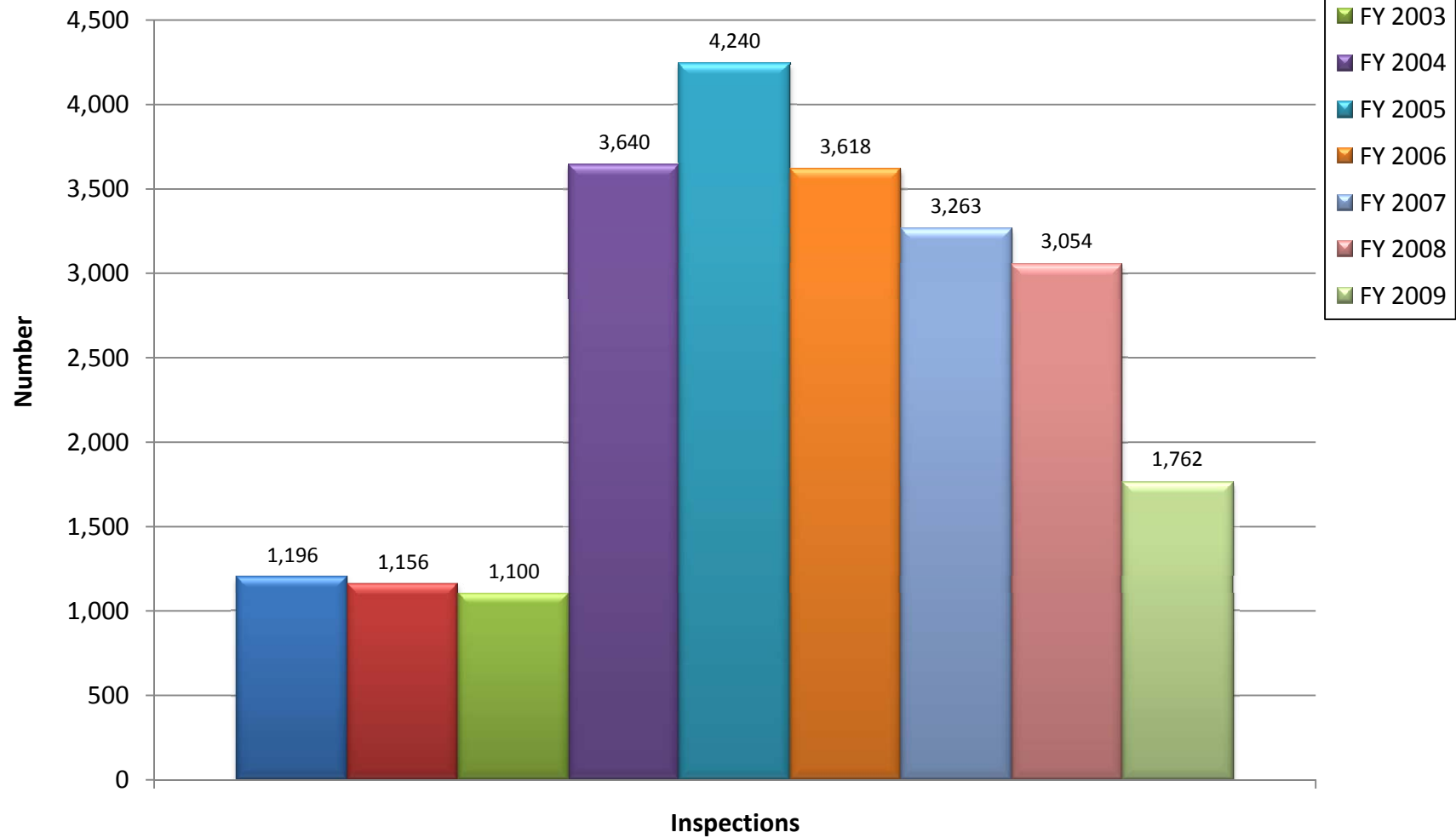
Newport News

Erosion and Sediment Control Activities

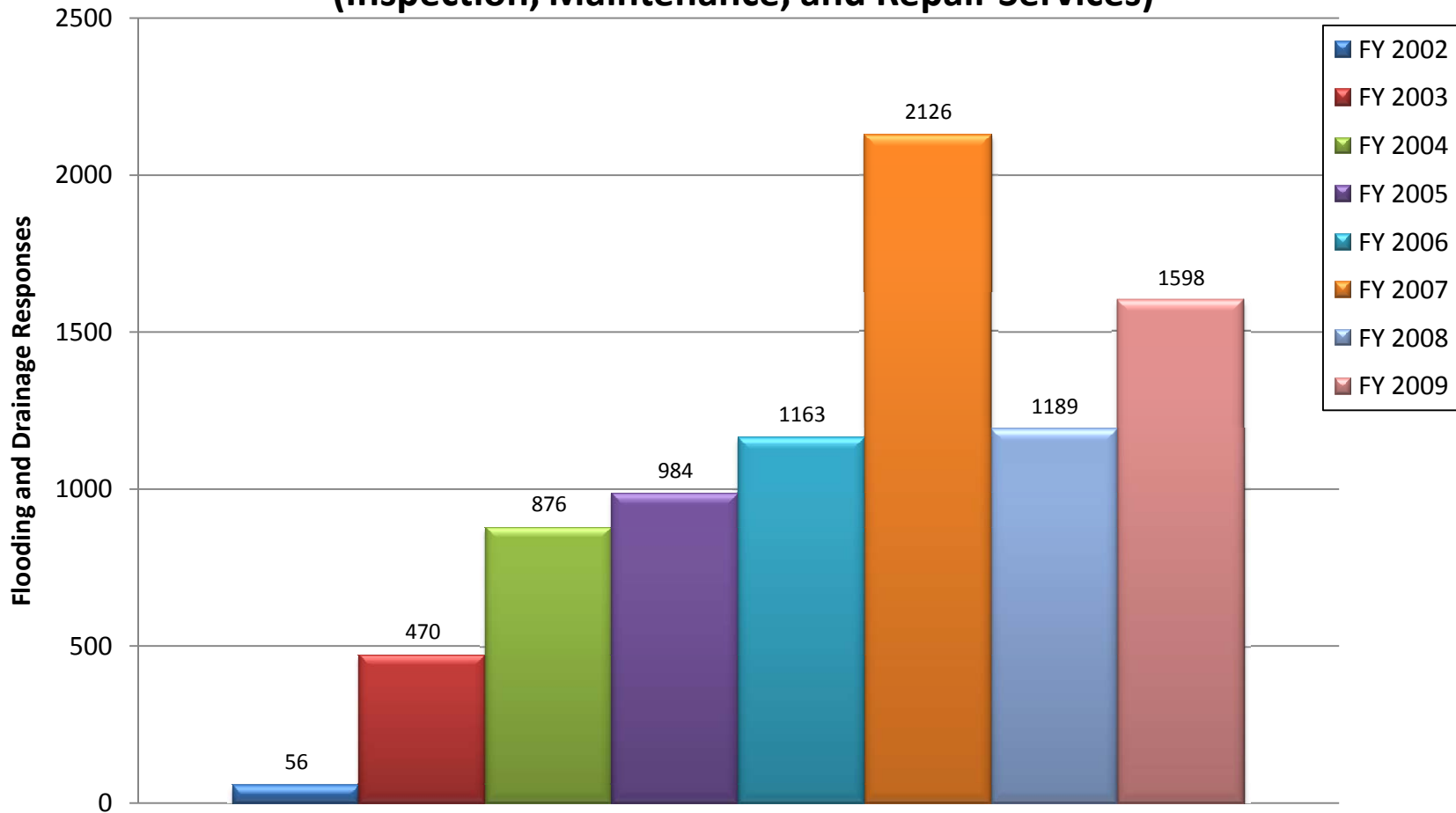
Number of Permits Issued & Disturbed Acreage



Newport News Erosion and Sediment Control Activities Number of Inspections



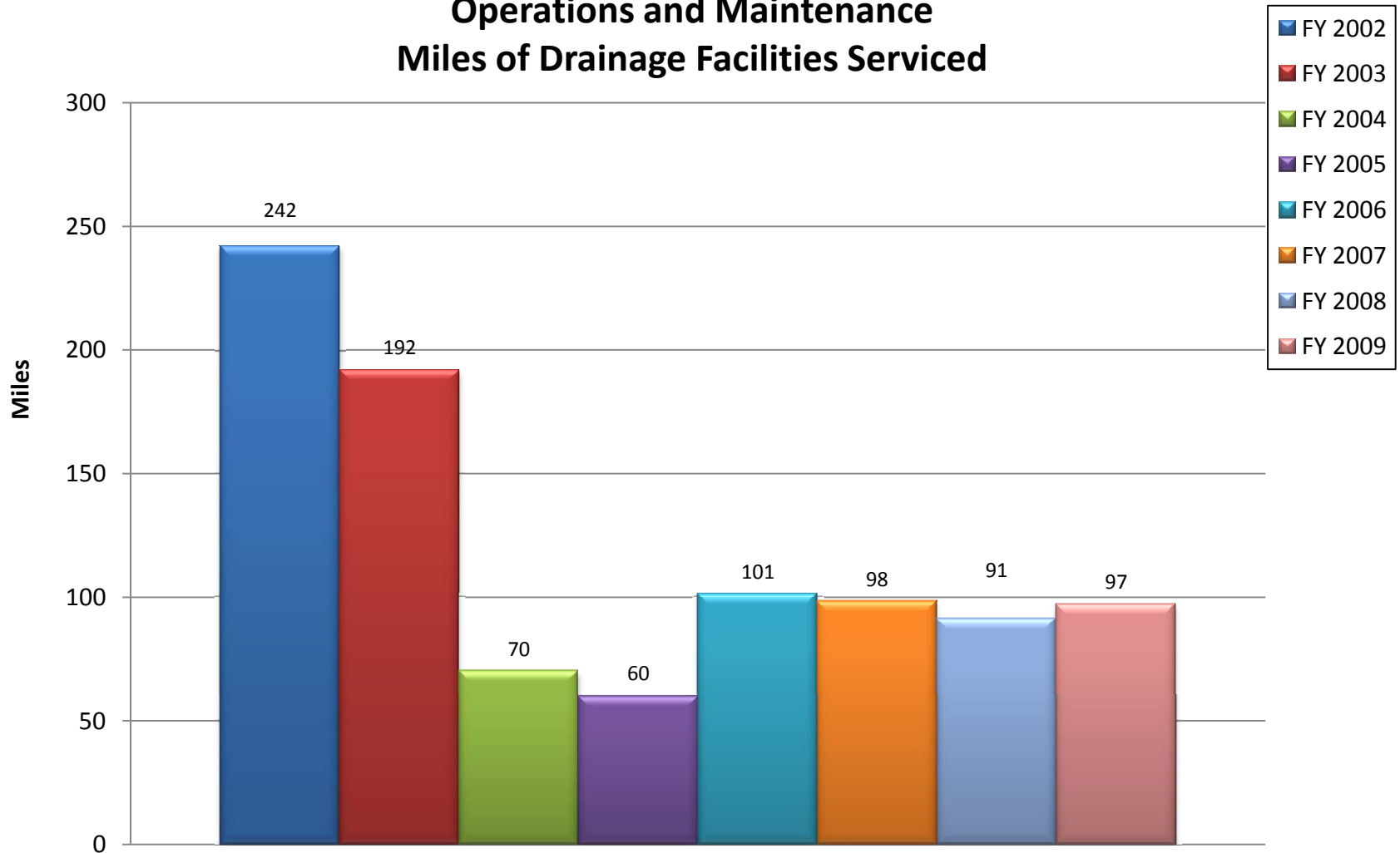
**Newport News
Flooding and Drainage Problems
Number of Responses to Assistance Requests
(Inspection, Maintenance, and Repair Services)**



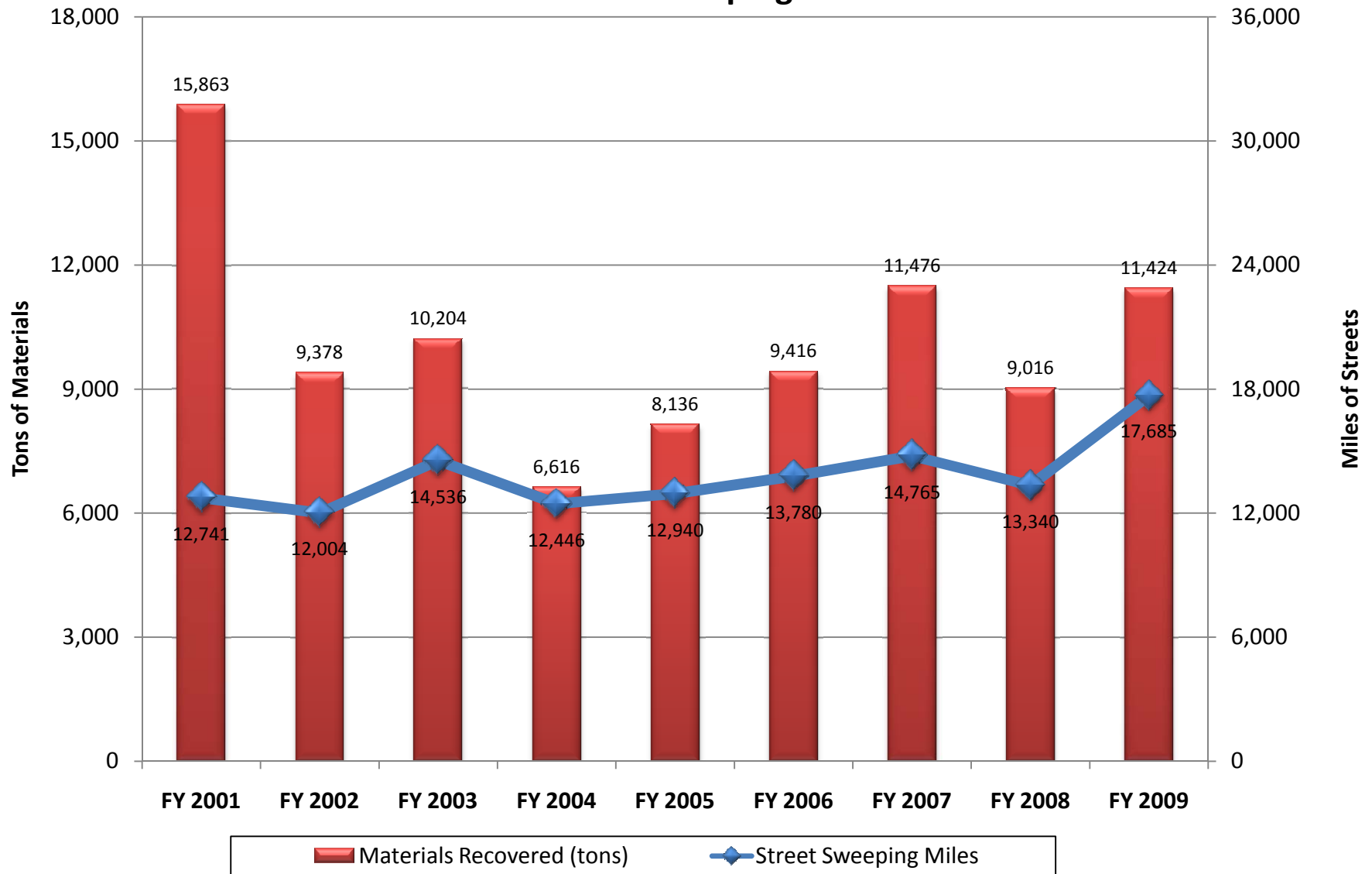
Newport News Flooding and Drainage Stormwater Projects



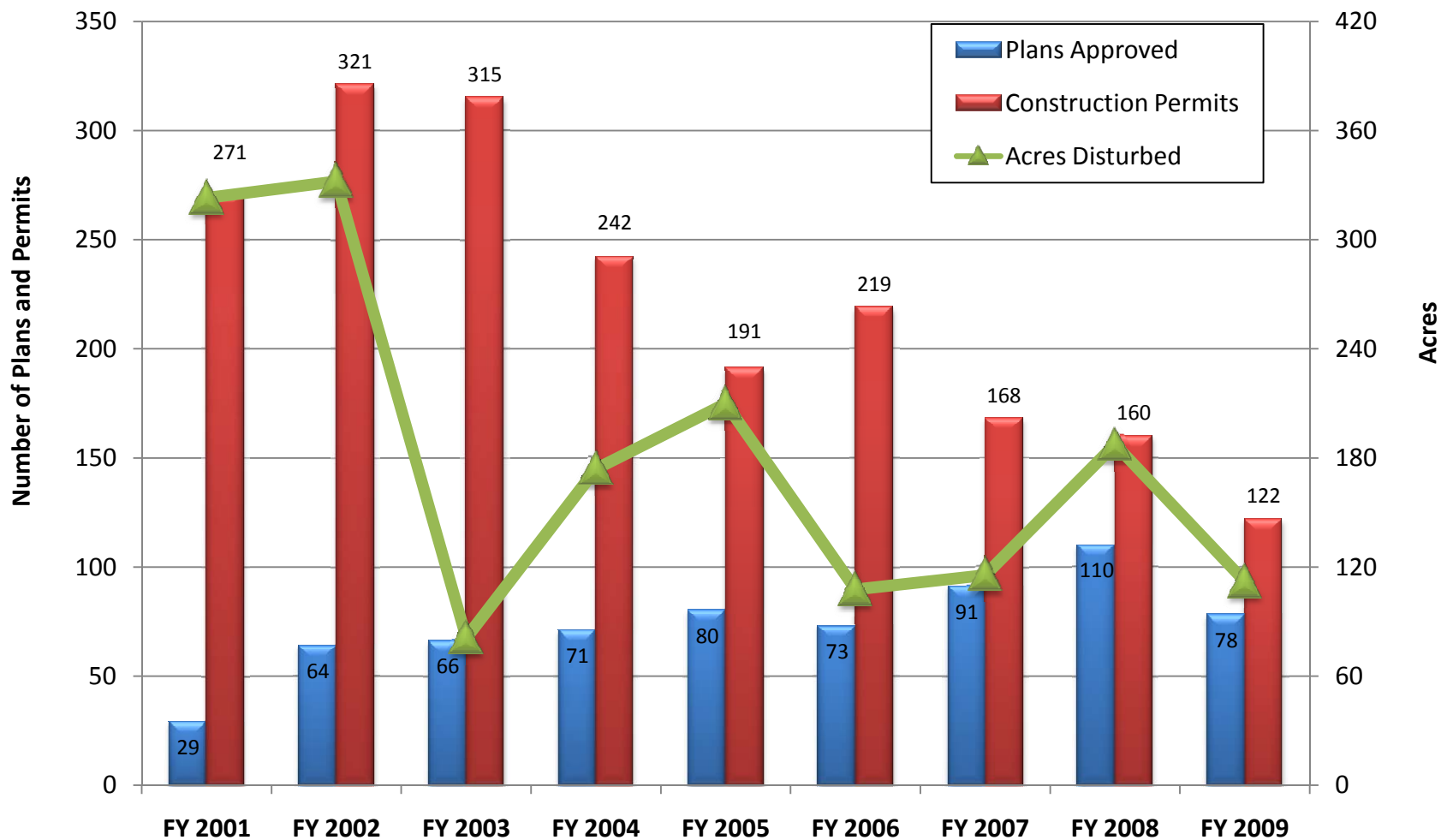
**Newport News
Operations and Maintenance
Miles of Drainage Facilities Serviced**



