



COMMISSION MEETING MINUTES
March 22, 2016

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Name	Title	Present for Item Nos.
Lakdawala, Vishnu K.	Commission Chair	Absent
Elofson, Frederick N.	Commission Vice-Chair	1-11
Bredemeyer, Arthur C.	Commissioner	Absent
Glenn, Michael E.	Commissioner	1-11
Levenston, Jr., Willie	Commissioner	1-11
Lynch, Maurice P.	Commissioner	1-11
Rodriguez, Stephen C.	Commissioner	1-11
Rotkis, Susan M.	Commissioner	1-11

1. **AWARDS AND RECOGNITION**

Action: No action required.

Brief: Mr. Henifin announced the following awards and introductions.

a. New Employee

Dr. Chris Wilson recently joined HRSD as the new Manager of Process Engineering and Research. In this role, he will support process engineering and optimization activities in addition to managing specific projects within HRSD's applied research program.

Previously, Chris served as Residuals Practice Leader and Firm-Wide Wastewater Process Engineering Specialist for Greeley and Hansen, LLC. His responsibilities in this role included technical leadership in the delivery of process engineering and design services to municipal and industrial wastewater treatment facilities. He also managed the firm's applied research activities in collaboration with partners within public utility, academic and industry organizations.

Chris is also currently an Adjunct Professor in the Department of Civil and Environmental Engineering at George Washington University. He completed his graduate studies at Virginia Polytechnic Institute and State University and undergraduates studies at Bucknell University. Chris is a licensed Professional Engineer in the Commonwealth of Virginia.

b. Promotion

Mr. William Strong was recently promoted to Oracle Developer. Will began his HRSD career six years ago as a programmer analyst and is greatly valued for his innovative problem solving and leadership skills. His primary focus has been in



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programming support for the Customer Care Center. Will has made significant contributions in development of applications that have improved efficiency and productivity for many departments throughout the organization. In his new role he will be primary support for HRSD's Enterprise Resource Planning (ERP) systems. Will is to graduate in May from Old Dominion University with a Bachelor of Science degree in Computer Science and minor in Computer Engineering.

c. Awards

The HRSD Environmental Improvement Fund Awards were presented March 12 during the 65th Annual Tidewater Science and Engineering Fair. The following recipients were selected by a team of HRSD scientists led by Water Quality Director Jim Pletl:

Junior Division (Middle School)

1st Place – Samantha Vaughn; Jolliff Middle School, Chesapeake: *"The Effect of Common Water Pollutants on Invertebrates"*

2nd Place – Ian Connor; Gildersleeve Middle School, Newport News: *"The Cleaner Challenge"*

Senior Division (High School)

1st Place – Sarah Lewis; Tabb High School, York County: *"The Effect of Water Movement on Oyster Filtration Rate"*

2nd Place – Rhiannon Edwards; Governor's School for Science and Technology, Newport News: *"Low Cost Continuous Flow Microbial Desalination Cells for Environmentally Sustainable Integrated Water Treatment"*

The prizes are: *Junior Division:* First Place – \$300 cash and a trophy; Second Place – \$200 cash and a trophy.

Senior Division: First Place – \$600 cash and a trophy; Second Place – \$400 cash and a trophy.

HRSD also presents a \$75 cash honorarium to the teacher that mentored and supported each winner.



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d. White House Water Summit

Mr. Henifin announced that HRSD's sustainable water recycling initiative was among the water issue solutions featured during the March 22, 2016, White House Water Summit in Washington, D.C. The event was held in conjunction with the United Nations World Water Day to catalyze ideas and actions to help build a sustainable and secure water future through innovative science and technology. HRSD's project is featured on page 15 of the [White House Water Summit Commitments Report](#). J. Dano, Chief of Planning and Analysis, represented HRSD at the summit.

Attachment #1: [Commitments to Action on Building a Sustainable Water Future](#)

Public Comment: None



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2. **CONSENT AGENDA**

Action: Approve the items listed in the Consent Agenda.

Moved: Michael Glenn **Ayes:** 6
Seconded: Susan Rotkis **Nays:** 0

Brief:

- a. Approval of minutes as amended from previous meeting.
- b. Rejection of Bids
 - 1. [Oracle E-Business Suite Managed Support Services](#)
- c. Contract Awards
 - 1. [Infrared Thermographic Inspection Services](#) \$61,365
- d. Task Orders
 - 1. [Central Trunk Interceptor Force Main A & B Main Line Valves](#) \$600,053
- e. Change Orders
 - 1. [Telephony Customer Interaction Center Service Contract](#) \$239,000
- f. Sole Source
 - 1. [Aqualog® Spectrometer](#)
 - 2. [Banking, e-Billing, Lockbox and Related Services](#)
 - 3. [Daparak, Inc. Re-Chroming Services](#)
- g. HRSD Use of Existing Competitively Awarded Contract Vehicle
 - 1. [Interceptor Line Inspection Camera Van](#) \$336,968

Item(s) Removed for Discussion: None

Attachment #2: [Consent Agenda](#)

Public Comment: None



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3. **Bowers Hill Interceptor Force Main Section I Repair – Emergency Project
Initial Appropriation**

Action: Appropriate total project funding in the amount of \$4,077,411.

