

# SEMI-ANNUAL REPORT FY 2017

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HRSD  
1434 Air Rail Avenue  
Virginia Beach, VA 23455

April 27, 2017

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### 1. INTRODUCTION AND PURPOSE

On February 23, 2010, HRSD entered into an Amended Consent Decree (“Consent Decree”) with the United States of America and the Commonwealth of Virginia for the purpose of fulfilling the objectives of the Clean Water Act and the Virginia State Water Control Law. This Consent Decree has been modified four times by agreement of all parties in 2011, 2013, 2014, and 2017. In December 2014, the Special Order by Consent (SOC) with the DEQ and thirteen localities was modified and HRSD is no longer part of that order.

The Consent Decree requires HRSD to perform, among other things, the following tasks:

- Implement a flow, pressure, and rainfall monitoring program;
- Coordinate with the Localities to develop a Regional Hydraulic Model;
- Prepare a plan for and conduct a condition assessment program;
- Construct specified interim system improvements;
- Develop and implement a Sanitary Sewer Overflow (SSO) Response Plan;
- Develop a Regional Wet Weather Management Plan in consultation with the Localities;
- Update and implement a Management, Operations and Maintenance (MOM) Program; and
- Prepare and submit a variety of periodic and event-driven reports.

This Semi-Annual Report is submitted pursuant to Section XVII of the Consent Decree. HRSD has prepared this Semi-Annual Report in accordance with the above requirements to apprise the EPA (representing the United States of America) and the DEQ (representing the Commonwealth of Virginia) of steps taken toward meeting the obligations of the Consent Decree. Specifically, this Semi-Annual Report summarizes the work and activities undertaken by HRSD from July 1, 2016, through December 31, 2016, and the planned work for the remainder of FY 2017.

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## 2. MAJOR COMPLIANCE ACHIEVEMENTS

### 2.1 Flow, Pressure, and Rainfall Monitoring Program

#### 2.1.1 Ongoing System Monitoring

Following completion of the Consent Decree required 12-month flow, pressure, and rainfall monitoring period on March 11, 2011, HRSD continues to maintain a wide-scale monitoring network. Regular manual data review has been conducted and unreliable data has been flagged in the system. In the first six months of FY 2017, HRSD has:

- Installed Flow Meter at MMPS-301 (City Center Blvd) on 7/6/16 following construction
- Installed Flow Meter at MMPS-211 (Cedar and Dominion) on 7/22/16 following construction
- Re-installed Flow Meter at MMPS-033 (Norchester PS) on 7/28/16 following construction
- Installed Flow Meter at MMPS-302 (Lawnes Point TP) on 8/4/16
- Installed Flow Meter at MMPS-299 (Courthouse PRS) on 10/26/2016
- Temporarily removed Flow Meter at MMPS-023 (PVC at Williamsburg TP Influent) on 12/21/16
- Installed Pressure Sensor at MMPS-301 (City Center Blvd) on 7/6/16 following construction
- Re-installed Pressure Sensor at MMPS-211 (Cedar and Dominion) on 7/25/16

A portal to allow access for the Localities to the HRSD flow, pressure, and rainfall data from the FPR sites (Telog server data) was developed and implemented in February 2009 and continues to be used and enhanced.

### 2.2 Condition Assessment Plan

#### 2.2.1 Implementation of the Condition Assessment Plan

##### 2.2.1.1 Condition Assessment Field Activities

HRSD has completed all Consent Decree required Condition Assessment Field Activities per the Preliminary Condition Assessment Report prior to the completion milestone of October 31, 2013. See Section 4 of this report for details on the Condition Assessment Field Activities.

##### 2.2.1.2 Prompt Repairs

HRSD continues to implement a program to identify and address HRSD's collection system infrastructure deficiencies found during the course of condition assessment field activities that require prompt attention (as defined in the approved Condition Assessment Plan). Defects are evaluated to determine if they:

- Pose an immediate threat to the environment;
- Pose an imminent threat to the health and safety of the public;
- Create operational problems that may result in SSOs; or
- Contribute to substantial inflow to the system.

If such a defect is identified through the inspection process, it is assessed to determine the appropriate repair necessary. See Section 4 of this report for details on the Condition Assessment Program Prompt Repair status.

## 2.2.2 Rehabilitation Action Plan Implementation

The approved Rehabilitation Action Plan contains 61 projects to be completed in three phases. Table 2-1 shows the status of the Plan phases through December 31, 2016. Projects completed this period are included in Appendix A project certifications.

Phase	Number of Projects Completed	Total Number of Projects	Estimated Cost of Completed Projects	Estimated Total Cost of All Projects in Phase
0	9	10	\$27,150,825	\$29,206,825
1	3	21	\$9,426,965	\$61,844,965
2	1	30	\$15,000	\$96,625,380

## 2.3 Interim System Improvements (ISI)

Appendix 5 to the Consent Decree lists thirty-three projects that are required to be completed within 8 years of the Date of Entry of the Consent Decree. The modification to the Consent Decree in FY 2013 has added eighteen (18) new projects for a total of fifty-one (51). Modification No. 3 which was entered by the court in August 2014 added two (2) projects and removed eight (8), leaving a total of forty-five (45) Interim System Improvement projects. HRSD has each of these projects scheduled as part of its Capital Improvement Program with completion prior to February 23, 2018, with the exception of the recent additions which have a December 2018 deadline. A number of these projects are underway with several in construction during this fiscal year. As required by Paragraph 32 of the Consent Decree, HRSD will provide a certification by a Professional Engineer that each of these projects was completed satisfactorily to the EPA and DEQ. HRSD is on schedule to meet the milestones with four (4) projects completed during this period. A complete update for the fiscal year will be provided in the Annual Report. Table 2-2 provides a list of ISI projects that were completed within this reporting period.

CD Ref Number	CIP Number	Project Name	Consent Decree Project Cost	Actual Project Cost
23	YR-101	Coliseum Drive Pressure Reducing Station	\$6,000,000	\$13,026,473 (includes storage tank not part of original scope)
25	VIP-130	Norchester St. Pump Station Replacement/Rehabilitation	\$2,000,000	\$7,365,652
44	JR-117-1	Jefferson Avenue Interceptor Force Main Replacement Phase I	\$4,500,000	\$6,662,022
50	AT-116-1	Courthouse Interim Pressure Reducing Station	\$1,500,000	\$2,840,627



## 2.4 Management, Operations, and Maintenance (MOM) Program

### 2.4.1 Implementation of MOM Program

HRSD continues to implement its MOM Program. This includes details pertaining to management, operations, and maintenance of nearly all aspects of HRSD's system, including quantitative performance measures, implementation of continuous improvement initiatives, and special programs coordinated in the region such as the HR FOG. HRSD performed an annual performance assessment of its MOM Plan in accordance with Section 5 of the MOM Program following completion of FY 2016.