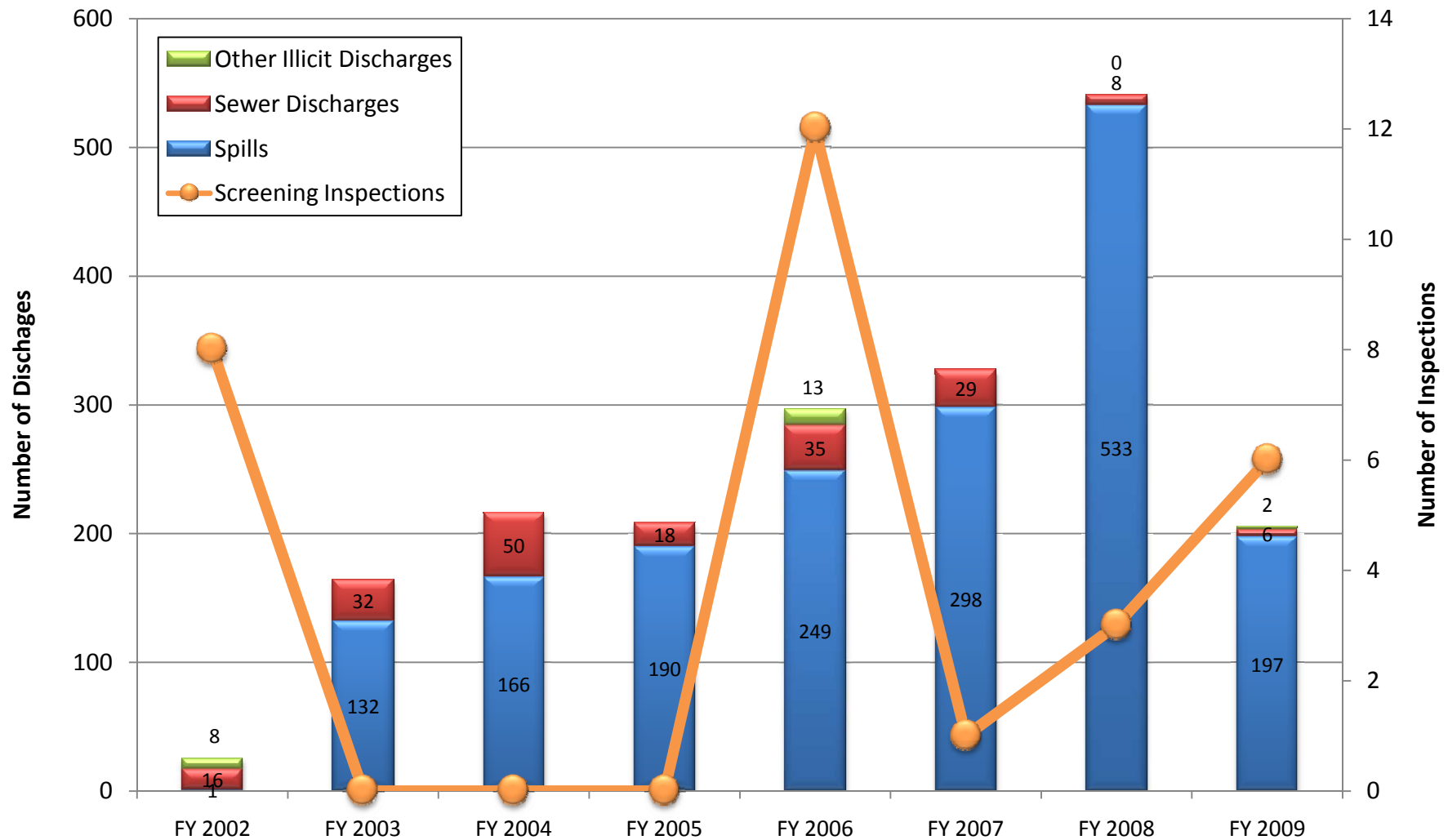
Newport News Operations and Maintenance Street Sweeping



Newport News Permitting and Compliance Plans Approved, Construction Permits and Disturbed Acres



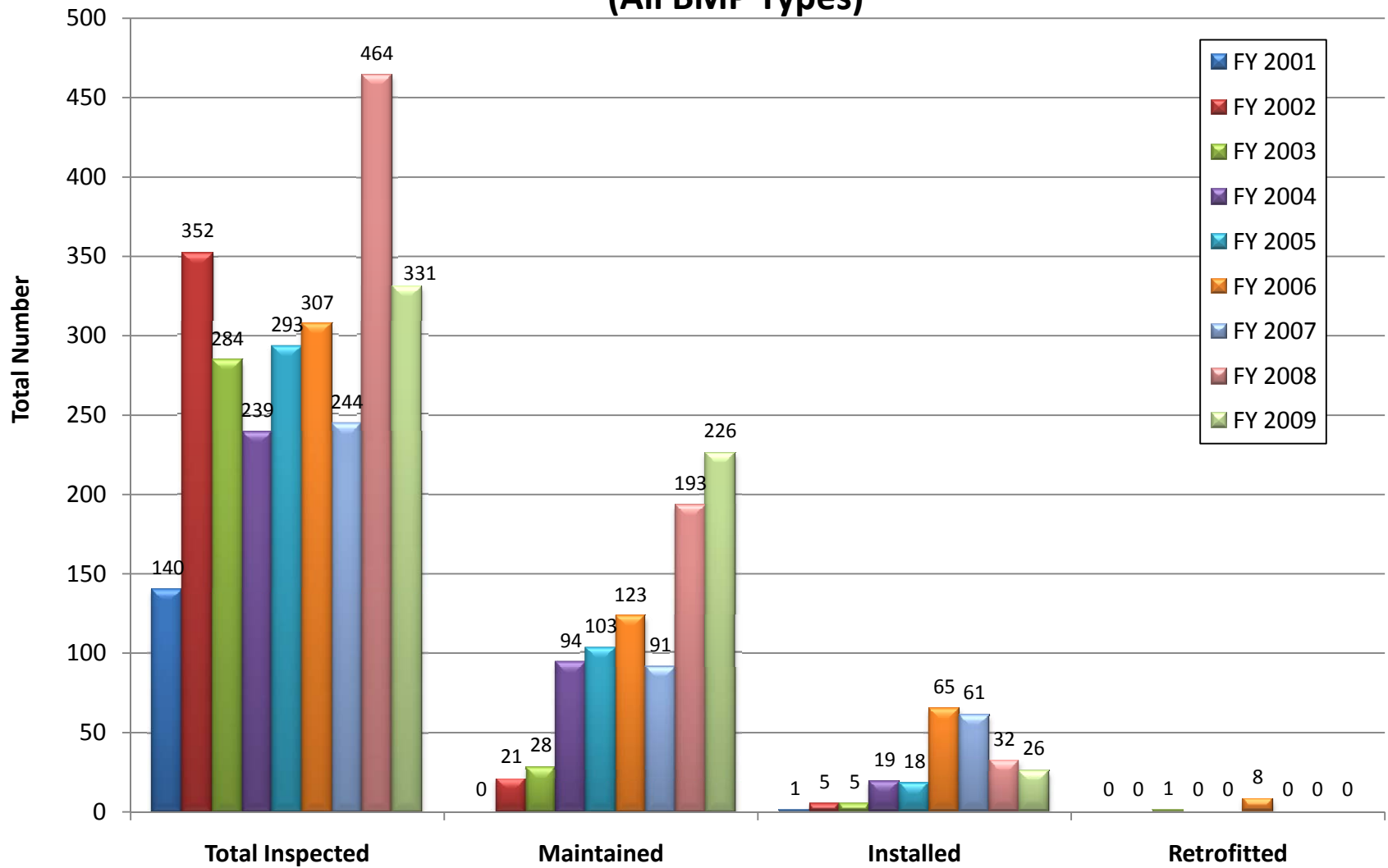
Newport News Investigative Monitoring Illicit Discharges Identified and Screening Inspections



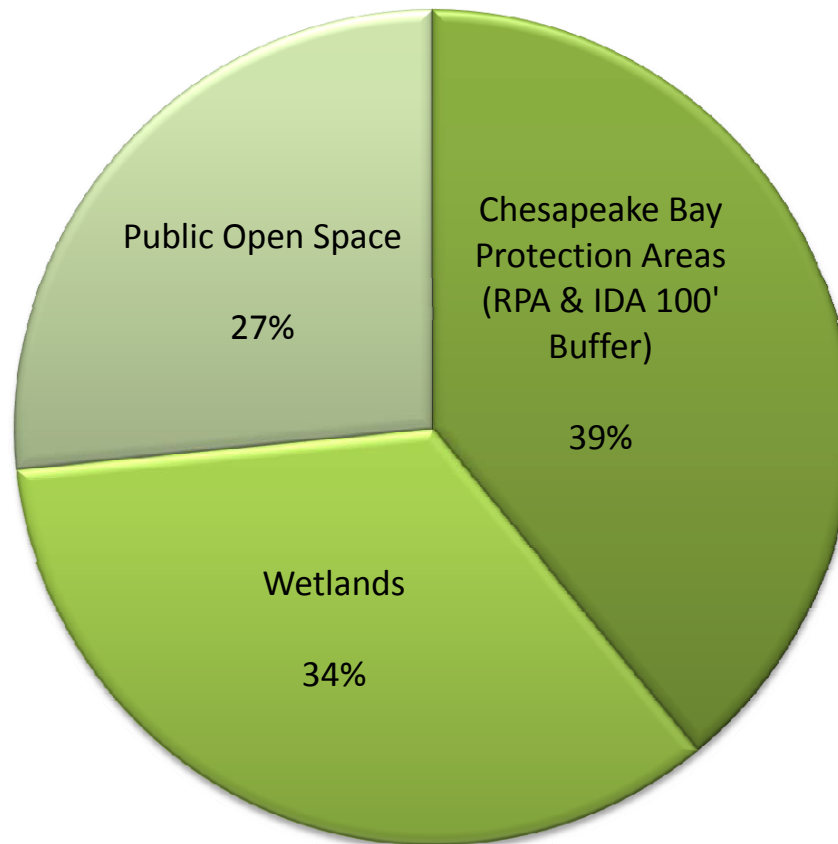
City of Norfolk

Norfolk

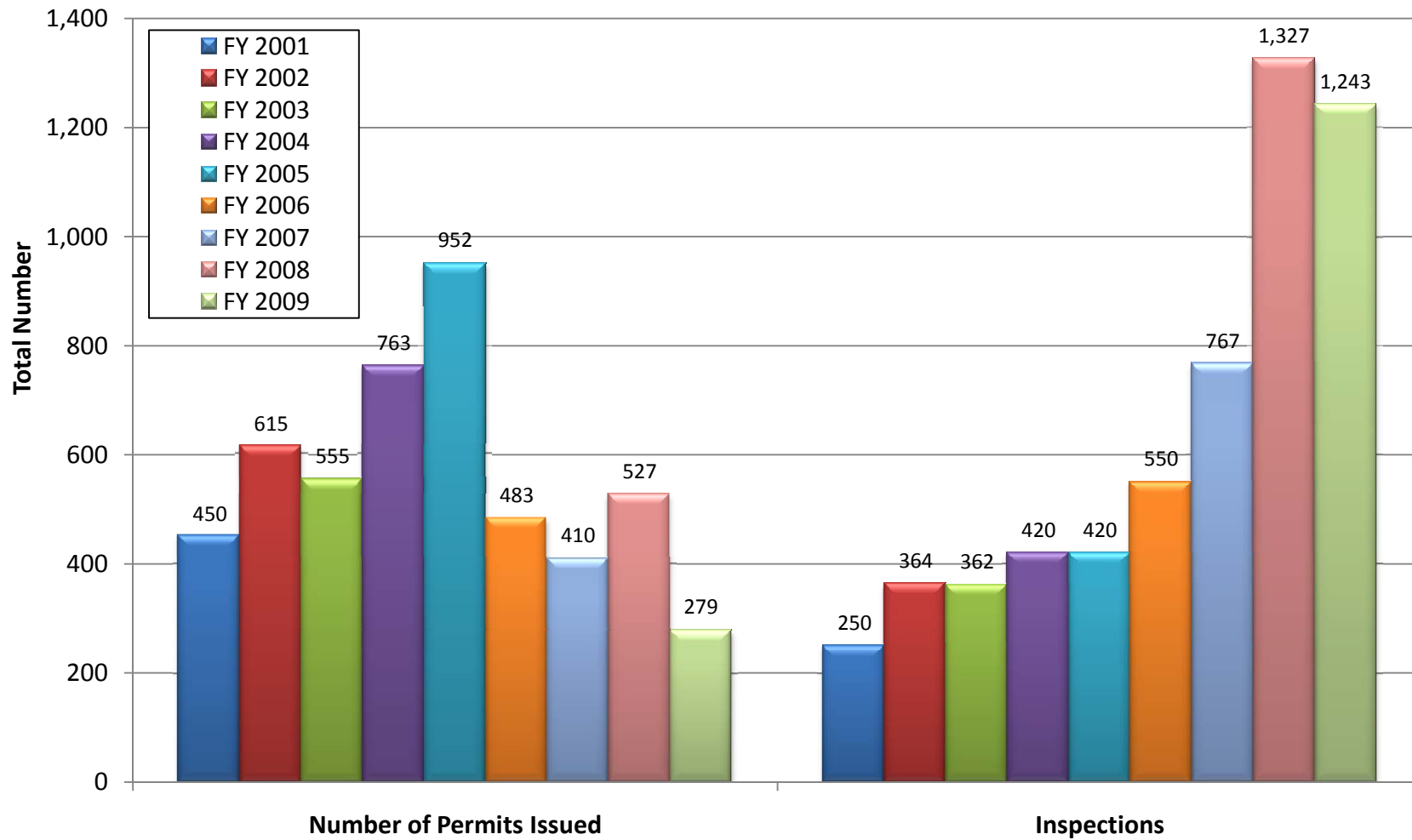
Total Number of Public BMPs Installed, Retrofitted, Inspected and Maintained (All BMP Types)



**Norfolk
Components of Greenlands
Fiscal Year 2009**



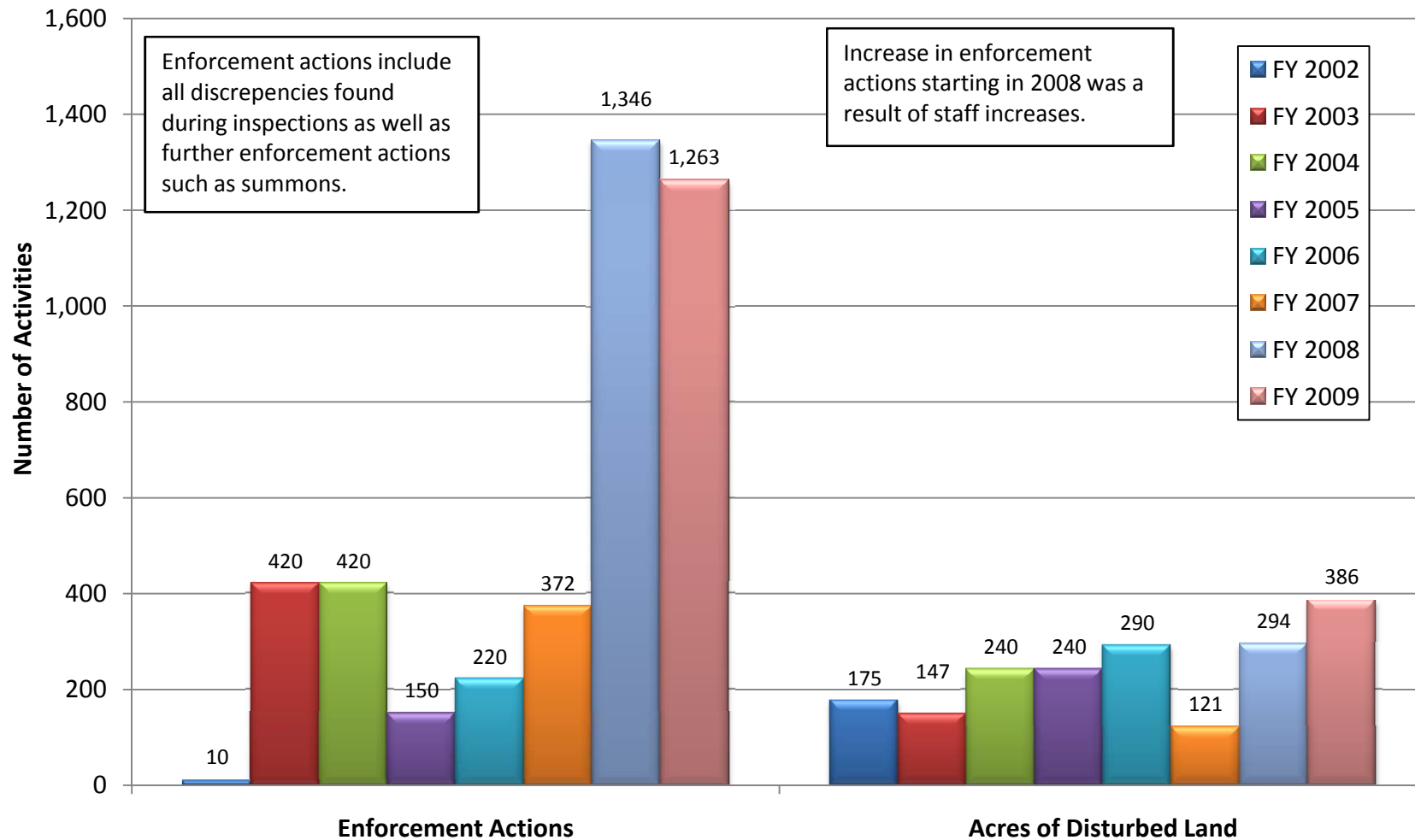
Norfolk
Erosion and Sediment Control Activities
Number of Permits Issued and Number of Inspections



