



# NAVY REGION MID-ATLANTIC HAMPTON ROADS REGIONAL MS4 PERMIT CHESAPEAKE BAY TMDL IMPLEMENTATION

Commander Navy Region, Mid-Atlantic  
Dave Cotnoir

Hampton Roads Regional Environmental Committee  
2 June 2016



*We Exist to Enable and Sustain Warfighter Readiness*



# Overview



- BMP Opportunity Assessments
- Chesapeake Bay Action Plan
- Challenges
- Future Initiatives
- Questions





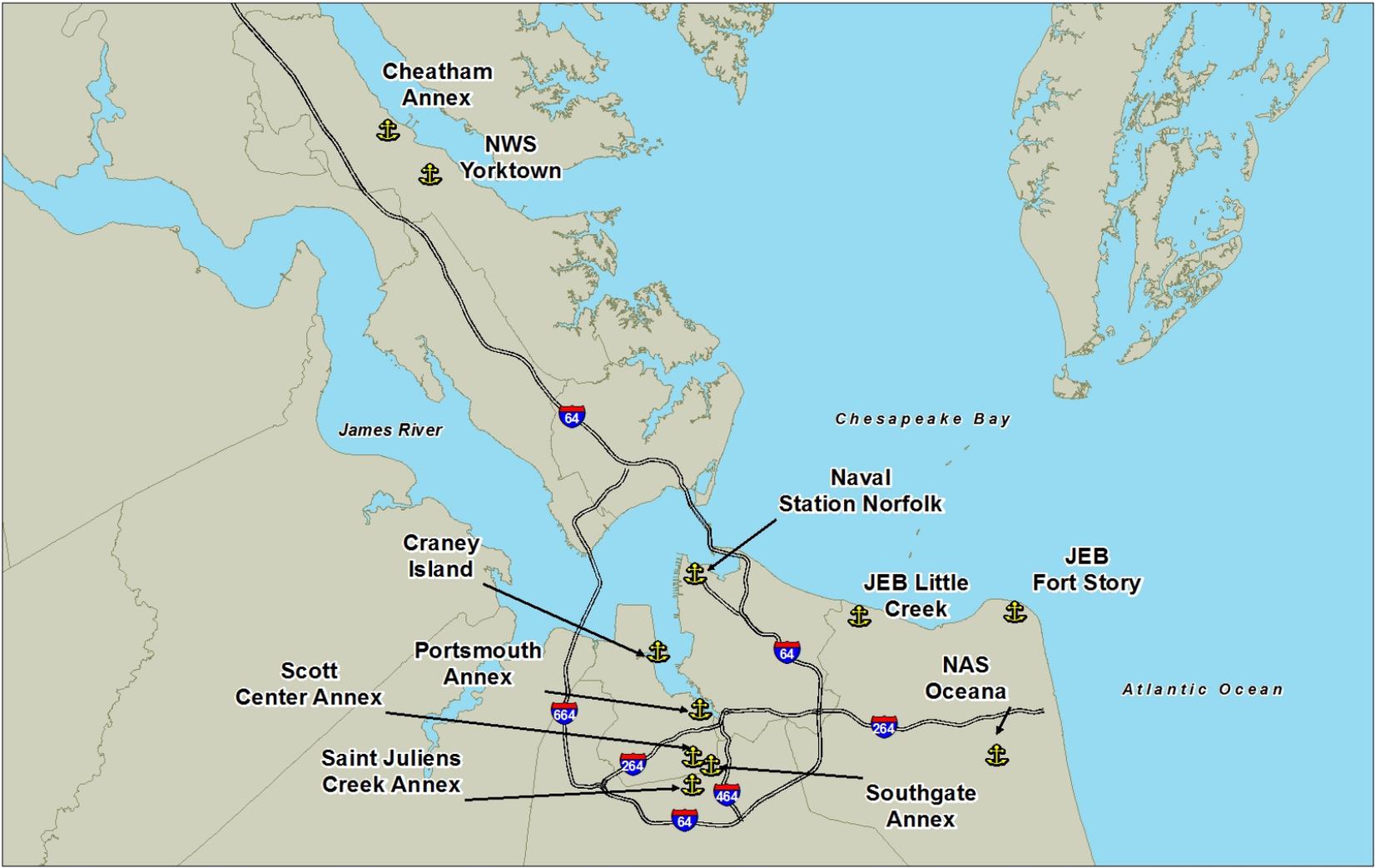
# Stormwater BMP Opportunity Assessments



- Required by E.O. 13508 but also necessary to achieve load reduction requirements from the Bay TMDL and Regional MS4 permit
- Conducted as funding allowed from 2010 to 2014
- A comprehensive installation-wide survey to identify opportunities to improve stormwater management
  - upgrading existing stormwater BMPs or
  - installing new BMPs to treat stormwater from existing facilities/areas



# BMP Opportunity Assessment Locations





# BMP Opportunity Inventory



- Over 800 opportunities in South Hampton Roads
- Naval Station – 172
- Little Creek - 163
- Fort Story - 91
- Oceana – 77 total, 3 drain to bay
- NSA HR – 39, NSA HR LRA - 6
- NSA HR PA - 47
- Scott Center Annex - 42
- St Julians Creek Annex - 81
- Southgate Annex - 39
- Craney Island - 109