Moved:	Michael Glenn	Ayes:	6
Seconded:	Stephen Rodriguez	Nays:	0

CIP Project: NP0132

Project Description: On April 24, 2015 a leak was identified at 4700 Portsmouth Boulevard in Chesapeake. The leak was due to an approximately 1.5-inch hole in the bottom of the pipe near a joint. There was external corrosion to the bell and bottom of the pipe to the extent that the gasket was exposed and multiple areas along the bottom showed severe external corrosion. This emergency project replaced this deteriorated section of force main.

Contract Description: An emergency designation was authorized on May 1, 2015 and the Commission was briefed on May 26, 2015. The work is now complete. The total requested appropriation of \$4,077,411 will cover T.A. Sheets General Contractors’ construction effort that was authorized through the Sewer Repairs and On-Call Services annual contract for \$3,715,393 and Whitman Requardt & Associates’ engineering and construction inspection effort that was authorized through the Interceptor Systems Project annual contract for \$362,018.

Discussion Summary: Staff explained the external corrosion was due to the poor soils in this area and the limited life of this pipeline is not typical for ductile iron pipe.

Attachment: None

Public Comment:



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4. **King William Treatment Plant Effluent Utilization Monitoring Station Agreement**

Action: Approve the multiple year agreement with the United States Department of the Interior, U.S. Geological Survey (USGS) for Installation and Operation of a monitoring station on Moncuin Creek.

Moved: Maurice Lynch **Ayes:** 6
Seconded: Willie Levenston **Nays:** 0

CIP Project: MP011920

Budget	\$2,246,823
Previous Expenditures and Encumbrances	(\$2,223,136)
Available Balance	\$23,687

Project Description: This project will provide King William Treatment Plant effluent as a reclaimed water source to the Nestle’ Purina Cat Litter Production Facility. The project will include construction of a pipeline and pumping system only. Any storage necessary will be provided by Nestle’ Purina Cat Litter Production Facility. The attached [multiple year agreement](#) is for the USGS to install and operate a real-time, permanent tide monitoring station on Moncuin Creek at the bridge on Mount Pleasant Road near Manquin, Virginia. The purpose of this station is to provide accurate and reliable water level and streamflow information for Moncuin Creek. The purpose of stream monitoring is to ensure that adequate flow remains in the stream during low-flow and drought conditions; stream flow is critical to the natural ecosystem. The effluent from HRSD’s King William Treatment Plant contributes to the flow of Moncuin Creek so the diversion of this water to the Nestle’ Purina Cat Litter Production Facility will reduce stream flow. The station will record flows and, if the flow drops below 0.093 cubic feet per second (60,000 gallons per day), HRSD is required by permit to return flow to the stream rather than conveying the water to the Nestle’ Purina Cat Litter Production Facility. The location of the station was determined to provide the best opportunity to collect the most accurate data representative of local stream conditions.

Funding Description: This CIP Project was approved at the September 2012 Commission Meeting. A breakdown of costs for April 2016 to June 2020 is provided below. The installation cost of \$30,000 will be charged to the CIP Project Budget. The operation costs of \$65,550 will be charged to the Operating Budget.

	2016	2017	2018	2019	2020
Installation	\$30,000	NA	NA	NA	NA
Operation	\$3,650	\$15,000	\$15,300	\$15,600	\$16,000
Total Cost	\$33,650	\$15,000	\$15,300	\$15,600	\$16,000

Attachment #3: [Agreement](#)



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- 5. **UNFINISHED BUSINESS** – None
- 6. **NEW BUSINESS** – None
- 7. **COMMISSIONER COMMENTS** – None
- 8. **PUBLIC COMMENTS** – None
- 9. **INFORMATIONAL ITEMS**
 - Action:** No action required.
 - Brief:** The items listed below were presented for information.
 - a. [Management Reports](#)
 - b. [Strategic Planning Metrics Summary](#)
 - c. [Effluent Summary](#)
 - d. [Air Summary](#)
 - Attachment #4:** [Informational Items](#)
 - Public Comment:** None
- 10. **RECESS**



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11. **WORK SESSION – Fiscal Year 2016-2017 Annual Budget**

Brief: Staff presented the highlights and drivers of the draft Fiscal Year 2016-2017 budget including estimated revenues, significant expense increases and decreases, staffing requirements, results of the second phase of the compensation study and a review of benefit changes. A draft budget was provided during the workshop for Commissioners' review before the April meeting of the Finance Committee.

Action: No action is required.