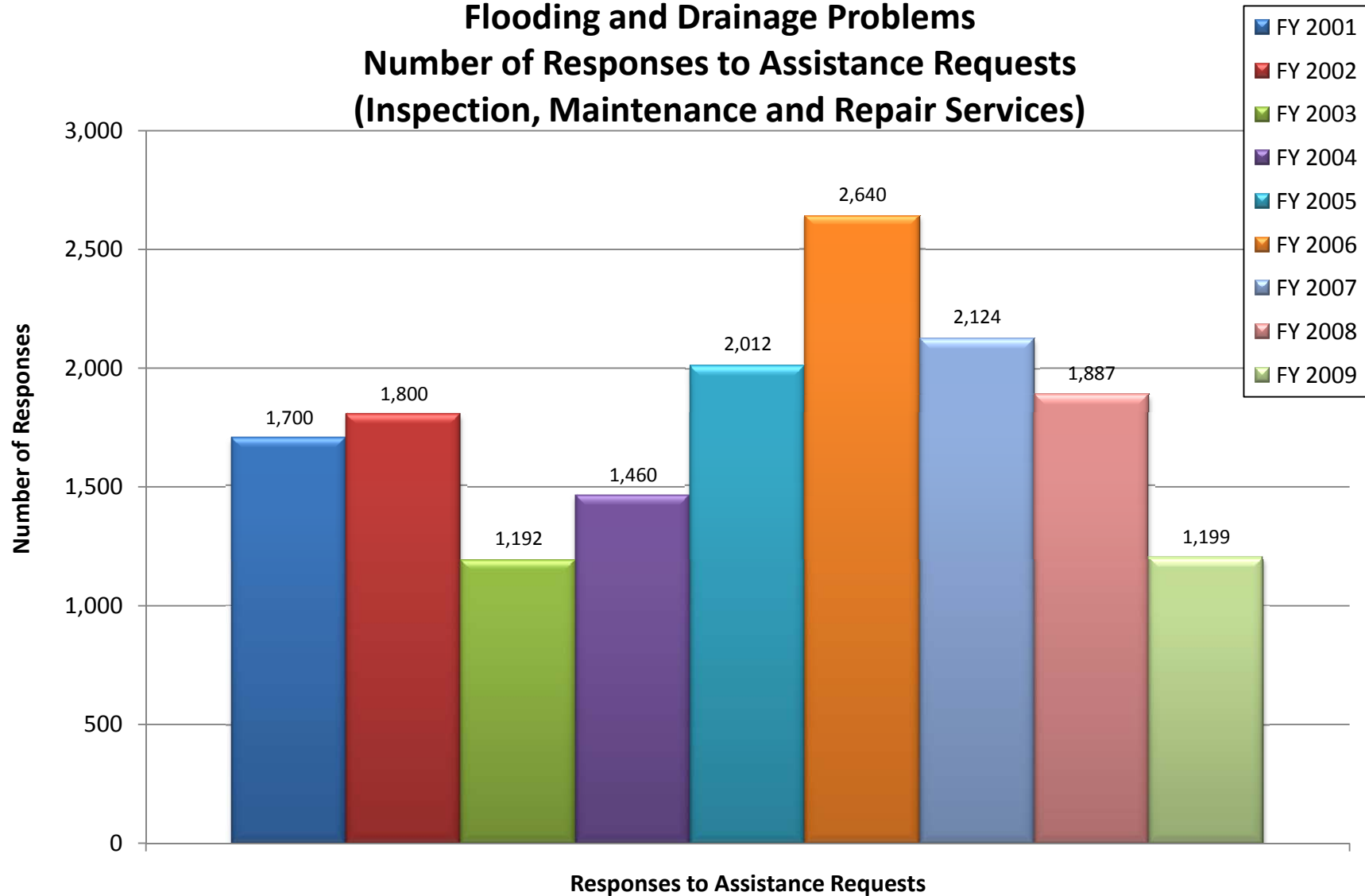
Norfolk

Erosion and Sediment Control Activities

Number of Enforcement Actions and Acres of Disturbed Land



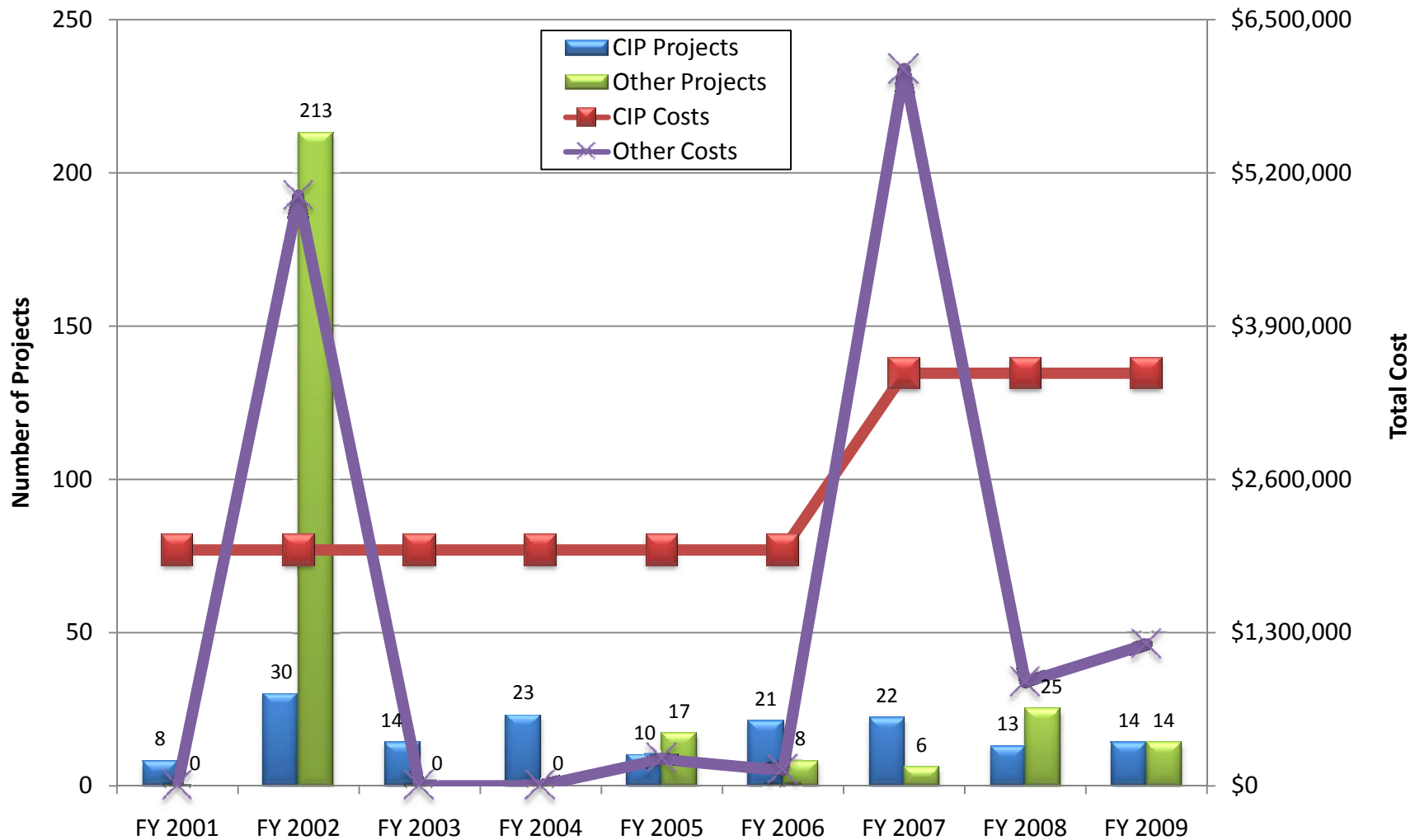
Norfolk
Flooding and Drainage Problems
Number of Responses to Assistance Requests
(Inspection, Maintenance and Repair Services)



Norfolk

Flooding and Drainage Problems

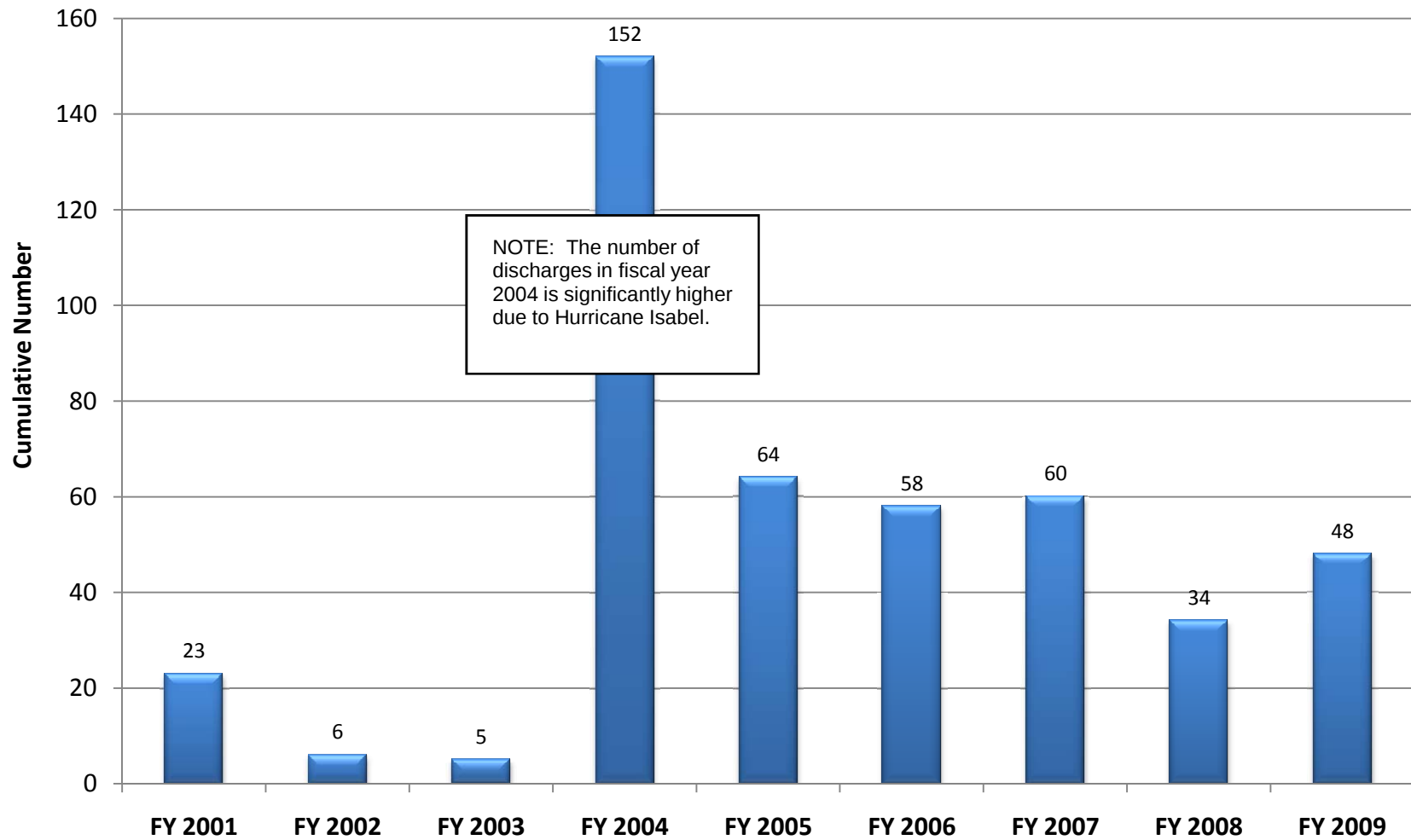
Flooding/Drainage Stormwater Projects and Costs



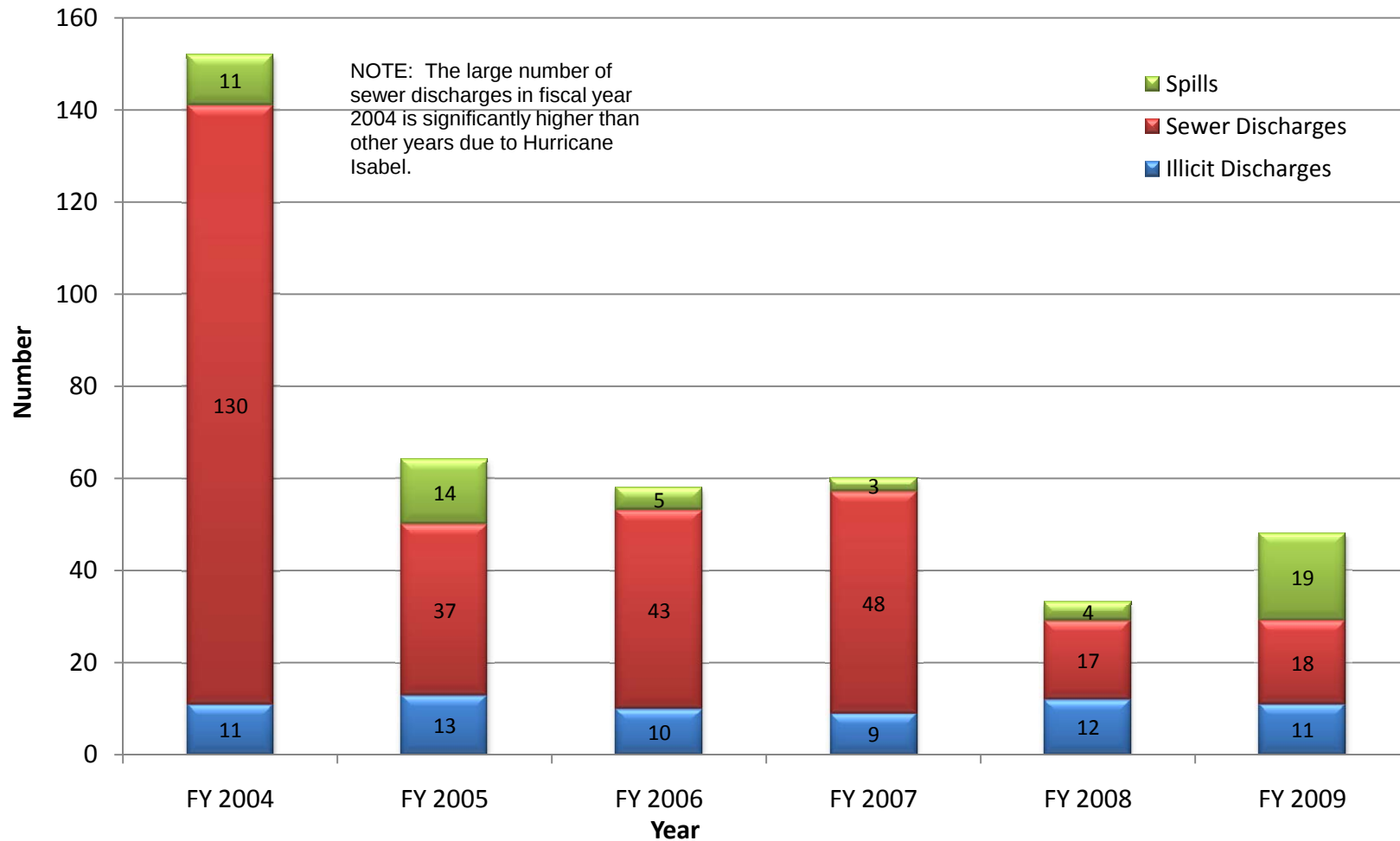
Norfolk

Investigative Monitoring

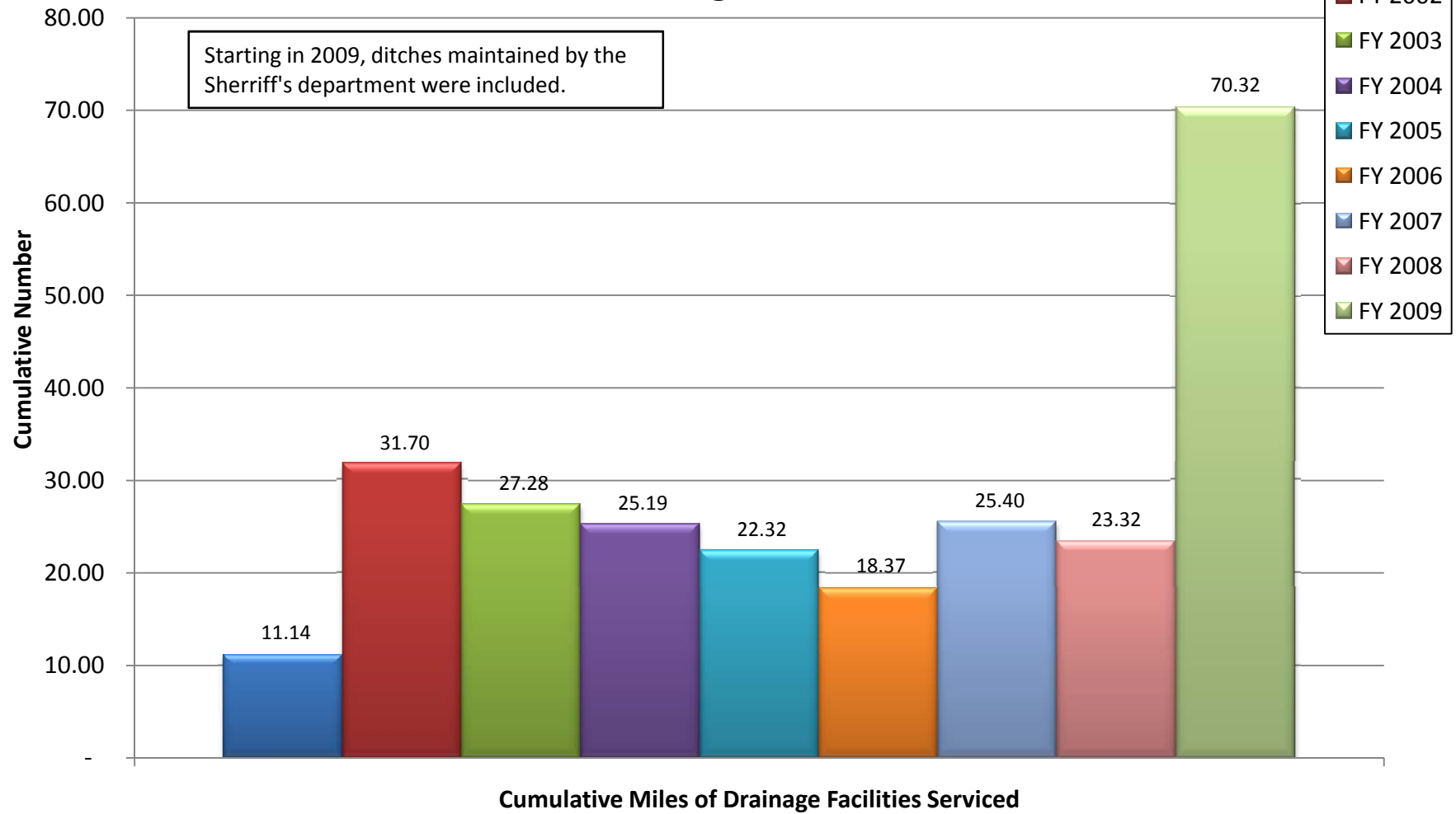
Number of Discharges Identified and Corrected



City of Norfolk
Investigative Monitoring
Number of Discharges by Type of Discharge
(Spills, Sewer Discharges and Illicit Discharges)



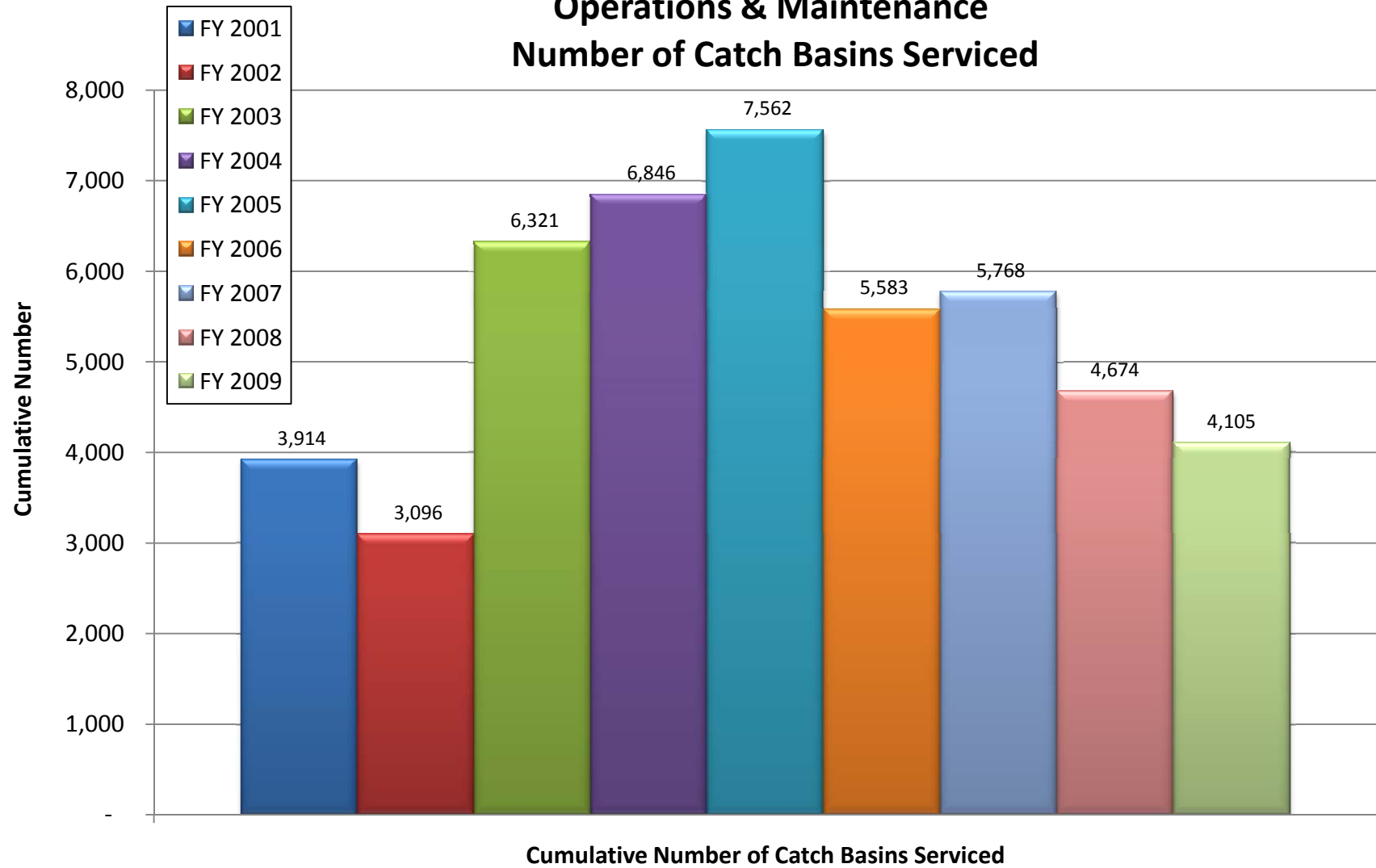
Norfolk
Operations & Maintenance
Miles of Drainage Facilities Serviced