# Desktop Assessment



Assess BMP Opportunities

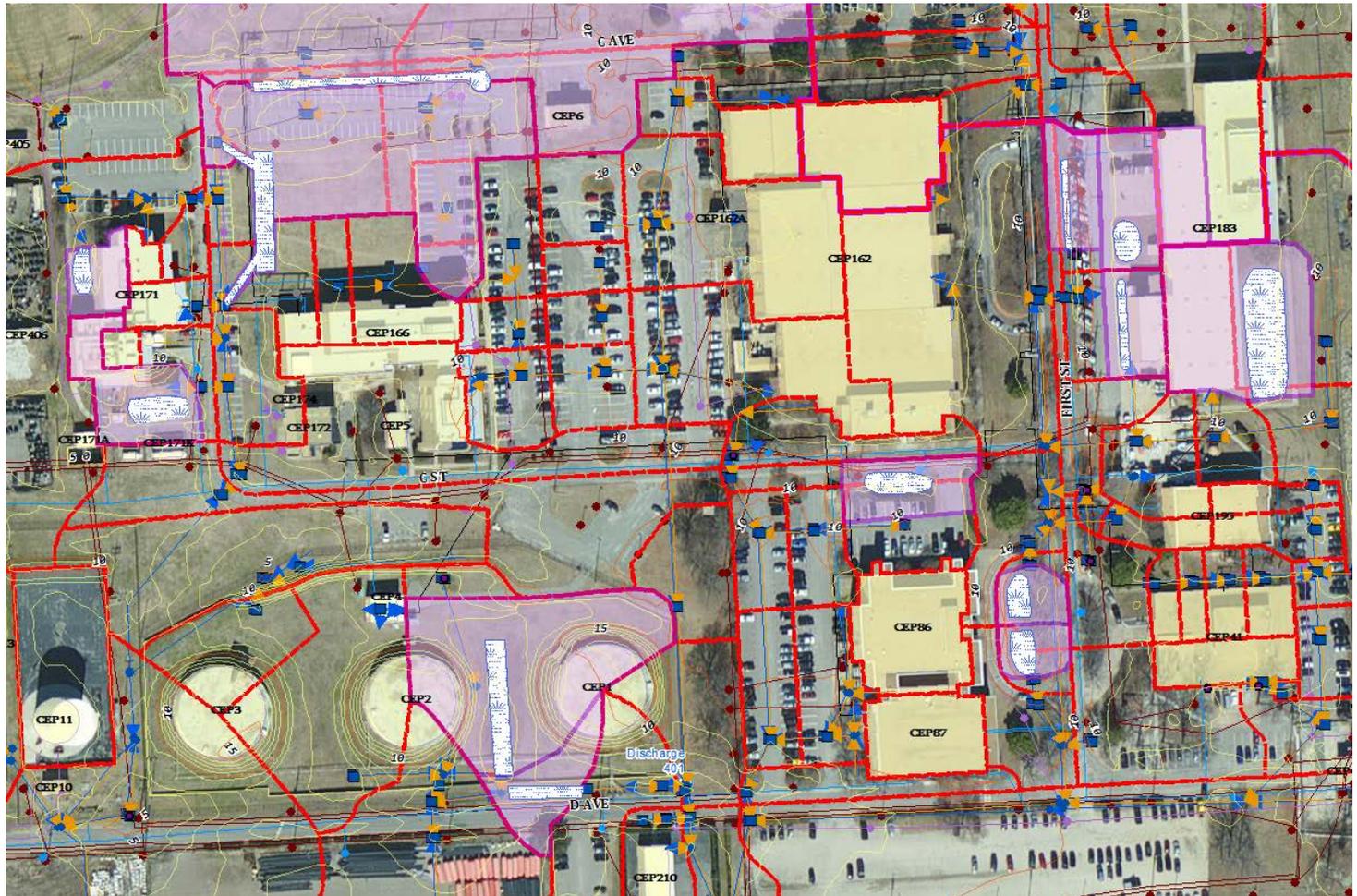
## Steps

Desktop Assessment

Site Assessment

Scoring/  
Ranking

Selection/  
Accounting





# Site Assessment



Assess BMP Opportunities

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Baker Site Assessment – Chesapeake Bay Protection and Restoration SM

DATE/TIME:	OUTFALL WATERSHED (AND SUB WATERSHED IF APPLICABLE), NOTE OTHER OUTFALL WATERSHEDS DIVERTED TO BMP:	BMP #:
	OUTFALL SHED= OTHER SHEDS=	

INSPECTION COMPLETED BY:

SITE DESCRIPTION

Facility: Navy Station Norfolk

Map Panel:

Ownership:  Public  Private  Unknown  
 If Public, Government Jurisdiction:  Local  State  DOT  Other:

EXISTING CONDITIONS

Existing Stormwater Practice:  Yes  No  Possible

Type:

Description:

Location (Roads/Bldgs/etc):

Describe Existing Site Conditions, Including Existing Site Drainage and Conveyance:

Maintenance Required?