### 2.4.2 Quantitative Performance Measures

The revised MOM Program, approved on September 27, 2011, included many performance measures to help HRSD understand the performance of program elements. Paragraph 34 of the Consent Decree established a list of six specific measures that are subject to stipulated penalties, including: gravity sewer main inspection, air release valve preventative maintenance, gravity sewer cleaning, pumping station annual preventative maintenance, back-up generator annual preventative maintenance, and non-invasive force main inspection near drinking water supply reservoirs. Work has continued to implement and track these performance measures and the results will be presented in the FY 2017 Annual Report. HRSD is on track to meet or exceed all the performance measures identified in Paragraph 34 of the Consent Decree.

## 2.5 Regional Wet Weather Management Plan

Modification No. 3 to the Consent Decree was entered by the Court in August 2014 and establishes a new deadline of October 1, 2017 for RWWMP submittal. See Section 7 of this report for additional details.

HRSD has continued in FY 2017 to develop the RWWMP through completion of the Alternatives Analysis Report which was submitted July 29, 2016. Since that time, the solutions for the selected Level of Service are being optimized for inclusion in the RWWMP.

## 2.6 SSO Emergency Response Plan

An annual update of the approved Sanitary Sewer Overflow (SSO) Response Plan to the EPA and DEQ is being prepared to be submitted to the EPA/DEQ. This plan continues to be implemented by HRSD. A copy of the most recently approved plan is posted to the [www.HRSD.com](http://www.HRSD.com) website.

## 2.7 Coordination with Localities

There was a wide variety of coordination activities in the first half of FY 2017 amongst HRSD and the localities. These activities included:

- Capacity Team Meetings with the Localities to review progress and responsibilities of the Consent Decree and Memorandum of Agreement;
- Briefings of the Directors' of Utilities Committee to share progress on compliance with the Consent Decree;
- A regional SharePoint website continues to be updated to collaborate with and provide documents to the regional Capacity Team; and
- Copies of the Annual Report were provided from HRSD to the Localities.

## 2.8 Public Participation

HRSD held its annual information meeting on January 24, 2017, and published a newsletter by February 23, 2017, the anniversary of the Date of Entry. Information and approved plans continue to be posted to HRSD's website, which is accessible to the public.

## 2.9 Post-RWWMP Implementation Monitoring and Performance Assessment

No action has been performed for this item as it is a later requirement of the Consent Decree.

## 2.10 Reporting

### 2.10.1 Annual Report

HRSD completed an FY 2016 Annual Report as required by the Consent Decree, and submitted it to the EPA and DEQ on October 28, 2016.

### 2.10.2 Quarterly Briefing

Quarterly briefings were held per Paragraph 90 of the Consent Decree, on September 20, 2016, and January 24, 2017, with attendance by HRSD, the EPA, and the DEQ. The briefing on September 20, 2016, was rescheduled by mutual consent.

## 2.11 Summary of Submittals

Table 2-3 summarizes the status of the documentation that HRSD has submitted to the EPA and DEQ under the Consent Decree in the first half of FY 2017.

Consent Decree Submittal	Submittal Date
Alternatives Analysis Report	July 29, 2016
Quarterly Briefing	September 20, 2016
Annual Report	October 28, 2016

### 3. COMPLIANCE DEADLINES AND MILESTONES

In the first half of FY 2017, HRSD expended considerable resources in both time and money to achieve the compliance goals of the Consent Decree. All deliverables were submitted on or before their due dates and all milestones were met.

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## 4. CONDITION ASSESSMENT ACTIVITIES

HRSD has continued with its Condition Assessment Program as required by Section VII, Paragraph 25 of the Consent Decree, in FY 2017 with significant progress made in many aspects of the program. The following subsections describe the progress made in each aspect.

### 4.1 Gravity Main

All gravity sewer main inspections were completed by the November 2011 milestone.

### 4.2 Force Main

All force main inspections were completed by the October 2013 milestone.

### 4.3 Pumping Facilities

All pump station inspection work was completed by the November 2011 schedule deadline.

### 4.4 Prompt Repairs

Through the Condition Assessment Program, HRSD has identified 79 defects in the HRSD sanitary sewer system (primarily gravity sewer pipe and manholes) which have been deemed to be Prompt Repairs. These defects have been grouped into larger repair work orders and are currently in various stages of planning, design, or construction. The following Table 4-1 provides details on all known Prompt Repairs as of December 31, 2016.

Table 4-1. Summary of Prompt Repairs						
Name	Location	Jurisdiction	Line Number	Summary of defect	Number of Defects	Status
41st Street	41st Street east of intersection with Jefferson Ave; between MHs NG-112-12175 and NG-112-11783	Hampton	NG-112	Pipe lining failure	1	Complete
Beach Road	West side of Beach Road opposite intersection with Wade Road between MH NG-088-0 and NG-088-155.	Hampton	NG-088	Pipe connection at manhole needs repair	1	Complete
Beach Road	West side of Beach Rd. between intersection with Bonneville Dr. and Catalina Drive between MH NG-088-1654 and NG-088-1863	Hampton	NG-088	Lateral connection to mainline needs repair	4	Complete

Table 4-1. Summary of Prompt Repairs

Name	Location	Jurisdiction	Line Number	Summary of defect	Number of Defects	Status
	Approximately in front of 112 Beach Rd between MH NG-088-0636 and NG-088-0970	Hampton	NG-088	Mainline pipe defects		
	Beach Rd. approximately 170 ft. south of Wade Rd. intersection	Hampton	NG-088	Manhole defects		
	West side of Beach Road opposite intersection with Hall Road. Between MHs NG-088-1260 and NG-088-1316	Hampton	NG-088	Mainline punctured by another utility directional drilling		
Various Manholes	North King St.	Hampton	NG-078	Manhole defects	3	Complete
	E. Pembroke Ave. at Washington St.	Hampton	NG-084	Manhole defects		
	Bainbridge Blvd. between Beech St. and Wilton St.	Norfolk	SG-153	Manhole defects		
Jefferson Ave	Jefferson Ave. between 40th St and 41st St	Newport News	NG-114	Mainline pipe defects	2	Complete
	Jefferson Ave between 39th and 40th St	Newport News	NG-114	Mainline pipe defects		
Newtown Road	Newtown Rd. at Virginia Beach Blvd (ne corner of intersection)	Virginia Beach	SG-112	Manhole defects and mainline pipe defects	3	Complete
	Newtown Rd. approx. 415 ft. north of Princess Anne Rd.	Virginia Beach	SG-113	Manhole defects		
	Newtown Rd. at Elam Ave.	Virginia Beach	SG-113	Manhole defects		
Mercury Blvd	West Mercury Blvd	Hampton	NG-099	Mainline pipe defects	3	To be completed as part of CIP BH-150
	West Mercury Blvd	Hampton	NG-057	Mainline pipe defects		
	West Mercury Blvd; near Beechwood Rd.	Hampton	NG-057	Mainline pipe defects		
Various Repairs	North Hope Street	Hampton	NG-160	Pipe lining failure	3	Complete
	Old Atlantic Avenue; near intersection with Liberty Street	Chesapeake	SG-148	Pipe lining failure		
	South of Steamboat Creek PS	Norfolk	SG-102	Manhole defects		
Witchduck	South Witchduck Road	Virginia Beach	SF-141	Corroded FM bolts	1	Complete