Discussion Summary: Staff reviewed the following items in preparation for the Fiscal year 2016-2017 Annual Budget:

- Financial Plan showing projected revenue needs, capital expenditures, coverage, reserves, etc.
- Revenue impacts including water consumption projections, changes to surcharge rates (BOD), other significant impacts on revenue for next year and proposed changes to fees
- Compensation survey results and impact on the 2017 budget. Discussion also included plans to memorialize the HRSD Compensation Philosophy in a Commission approved policy.
- Health care renewal costs and drivers, and an overview of Wellness results including the advantage of the lower wellness deductibles and incentives
- Staffing changes proposed for FY-17
- Operating budget highlights including significant expense changes (up and down) based on FY-16 vs. FY-17 numbers

Attachment #5: [PowerPoint Presentation](#)

Public Comment: None



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Announcements:

- The Finance Committee will meet on Thursday, March 31, at 9:00 a.m. to review the Draft Capital Improvement Program for Fiscal Years 2017-2026.
- The Finance Committee will meet on Friday, April 15, at 9:00 a.m. to review the Draft FY 2016-2017 Annual Budget.
- The 23rd Annual Pretreatment Excellence and Pollution Prevention Awards luncheon will be held on April 20.

Next Commission Meeting Date: April 26, 2016 at the HRSD North Shore Operations Center, 2389 G. Avenue, Newport News, VA 23602

Meeting Adjourned: 11:16 a.m.

SUBMITTED:

APPROVED:

Jennifer L. Cascio
Secretary

Vishnu K. Lakdawala, PhD.
Chair

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ATTACHMENT #1

AGENDA ITEM 1. – White House Water Summit - Commitments to Action on Building a Sustainable Water Future

COMMITMENTS TO ACTION ON BUILDING A SUSTAINABLE WATER FUTURE

The Executive Office of the President



March 22, 2016

Water challenges are facing communities and regions across the United States, impacting millions of lives and costing billions of dollars in damages. Recent events, including record-breaking drought in the West, severe flooding in the Southeast, and the water-quality crisis in Flint, MI, have elevated a national dialogue on the state of our Nation’s water resources and infrastructure. This dialogue is increasingly important as a growing population and changing climate continue to exacerbate water challenges. On March 22, 2016 – World Water Day – the Obama Administration hosted the first-ever White House Water Summit to shine a spotlight on the importance of cross-cutting, creative solutions to solving the water problems of today, as well as to highlight the innovative strategies that will catalyze change across the ways in which we use, conserve, protect, and think about water in the years to come. As part of the Summit, the Administration called on institutions and organizations from all sectors to make new commitments to build a sustainable water future in the United States. In response, institutions and organizations made the following commitments, as reported and described by respondents.

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New Steps Being Taken by the Administration

Today, the White House is announcing new steps to help build a sustainable water future in the United States. These steps include:

- **Building national capabilities for long-term drought resilience.** Drought routinely affects millions of Americans and poses a serious and growing threat to the security of communities nationwide. While drought has recently been particularly detrimental to Western states, serious drought issues can affect nearly every region of the country; in 2012, drought covered more than 65% of the United States. Drought presents risks to the security of the U.S. food supply and integrity of critical infrastructures, causes extensive economic impacts, increases energy costs, and adversely impacts health in many ways. The impacts of climate change are expected to increase the frequency, intensity, and duration of droughts in many regions. That's why today, President Obama is issuing a Presidential Memorandum on [Building National Capabilities for Long-Term Drought Resilience](#). The Memorandum lays out six drought-resilience goals and corresponding actions, and permanently establishes the National Drought Resilience Partnership (NDRP) as an interagency task force responsible for coordinating execution of these actions. In addition, building on previous drought-response efforts, the Administration is releasing the NDRP's [Long-Term Drought Resilience Federal Action Plan](#). The Action Plan describes specific activities that Federal agencies will take – within existing resources and authorities and working with State, regional, tribal, and local partners – to build national drought-resilience capabilities in accordance with the goals and actions of the Presidential Memorandum. These actions build on previous efforts of the Administration in responding to drought and are responsive to input received during engagement with drought stakeholders, which called for shifting focus from responding to the effects of drought toward supporting coordinated, community-level resilience and preparedness to adapt to drought impacts.

In conjunction with today's Presidential Memorandum and NDRP Action Plan, Federal agencies are announcing new efforts to enhance long-term drought resilience:

- Improving drought monitoring and forecasting. In 2016, as part of the NDRP Action Plan, the **U.S. Department of Agriculture (USDA)** and **NOAA** will expand the U.S. Drought Monitor – a vital tool for guiding response to drought emergencies – to include the U.S. Virgin Islands and the U.S. Affiliated Pacific Islands.
- Improving rural access to drinking water. As part of the NDRP Action Plan, **USDA** will work with States and tribes to identify rural communities most at risk for compromised drinking-water supplies as a result of drought. Additionally, USDA will make inclusion of drought impacts in emergency-response plans a condition of funding for new water and waste infrastructure projects, and will train technical-assistance providers as needed to support communities in meeting this requirement.
- Improving the coordination and integration of Federal programs. In 2016, as part of the NDRP Action Plan, **USDA** and the **U.S. Bureau of Reclamation (USBR)** will extend the successful practices of cross-program coordination for USBR WaterSMART and USDA Environmental Quality Incentives Program (EQIP) water-efficiency grants currently underway in California to other basins suffering from or at risk for drought.