Photos taken  Yes  No  
 GPS Camera Used  Yes  No

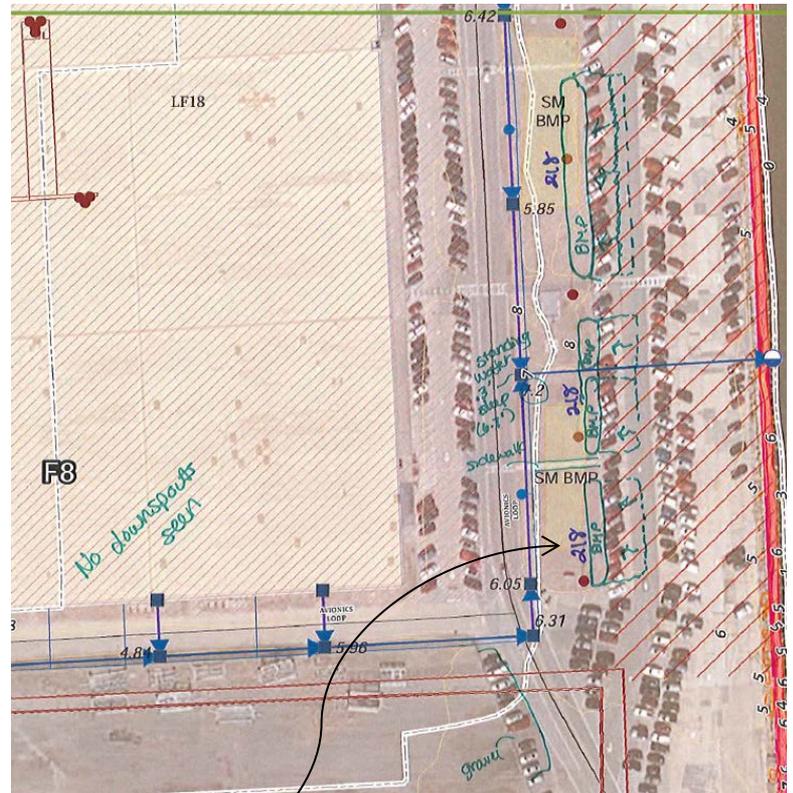
PROPOSED CONDITIONS OR RETROFIT

Description of Proposed BMP:

Existing Head Available and Points Where Measured or How Assumed:

Additional Notes or Drawings:

Page 1 of 2 Unique Site ID: \_\_\_\_\_



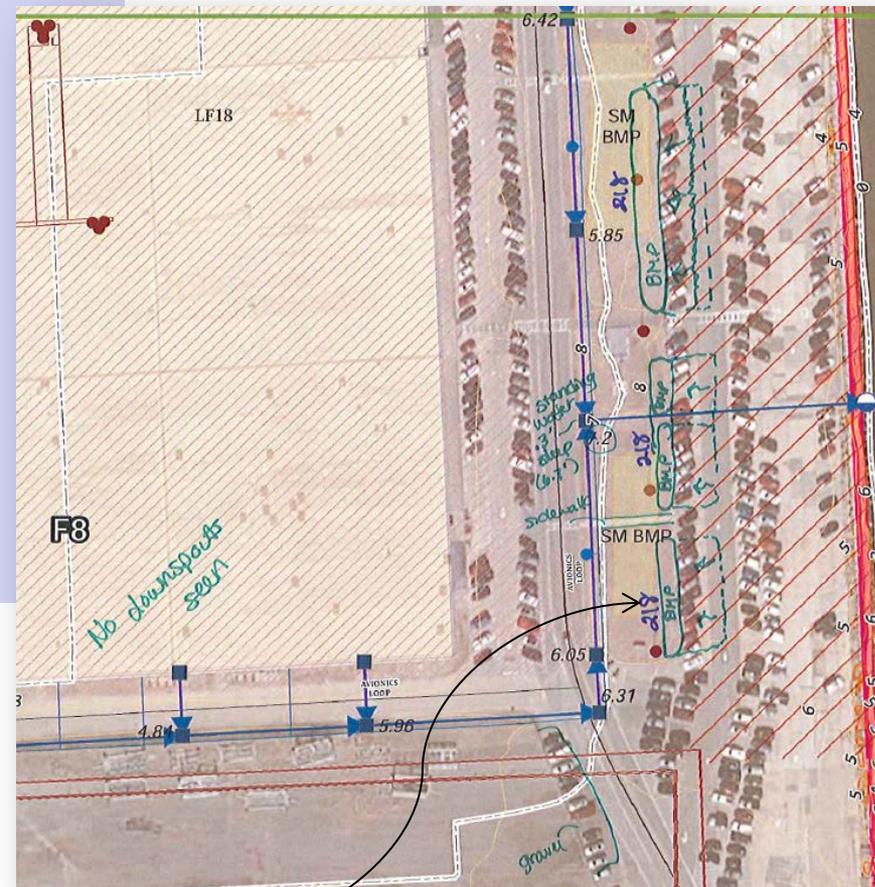
“Opportunity”