Table 4-1. Summary of Prompt Repairs

Name	Location	Jurisdiction	Line Number	Summary of defect	Number of Defects	Status
Pin Oak Rd	Pin Oak Road; Residential neighborhood	Newport News	NG-175	Mainline Pipe Defects	1	Complete
Bainbridge Blvd	Bainbridge Blvd near I-464	Norfolk	SG-145	Mainline Pipe Defects	2	Complete
	Bainbridge Blvd near I-464 just upstream of PS	Norfolk	SG-145	Mainline Pipe Defects		
Shell Rd - Hampton	Shell Road	Hampton	NG-141	Mainline Pipe Defects	2	Complete
	Harris Creek Road	Hampton	NG-086	Mainline Pipe Defects		
Pearl Street	Pearl Street near Ligon Street near I-464/I-262 Interchange	Norfolk	SG-202	Mainline Pipe Defects	2	Complete
	Pearl Street near Ligon Street near I-464/I-262 Interchange	Norfolk	SG-202	Mainline Pipe Defects		
Deep Creek	Deep Creek force main on suction side of Deep Creek PRS	Chesapeake	SF-143	FM defects	1	Complete
Wythe Lagoon	Wythe Lagoon Siphon	Hampton	NG-151	Siphon defects	1	Complete
Pump Station Hatches	Ingleside Road Pump Station	Norfolk	PS#148	Wet Well Hatch	1	Complete
Pump Station Wet Wells	Rodman Ave Pump Station Wet Well	Portsmouth	PS#145	Wet Well Defects	1	To be completed as part of CIP VIP-173
Luxemburg Ave	Influent line to Luxemburg Avenue pump station.	Norfolk	SPS-113	Defect at manhole connection	1	Complete
Gowrie and Farragut	Manhole near creek at end of Gowrie Avenue	Norfolk	SG-068	Manhole defects	2	Complete
	Manhole near creek at end of Farragut Avenue	Norfolk	SG-068	Manhole defects		
Shipyard Sewer	Outside of 33 <sup>rd</sup> street Pump Station	Newport News	33 <sup>rd</sup> Street	Mainline pipe defects	3	Work order in development
	31 <sup>st</sup> Street	Newport News	31 <sup>st</sup> Street	Mainline pipe defects		
	38 <sup>th</sup> Street	Newport News	38 <sup>th</sup> Street	Mainline pipe defects		
Chesterfield Blvd	Gravity influent to Chesterfield PS	Norfolk	SG-207	Mainline pipe defects	2	Complete
	Gravity influent to Chesterfield PS	Norfolk	SG-207	Mainline pipe defects		
State Street FM	Force main at State St Pump Station	Norfolk	SF-097	Thin wall	1	Complete
Berkley Avenue	Manholes on Berkley Avenue	Norfolk	SG-098	Manhole defects	2	Complete
	Manholes on Berkley Avenue	Norfolk	SG-098	Manhole defects		

Table 4-1. Summary of Prompt Repairs

Name	Location	Jurisdiction	Line Number	Summary of defect	Number of Defects	Status
Newmarket Creek	Orcutt Avenue and Paul street at influent to Newmarket Creek PS	Newport News	NG-127	Manhole Defects	2	To be completed as part of CIP BH-150
	Orcutt Avenue and Paul street at influent to Newmarket Creek PS	Newport News	NG-127	Pipeline defects		
Laskin Road	Laskin Road Force Main	Virginia Beach	SF-135	Hit by third party	1	Complete
Elizabeth River	East side of Elizabeth River Crossing	Chesapeake	SF-143	Thin wall	1	Complete
14 <sup>th</sup> Street	Manhole at Jefferson Ave and 14 <sup>th</sup> street	Newport News	NG-130X	Manhole Defect	1	Complete
Army Base	Baker Street and Hampton Blvd	Norfolk	SF-003	Pipeline defect	1	Complete
Mercury and Orcutt Intersection	W Mercury Blvd	Hampton	NG-127	Manhole Defect	1	Complete
Claremont Avenue Discharge	Harbor Lane and 14 <sup>th</sup> Street	Newport News	NG-130	Pipeline Defect	1	Complete
Boat Harbor Outlet	Jefferson Avenue and 25 <sup>th</sup> Street	Newport News	NG-169	Pipeline Defect	1	Complete
Hickman Branch	Factory Street	Portsmouth	SG-193	Pipeline Defect	1	Complete
Terminal Avenue	Terminal Avenue	Newport News	NG-125	Pipeline Defect	1	Complete
Swannanoa and Summerset	Intersection of Swannanoa Drive and Summerset Drive	Portsmouth	SF-206	Pipeline Defect	1	Complete
Orcutt Avenue Liner	Orcutt Avenue and 79 <sup>th</sup> Street	Hampton / Newport News	NG-127	Pipeline Defect	1	Complete
Bay Shore Lane	Bay Shore Lane	Hampton	NG-095	Manhole Defects	7	Under Construction
Warwick Blvd	Warwick Blvd	Newport News	NG-130	Pipeline Defect	1	Complete
Warwick and Woodhaven	Warwick Blvd to Thorncliff Drive	Newport News	NF-015	Pipeline Defect	1	Complete
Woodland Avenue	Woodland Avenue and Ballentine Blvd	Norfolk	SG-089	Manhole Defects	6	Developing Work Order
Indian River Road	Indian River Road near Campostella	Norfolk	SF-106	Pipeline Defect	1	Complete
Powhatan Ave	Powhatan Ave	Norfolk	SG-044	Manhole Defect	1	Developing Work Order
Euclid Road	Euclid Road and Southern Blvd	Virginia Beach	SF-197	Pipeline Defect	1	Complete



Table 4-1. Summary of Prompt Repairs

Name	Location	Jurisdiction	Line Number	Summary of defect	Number of Defects	Status
Dovercourt Road	Dovercourt Road	Norfolk	SPS-108	Manhole Defect	1	Complete
Beach Road South	Beach Road between Catalina Drive and Westlawn Drive	Hampton	NG-088	Pipeline Defect	1	Developing Work Order
Hampton Institute	Hampton Institute Pump Station	Hampton	NPS-211	Pipeline Defect	1	Developing Work Order
Portsmouth Blvd	Portsmouth Blvd	Newport News	NG-125	Pipeline Defect	1	Complete
Boat Harbor Influent	Terminal Avenue Junction Box	Newport News	NG-125	Pipeline Defect	1	Complete

It is important to note that some Prompt Repairs were discovered after the FCAR and are being addressed under HRSD's ongoing MOM Program.