Norfolk

Operations & Maintenance

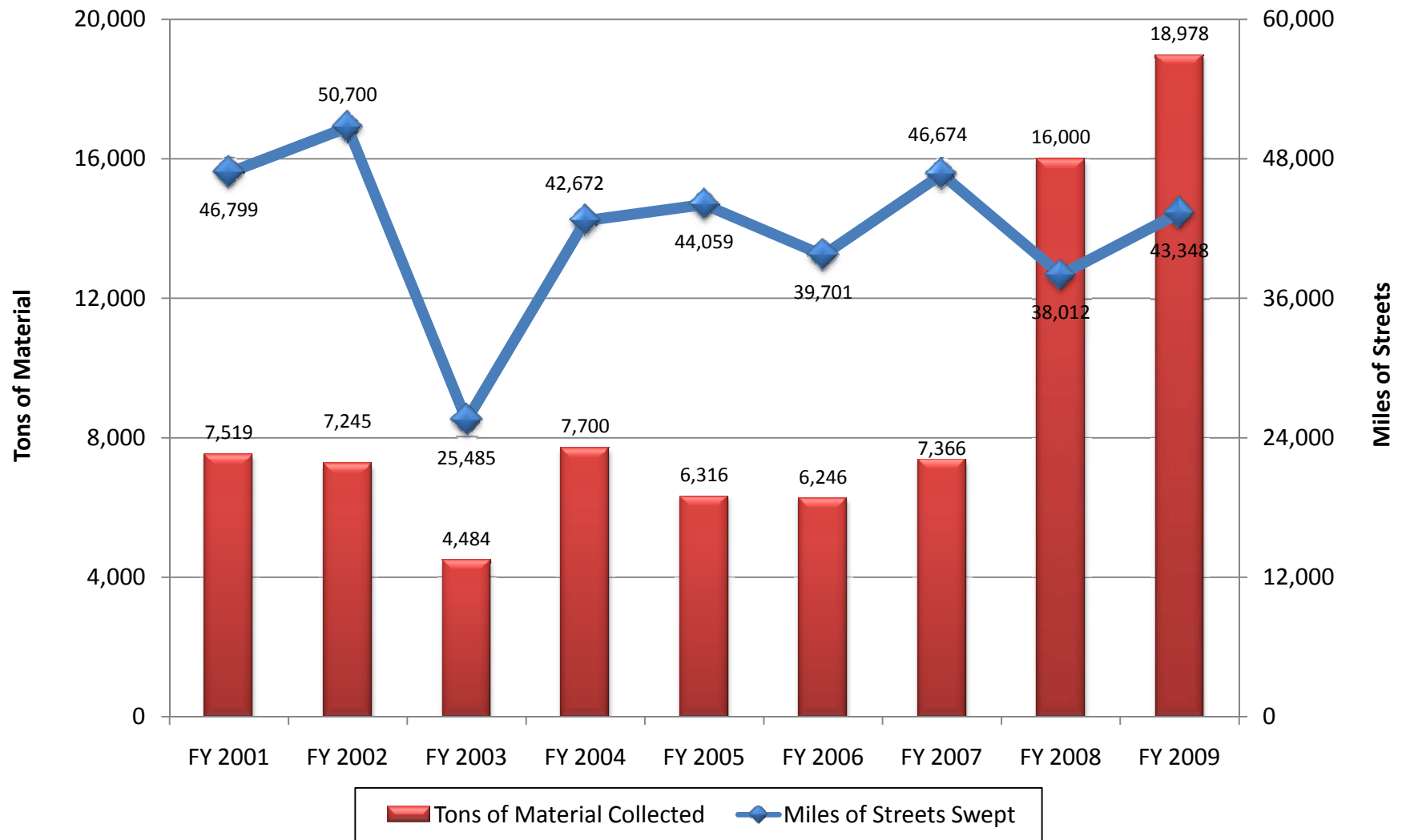
Number of Catch Basins Serviced



Norfolk

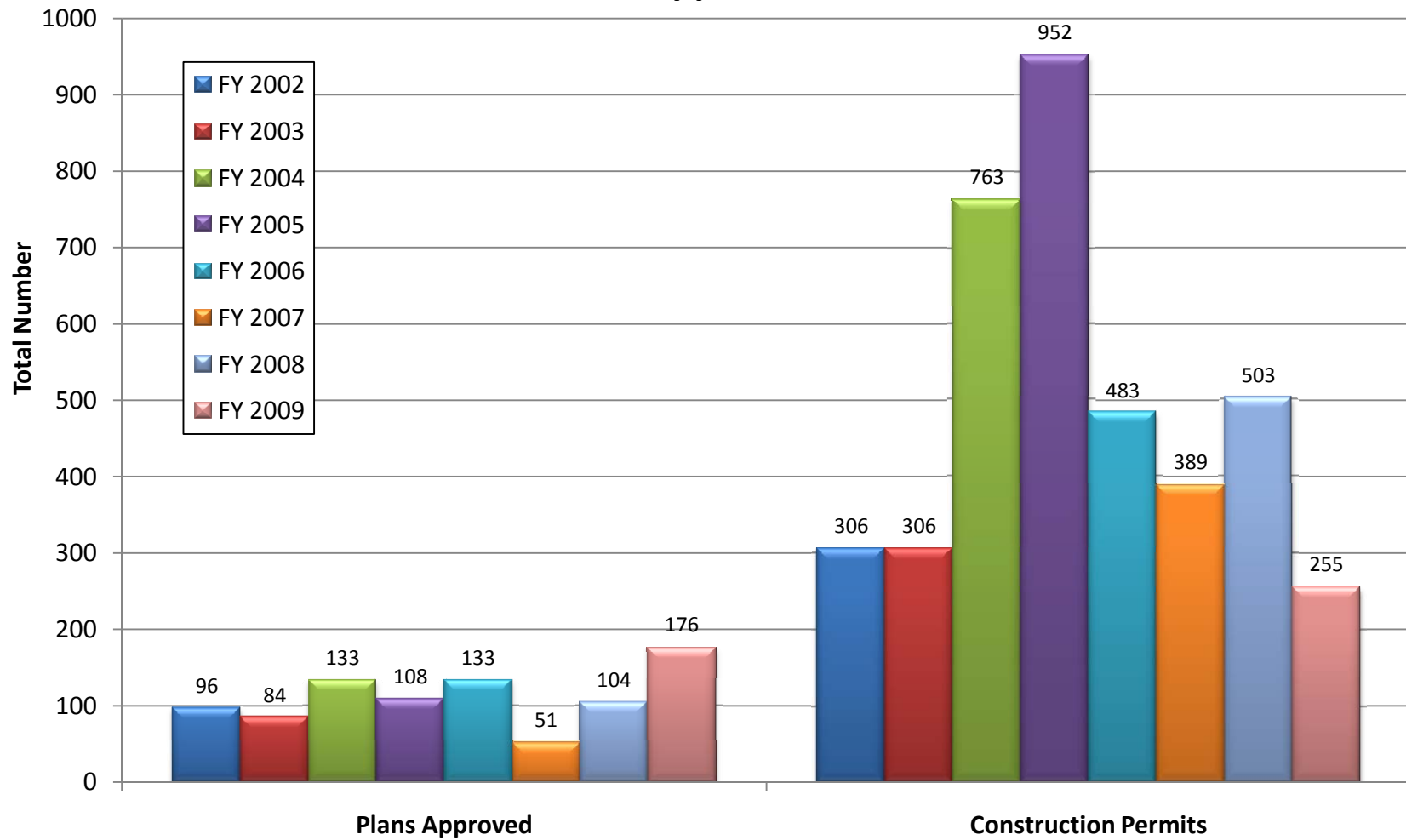
Operations and Maintenance

Street Sweeping Miles and Tons of Materials Collected



*Starting in FY 2009, the City switched from a 6-week street sweeping schedule to a monthly schedule.

Norfolk
Permitting and Compliance
Number of Site Plans Approved & Construction Permits



Public Outreach Presentations and Environmental Knowledge

Norfolk FY 2009

Activity Date	TOPIC	PARTICIPANTS	KNOWLEDGE BEFORE	KNOWLEDGE AFTER
			(Scale 1-5)	(Scale 1-5)
7/2/2008	Environment/Recycling/Clean H2O	10	2	3
7/3/2008	Environment/Recycling/Clean H2O	36	1	3
7/9/2008	Environment/Recycling/Clean H2O	14	1	3
7/10/2008	Gen. SW/Street Sweeping	25	2	4
7/11/2008	Environment/Recycling/Clean H2O	8	1	3
7/11/2008	Environment/Recycling/Clean H2O	11	1	3
7/12/2008	Street Sweeping/Signage	7	1	3
7/16/2008	Environment/Recycling/Clean H2O	45	1	3
7/17/2008	Environment/Recycling/Clean H2O	10	1	3
7/19/2008	Environment/Recycling/Clean H2O	5	1	3
7/24/2008	Environment/Recycling/Clean H2O	30	2	4
8/5/2008	Storm Water General	300	1	2
8/7/2008	Environment/Recycling/Clean H2O	8	1	3
8/9/2008	Storm Water General	60	1	2
10/4/2008	Storm Water General	2300	2	4
10/7/2008	Storm Water General/Lawn Care	600	1	3
10/11/2008	Scoop the Poop/Storm Water	100	2	3
10/25/2008	Scoop the Poop/Storm Water	150	2	4
11/5/2008	Watershed/Pollution-4th grade	120	2	4
11/12/2008	Watershed/Pollution-4th grade	100	1	3
11/22/2008	General SW	250	1	2
1/23/2009	Landscape Companies	26	2	4
1/31/2009	Street Sweeping/General SW	25	2	3
2/5/2009	Water Cycle/Environment	32	3	4
2/17/2009	Street Sweeping/General SW	12	3	4
2/19/2009	General SW/Street Sweeping	15	3	4
3/17/2009	General SW/Public Works	7	4	4
3/17/2009	Water Cycle/Environment	100	2	4
3/25/2009	Water Cycle/Environment	120	2	4
4/3/2009	WaterShed/Human Interaction	66	2	4
4/6/2009	Water Cycle/Environment	120	2	4
4/8/2009	Storm Water/Enviro Jobs	700	2	3
4/9/2009	Water Cycle/Pollution/Protection	75	3	4
4/20/2009	WaterShed/Human Interaction	62	2	4
4/25/2009	Environment/Recycling	125	1	2
4/30/2009	Water Pollution/Effects/Prevention	106	2	3
5/16/2009	Scoop the Poop/Storm Water	65		
5/19/2009	Public Works/Environment	8		
5/20/2009	Public Works/Environment	12		
5/21/2009	Public Works/Environment	75		
5/27/2009	General SW	400		
6/3/2009	General SW	350		
6/4/2009	General SW	450		
6/30/2009	Water Pollution/Effects/Prevention	38	1	2

PUBLICATIONS

Norfolk FY 2009

MONTH PUBLISHED	ARTICLE/PUBLICATION	TOPIC	INTENDED AUDIENCE
July 2008	Council Update	Hurricane prep/SW Pump Stations	City Council/Gen Public
July 2008	Council Update	Street Sweeping advertsing update	City Council
July 2008	PR Street Sweeping signage	Black plastic bags	Media/General Public
July 2008	PR New Monthly Street Sweeping Program	New program/benefits	Media/General Public
July 2008	Norfolk quarterly	Street Sweeping	General Public
November 2008	Civic Connection	General Storm Water Information	Civic Leagues
June 2009	Civic Connections	General SW information: Q & A format	Civic Leagues
June 2009	HHW Event Press Release	HHW and Electronics Recycling	General Public

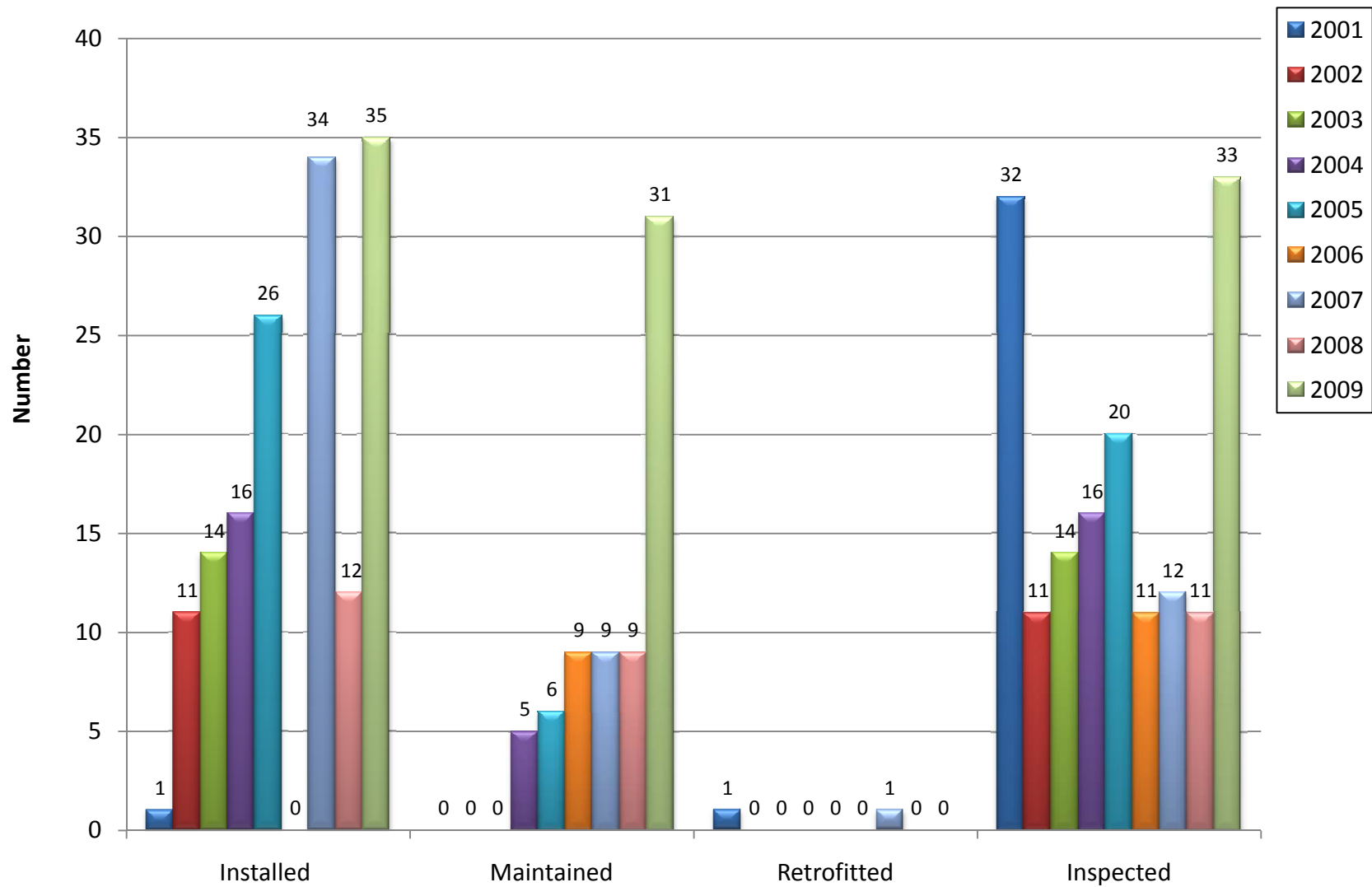
MASS MAILINGS
Norfolk FY 2009

MONTH PUBLISHED	NEIGHBORHOOD	TOPIC
July 2008	City-wide CL Mailing- Communication Dept.	Street Sweeping Update
August 2008	City-wide CL Mailing- Communication Dept.	Street Sweeping letter
September 2008	CL mailing Street Sweeping Update September	Street Sweeping newsletter
September 2008	Larchmont/Richmond Cres CIP	CIP Tidal project
September 2008	15th View/Lea View CIP	CIP Tidal project
May 2009	Sir Oliver/Fayton/Elwood	Illegal dumping

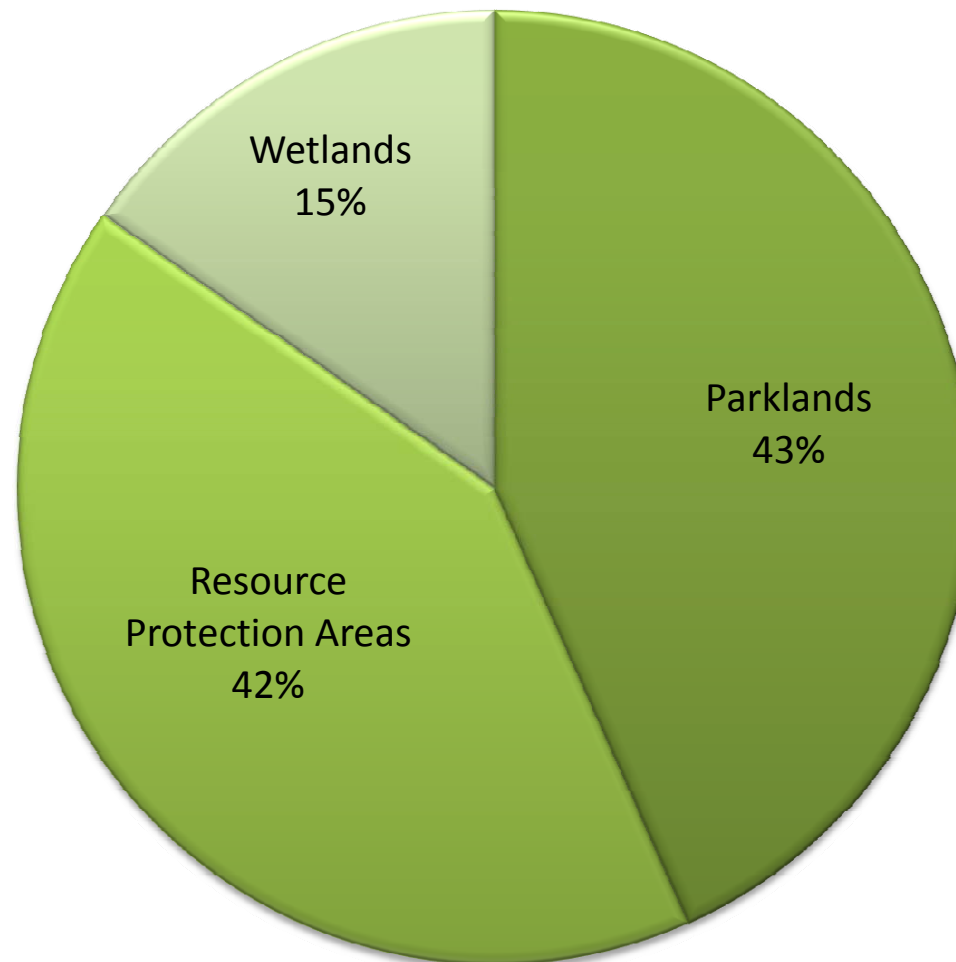
City of Portsmouth

Portsmouth

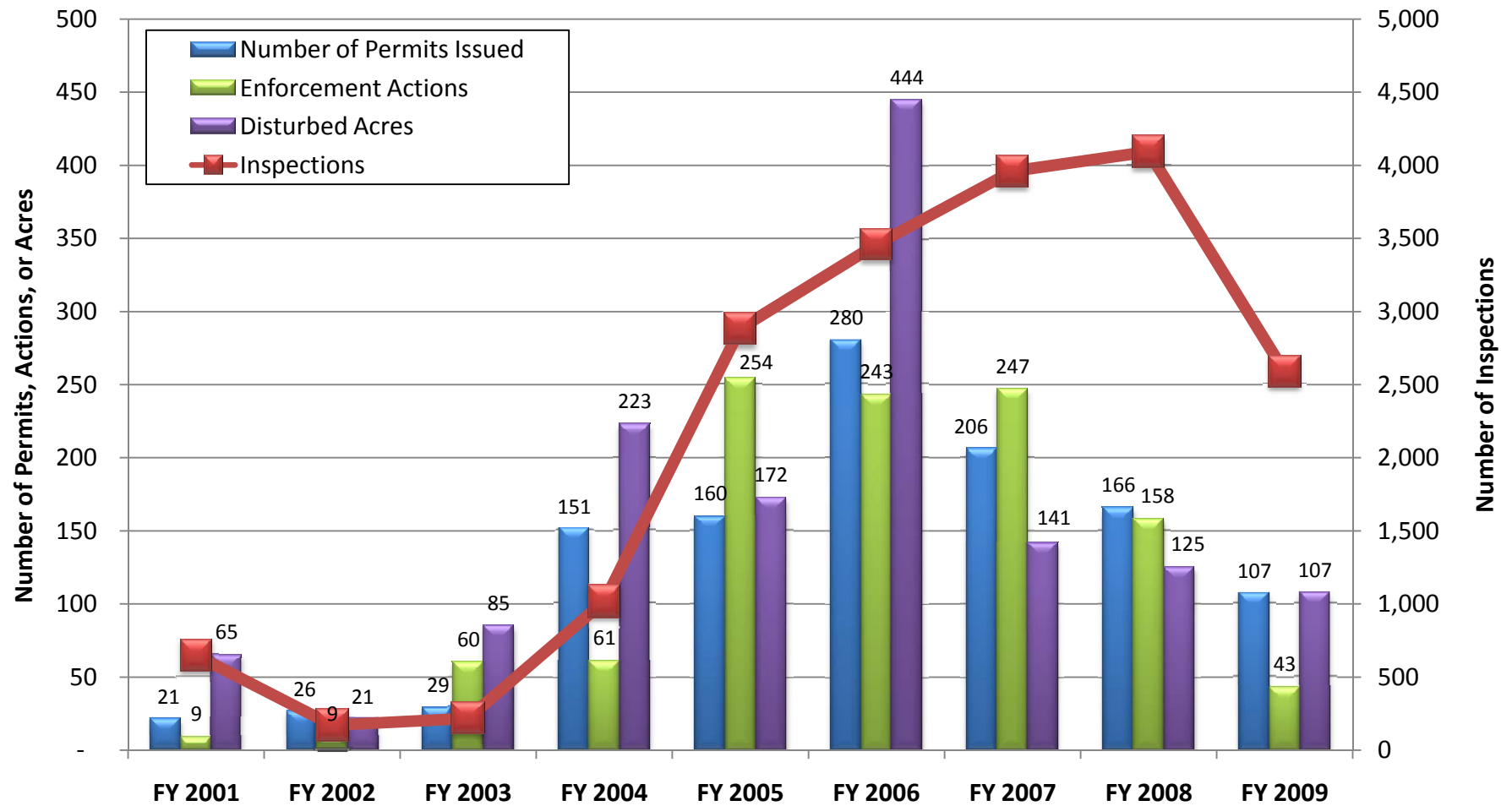
Number of BMPs Installed, Maintained Retrofitted and Inspected