# Site Assessment



- Date, Site ID, Time, Location...
- Observed Land Uses
- Observed Utilities
- Observed Problems
- Opportunity Locations
- Approximate Drainage Area



“Opportunity”



# BMP Scoring / Ranking



Assess BMP Opportunities

## Steps

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**Environmental Impact Factors**

**Environmental Benefits**

Impervious Area, Land Use, Receiving Water Sensitivity (23.3%)

Water Quantity, Water Quality, Env. Benefits (43.3%)

Space, Access, Utilities (20%)

Construction & Maintenance (13.3%)

**Constraints**

**Relative BMP Cost Factors**





# BMP Selection / Accounting



Assess BMP Opportunities

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### SM Fact Sheet:

NAVFAC Mid-Atlantic - NMC Portsmouth Stormwater Opportunity Assessment  
Portsmouth, VA

**Opportunity Information**

ID	SM-002-1
Subwatershed	002
Drainage Area	0.41
Impervious Estimate	32%
Land Use	Commercial
Location	On the northwest corner of the intersection of Barton Ave and Goodwin Rd
Proposed BMP Type	Bioswale
Site Description	Runoff from both sides of road and adjacent grassed areas drains to curb inlet on the west side of the road.

- Site Solutions:**
- Install a curb cut near the intersection to divert water from the road into the grassed area where BMP is proposed.
  - Install a bioinfiltration facility that ties back into the existing storm drain system on other side of the brick wall that surrounds the west entrance, or back onto street if the first option is not feasible.
  - Pick up additional drainage area as possible by diverting water from catch basins referred to under bullet 2.

**Prioritization Information**

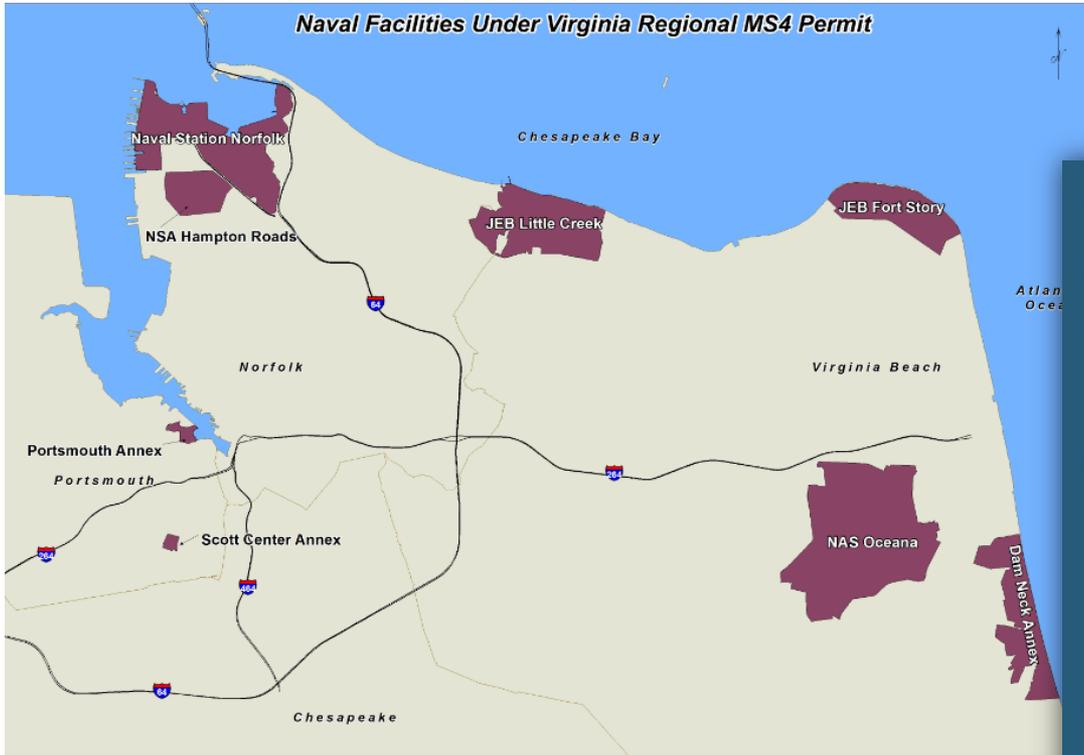
Rank	23/47
Total Score	96
Subscores from Ranking Categories:	
Environmental Characteristics	16 of 50
BioBn	42 of 50
Construction	27 of 30
Construction Impact	11 of 20
Cost Estimate	
Design & Construction	\$11,600



SM-002-1



# Chesapeake Bay TMDL Action Plan Hampton Roads Installations



**Chesapeake Bay TMDL Action Plan**  
Hampton Road Installations  
Contract No: N62470-10-D-3000: WE21

Draft | June 2015

Prepared for:  
NAVFAC Mid-Atlantic  
Water Compliance Section  
Norfolk, VA 23511

Prepared by:  
Michael Baker Jr., Inc.  
A Michael Baker International Company  
3601 Eisenhower Avenue  
Alexandria, VA 22304