- Announcing a new public-private collaboration around drought research. The **U.S. Geological Survey (USGS)** National Climate Change and Wildlife Science Center is announcing a new partnership with the **Wildlife Conservation Society** and **The Nature Conservancy** to synthesize current understanding of the ecological impacts of drought and examine sets of management options that are relevant at the national, regional, and local levels.
- **Supporting cutting-edge research.** The Administration is announcing a number of efforts to support cutting-edge water-research projects, including:
 - Awarding nearly \$35 million in grants:
 - The **National Science Foundation (NSF)** is providing \$20 million through its Experimental Program to Stimulate Competitive Research (EPSCoR) to research teams who will apply a systems-based, highly integrated approach to examine impacts of extreme events. An integrated model of the watershed will be used to test management scenarios and identify strategies for maintaining infrastructure, environmental health, and drinking-water quality in the face of extreme-weather events. NSF is also providing \$2 million through its Advanced Technology Education program to educate technicians for water-related and other high-technology fields that drive our Nation's economy.
 - **USDA** is awarding \$8.5 million to ten institutions and organizations through its National Institute of Food and Agriculture's Water for Agriculture program, to support research into critical water problems in rural and agricultural watersheds across the United States. These grants further research and education projects focusing on sustainability, allocation, and management of water resources, as well as the treatment and safety of water sources.
 - The **Environmental Protection Agency (EPA)** is awarding \$3.3 million to five institutions – the Water Environment Research Foundation; the University of Illinois at Urbana-Champaign; Utah State University; the University of Nevada, Las Vegas; and the University of California, Riverside – to fund research on the health and ecological impacts of water-conservation practices. EPA will also hold a kick-off event for \$4 million recently awarded to four institutions – Public Policy Institute of California, Water Research Foundation-University of Colorado Boulder, University of Utah, and Clemson University – to fund research on potential impacts of drought and forest fire on water quality.
 - The **National Aeronautics and Space Administration (NASA)** is announcing the formation of a new, agency-wide Western Water Applications Office (WWAO), based at its Jet Propulsion Laboratory (JPL) at the California Institute of Technology in Pasadena. The WWAO will support the strategic development of key applications from satellite observations and airborne technologies to maximize their use in order to better meet the challenges of drought, flooding, declining snowpacks, and falling groundwater levels across the west. NASA is launching this effort in summer 2016.
 - The Federal agencies participating in the **National Nanotechnology Initiative** are announcing a new Nanotechnology Signature Initiative (NSI), *Water Sustainability through Nanotechnology*. The new NSI will focus on applying the unique properties of

materials – including increased surface area and reactivity – that occur at the nanoscale to increase water availability, improve water delivery and use efficiency, and enable next-generation water-monitoring systems. Participating agencies include the **Department of Energy (DOE)**, **EPA**, **NASA**, the **National Institute of Standards and Technology (NIST)**, **NSF**, and **USDA**.

- **Piloting promising solutions.** Testing and demonstration of new approaches to water sustainability is an essential precursor to large-scale implementation. Today, the Administration is announcing pilots of several such approaches:
 - Improving weather forecasts for water-management operations. This year, **NOAA**, **USGS**, and the **U.S. Army Corps of Engineers (Army Corps)**, along with the **Sonoma County Water Agency** and other local and state partners, will launch the Lake Mendocino Forecast Informed Reservoir Operations pilot project in California's Russian River. This pilot will demonstrate ways in which improved weather forecasts can aid the decisions made by Army Corps and other water-resource managers as they balance flood and drought risks, maximize reservoir-storage potential, and minimize conflict among competing water users.
 - Improving identification and monitoring of harmful algal blooms. In August 2016, **NOAA**, the **University of Michigan**, and the **Monterey Bay Aquarium Research Institute** will deploy the Environmental Sample Processor (ESP) in Lake Erie for the first time. The ESP “lab-in-a-can” will be deployed autonomously to collect water samples, run molecular diagnostics, and provide water managers with data on harmful-algal toxicity in near real-time before the water reaches municipal water intakes.
 - Enhancing water sensing. The NOAA-funded **Alliance for Coastal Technologies**, **EPA**, **USGS** and other partners are collaborating with **XPRIZE** to create pilot opportunities to demonstrate uses of sensors from the Nutrient Sensor Challenge and the Wendy Schmidt Ocean Health pH XPRIZE in a wider variety of “real-world” conditions and settings. In 2016, these innovations will be tested and verified as components of existing operational environmental monitoring and observing systems and networks.
 - Reducing water use in power plants. The **DOE** Office of Fossil Energy is issuing a [competitive funding opportunity](#) for development of a 10 MW scale test facility for validating the performance of power cycles that use supercritical carbon dioxide instead of water as the working fluid – an approach with the potential to considerably reduce the water requirements of power generation.
- **Supporting water-innovation networks.** Building on the Nation's historical reputation for ingenuity, the Administration is announcing new efforts to connect researchers, technologists, and innovators across the country to accelerate solutions to priority water challenges.
 - Recovering resources from wastewater. **DOE**, **EPA**, **NSF**, and **USDA**, in collaboration with the **Water Environment Research Foundation**, are developing a National Water Resource Recovery Test Bed Facility network and directory, to connect those working on approaches for recovering energy and other valuable resources from wastewater with test facilities appropriate for their needs. Today, the collaboration is announcing the next step in this effort: two NSF-sponsored