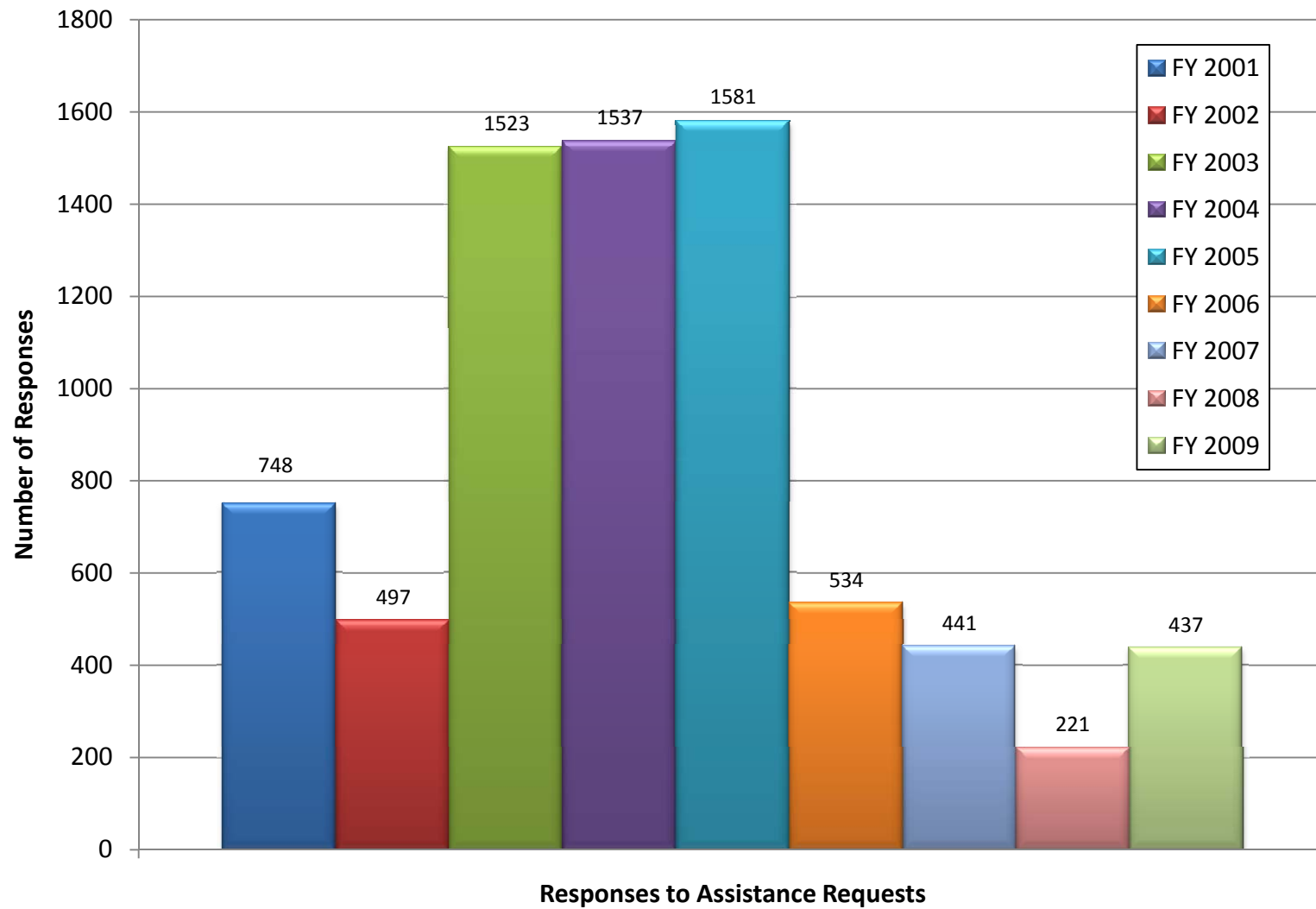
**Portsmouth
Greenlands Program
FY 2009**



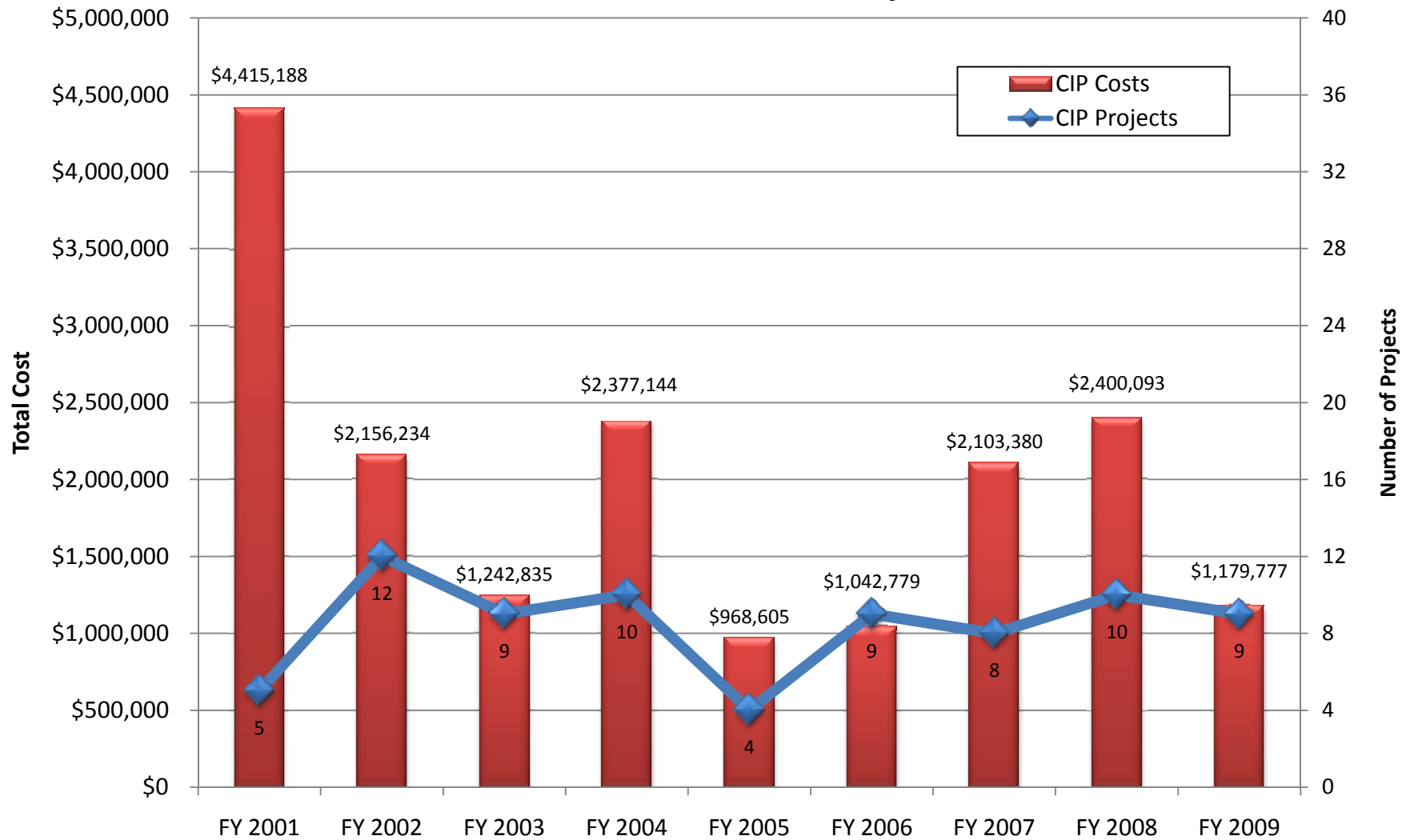
Portsmouth Erosion and Sediment Control Activities



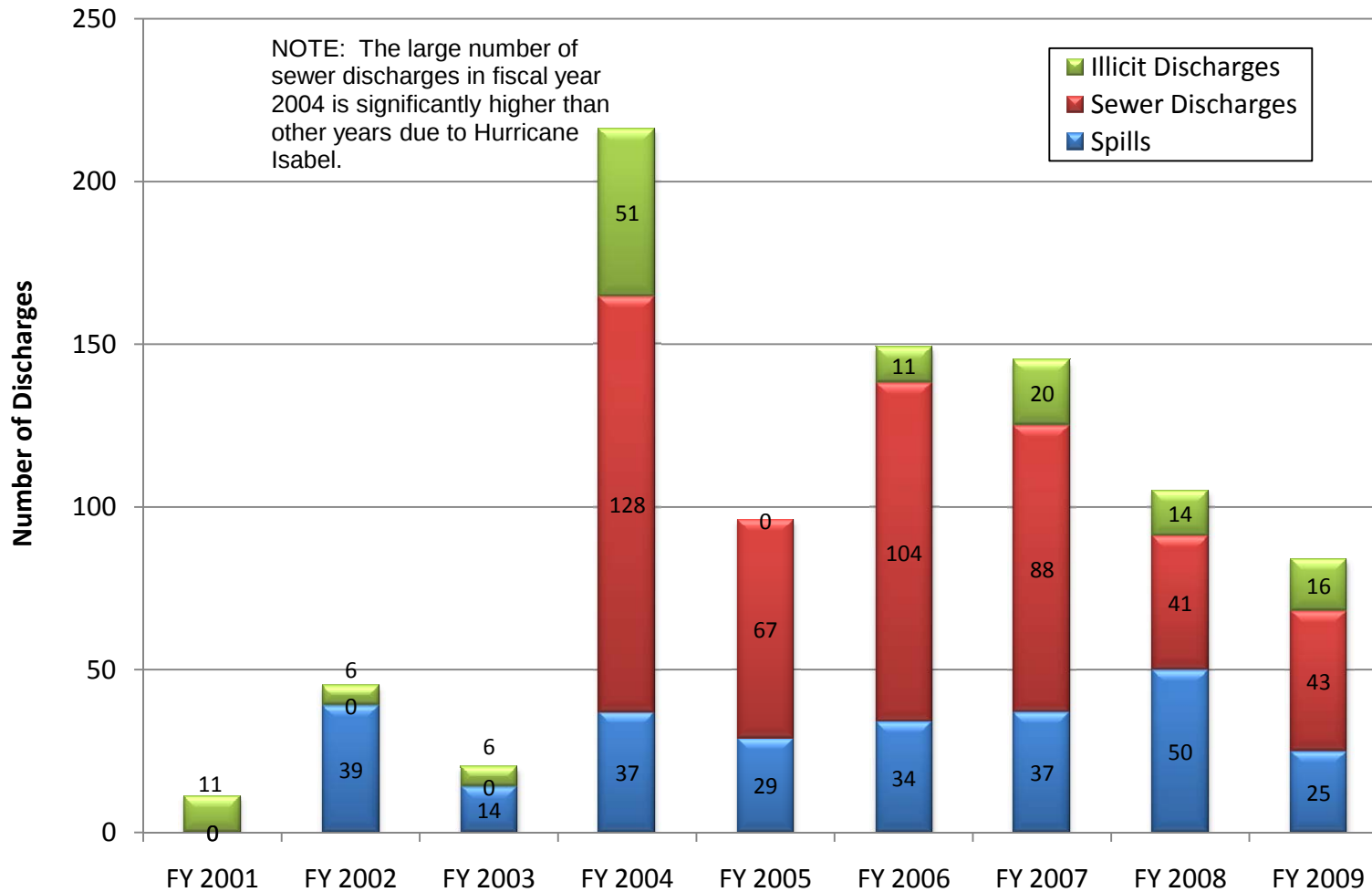
Portsmouth Flooding and Drainage Problems Response to Assistance Requests