# MS4 Regulated Areas





# Existing Source Loads



## Existing Source Loads for the James River Basin (Permit Table 2a)

Subsource	Pollutant	Total Existing Acres Served by MS4 (06/30/09)	2009 EOS Loading Rate (lbs/acre/yr)	Estimated Total POC Load Based on 2009 Progress Run (lbs/yr)
Regulated Urban Impervious	Nitrogen	2,768	9.39	25,990
Regulated Urban Pervious		3,577	6.99	25,006
Regulated Urban Impervious	Phosphorus	2,768	1.76	4,871
Regulated Urban Pervious		3,577	0.5	1,789
Regulated Urban Impervious	Total Suspended Solids	2,768	676.94	1,873,668
Regulated Urban Pervious		3,577	101.08	361,599



# Required Pollutant Reductions



## Total POC Reduction Required During the 1st Permit Cycle for the James River Basin (Permit Table 3a)

Subsource	Pollutant	Total Existing Acres Served by MS4 (06/30/09)	First Permit Cycle Required Reduction in Loading Rate (lbs/acre/yr)	Total Reduction Required First Permit Cycle (lbs/yr)
Regulated Urban Impervious	Nitrogen	2,768	0.04	110.7
Regulated Urban Pervious		3,577	0.02	71.5
Regulated Urban Impervious	Phosphorus	2,768	0.01	27.7
Regulated Urban Pervious		3,577	0.002	7.2
Regulated Urban Impervious	Total Suspended Solids	2,768	6.67	18,462
Regulated Urban Pervious		3,577	0.44	1,574



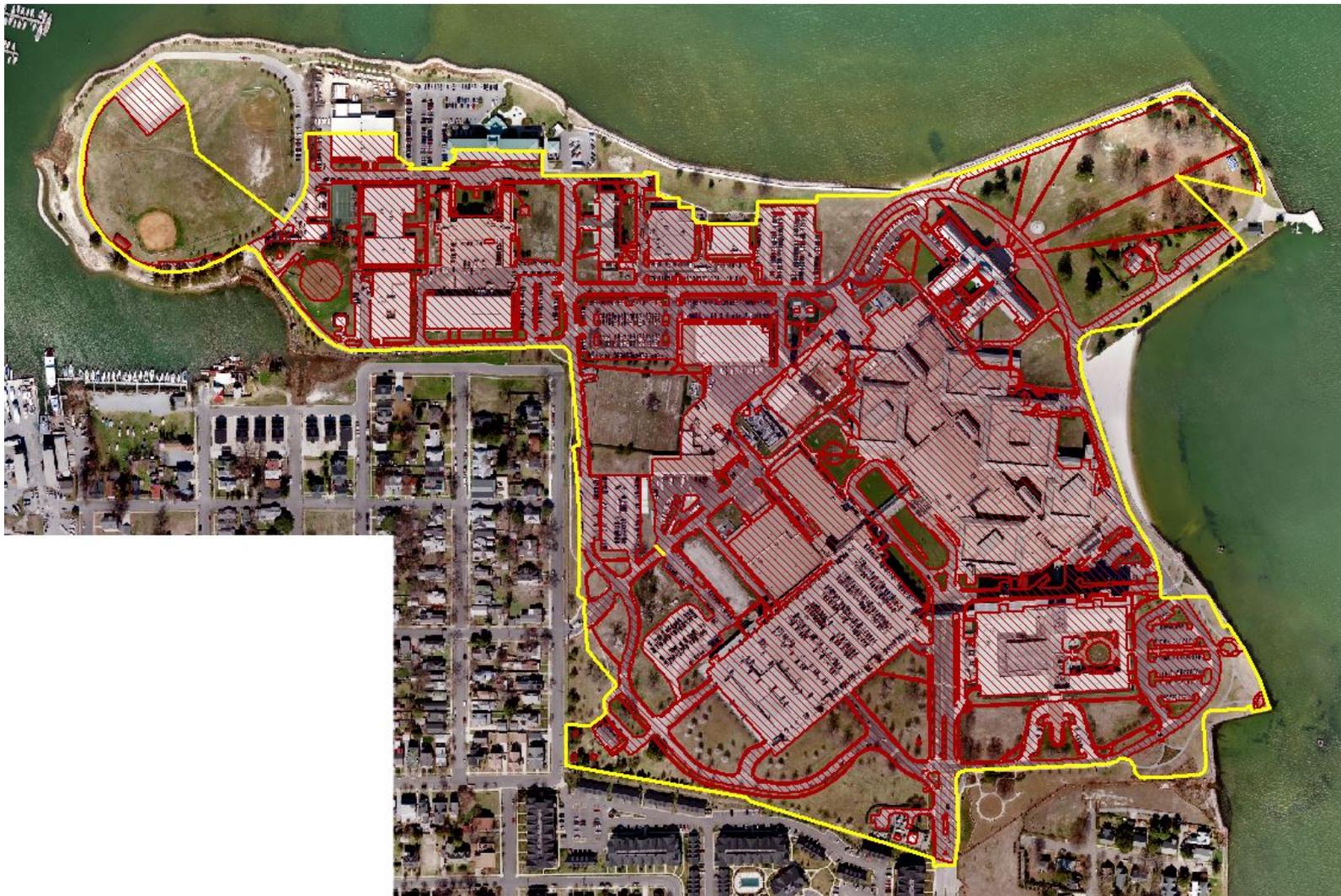
# Existing Source Loads and Required Reductions