- workshops in May and June of this year to develop metrics and structure for the network.
- Supporting innovation clusters. EPA is committing to provide \$200,000 in funding this year for its recently established Environmental Technology Innovation Clusters Program. The Cluster Program supports a network of 15 regional groupings of businesses, government, research institutions, and other organizations focused on development and deployment of technologies for addressing the Nation's water and other environmental challenges. In addition, the Cluster Program is releasing a [statement](#) from Cluster leaders recommending core actions to advance water innovation in the United States.
 - **Expanding monitoring and forecasting capabilities.** Accurate, timely, and sufficient data, information, and predictions about our Nation's watersheds and water cycles are critical to informing planning and decision making at all levels. That's why the Administration is announcing new steps to expand these capabilities:
 - Releasing a new National Water Model. In June 2016, NOAA will release a new National Water Model that will dramatically enhance the nation's river-forecasting capabilities. The model – which relies on data from EPA and USGS and was developed by the National Center for Atmospheric Research (NCAR), funded by NOAA and NSF – will deliver forecasts for approximately 2.7 million locations, up from 4,000 locations today – a 700-fold increase in forecast density. Other institutions are already launching their own workstreams to build on the new model, including:
 - The NSF-funded **Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)** and the **University Consortium for Geographic Information Science (UCGIS)** will work with NOAA and other Federal agencies to analyze the Nation's land-surface elevation – an important step in being able to add real-time flood-inundation mapping to the National Water Model. This project will be supported by computation at the CyberGIS facility at the **University of Illinois at Urbana-Champaign**, and by a seven-week Summer Institute for graduate students at NOAA's National Water Center in Alabama.
 - **Esri** and **KISTERS North America, Inc.**, in collaboration with the academic community and NOAA, will build on the National Water Model and the recent success of the National Flood Interoperability Experiment to develop a National Flood Model that enhances flood forecasting for the Nation. KISTERS will work with the Center for Research in Water Resources of the **University of Texas at Austin** to integrate flood-relevant data from local agencies and other sources into the National Flood Model, with a goal of launching a pilot version of the National Flood Model later this year. Esri will develop data-processing and spatial-analysis workflows to advance research into streamflow and flood-inundation forecasting, and will make the forecasts from the National Flood Model freely available online. In addition, Esri will help visualize this data through interactive online-mapping applications that will combine the forecasts with other data to identify at-risk populations and help inform decision making.
 - Advancing western water data. NASA's JPL is committing to treating western water issues with the same urgency and rigor as its spaceflight projects. By integrating

- hydrological observations from NASA's flagship satellite and aircraft platforms, JPL's new Western States Water Mission will provide a high-resolution picture of western water availability (snow, surface water in rivers and reservoirs, soil moisture, and groundwater) that has not been previously possible. The data will be widely accessible on the same advanced visualization platform that NASA uses for its Mars missions.
- Enabling early identification of algal blooms. EPA, NOAA, NASA, and USGS are collaborating to develop an early-warning indicator system using historical and current satellite data to detect algal blooms, which can severely impact drinking-water quality, in U.S. freshwater systems. As part of this effort, in 2015 the collaborating agencies launched the Cyanobacteria Assessment Network (CyAN) project, which will create a standard and uniform approach for early identification of algal blooms, with an initial focus on high-priority states. Today, the project is announcing that it will expand to continental coverage by 2017.
 - **Improving information and tools.** The following new Federal resources and actions will help inform planning and decision-making with respect to our Nation's water resources:
 - Memorandum to enhance Federal coordination. Army Corps, USGS, NOAA and FEMA are today renewing a Memorandum of Understanding (MOU) for Collaborative Science, Services and Tools to Support Integrated and Adaptive Water Resources Management. The MOU will increase collaboration and partnership in areas of mutual interest to address challenges, streamline processes, and share data and information (both within the Federal government and with non-Federal institutions) in order to increase efficiency and enhance service delivery. Important efforts where progress has been made include national flood inundation mapping, systems operability and data synchronization, as well as coastal and climate-related activities. An action plan will be developed this year to guide activities for the next five years under the MOU.
 - SECURE Water Act: Report to Congress and Visualization Tool. USBR is releasing a new Report to Congress – as mandated by the SECURE Water Act of 2009 – that provides a basin-by-basin overview of impacts to U.S. water supplies from climate change, and includes numerous potential adaptation strategies relevant to each basin. USBR will also release an interactive SECURE Water Act Visualization Tool – a web-based companion product to the Report to Congress that allows the public to interact with the data presented in the Report, and to better understand the risks that the data indicate.
 - Hydrologic Engineering Center River Analysis System (HEC-RAS) Update. The Army Corps is releasing an update to its HEC-RAS engineering software, allowing the software to perform two-dimensional hydrodynamics along with integrated one- and two-dimensional modeling, and unsteady flow computations. The two-dimensional capabilities allow users to determine the timing and direction of river flow, important for evaluating environmental and stream stability issues, and for studying consequences associated with possible dam- and levee-failure scenarios. The update also includes new capabilities for modeling surface water-groundwater seepage, as well as water-quality and sediment-transport modeling enhancements.
 - Water-resources dashboard. NOAA and several outside organizations are launching a shared water-resources dashboard as part of the U.S. Climate Resilience Toolkit.