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## 5. SYSTEM PERFORMANCE

### 5.1 STP Performance

The HRSD system was influenced by wet weather events in the first half of FY 2017 that led to flow increases at the treatment facilities. In addition, construction related to the nutrient control program was ongoing at several of the treatment plants with minor operational events that contributed to unusual discharges from the facilities. Table 5-1 provides details on the unusual discharges from July 1 to December 31, 2016. Nine of the sixteen occurrences were fully treated effluent, and eight also occurred during Tropical Storm Julia and Hurricane Matthew which are beyond HRSD's expected Level of Service.

### 5.2 HRSD Conveyance System Performance

For the reporting period of July 1 through December 31, 2016, HRSD experienced 30 capacity-related sanitary sewer overflows (SSOs) from its system. Very significant wet weather events in excess of a 10-year recurrence interval occurred during this period, namely Tropical Storm Julia on September 21 and Hurricane Matthew on October 8. These rainfall events which accounted for all but one of the SSOs were spread across the HRSD system and exceeded any reasonable level of service. All of these events are detailed in the Sanitary Sewer Overflow Reporting System (SSORS). Details on these 30 events are available in Table 5-2.

### 5.3 Capacity Related SSOs

As part of the recent modification (No. 3) to the Consent Decree, Paragraph 88.a. requires the Semi-Annual Report to include "a discussion of the cause, significance, and response to any wet weather or capacity related SSO that occurred in the Region [sic] SS System." As discussed with and accepted by EPA/DEQ, HRSD will provide information related to these events in the Annual Reports rather than the Semi-Annual Reports.

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Table 5-1. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2016)

Date	Location	Description/Cause	Duration of Event	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
7/1/2016	Army Base	A contractor opened a NPW valve to a disconnected 2".	10 min	An operator was out on their round and noticed water running from the pipe, and onto the ground/down the storm drain. Operator called for help and was able to trace the line back to the valve that was open, and secured the valve.	250	250	NPW	ground/ storm drain	
7/13/2016	Williamsburg	A 2" Non-Potable Water (NPW) hose near the headworks building split, spraying NPW into the air and onto the ground surface.	29 min	Plant staff stopped the release by securing the 2" NPW supply valve. Flow that was in the containment area / headworks building went to the plant drain system, and was returned to the headworks. Approximately 725 gallons could not be recovered. The faulty hose was disposed of and will be replaced.	2,900	725	NPW	storm drain / James River	
8/20/2016	VIP	HRSD was notified on August 22, 2016 at a Contractors meeting at 07:30 of a Non-Potable water spill (NPW) that began at approximately 09:50 AM on August 20 and ended on August 21 at 7:30AM. A contractor working on plant site left a 4 inch NPW line running into a new process tank on Saturday August 20th and failed to secure the valve before leaving for the weekend. The process tank overflowed sometime between Saturday and Sunday morning August 21st. The spill resulted in NPW running from 9 each 2" pipes on the wall of the new process tank which will be connected to larger pipes in the future. A portion of the spill ran into an open excavation which is sheeted and has a concrete mat at the bottom, and was recovered.	See description	The valve was secured as soon as it was discovered by the contractors Sunday morning. The amount in the excavation was recovered. The total amount lost is an estimation.	15,600	6,250	NPW	ground / wetlands to south	

Table 5-1. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2016)

Date	Location	Description/Cause	Duration of Event	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
9/4/2016	Boat Harbor	The Furnace Non-Potable Water (NPW) line located along the split flow channel broke and resulted in NPW coming out of the ground along the curb. We think re-starting the furnace NPW pump after the storm passed caused a weak part of the line to break from the sudden water pressure.	6 hours	Plant operator noticed a puddle on the road at 01:00 am but thought it was from the recent rain event associated with the tropical cyclone. At 03:00 am the plant operator determined there was an underground leak and storm drain covers were installed and pumps were used to pump the captured water back into the treatment plant process. The leak recovery by pump setup completed at 04:30 am. The chlorine residual of leak at the time of discovery was 0.35 mg/L. A furnace burnout occurred starting at 05:15 am (to maintain MACT 129 compliance), and the furnace NPW was secured by plant staff once the burnout was complete at 07:00 am. After securing the flow, plant and interceptor staff excavated the break location for repairs and to determine the volume of NPW released to the ground and storm drain.	18,000	10,500	NPW	ground / James River	
9/21/2016	Army Base	Plant experienced an overflow spill from the primary clarifier influent channel. During tropical storm Julia, the facility experienced a maximum hourly rainfall amount of 1.60 inches, with a total rainfall of 8.76 inches over the storm event. The raw influent flow exceeded 36 MGD with only 2 primaries in service (each primary can handle approximately 12 MGD). This caused the influent channel covers to lift and wastewater to overflow out of the channel and into the nearest storm drain.	15 min	A third primary clarifier was immediately placed into service and the overflow subsided.	5,000	5,000	Primary clarifier influent	storm drain	Remnants of Tropical Storm Julia
9/21/2016	VIP	The VIP Plant experienced flows well above 80 MGD from the remnants of Tropical Storm Julia. The rain gauge at the facility read a maximum hourly rainfall amount of 1.3 inches, with a total rainfall of 7.8 inches over the storm event. Plant staff monitored influent water elevations at the plant site and at nearby manholes. To reduce the likelihood of overflows in residential areas, the plant was forced to bypass 53,600 gallons of chlorinated influent flow into the Elizabeth River. The influent water elevation was continuously monitored to minimize the bypassed volume. The total amount of bypassed flow was chlorinated.	60 min	Plant staff continuously monitored the influent water elevation to secure the bypass gate, minimizing the bypassed flow. The total bypass duration was 58 minutes.	53,600	53,600	Chlorinated influent	canal leading to Elizabeth river	Remnants of Tropical Storm Julia

Table 5-1. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2016)

Date	Location	Description/Cause	Duration of Event	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
9/21/2016	VIP	Treated, chlorinated plant effluent overflowed from the effluent vault into the plant short outfall channel. The plant experienced high flows due to remnants of Tropical Storm Julia, starting on 9/21/16. The rain gauge at the facility read a maximum hourly rainfall amount of 1.3 inches, with a total rainfall of 7.8 inches. Flow above 80 MGD resulted in some effluent water going over the effluent vault weir to the short outfall channel.	7 hr 39 min	The plant was designed for the use of the short outfall when plant effluent flows exceed 80 MGD. When flow subsided after the storm event, the overflow into the short outfall stopped.	Flow over the effluent vault weir into the short outfall occurred sporadically during the reported time period, usually during high tide events. Over the reported period, there were over 200 short splashes of flow over the weir, estimated at less than 10,000 gallons total for the event.	unknown	Fully treated effluent	canal leading to Elizabeth river	Remnants of Tropical Storm Julia
9/21/2016	VIP	Secondary clarifier effluent overflowed into the chlorine contact channel that is still under construction. The contractor left the influent gates of the unfinished contact channel open resulting in an overflow into the canal north of the plant. The overflow was due to high flows related to tropical Storm Julia. The rain gauge at the facility read a maximum hourly rainfall amount of 1.3 inches, with a total rainfall of 7.8 inches over the storm event.	13 min	The chlorine contact channel influent gate was closed shortly after the overflow was discovered by plant personnel. The contractor is dewatering the chlorine contact channel with a 6" pump. Gates will be locked out to prevent further problems.	217,000	217,000	secondary effluent	canal leading to Elizabeth River	Remnants of Tropical Storm Julia