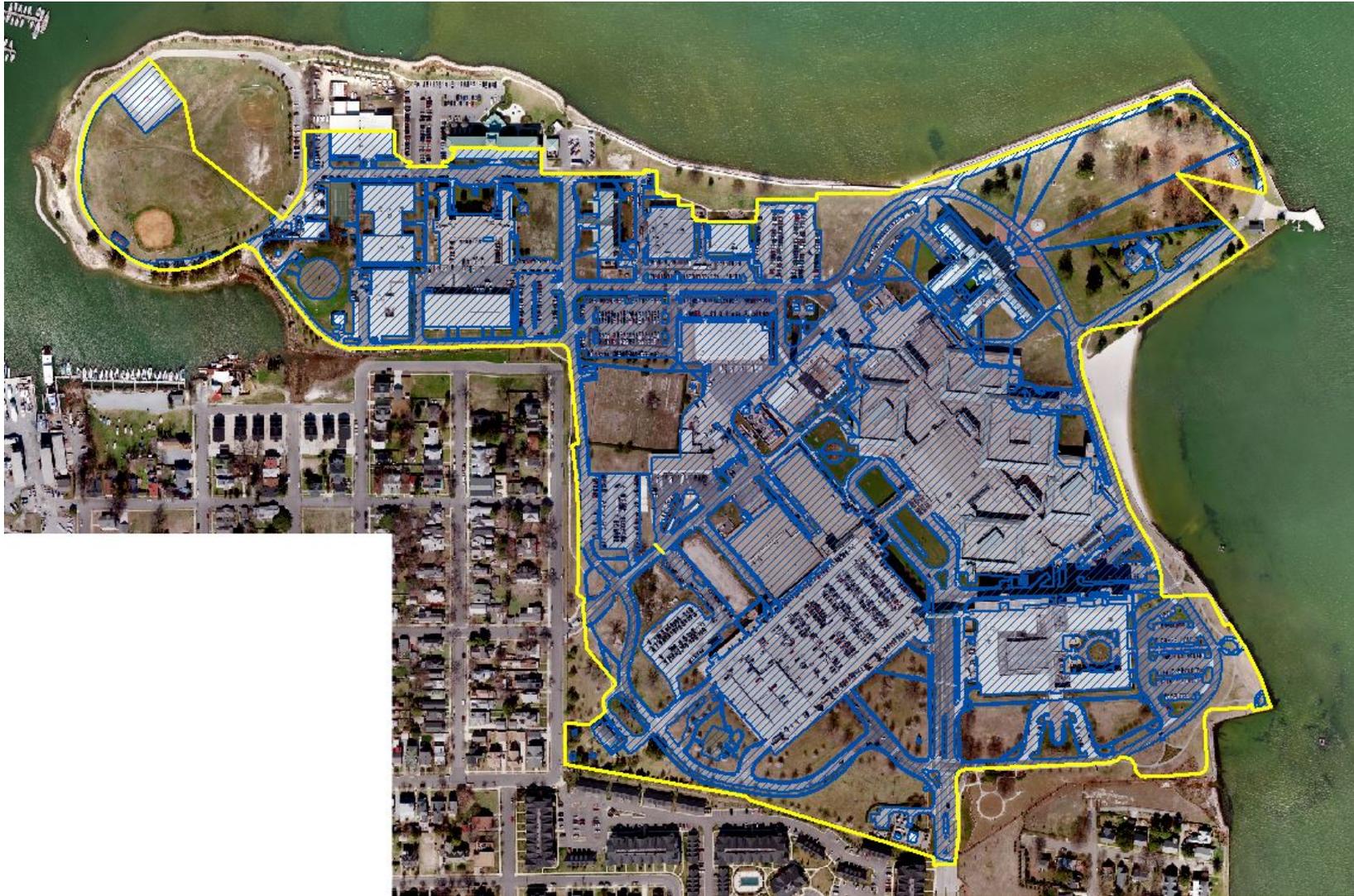
	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
Existing Source Loads (2009)	52,109	6,764	2,263,156
Existing Source Reductions (2025)	3,912	920	410,471