- This dashboard will serve as a common resource for urban planners and local officials to easily access many of the flood and drought data sets needed to support climate-adaptation planning. To connect users around the dashboard, NOAA will run a series of web sessions to explain the data on the dashboard and demonstrate how these data can be incorporated into decision making.
- Flood flow-change detection tool. The **Army Corps** is releasing a web tool that will enable users to detect nonstationarities, or significant changes, in the statistics of annual maximum daily streamflow at any USGS gage site. The tool will improve understanding of climate variability, which will in turn allow water-resources planners and engineers to better understand and project how streamflow is, and will continue to be, affected by climate change.
 - Nearshore processes research. The **Army Corps** is announcing that this fall, it will release an implementation plan for addressing the research needs identified in the 2014 *Future of Nearshore Processes Research* report. The plan, which was cosponsored by the American Shore and Beach Preservation Association and is being developed by a collaboration among 30 institutions and eight Federal agencies, will integrate research from the Federal government, academia, industry, and NGOs to inform recommendations for managing water quality and other important factors in the often highly developed yet vulnerable nearshore environment.
 - Report to Congress on Upper Mississippi River Restoration. This year, the **Army Corps** will release the fourth in a series of reports to Congress on the status of the Upper Mississippi River Restoration, an effort that includes five States (IA, IL, MI, MN, and WI) as well as the EPA, USGS, the USDA Natural Resources Conservation Service, the U.S. Fish and Wildlife Service, and numerous other partners and stakeholders. The report will include information on partnership among Federal and state agencies and other organizations; construction of high-performing habitat restoration, rehabilitation projects; and increased understanding through monitoring, research, and assessment, and engagement with other organizations.
- **Raising public awareness and engagement.** To give more individuals and communities across the country the opportunity to learn more about and share their thoughts on water, the Federal government will:
 - Create a new video series. In a new video series produced by **NBC Learn**, the educational arm of NBCUniversal News Group, **NSF** will explore how cutting-edge science and engineering research can transform how the country understands, designs, and uses water resources and technologies. The four-part series, which will be made freely available for public and classroom use across a variety of platforms in fall 2016, will promote public awareness of water infrastructure designs and needs, water conservation in rural and urban settings, water-treatment techniques, and water-quality issues.
 - Host a National Climate Game Jam – Water! From April 15–24, 2016, **NOAA** will host a National Climate Game Jam – Water!, bringing together youth, climate scientists, and educators at sites around the country to create new virtual and physical game prototypes that allow players to learn about climate change and water through science-based, interactive experiences. The winners of the Jam, along with the full list of game ideas and videos, will be posted online. This

Game Jam follows on an initial commitment through the Climate Education and Literacy Initiative.

Advancing Water Sustainability on All Fronts

Across the country, stakeholders in all sectors have responded to the Administration's call to action for an all-hands-on-deck effort to build a sustainable water future, including with new actions being announced today.

Managing Water for the Long Term

To reduce and mitigate the incidence and impact of water stresses on U.S. communities, it is essential to develop, implement, and normalize sustainable, integrated, long-term water-management strategies. Today, states and localities are making new commitments to lead on this front.

- The **Colorado River Basin States (CO, WY, NM, UT, CA, NV, AZ)**, the **Southern Nevada Water Authority**, the **Metropolitan Water District of Southern California**, the **Central Arizona Water Conservation District**, **Denver Water**, the **Upper Colorado River Commission**, and **USBR**—are committed to addressing water scarcity on the Colorado River, a critical source of water for 40 million people, businesses, and the environment in the United States and Mexico. Based on the success of first Pilot agreements, today, the coalition is announcing the launch of Phase II of a program that brings together farmers, ranchers, and tribes with municipalities and policymakers to conserve water for the long term. The program compensates water users for implementing voluntary water-conservation projects that decrease use, improving critical water-storage levels at Lakes Powell and Mead for the benefit of the entire Colorado River Basin.
- The **State of Oklahoma** is launching its Water for 2060 Initiative, a unified approach for achieving the goal set by Oklahoma Governor Fallin and the State Legislature of using education and incentives to ensure that Oklahoma's freshwater use in 2060 is at or below 2012 levels, while supporting Oklahoma's continued population growth and economic prosperity. The initiative establishes a unified approach across each major water-use sector for increased water conservation, recycling, and reuse. By establishing a plan with a 50-year outlook, the Initiative hopes to ensure that all current and future Oklahomans have access to a readily available supply of clean, safe water for many more decades to come.
- The **City of Los Angeles** is committing to capture an additional 12 billion gallons per year of stormwater for infiltration and reuse by 2025, on top of the more than 8.8 billion gallons the City captures today. Stormwater capture is a key component of the City's goal to source 50% of its water locally by 2035 and helps fulfill multiple objectives in the City's Sustainable City pLAn.
- The **City of Tucson** and the **City of Phoenix** are announcing the next step in their exchange agreement, signed in 2014, that allows Phoenix to store water allocated under the Central Arizona Project in Tucson's underground recharge facilities, which simultaneously decreases both pumping costs for Tucson and construction costs for Phoenix. Today, the Cities are announcing that over the next year, they will work together to achieve a more than five-fold increase of water stored under this agreement, resulting in storage of more than 1.6 million gallons of water, or enough to serve over 17,000 homes for a year.