Table 5-1. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2016)

Date	Location	Description/Cause	Duration of Event	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
9/30/2016	York River	The Shift Assistant was filling the scum well at #2 Primary Clarifier with de-chlorinated NPW trying to clear a clogged pipe. He turned the hose on and walked away with the intention of coming back to it. This was about 0320. At 0450, the Shift Operator discovered that the hose came out of the well and was spraying on the ground. If we assume that the hose came out as soon as the Assistant walked away, we estimate 5400 gallons soaked into the ground at the surrounding area, but we have no way of knowing when the hose came out of the well. This was estimated after doing a fill test with the hose measuring about 60GPM, assuming it was running on the ground for 90 minutes.	Est. 90 min	The Operator turned off the hose as soon as the leak was discovered.	5,400	5,400	NPW	ground	
10/8/2016	Ches-Liz	Unusually high flows from Hurricane Matthew resulted in a peak flow of 88.6 mgd. The facility experienced rainfall in the amount of 8.85 inches from this storm. During the storm the long outfall vault flooded, causing the primary outfall to fail in the closed position. The short outfall was utilized, but it was designed to be supplementary to the primary outfall and could not pass the >80MGD flow it was receiving.	13 hr 30 min	Additional tanks were placed in service, and the facility opened the short outfall. The overflow ceased when influent flows came down.	8.35MG	8.35MG	Fully treated effluent through the short outfall	drainage ditch to Little Creek Cove	Hurricane Matthew
10/8/2016	Ches-Liz	Unusually high flows from Hurricane Matthew resulted in a peak flow of 88.6 mgd. The facility experienced rainfall in the amount of 8.85 inches from this storm.	13hr 51 min	Additional tanks were placed into service.	128.9MG	128.9MG	Fully treated effluent through the short outfall	Little Creek Cove	Hurricane Matthew
10/8/2016	James River	Due to high flows in excess of 50 MGD from rainfall occurring during Hurricane Matthew, an estimated 10,000 gallons of raw influent spilled from the headworks and an estimated 200 gallons spilled from influent chamber of 1 & 2 secondary clarifier. This storm produced rainfall amounts of 7.72 inches at the facility.	10 min	Headworks: Put #3 stepscreen in service to allow for additional flow. Placed #2 secondary clarifier in service; this clarifier was out of service for repair and inoperable.	10,200	10,200	Influent	ground / James River	Hurricane Matthew



Table 5-1. Detailed Listing of HRSD Treatment Plant Unusual Discharges (July 1 to December 31, 2016)

Date	Location	Description/Cause	Duration of Event	Corrective Action	Estimated Quantity Discharged (gallons)	Estimated Quantity to State Waters (gallons)	Type of Overflow	Receiving Water	Comments
10/8-9/2016	VIP	With 9.26 inches of rainfall from Hurricane Matthew over two days, VIP Plant experienced flows well above 80 MGD. Plant staff monitored influent water elevations at plant site and at nearby manholes. To reduce the likelihood of overflows in residential areas, the plant was forced to bypass an estimated 9.3 Million gallons of chlorinated influent flow into the Elizabeth River. The influent water elevation was continuously monitored to minimize the bypassed volume. The total amount of bypassed flow was chlorinated. This Hurricane was preceded by Tropical Storm Julia, resulting in major flooding.	42 hr 8 min	Plant staff continuously monitored the influent water elevation to secure the bypass gate, minimizing the bypassed flow.	9.3 MG	9.3 MG	Chlorinated influent	canal leading to Elizabeth River	Hurricane Matthew
10/21/2016	Ches-Liz	Vac-Truck overfilled from removing debris from grit system. Overflow entered nearby stormdrain.	15 min	Moved truck to unloading area and emptied truck. Informed the truck operator that no discharge water is permitted on the roadway or stormdrain.	100	100	Influent	storm water receiving pond	
11/12/2016	Ches-Liz	While gravity draining #1 gravity thickener the drain pump station became overwhelmed with flow and the system backed up and out of the road drain located near the contact scum building.	3 hr 50 min	Closed gravity drain valve. Lime was put down on top of the ground in the spill area.	500	200	unit process - gravity thickener solids	ground	
12/13/2016	Ches-Liz	Short Outfall Operator that was damaged in Hurricane Matthew was repaired. The operation and calibration of the limit settings for the repaired valve was tested by opening and closing the valve locally and remotely.	15 min	Proper remote operation of the valve was confirmed. The valve was placed in its normal closed configuration.	97,500	97,500	Fully treated effluent	Little Creek Cove	

\*NPW (non-potable water) is fully treated and chlorinated final effluent.