# New Source Loads – 2009 Impervious Area



# New Source Loads – 2014 Impervious Area





# New Source Loads (2009-2014)

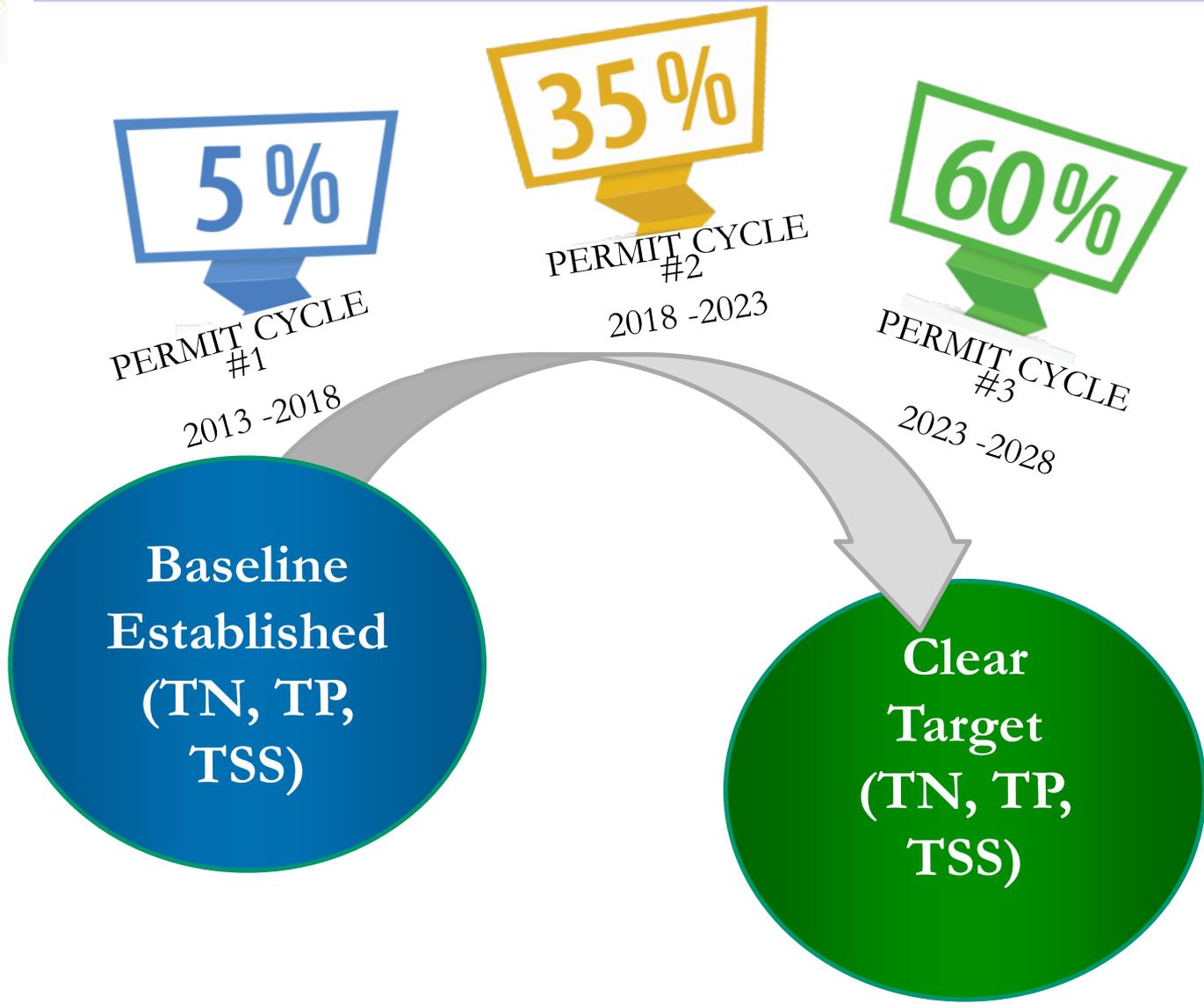


IMPERVIOUS REGULATED AREA INCREASE (AC)	ADDITIONAL TN (LBS/YR)	ADDITIONAL TP (LBS/YR)	ADDITIONAL TSS (LBS/YR)
64.0	153.6	80.6	36,845





# WIP Phased Implementation





# Load Reduction from Existing BMPs



	TN (lbs/yr)	TP (lbs/yr)	TSS (lbs/yr)
Reductions from Jan. 2006 to June 2009 BMPs	138.98	34.12	16,595.25
Reductions from July 2009 to June 2014 BMPs	334.36	75.12	35,305.50





# Required Load Reduction Summary



	Nitrogen (LB/yr)	Phosphorus (LB/yr)	Total Suspended Solids (LB/yr)
2018 Existing Source Reduction	196	46	20,524
2023 Existing Source Reduction	1,369	322	143,668
2028 Existing Source Reduction	2,347	552	246,288
<i>Existing BMPs Credit</i>	<i>533</i>	<i>109</i>	<i>51,901</i>
2018 Construction Offset	7.7	4.0	1,842
2023 Construction Offset	54	28	12,894
2028 Construction Offset	92	48	22,104
<b>2018 Remaining Reduction</b>	<b>-330</b>	<b>-59</b>	<b>-29,535</b>
<b>2023 Remaining Reduction</b>	<b>1,093</b>	<b>291</b>	<b>127,027</b>
<b>2028 Remaining Reduction</b>	<b>2,440</b>	<b>600</b>	<b>268,392</b>