- The **Santa Ana Watershed Project Authority (SAWPA)** is implementing its “One Water One Watershed” integrated regional water management 2.0 plan with a \$100 million watershed program to deal with long-term drought through water-use efficiency and conjunctive-use storage of water within the groundwater basins of the Santa Ana watershed. SAWPA will share lessons learned from this program with other drought-stricken regions across the western United States.

Investing in Water Solutions

The availability of private capital is an essential component of ensuring long-term solutions to complex environmental and social challenges. Recognizing this, the Administration has launched numerous efforts and institutions – including the [Clean Energy Investment Initiative](#), the Department of the Interior (DOI)’s [Natural Resources Investment Center](#), EPA’s [Water Infrastructure and Resiliency Finance Center](#), and USDA’s Rural Opportunity Investment Initiative – to encourage creative financing opportunities that help address these challenges while advancing economic development goals. The following private companies responded to the Administration’s call to action and today are announcing new steps to invest in the Nation’s water future, including nearly \$4 billion in financing for water-infrastructure projects.

- The **Baton Rouge Water Company (BRWC)** recently constructed a “scavenger well couple” to achieve *in situ* separation of brackish and fresh water in an underground drinking-water aquifer. Today, BRWC is announcing that it will invest an additional \$40,000 this year into a redesign of the couple’s pumping equipment, to enable the Company to remove chlorides at a higher rate and extend the usefulness of the aquifer years into the future. In addition, BRWC is announcing that in 2016 and 2017, it will invest resources in another saltwater-intrusion prevention project, focusing on a different and deeper chloride-threatened groundwater drinking-water source in the local area. As part of this project, which involves **USGS**, the **Capital Area Groundwater Conservation Commission**, and **Louisiana State University**, BRWC will temporarily dedicate two of its groundwater drinking-water aquifers for development and testing of new saltwater-intrusion prevention techniques.
- **CDP** is introducing water security into its supply-chain program, supporting U.S. businesses in reducing water impacts and enhancing water security across their vast supply chains. Through CDP’s supply-chain program, companies will use water data from more than 1,500 suppliers to shift \$218 billion worth of corporate procurement spending to support sustainable water use.
- To help foster investment in resilient and sustainable water infrastructure, **Ceres**, the **Climate Bonds Initiative**, the **Alliance for Global Water Adaptation**, **CDP**, and the **World Resources Institute** are launching a Water Climate Bonds Standard to provide investors with verifiable, science-based criteria for evaluating water-related bonds and to assist issuers in the global corporate, municipal, sovereign, and supra-sovereign markets in differentiating their green-bond offerings. The **San Francisco Public Utilities Commission** expects to be the first issuer to align a forthcoming bond sale with the standard in order to finance sustainable stormwater management and wastewater projects.

- The **Municipality of Anchorage** is announcing major infrastructure improvements to advance water and energy efficiency at its new \$300 million Sullivan Plant 2A power-generation facility in northeast Anchorage. Two city-owned utilities, Municipal Light & Power (ML&P) and Anchorage Water & Wastewater Utility (AWWU), are partnering to capture waste heat to apply to water, reducing water-heating energy requirements in homes and buildings. ML&P's new technology will reduce water consumption by as much as 75 million gallons of water annually, while AWWU's adjoining \$11 million energy-recovery project is expected to save the community \$1–2 million annually in energy costs.
- The **North Bay Water Reuse Authority** is committing to develop a \$250 million portfolio of recycled-water and water-management infrastructure projects that will deliver a new water supply for agricultural irrigation, environmental restoration, and municipal purposes. The projects seek to capture and put to beneficial use up to 8 million gallons per year of recycled water as new supply through a diverse portfolio of projects designed to meet the needs of urban, agricultural, and environmental water users. These include water treatment using advanced filtration and UV processes, small-scale reservoirs, storage tanks, distribution systems, and groundwater-management facilities.
- **Renovate America's** PACE (Property Assessed Clean Energy) program, HERO (Home Energy Renovation Opportunity), has facilitated \$1.3 billion in financing for energy efficiency, renewable energy, and water efficiency home improvement projects in California. Today, Renovate America is setting a goal to enable \$1.4 billion in new financing for an estimated 111,000 water-efficiency improvements over the next 10 years, which will help create an additional 12,000 jobs and \$2.4 billion in economic impact. Through this new private investment and the projects already completed through HERO, 34.1 billion gallons of water will potentially be saved over the next 10 years.
- The **San Bernardino Municipal Water Department (SBMWD)** is announcing that in 2017, it will begin construction on Phase I of its Clean Water Factory, a \$300 million recycled-water facility that will provide water for irrigation and treated water for recharging the groundwater basin that supplies the SBMWD. When the facility is completed (targeted for 2025), it will treat 6.5 billion gallons of water per year, helping to drought-proof water supplies for more than a million people.
- **Sustainable Water** is committing to deploy \$500 million in capital to develop 50 eco-engineered decentralized reclamation and reuse systems requiring no upfront costs under a Water Purchase Agreement. Modeled after a campus-wide water-reclamation system used at Emory University, these systems will yield 7.5 billion gallons of recycled water annually for beneficial reuse while potentially reducing risks associated with water availability, aging infrastructure, and rising rates. The systems, which Sustainable Water will deploy in collaboration with local authorities, are designed to serve as a platform for community outreach and research while helping enable bulk water users improve resiliency and reduce their burden on existing resources.
- **Ultra Capital** will invest \$1.5 billion over the next decade to support financing of decentralized and scalable water-management systems, including reclaimed water treatment, wastewater management, stormwater capture and storage, water-distribution