Portsmouth Flooding and Drainage Stormwater Projects

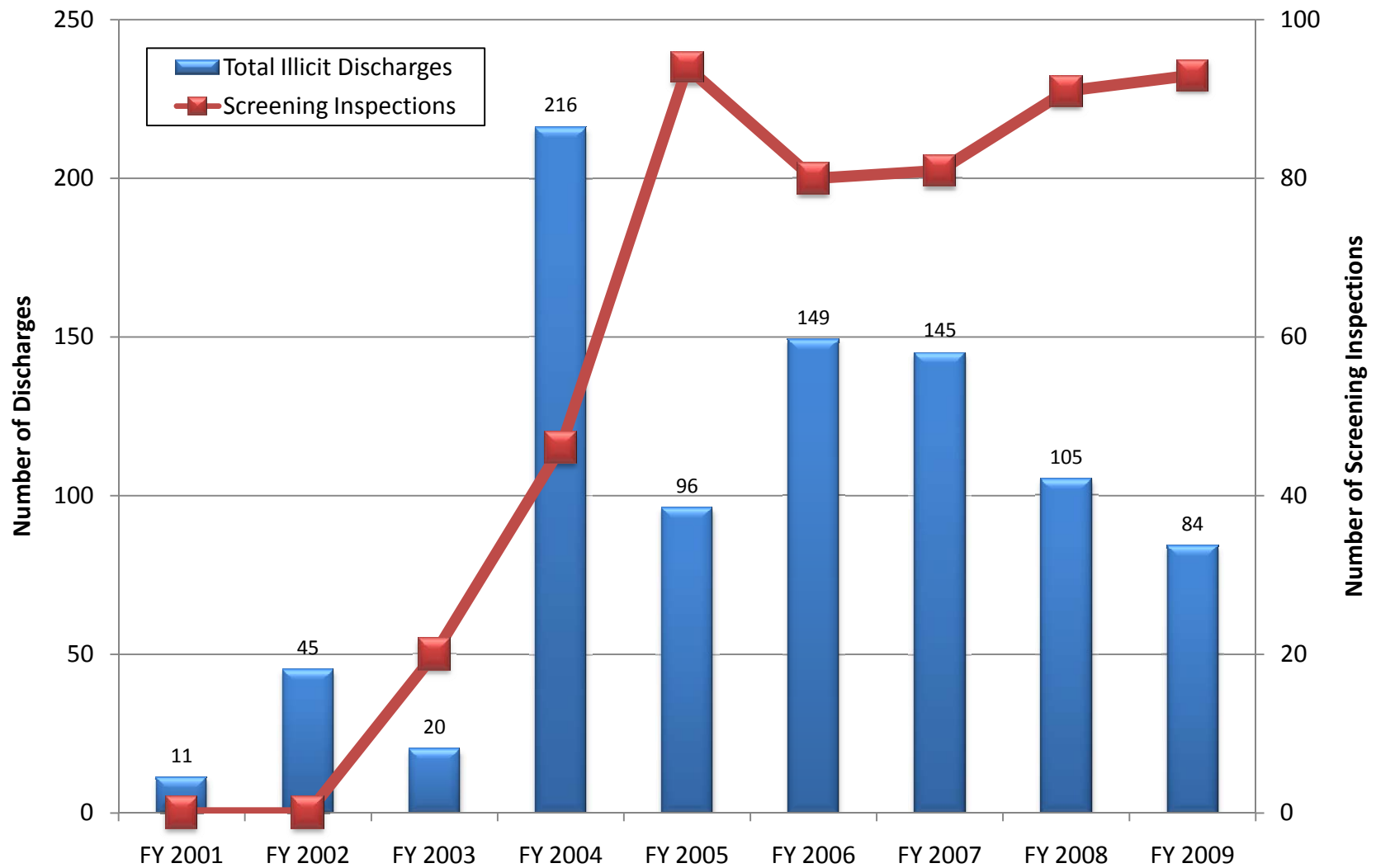


Portsmouth Investigative Monitoring Number of Discharges by Type of Discharge

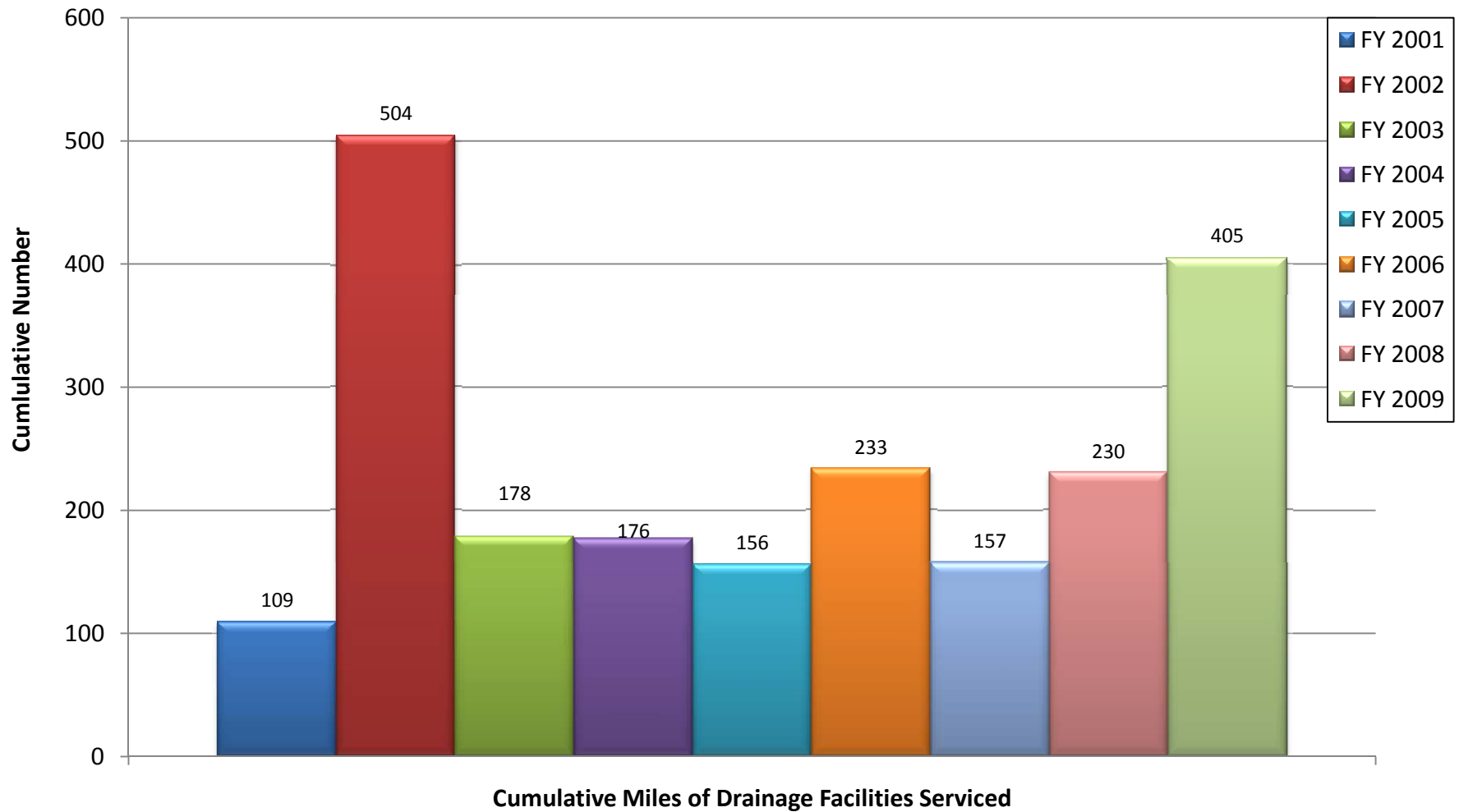


Portsmouth

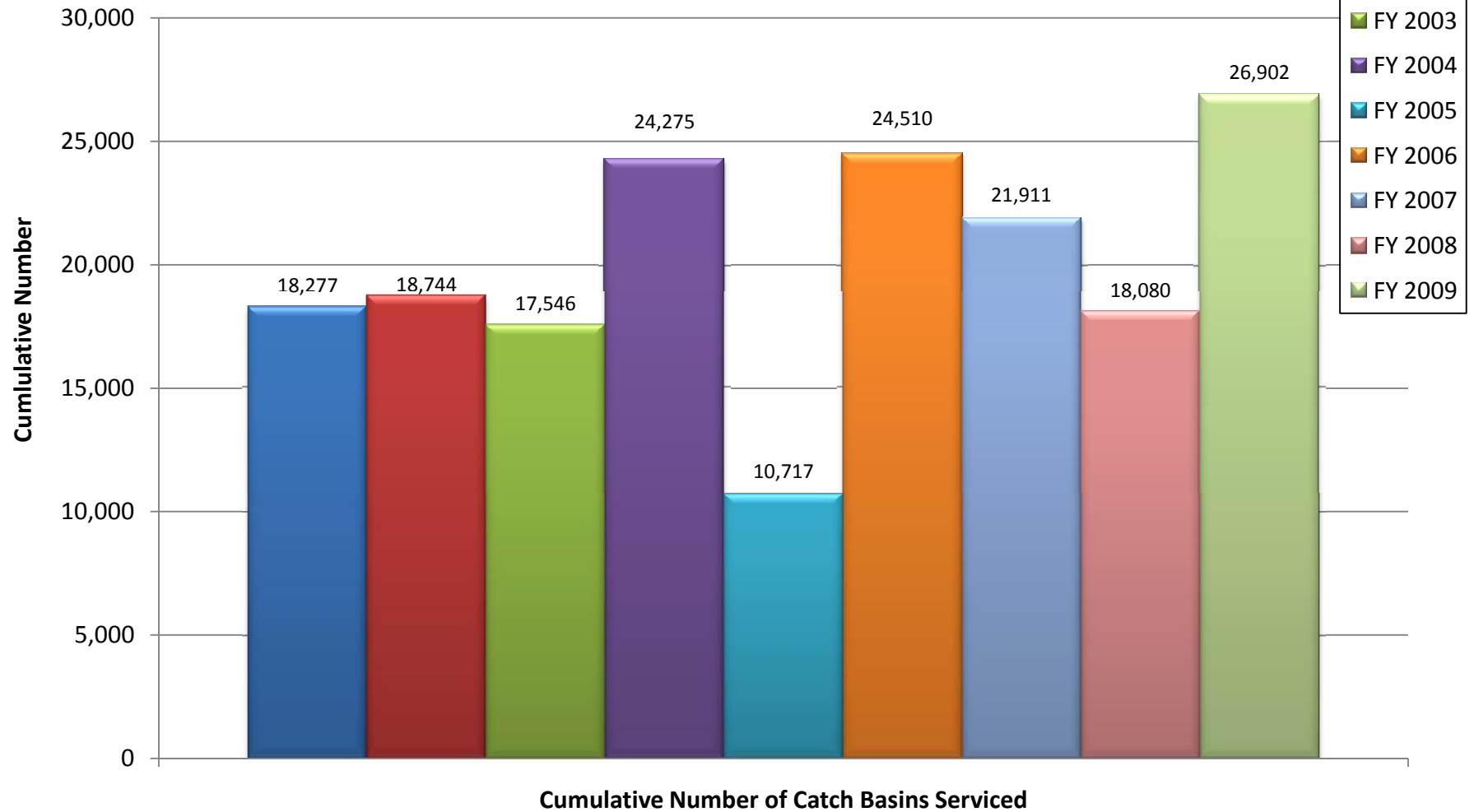
Number of Illicit Discharges and Screening Inspections



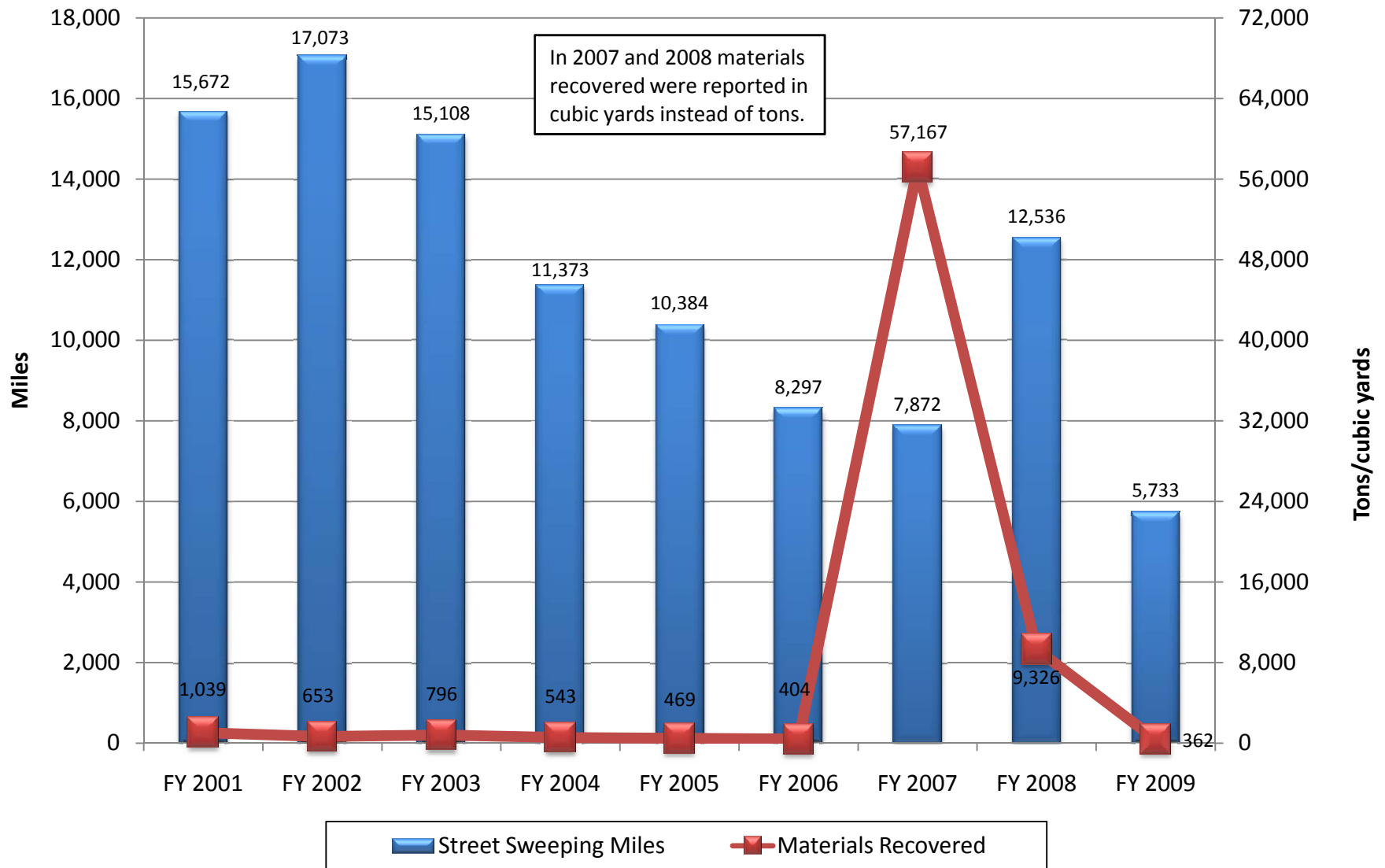
**Portsmouth
Operations and Maintenance
Miles of Drainage Facilities Serviced**



Portsmouth Operations and Maintenance Number of Catch Basins Serviced

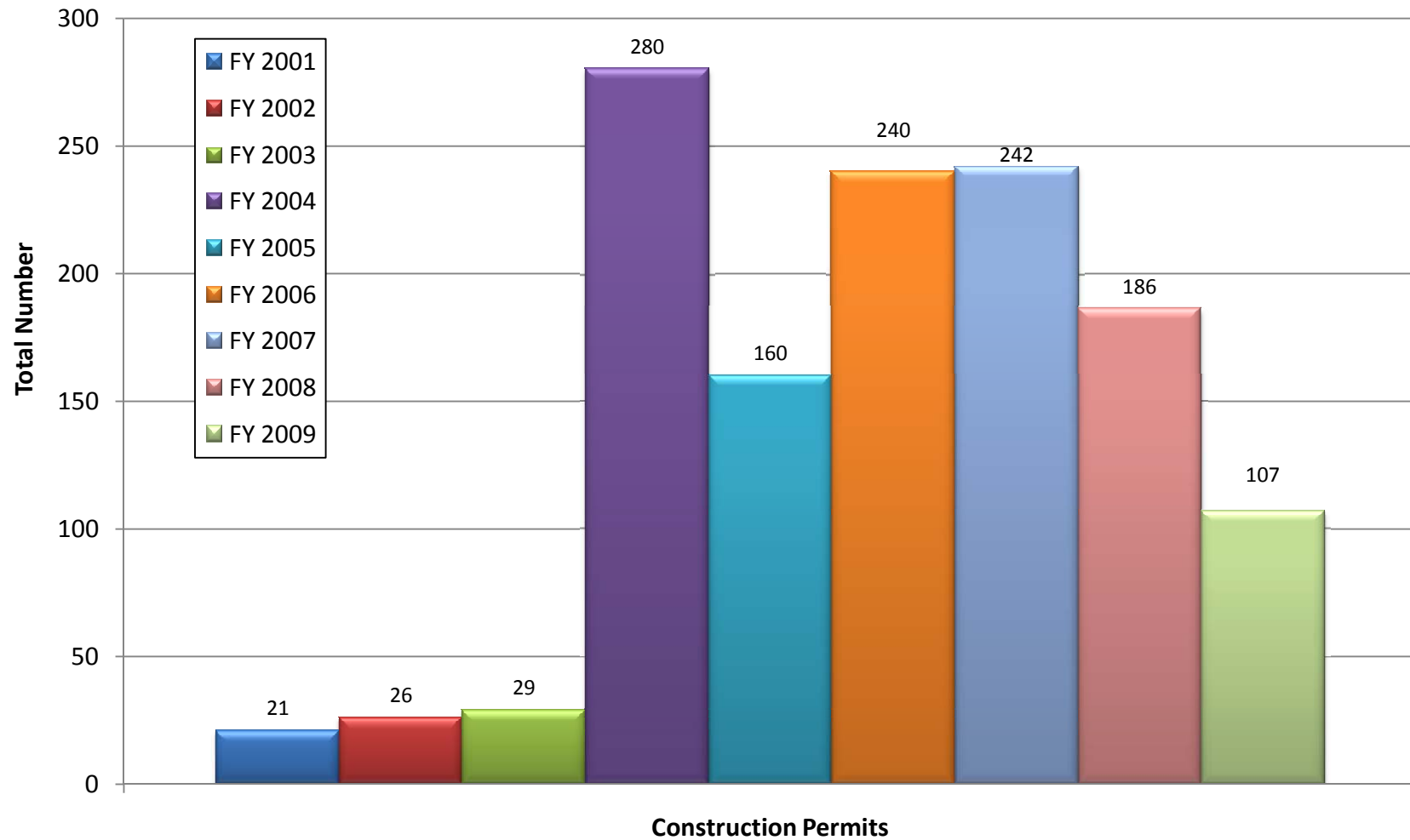


Portsmouth Operations and Maintenance Street Sweeping



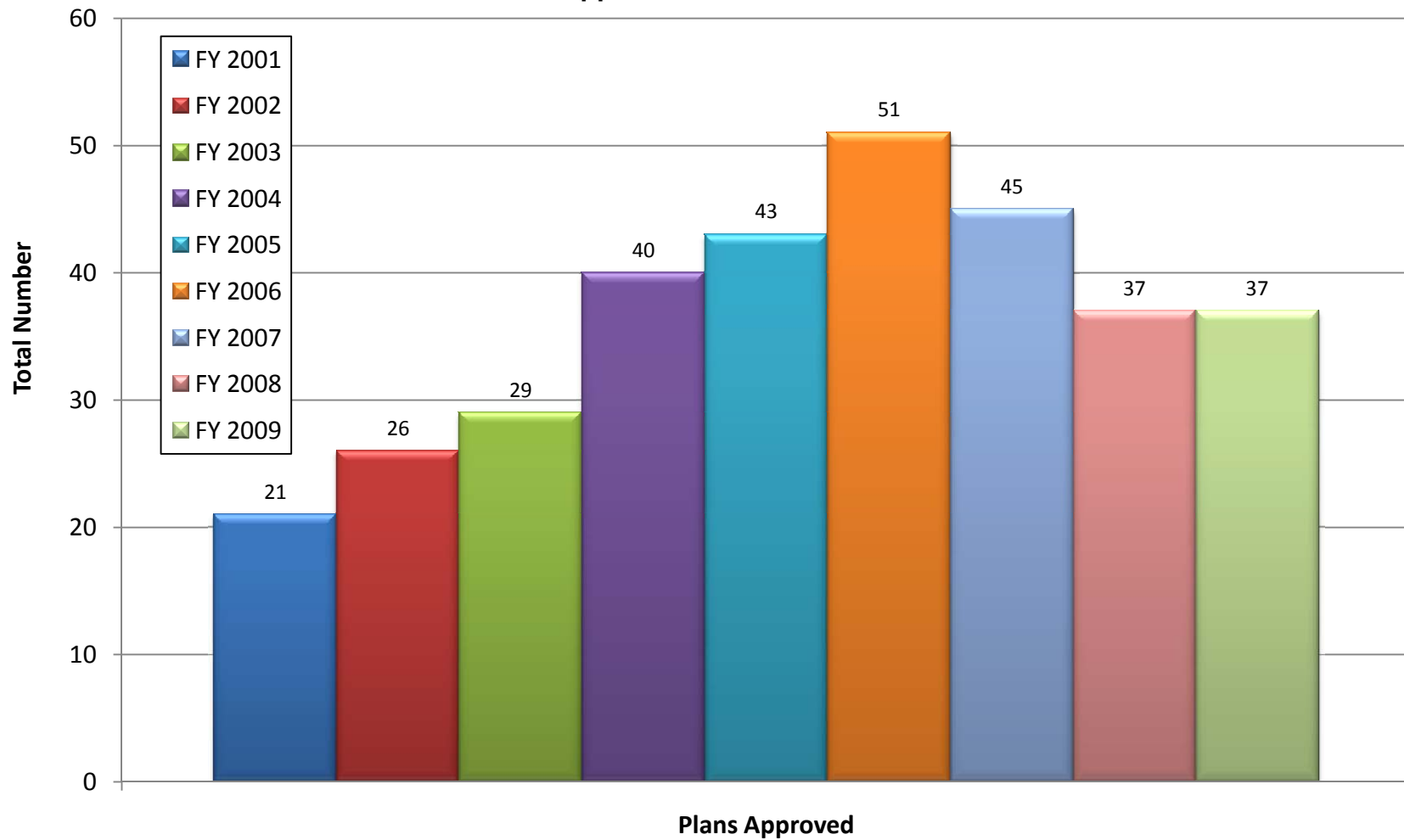
Portsmouth Permitting & Compliance

Number of Construction Permits from FY 2001 - FY 2009



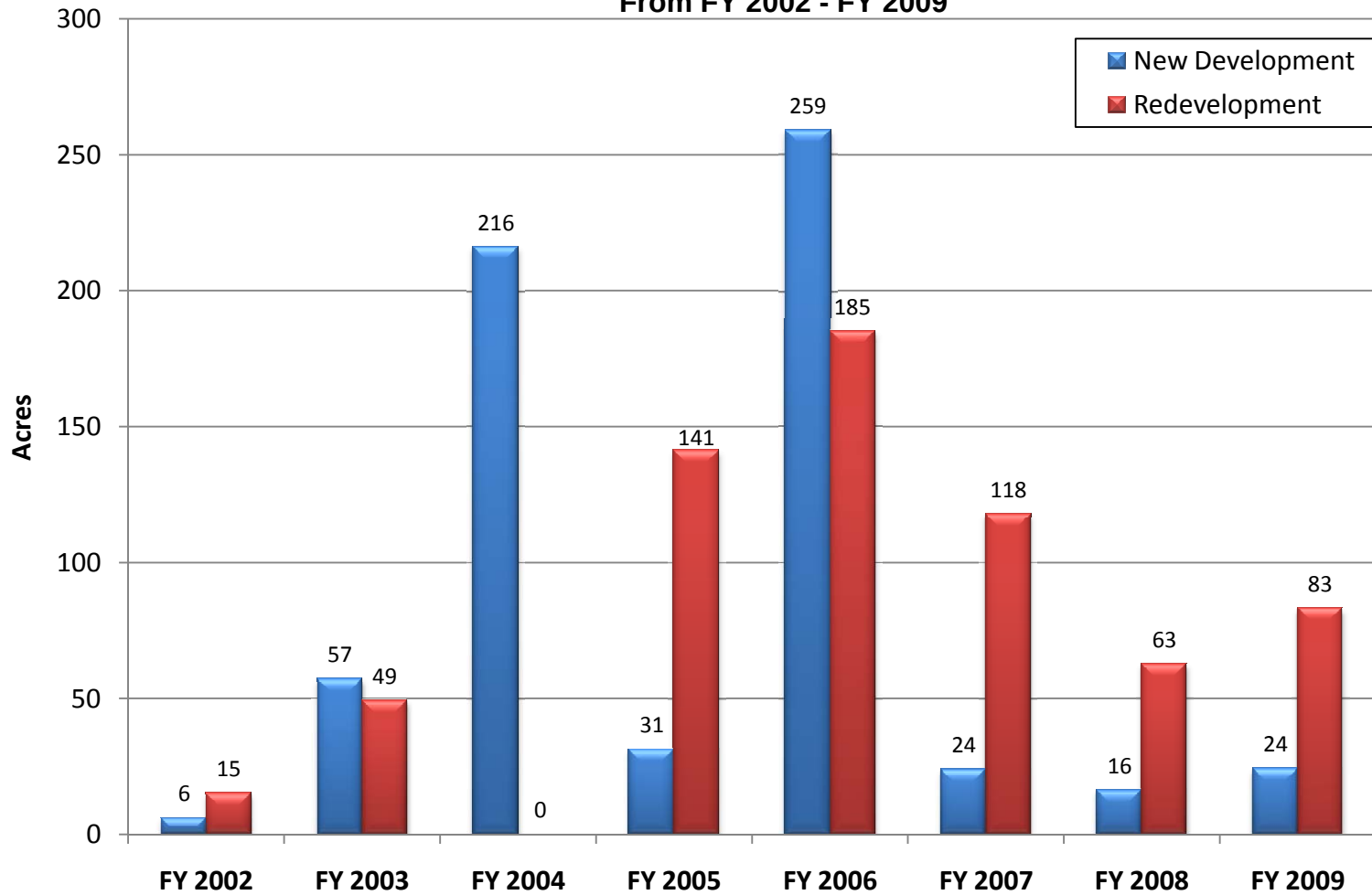
Portsmouth Permitting & Compliance

Plans Approved from FY 2001 - FY 2009



Portsmouth Permitting & Compliance

Newly Developed & Redeveloped Acreage
From FY 2002 - FY 2009



Environmental Outreach Activities Portsmouth FY 2009

<i>Activity Area</i>	<i>Activity Type</i>	<i>Date</i>	<i>Number Citizens Reached</i>	<i>Comments</i>
Education	Material Distribution	7/3/2009	75	Family Reunion
Education	Material Distribution	7/3/2009	15	City Of Portsmouth Mosquito Control Operations Center
Education	Material Distribution	7/21/2009	40	City Of Portsmouth Mosquito Control Operations Center
Education	Material Distribution	7/31/2009	20	Christopher Academy
Education	Material Distribution	8/18/2009	2	Earl Industries
Education	Material Distribution	8/26/2009	30	City Of Portsmouth Public Schools
Education	Material Distribution	9/15/2008	2	City Of Portsmouth Residents
Outreach Activity	Event	9/30/2008	700	Employee Wellness Fair
Education	Material Distribution	10/13/2008	80	Annual Block Party