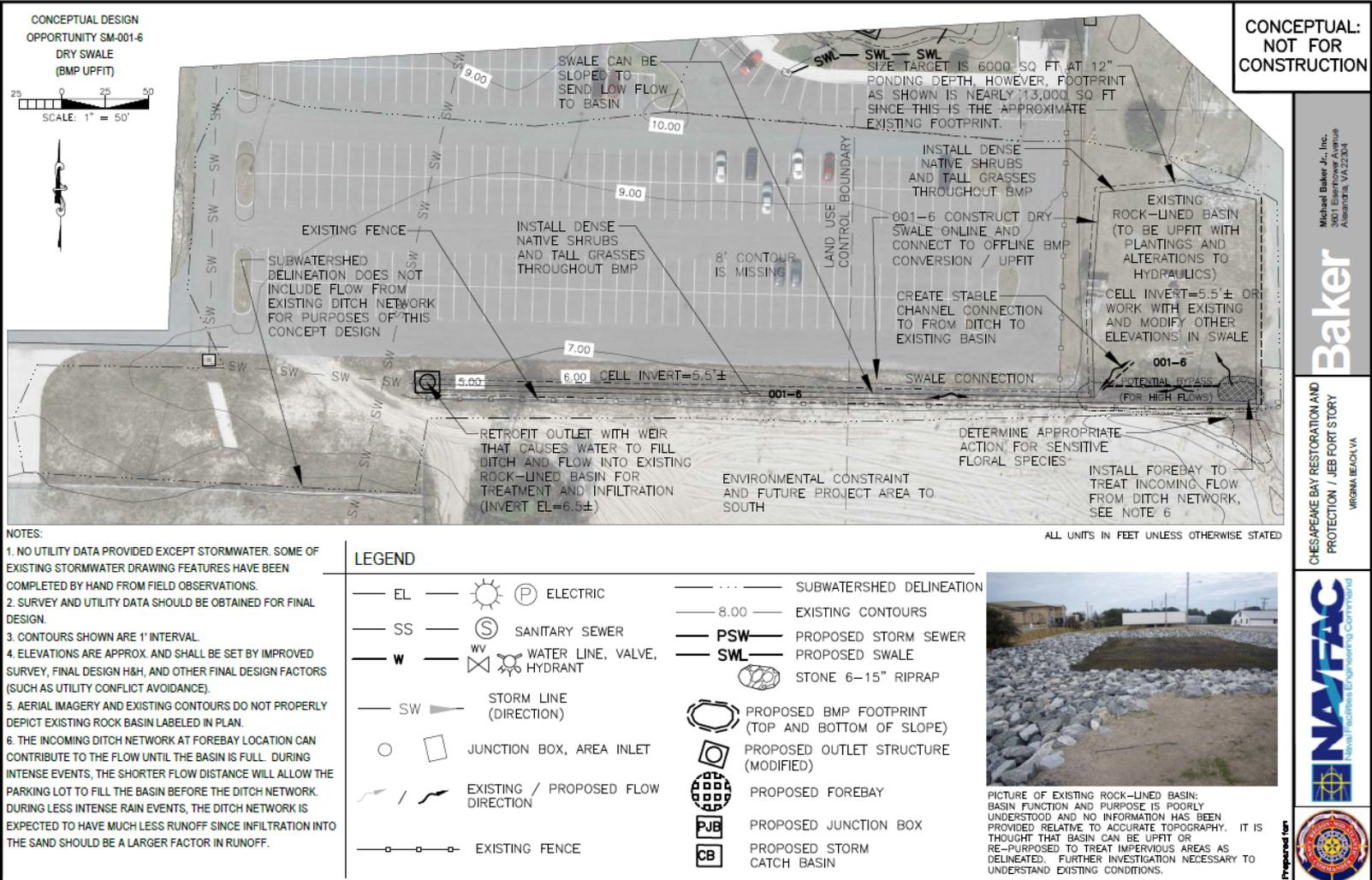
# Required BMPs and Funding



- Approximately 200 BMPs by 2023
  - Cost estimated at \$60-75 M
- Approximately 400 additional BMPs by 2028
  - Cost estimated at \$120-150 M
- Funding not allocated, hoping to find more cost effective BMPs
- Concept designs prepared for 47 BMPs
- FY15 EOY award of 142 additional concept designs to meet 2023 reductions
- BMPs being selected based on rankings in BMP Opportunity Assessments



# Conceptual Plans





# Challenges



- Funding
  - DoD budget to sustain mission readiness is constrained
  - Significant compliance costs for implementation and BMP operation and maintenance
    - Virginia Navy-Hampton Roads installations projecting \$225M by 2028
    - Estimating \$5K / yr / BMP (700 new BMPs by 2028)
  - Three to five year lead time to request projects
- Chesapeake Bay TMDL
  - 2017 Mid-point Assessment and EPA evaluation of DoD progress
  - Phase III Watershed Implementation Plan development and coordination
  - Reporting coordination with Bay jurisdictions



# Future Initiatives



- Enhance collaborative efforts within CBP Partnership
  - Outreach, partnering and stewardship activities
  - Support improvement of modeling tools
  - Identifying work plan actions / commitments and additional funding streams
- Developing strategy for implementing the Protocol for Setting Federal Targets, Reporting and Verifying BMPs
  - Considering scale of reporting and planning for the purposes of the Chesapeake Bay Program versus compliance requirements
- Bay TMDL Implementation
  - Comply with stormwater permits and support development of Phase III WIPs
  - Continue to refine land use and best management practices data
  - Report annual progress

# Questions