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Table 5-2. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2016)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled in Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO	Discharge Quantity	Amount Reaching State Waters	DEQ IR	Occurred within past 5 years
7/31/2016 19:58	Chesapeake Blvd Pump Station	5734 Chesapeake Blvd, Norfolk VA	Wayne Creek	Norfolk	Capacity-Weather Related	High flows from rainfall caused the pump station to go into alarm status for overflow. A visual inspection and estimate of discharge flow was not possible because the tide gate was completely submerged. This overflow was verified through a visual check at the manhole upstream from the tide gate, where flows above the overflow pipe were observed. The pump station was in alarm from 7:58 pm to 8:48 pm and then from 8:58 pm to 9:02 pm. The rain gauge at Luxembourg Pump Station recorded a maximum hourly rainfall of 2.10" occurring on 7/31/16 between 18:00 and 19:00 and a total of 2.46" over the course of the day (7/31/16 0:00 - 8/1/16 0:00).	1 hour(s) 4 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows. The emergency pump was evaluated, repaired, and operational following the repair. The discharge flow was impossible to determine, as there was no way to differentiate what flow left the pump station via operating pumps, and what overflowed to the tide gate.	-1	-1	SSORS#2017-T-104596	YES
9/21/2016 5:05	Bridge Street Pump Station (Tide Gate)	4701 Victoria Blvd. Hampton, VA	Hampton River	Hampton	Capacity-Weather Related	Significant wet weather (5.1 inches of rain in 54 hours) combined with elevated tidal levels resulted in increased system flows.	3 hour(s) 25 minute(s)	Verified pump station operating properly. Operations personnel cleaned the area of all visible debris.	-1	-1	SSORS#2017-T-104635	YES
9/21/2016 0:43	Chesapeake Blvd Pump Station tide gate	5734 Chesapeake Blvd., Norfolk	Wayne Creek	Norfolk	Capacity-Weather Related	With the remnants of tropical storm Julia, a max hourly rainfall of 1.10 inches and a total rainfall of 10.69 inches fell in the Chesapeake Blvd pump station service area, resulting in increased system pressures and flows. The overflow alarm came through at 12:43 AM. Initially the area was inundated with flood water and inaccessible.	70 hour(s) 48 minute(s)	Station was checked multiple times throughout the event and was running properly. Overflow occurred at the tide gate behind the station. For a majority of this event the tidegate was completely submerged and no visual flow estimate could be taken.	-1	-1	SSORS#2017-T-104641	YES
9/21/2016 3:55	Manhole SG-149	1444 Bainbridge Blvd., Chesapeake, VA	Scuffeltown Creek	Chesapeake	Capacity-Weather Related	With the remnants of tropical storm Julia, a max hourly rainfall of 1.42 inches and a total rainfall of 12.79 inches fell in the Park Avenue PS service area, resulting in increased system pressures and flows. An upstream manhole overflowed due to the high station well level.	3 hour(s) 43 minute(s)	Verified pump station was operating properly.	5,575	5,575	SSORS#2017-T-104642	YES
9/21/2016 4:29	Quail Avenue PS	800 Quail Avenue, Chesapeake	Elizabeth River	Chesapeake	Capacity-Weather Related	With the remnants of tropical storm Julia, a max hourly rainfall of 1.42 inches and a total rainfall of 12.79 inches fell, resulting in increased system pressures and flows.	2 hour(s) 30 minute(s)	Surrounding area was inundated and no overflow could be seen but station was in overflow alarm status.	-1	-1	SSORS#2017-T-104643	NO
9/21/2016 5:57	Monroe Pump Station manhole	5808 Monroe Place, Norfolk	Lafayette River	Norfolk	Capacity-Weather Related	With the remnants of tropical storm Julia, a max hourly rainfall of 1.30 inches and a total rainfall of 7.80 inches fell in the Monroe Place pump station service area, resulting in increased system pressures and flows. Manhole in pump station driveway overflowed due to high well level at the pump station.	3 hour(s) 39 minute(s)	Verified that the receiving pump station was working properly.	2,190	2,190	SSORS#2017-T-104646	YES

Table 5-2. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2016)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled in Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO	Discharge Quantity	Amount Reaching State Waters	DEQ IR	Occurred within past 5 years
9/21/2016 9:45	Manhole SG-049	Hampton Blvd and 43rd Street, Norfolk	Elizabeth River	Norfolk	Capacity-Weather Related	With the remnants of tropical storm Julia, a max hourly rainfall of 1.30 inches and a total rainfall of 7.80 inches fell, resulting in increased system flows and VIP treatment plant wet well level.	0 hour(s) 15 minute(s)	The VIP treatment plant bypassed and chlorinated influent flow to prevent wastewater overflows in residential areas.	150	150	SSORS#2017-T-104647	YES
9/21/2016 9:45	Suffolk Pump Station	1136 Saunders Drive, Suffolk, VA	Shingle Creek	Suffolk	Capacity-Weather Related	With the remnants of tropical storm Julia, a max hourly rainfall of 1.10 inches and a total rainfall of 9.47 inches fell, resulting in increased system pressures and flows. The sealed lid on the siphon chamber directly upstream of the pump station came loose and overflowed when flows drastically increased over a short duration.	37 hour(s) 45 minute(s)	Station was checked multiple times throughout the event and was running properly. Repairs to the siphon chamber are ongoing.	583,050	583,050	SSORS#2017-T-104648	NO
9/22/2016 3:30	Bridge Street Pump Station (Tide Gate)	4701 Victoria Blvd. Hampton, VA	Hampton River	Hampton	Capacity-Weather Related	Significant wet weather (7.1 inches of rain in 66 hours) combined with elevated tidal levels resulted in increased system flows.	10 hour(s) 11 minute(s)	Verified pump station operating properly. Operations personnel cleaned the area of all visible debris.	-1	-1	SSORS#2017-T-104662	YES
10/8/2016 23:22	Manhole Terminal Blvd	300 Terminal Avenue, Newport News	James River	Newport News	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (9.16 inches of rain at Copeland Park PS) combined with elevated tidal levels resulting in increased system flows.	9 hour(s) 27 minute(s)	Verified treatment plant was operating properly.	155,925	155,925	SSORS#2017-T-104774	YES
10/8/2016 18:48	Center Ave PS	315 Center Ave.	Government Ditch / James River	Newport News	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (9.99 inches of rain at Morrison PS) combined with elevated tidal levels resulting in increased system flows.	13 hour(s) 57 minute(s)	Checked station to ensure all pumps were operating properly.	104,240	104,240	SSORS#2017-T-104775	YES
10/8/2016 19:10	Manhole @ Chesapeake Ave. and Clyde	3904 Chesapeake Ave	storm drain to James River	Hampton	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (9.16 inches of rain at Copeland Park PS) combined with elevated tidal levels resulted in increased system flows.	23 hour(s) 50 minute(s)	Verified pump station operating properly. Upon completion of tide cycle, cleaned area. Hampton personnel placed sandbags on top of the manhole cover, stopping the overflow (verified by NS personnel at 7:00 PM on 10/09/2016).	277,125	277,125	SSORS#2017-T-104776	YES
10/8/2016 17:48	Bridge Street Pump Station (Tide Gate)	4701 Victoria Blvd	Hampton River	Hampton	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (8.96 inches of rain at Bayshore PS) combined with elevated tidal levels resulted in increased system flows.	53 hour(s) 16 minute(s)	Verified pump station operating properly. Operations personnel cleaned the area of all visible debris. Tide gate was submerged due to tidal flooding preventing personnel from determining the overflow rate.	-1	-1	SSORS#2017-T-104777	YES
10/8/2016 19:00	Manhole at King St. and Rudd Lane	King St. and Rudd Ln.	Hampton River	Hampton	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (8.96 inches of rain at Bayshore PS) combined with elevated tidal levels resulted in increased system flows.	36 hour(s) 15 minute(s)	Verified pump station operating properly. Cleaned area upon completion of tidal events.	685,725	685,725	SSORS#2017-T-104778	YES
10/8/2016 18:27	Manhole King Street and I-64	King Street at I-64	Ditch leading to Brights Creek	Hampton	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (8.96 inches of rain at Bayshore PS) combined with elevated tidal levels resulted in increased system flows.	29 hour(s) 25 minute(s)	Verified pump station operating properly. Cleaned area upon completion of tidal events. Manholes were submerged due to tidal flooding preventing personnel from determining the overflow rate.	-1	-1	SSORS#2017-T-104779	NO