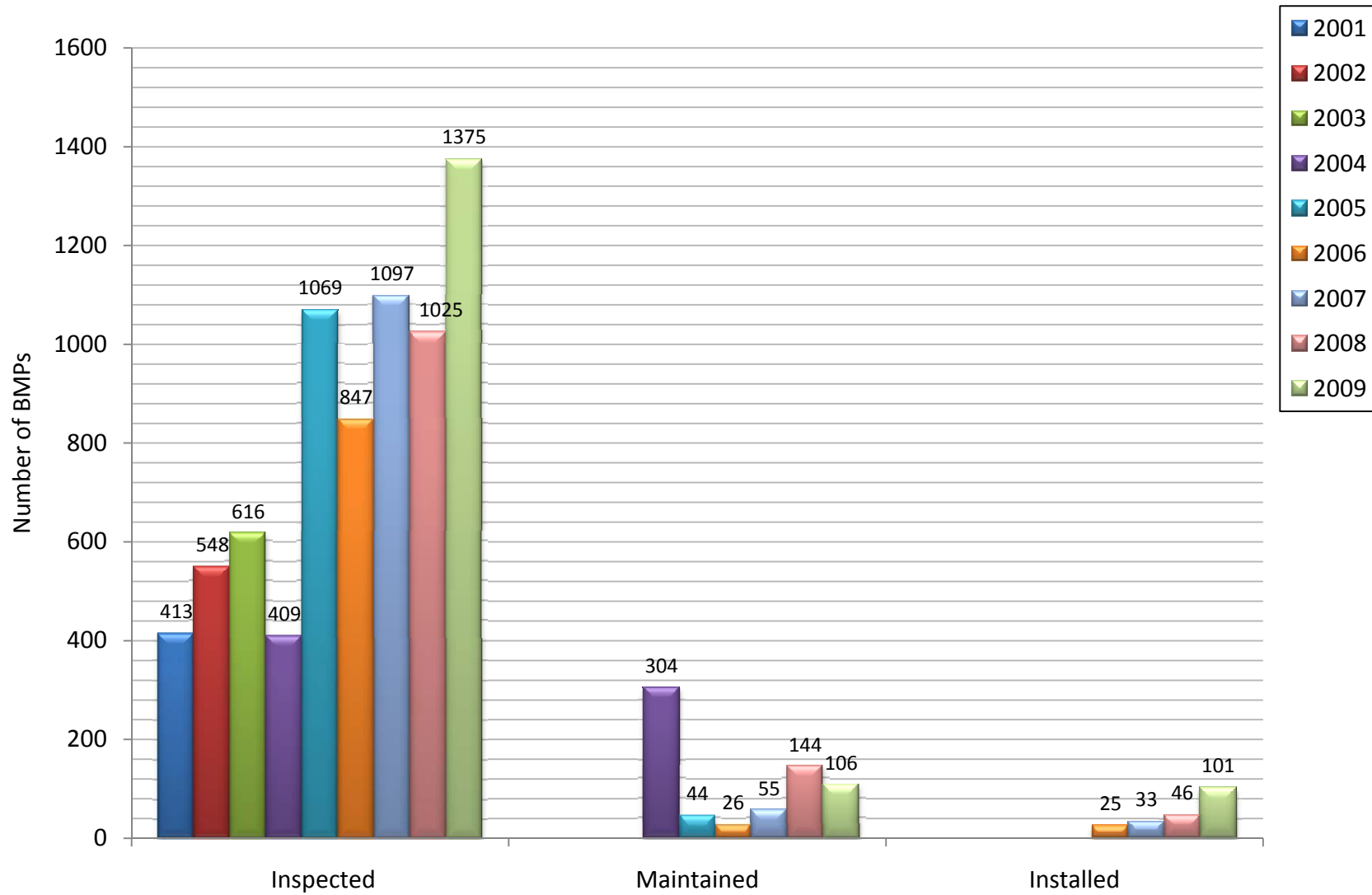
**Environmental Education Activities
Portsmouth FY 2009**

<i>Source</i>	<i>Medium</i>	<i>Title</i>	<i>Reach (No. Distributed)</i>
City Publication	Pamphlet	"Proper Waste Disposal for a Clean Environment"	321
The City Of Portsmouth Public Works Department	Car Trash Bag	"How Long Will Our Litter Be Here"	150
City Publication	Newsletter	"The Main Drain - Febuary 2008"	130
City Publication	Pamphlet	"Yard Care for a Clean Environment"	125
City Publication	Pamphlet	"It's Just Dirt"	124
The City Of Portsmouth	Coloring Booklet	"Water and Me"	75
The City Of Portsmouth	Coloring Booklet	"Show You Care"	75
Other	Bookmark	"VaNaturally.com"	75
DCR	Flyer	"Amazing Stuff"	14
DCR	Pamphlet	"Tips on Keeping Your Lawn Green and the Chesapeake Bay Clean"	5
DCR	Pamphlet	"Nonpoint Source Pollution and You"	4
SPSA	Facilities List	"Used Oil Recycling"	2
The City Of Portsmouth	Mail Insert	"Stormwater Management"	1
Office of Environmental Education	Postcard	"Please Pick Up My Poop"	1
DCR	Pamphlet	"We Would Like to Clear a Few Things Related to Lawn Care... Like Virginia's Rivers, Lakes, and Streams"	1

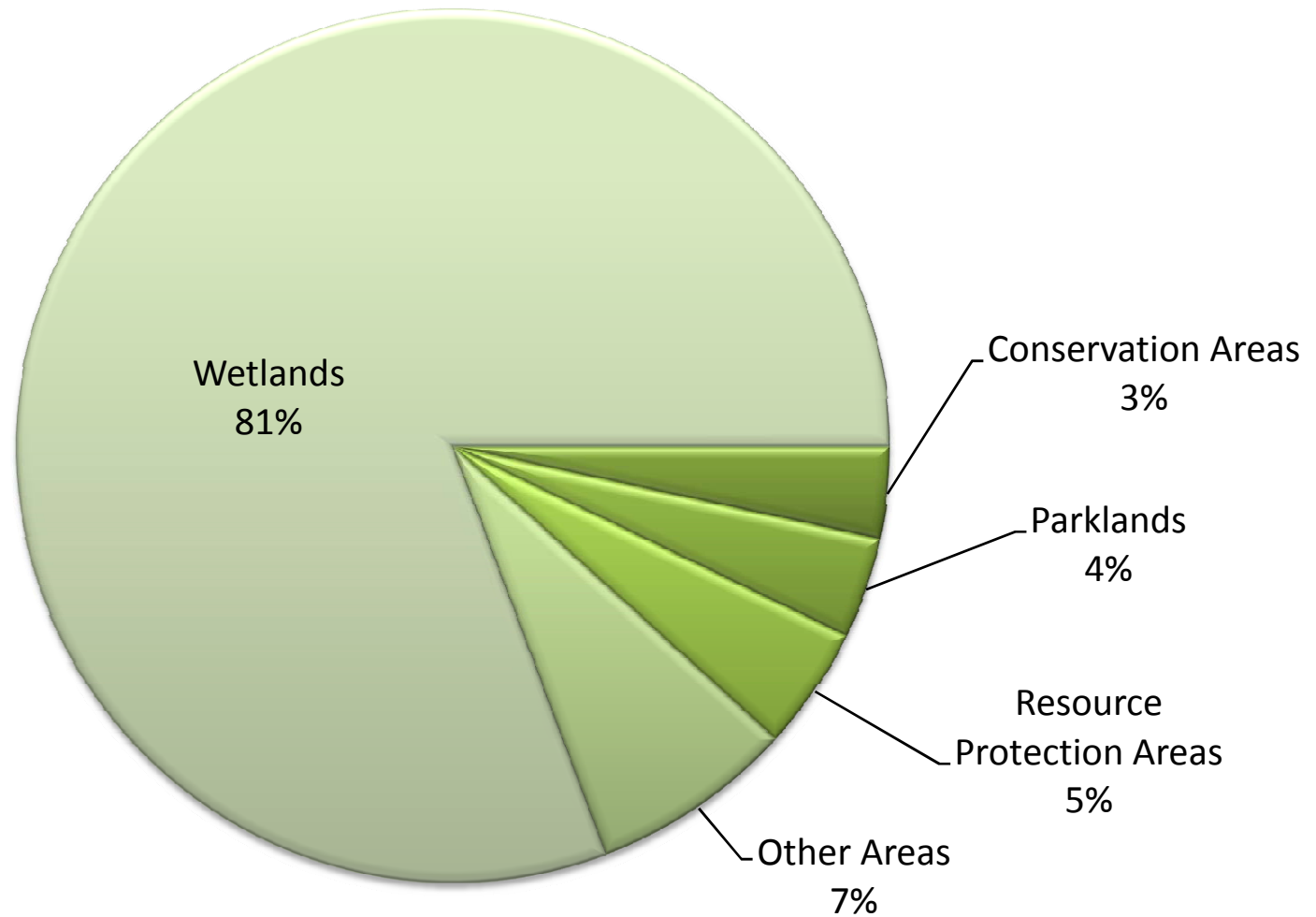
City of Virginia Beach

Virginia Beach

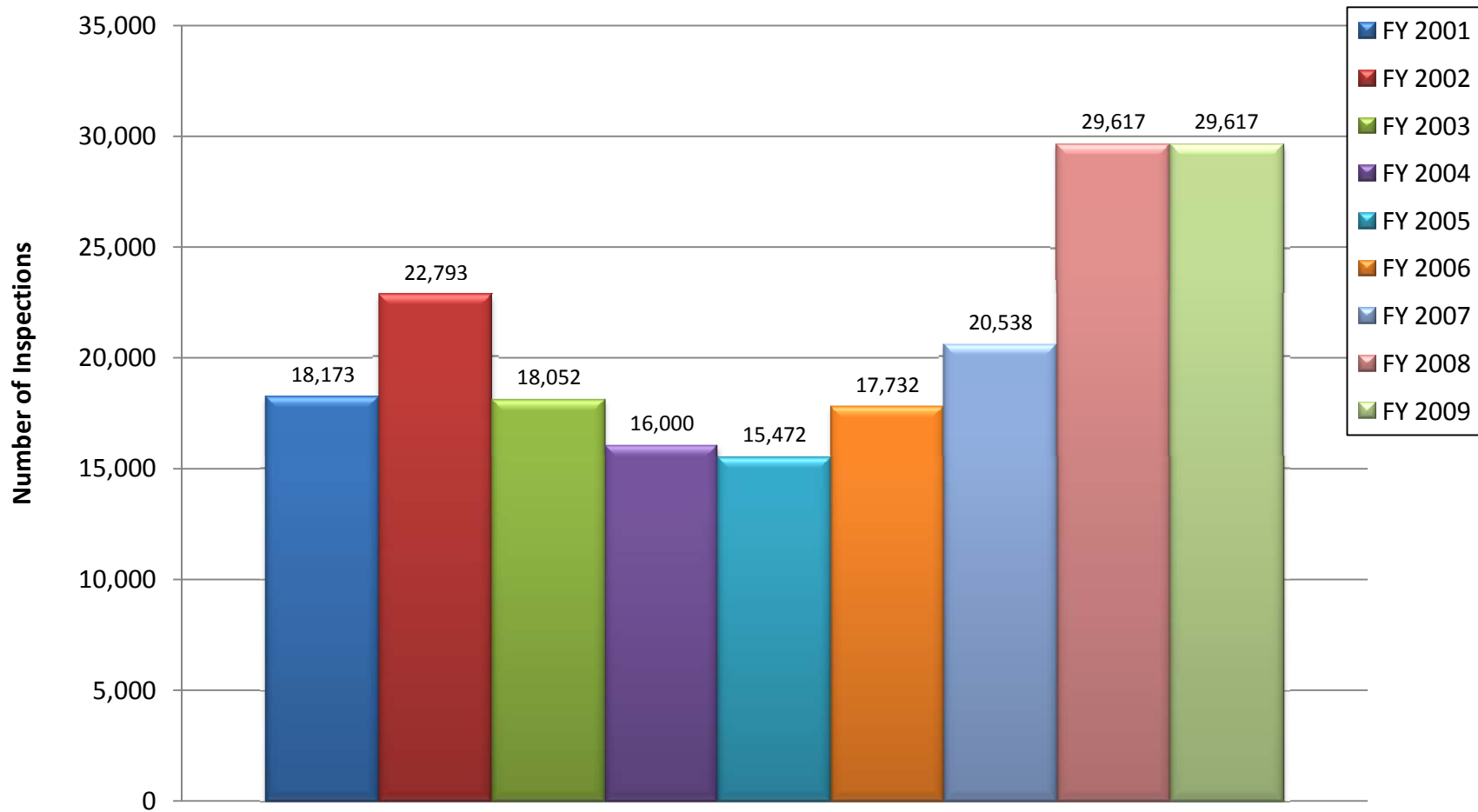
Total Number of BMPs Installed, Inspected and Maintained



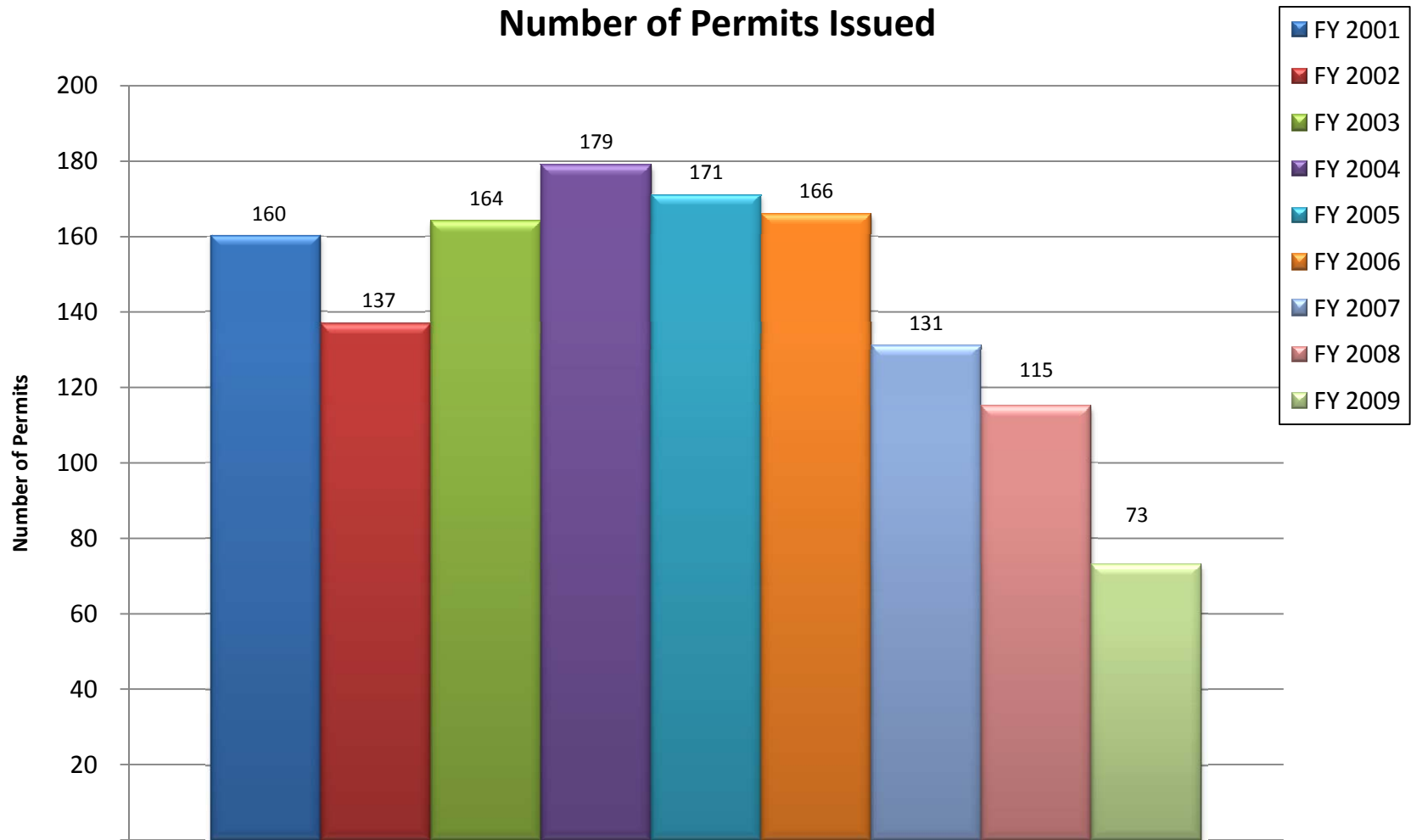
**Virginia Beach
Components of Greenlands
Fiscal Year 2009**



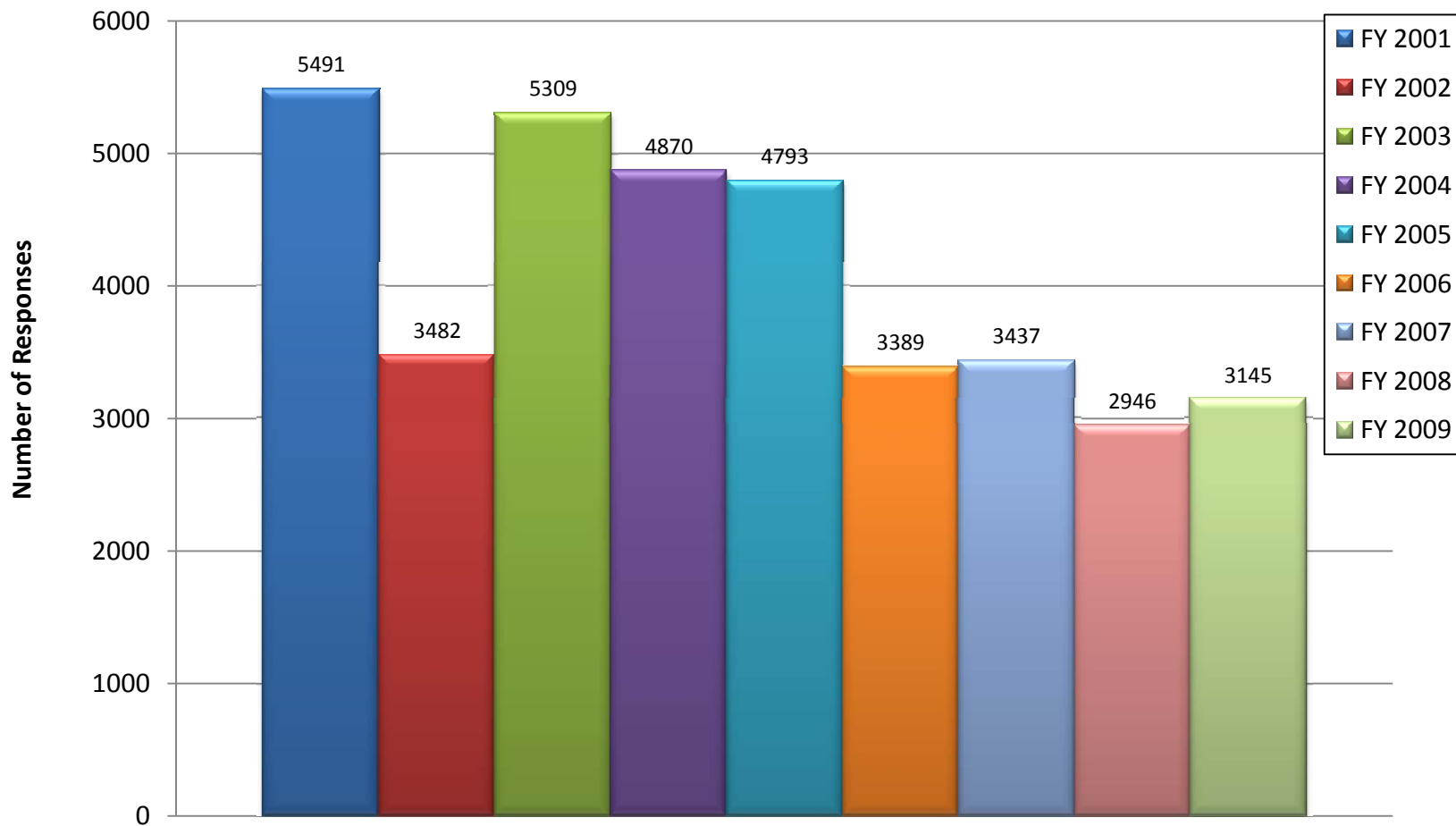
Virginia Beach Erosion and Sediment Control Activities Number of Inspections