Table 5-2. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2016)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled in Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO	Discharge Quantity	Amount Reaching State Waters	DEQ IR	Occurred within past 5 years
10/8/2016 17:59	Bay Shore Pump Station	720 Bay Shore Lane	Chesapeake Bay	Hampton	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (8.96 inches of rain at Bayshore PS) combined with elevated tidal levels resulted in increased system flows.	18 hour(s) 2 minute(s)	Verified pump station operating properly. Cleaned area upon completion of tidal events. Manhole was submerged due to tidal flooding preventing personnel from determining the overflow rate.	-1	-1	SSORS#2017-T-104780	YES
10/8/2016 18:39	Chesapeake Blvd PS	5734 Chesapeake Blvd	Wayne Creek	Norfolk	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 11.37-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	53 hour(s) 54 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104782	YES
10/8/2016 19:11	Manhole	Bainbridge Blvd. & Holly Ave.	Scuffeltown Creek	Chesapeake	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The manhole was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 11.24-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	14 hour(s) 5 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104783	YES
10/8/2016 19:25	Monroe Ave PS Manhole	5808 Monroe Place, Norfolk	Lafayette River	Norfolk	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The manhole was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 9.26-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	18 hour(s) 35 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104784	YES
10/8/2016 19:47	Dovercourt Pump Station	948 Dovercourt Road, Norfolk	Mason Creek	Norfolk	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The manhole was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 10.28-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	16 hour(s) 58 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	15,270	15,270	SSORS#2017-T-104785	NO
10/8/2016 20:18	Quail Ave. Pump Station	800 Quail Avenue, Chesapeake	Elizabeth River	Chesapeake	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 11.88-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	10 hour(s) 13 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104786	YES

Table 5-2. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2016)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled in Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO	Discharge Quantity	Amount Reaching State Waters	DEQ IR	Occurred within past 5 years
10/8/2016 21:20	Dozier Corner Pump Station	Halstead Lane, Chesapeake VA	Newton Creek	Chesapeake	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 11.42-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	18 hour(s) 10 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104787	NO
10/8/2016 22:21	Jamestown Crescent Pump Station	858 Jamestown Crescent Road, Norfolk	Lafayette River	Norfolk	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 9.26-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	10 hour(s) 39 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104788	YES
10/8/2016 23:20	Steamboat Creek PS	1900 E. Indian River Rd, Norfolk	Steamboat Creek	Norfolk	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 11.88-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	5 hour(s) 12 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104789	NO
10/9/2016 0:38	Manhole @ City Park Pump Station	Intersection of Beach Ave. and Ethel Ave., Norfolk	Lafayette River	Norfolk	Capacity-Weather Related	Manhole overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The manhole was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 9.26-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	8 hour(s) 47 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104790	YES
10/9/2016 1:51	Chesterfield Blvd Pump Station	2731 Chesterfield Blvd., Norfolk	Elizabeth River	Norfolk	Capacity-Weather Related	Wet well overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 11.37-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	3 hour(s) 5 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104791	NO

Table 5-2. Detailed Listing of HRSD Capacity Related SSOs (July 1 to December 31, 2016)

Date and Time of Incident	Location	Sewer System Component	Potential Receiving Waters	Spilled in Jurisdiction	SSO Classification	Description of Incident from SSORS	SSO Duration	Action Taken and Explanation of SSO	Discharge Quantity	Amount Reaching State Waters	DEQ IR	Occurred within past 5 years
10/9/2016 2:12	Hanover Pump Station	900 Hanover Avenue, Norfolk	Lafayette River	Norfolk	Capacity-Weather Related	Manhole overflow due to heavy rain and tidal flooding from Hurricane Matthew caused the pump station to go into alarm status for overflow. The location was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate. Local rain gauge recorded 9.26-inches of rain between 6:00AM 10/08/16 to 12:00PM 10/09/16.	4 hour(s) 11 minute(s)	HRSD staff verified that all pumps were operating properly. The overflow event ended as flow subsided, and the pumps were able to maintain flows.	-1	-1	SSORS#2017-T-104792	YES
10/8/2016 18:35	Manhole SG049	43rd Street at Hampton Blvd, Norfolk	Elizabeth River	Norfolk	Capacity-Weather Related	Manhole overflow due to heavy rain and tidal flooding from Hurricane Matthew. The manhole was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate.	8 hour(s) 25 minute(s)	The VIP treatment plant bypassed and chlorinated influent flow to prevent wastewater overflows in residential areas.	-1	-1	SSORS#2017-T-104793	YES
10/8/2016 18:35	Manhole Bluestone and 38th	Intersection of Bluestone Ave and W. 38th Street	Elizabeth River	Norfolk	Capacity-Weather Related	Manhole overflow due to heavy rain and tidal flooding from Hurricane Matthew. The manhole was submerged due to tidal and storm flooding preventing personnel from determining the overflow rate.	8 hour(s) 25 minute(s)	The VIP treatment plant bypassed and chlorinated influent flow to prevent wastewater overflows in residential areas.	-1	-1	SSORS#2017-T-104794	NO
10/8/2016 21:30	Chesapeake Ave manhole	3748 Chesapeake Avenue, Hampton	James River	Hampton	Capacity-Weather Related	Significant wet weather from Hurricane Matthew (9.16 inches of rain at Copeland Park PS) combined with elevated tidal levels resulted in increased system flows.	24 hour(s) 45 minute(s)	Verified pump station operating properly. Upon completion of tide cycle, cleaned area.	194,850	194,850	SSORS#2017-T-104797	NO

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### 6. PLANNED ACTIVITIES

HRSD will be continuing the overall program outlined in the Consent Decree in the remainder of FY 2017. The following sub-sections provide specifics on this work.

#### 6.1 Flow, Pressure, and Rainfall Monitoring Program

##### 6.1.1 Implementation of the FPR Monitoring Plan

Although not required by the Consent Decree, HRSD intends to continue to collect data from flow, pressure, and rainfall sensors in FY 2017, and plans to continue to operate a portal to allow access for the Localities to the HRSD flow, pressure, and rainfall data from the FPR sites (Telog server data). In FY 2017, HRSD will modify the network and delete and/or relocate some monitoring points.

##### 6.1.2 Capacity Related SSOs

In the remainder of FY 2017, HRSD will continue to coordinate with Localities following capacity-related SSOs in the Localities system. This will include coordinating with the Locality to review the occurrence, assist with evaluation of the problem, and, if practicable, help the Locality with interim or final solutions to mitigate the LOP.

#### 6.2 Condition Assessment Plan

##### 6.2.1 Implementation of the Condition Assessment Plan

###### 6.2.1.1 Prompt Repairs

HRSD will continue to implement action plans to address the Prompt Repairs identified.

##### 6.2.2 Rehabilitation Action Plan

In the remainder of FY 2017, HRSD will continue implementing the approved Action Plan.

#### 6.3 Interim System Improvements

HRSD will continue to design and construct the projects listed in Appendix 5 of the Consent Decree that are required to be completed within 8 years of the Date of Entry. The Verification of Completion will be included in upcoming Annual Reports as the projects are completed.

#### 6.4 Management, Operations, and Maintenance Program

##### 6.4.1 Implementation of MOM Program

HRSD will continue to implement its MOM Program.