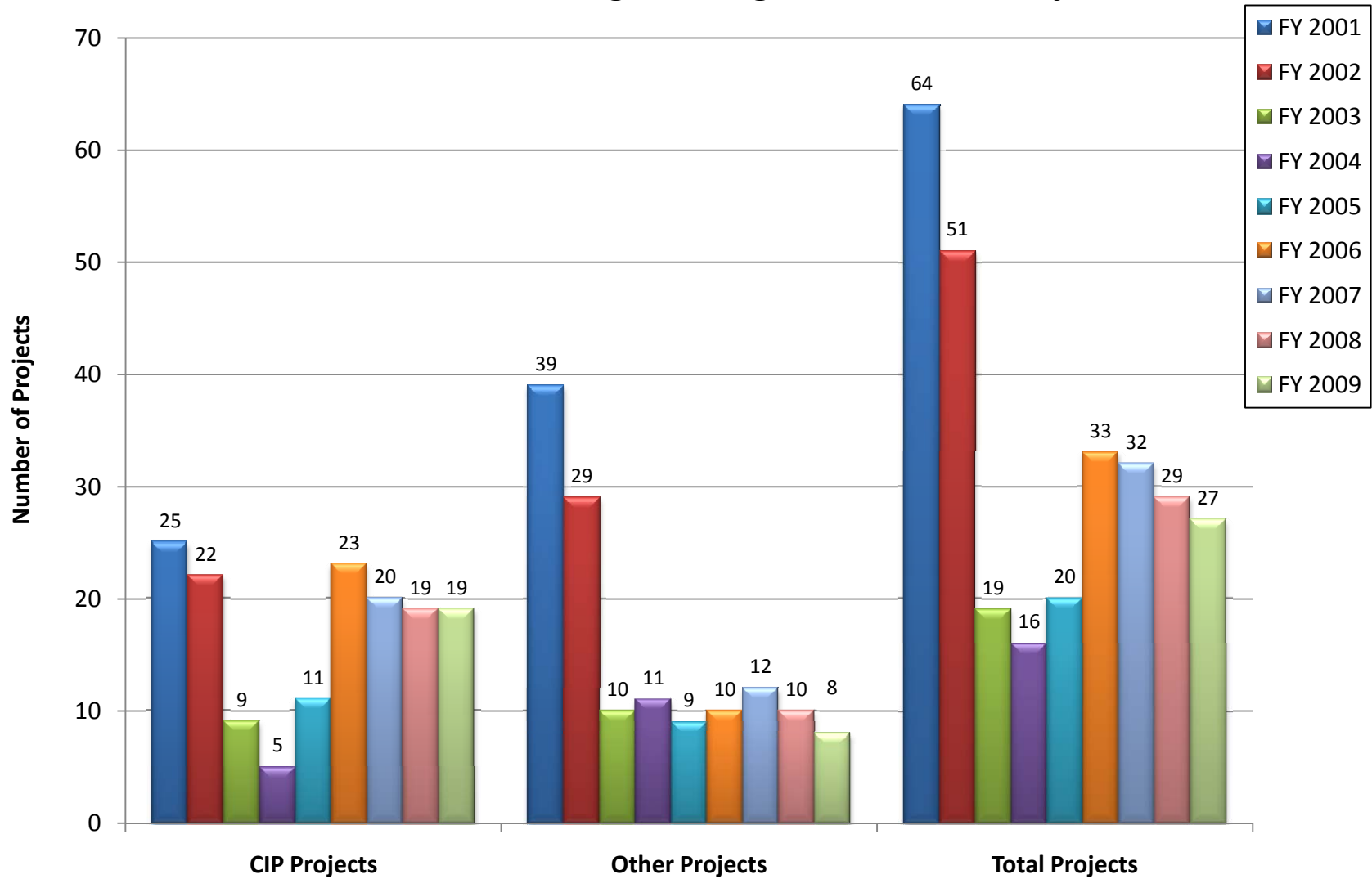
Virginia Beach Erosion and Sediment Control Activities Number of Permits Issued



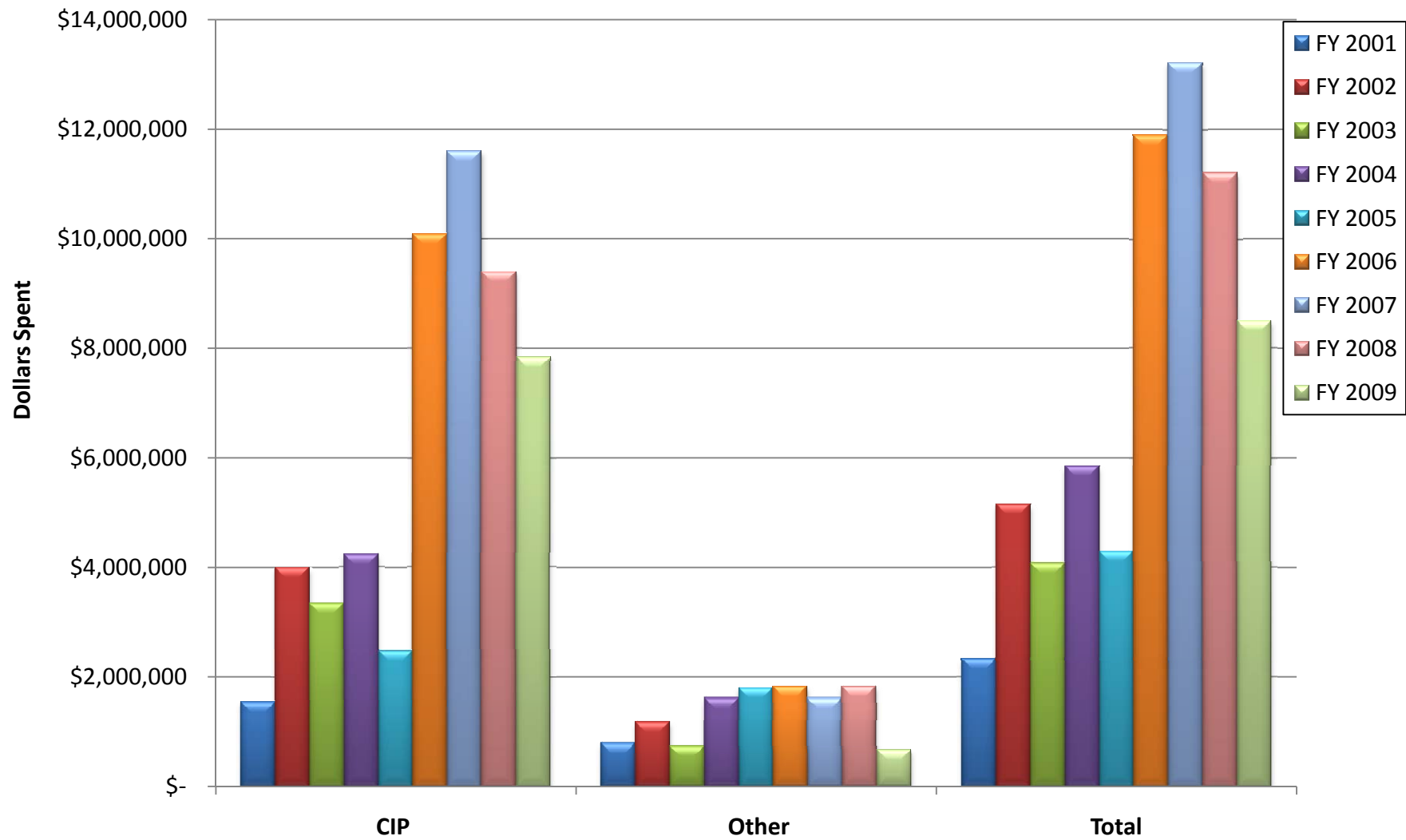
**Virginia Beach
Flooding and Drainage Problems
Number of Responses to Assistance Requests
(Inspection, Maintenance, and Repair Services)**



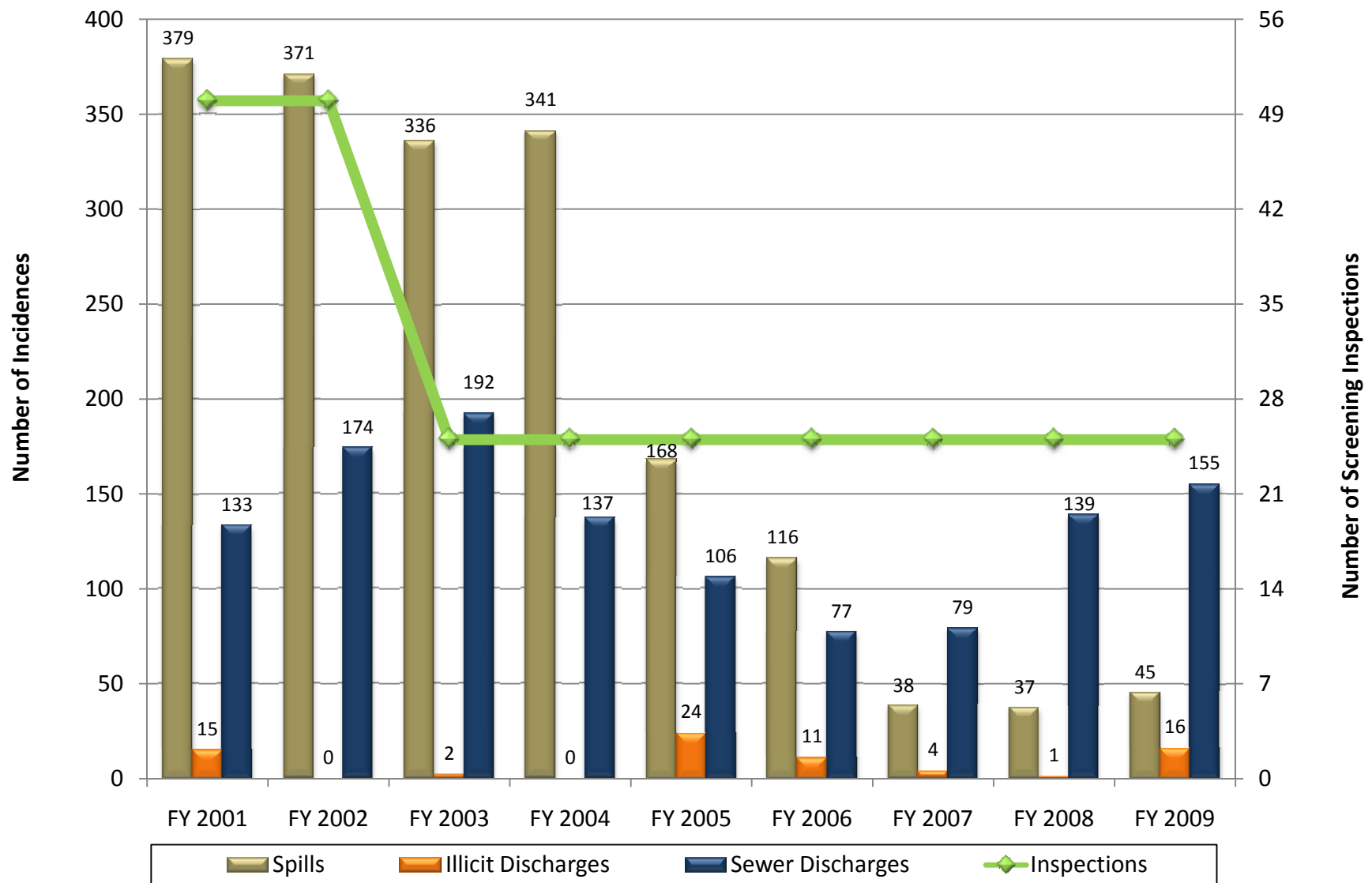
Virginia Beach Flooding and Drainage Problems Number of Flooding/Drainage Stormwater Projects



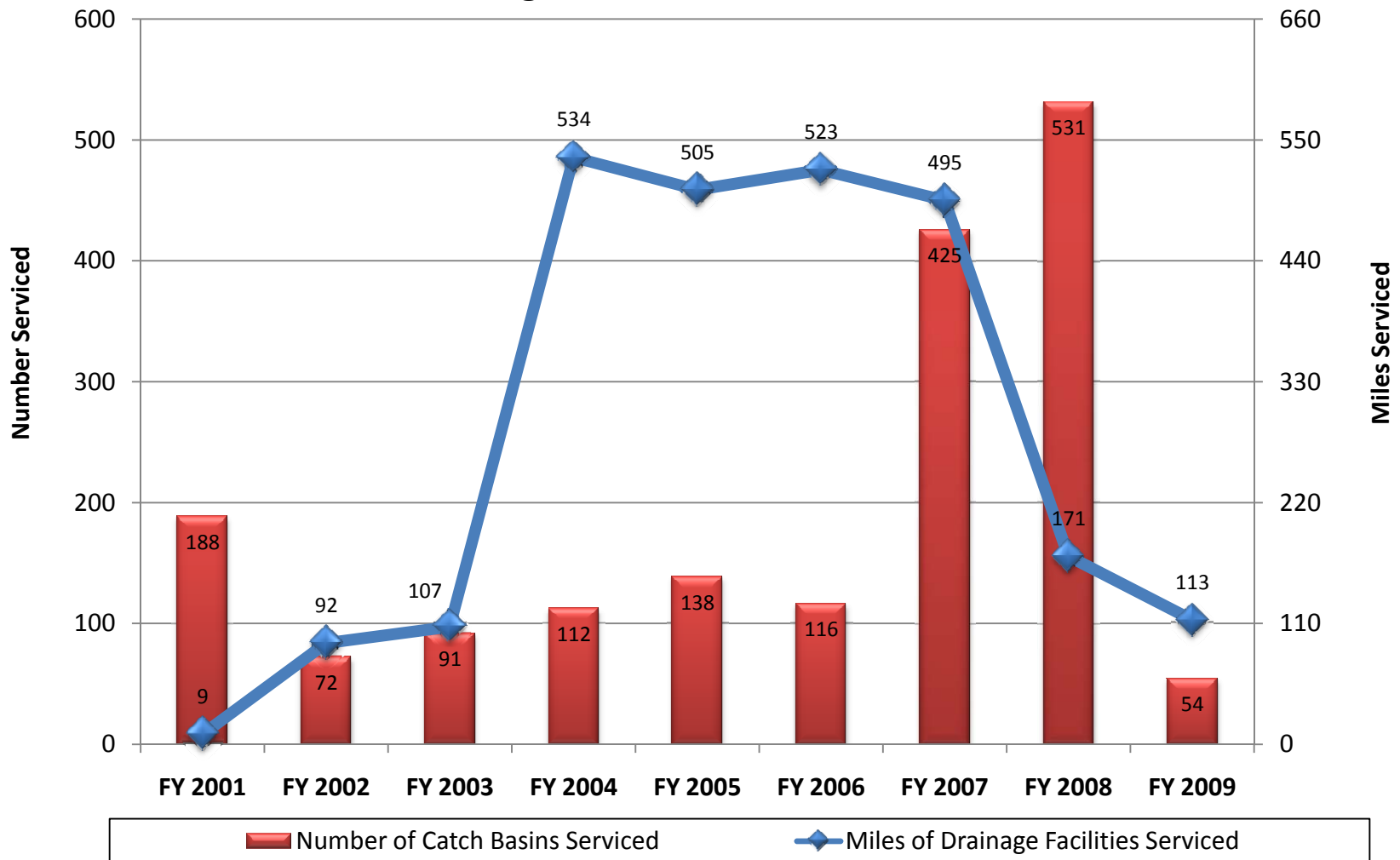
Virginia Beach Flooding and Drainage Problems Funds Spent on Stormwater Projects



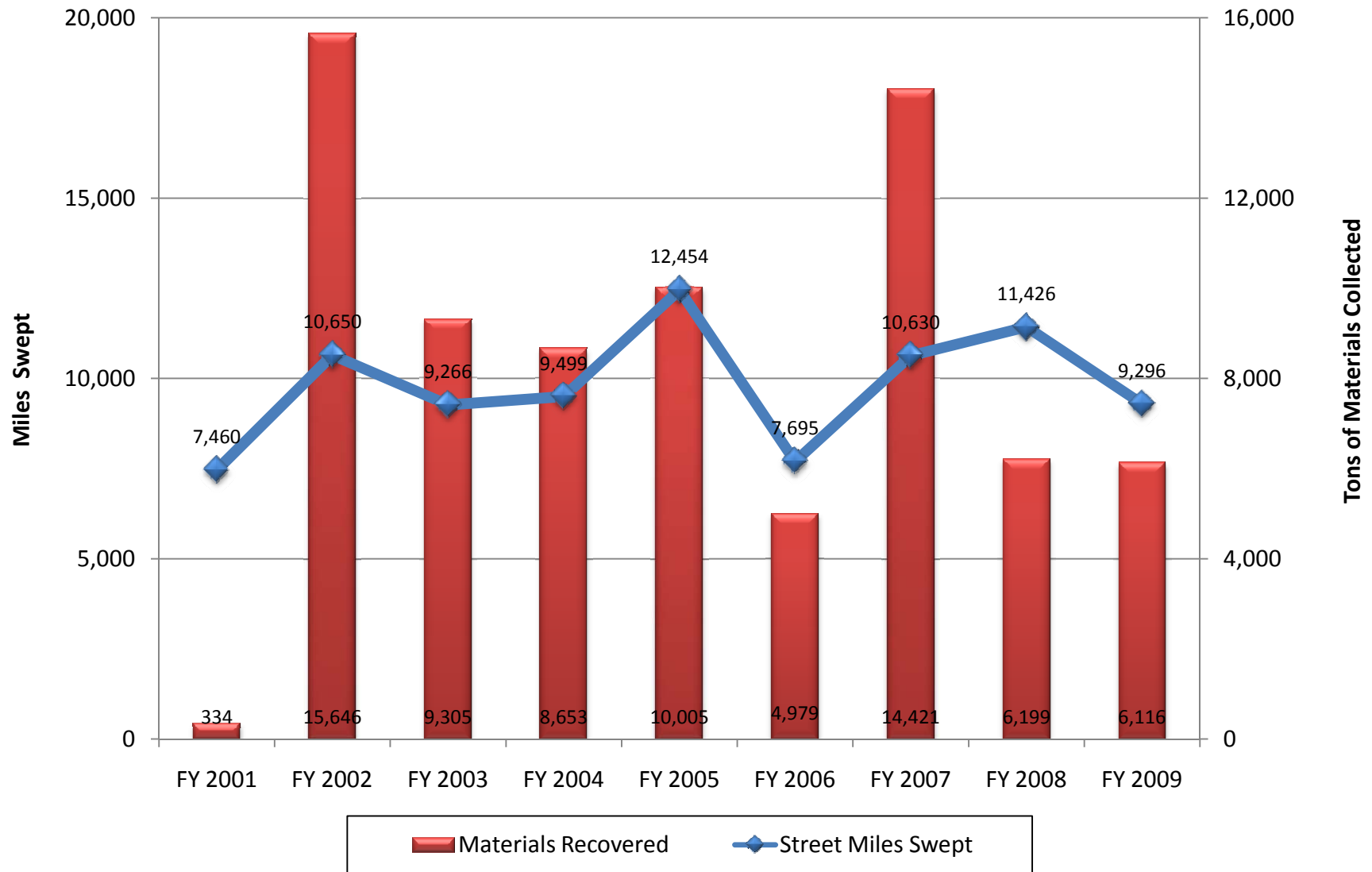
Virginia Beach Illicit Discharge Detection and Elimination Efforts



Virginia Beach Operation and Maintenance Drainage Facilities & Catch Basins Serviced



Virginia Beach Operations and Maintenance Street Sweeping



City of Virginia Beach Permitting & Compliance Number of Plans Approved