## 6.4.2 Quantitative Performance Measures

In the second half of FY 2017, HRSD will continue tracking the performance measures to determine how HRSD is implementing the program. This will include the list of six measures that are subject to stipulated penalties per Paragraph 34 of the Consent Decree. Progress on these measures will be documented in the FY 2017 Annual Report.

## 6.5 Regional Wet Weather Management Plan

Based on the Modification No. 3 to the Consent Decree, the deadline for the RWWMP has been extended to October 1, 2017 to incorporate the new RWWMP development process. In addition, HRSD will complete modeling with the RHM and LHMs for RWWMP development. This work will be focused on the RWWMP which will be due October 1, 2017.

## 6.6 SSO Emergency Response Plan

HRSD will continue to implement the approved SSO Response Plan.

## 6.7 Consultation with Localities

HRSD will continue to actively participate and facilitate a wide variety of consultation activities in FY 2017 amongst the regional parties. These activities included:

- Meetings of the Capacity Team, as needed, to discuss issues related to the Consent Decree;
- Periodic briefings of the Directors' of Utilities Committee to share progress on compliance with the Consent Decree; and
- Maintain a regional SharePoint website to collaborate with and provide documents to the regional Capacity Team.

## 6.8 Public Participation

HRSD will continue to hold annual information meetings and publish newsletters by the anniversary of the Date of Entry. Information and approved plans continue to be posted to HRSD's website which is accessible to the public.

## SEMI-ANNUAL REPORT FY 2017

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### 7. FORESEEABLE ISSUES RELATED TO UPCOMING COMPLIANCE DEADLINES AND MILESTONES

No issues to document in this Semi-Annual Report.

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## SEMI-ANNUAL REPORT FY 2017

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### 8. SIGNIFICANT ISSUES THAT REQUIRE A CHANGE IN THE CONSENT DECREE REQUIREMENTS

No issues to document in this Semi-Annual Report.

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APPENDIX A: INTERIM SYSTEM IMPROVEMENTS AND  
REHABILITATION ACTION PLAN PROJECT VERIFICATION OF  
COMPLETION

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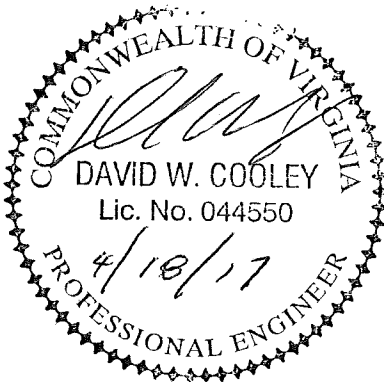
Interim System Improvements  
Verification of Completion

As required by Section IX of the Amended Consent Decree dated February 23, 2010, a set of Interim System Improvements have been identified that must be completed within 8 years of the Date of Entry. Paragraph 32 of that section requires a written certification of completion of each project or group of projects. For capital projects in excess of \$1,000,000, Paragraph 87a of the Consent Decree requires that verification be made by a Professional Engineer that the project was completed satisfactorily.


Through April 17, 2017, the following projects have been completed satisfactorily and consistent with the scope provided to the EPA and DEQ in the Consent Decree:

<u>Ref No.</u>	<u>CIP No.</u>	<u>Project Name</u>	<u>Project Cost</u>	<u>Completion Date</u>
23	YR-101	Coliseum Drive Pressure Reducing Station	\$13,026,473*	June 22, 2016
44	JR-117-1	Jefferson Avenue Interceptor Force Main Replacement Phase I	\$6,662,022**	June 30, 2016

\* Ref No. 23 includes \$3,470,405 which is the cost of a storage tank constructed with this project.  
 \*\* Ref No. 44 was constructed under two separate construction contracts.



Hereby verified by



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David Cooley, PE (No. 044550)  
 Chief of Design and Construction, North Shore  
 Hampton Roads Sanitation District



Interim System Improvements  
Verification of Completion

As required by Section IX of the Amended Consent Decree dated February 23, 2010, a set of Interim System Improvements have been identified that must be completed within 8 years of the Date of Entry. Paragraph 32 of that section requires a written certification of completion of each project or group of projects. For capital projects in excess of \$1,000,000, Paragraph 87a of the Consent Decree requires that verification be made by a Professional Engineer that the project was completed satisfactorily.

Between the periods of July 1, 2016 through December 31, 2016, the following projects have been completed satisfactorily and consistent with the scope provided to the EPA and DEQ in the Consent Decree:

<u>Ref No.</u>	<u>CIP No.</u>	<u>Project Name</u>	<u>Project Cost</u>	<u>Completion Date</u>
25	VP013000	Norchester Street Pump Station Replacement / Rehabilitation	\$7,365,652	July 30, 2016
50	AT011610	Courthouse Interim Pressure Reducing Station	\$2,840,627	September 28, 2016



Hereby verified by

Gary Hart, PE (No. 017583)  
Chief of Design and Construction, South Shore  
Hampton Roads Sanitation District

PO Box 5911, Virginia Beach, VA 23471-0911 • 757.460.2261 • Fax 757.363.7917

Rehabilitation Action Plan Projects  
Verification of Completion

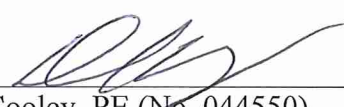
As required by Section VIII of the Third Amended Consent Decree dated May 30, 2015, a set of Rehabilitation Action Plan projects have been identified that must be completed according to the schedule in that document. For capital projects in excess of \$1,000,000, Paragraph 87a of the Consent Decree requires that verification be made by a Professional Engineer that the project was completed satisfactorily.

Through April 17, 2017, the following projects have been completed satisfactorily and consistent with the scope provided to the EPA and DEQ in the Consent Decree:

<u>Ref No.</u>	<u>CIP No.</u>	<u>Project Name</u>	<u>Project Cost</u>	<u>Completion Date</u>
GN-R12	GN013600	North Shore Pump Station Wet Well Rehabilitation	\$1,268,386.	April 4, 2016

Hereby verified by



  
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David Cooley, PE (No. 044550)  
Chief of Design and Construction, North Shore  
Hampton Roads Sanitation District



Rehabilitation Action Plan Projects  
Verification of Completion

As required by Section VIII of the Third Amended Consent Decree dated May 30, 2015, a set of Rehabilitation Action Plan projects have been identified that must be completed according to the schedule in that document. For capital projects in excess of \$1,000,000, Paragraph 87a of the Consent Decree requires that verification be made by a Professional Engineer that the project was completed satisfactorily.

Through December 31, 2016, the following projects have been completed satisfactorily and consistent with the scope provided to the EPA and DEQ in the Consent Decree:

<u>Ref No.</u>	<u>CIP No.</u>	<u>Project Name</u>	<u>Project Cost</u>	<u>Completion Date</u>
CE-R5	CE011200	Central Trunk Interceptor Force Main A & B Main Line Valves	\$1,765,339	August 5, 2016



Hereby verified by

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