systems, natural or biomimetic wastewater treatment, and energy converting bio-digesters. This commitment has the potential to support conservation and treatment of over 10 billion gallons of water over the next decade.

- **XPV Water Partners** is committing to invest an additional \$250 million to help emerging water companies bring new solutions to the marketplace. This commitment builds on the more than \$100 million to date that XPV has invested in water-technology companies.

Accelerating Development, Demonstration, and Deployment of Innovative Technologies

This past December, the Administration underscored the importance of boosting water sustainability through the greater utilization of water-efficient and water-reuse technologies; and promoting and investing in breakthrough R&D that reduces the price and energy costs of new water-supply technology. Individuals and institutions across the country responded to the Administration's call to action and are taking new steps to support these goals.

- The **Alabama Center for Rural Enterprise (ACRE)** is launching a challenge to design decentralized, on-site wastewater technologies that are sustainable, affordable, and will work with the "black belt" soils. These innovations may alleviate chronic problems of failing septic systems in rural Alabama. Nationally, over 270,000 households have experienced failures in their residential sewage-disposal systems over the last three months. The result is direct exposure of vulnerable populations to hazardous raw sewage in their home.
- The **Austin Technology Incubator (ATI)**, part of the IC² Institute at the **University of Texas at Austin**, is launching a Water Technology Incubator (ATI Water) to accelerate the development of innovative water startups. ATI Water will build a Texas-wide network of entrepreneurs and university-based water researchers to source significant engineering and scientific breakthroughs and prove them across commercial pilot facilities. In the next five years, expects through this network to help create 500 new water-technology jobs.
- This year, **AccelerateH2O**, in partnership with **ATI Water** and **elequa**, will launch three of a planned seven regional hubs in Texas for demonstrating innovative approaches for water reuse, brackish desalination and aquifer recharge in rural communities, optimization of water systems, and smart irrigation. AccelerateH2O will work through these hubs to engage 500 youth and student "water innovators" in open-source projects, expedite commercialization of 35 early-stage breakthrough water technologies, and launch four competitions focused on addressing critical water challenges. These efforts will support AccelerateH2O's goals of increasing the recovery of "lost" water by 15-22% annually, reducing overall water use by 7.5-10% annually in drought-prone areas, and increasing sources of "new" water by 28-30% annually by 2020 across all of Texas.
- **BREW** (Business. Research. Entrepreneurship. In Wisconsin.), a water-technology accelerator program of **The Water Council**, is committing to help 75 new water-technology start-ups get their ideas launched into successful businesses over the next five years through a mentorship and intensive 6-month, strategic training program. In addition, The Water Council is announcing an expansion of its BREW Corporate Accelerator Program, with **A.**

O. Smith Corporation and **Rexnord** joining **Veolia** in the program to support start-ups in water technology.

- Led by the **City of Chicago**, the **Metropolitan Water Reclamation District of Greater Chicago**, and **World Business Chicago**, a group of prominent water entities in the Chicago region is launching Current, a new water platform connecting local public utilities, private industries, research institutions, and entrepreneurs. At launch, Current will focus on three programs: (1) a public-private research consortium; (2) a network of diverse demonstration sites for new water technologies; and (3) a circular economy/business-model innovation program to encourage public and private entities to reuse resources from wastewater and water streams. These programs are expected to support over 400 businesses and create more than \$250 million in economic value over 10 years.
- The **City of Milwaukee** is announcing that the **International Water Association (IWA)** – will be establishing its first North American Regional Office in Milwaukee. In addition, the City is announcing a new formalized partnership with **The Water Council**, the **University of Wisconsin-Milwaukee**, and **Marquette University**. Together, these institutions will:
 - Build and/or attract over 75 water-focused entrepreneurs and small businesses to Milwaukee over the next five years.
 - Train up to 400 students annually with water-focused education qualifications through Milwaukee-area universities.
 - Implement the Alliance for Water Stewardship International Water Stewardship Standard at 10% of the businesses in the Milwaukee region by working with the local private sector.
 - Collaborate on practical water research, using the MetroLab framework, to address municipal and global water challenges.
- The **Clean Water Innovation Initiative**, along with its 17 founding business, government, non-profit, and research partners, is launching an EPA Water Innovation Cluster to serve the Puget Sound region in Washington. The Cluster will include three major components: (1) a physical technology-development accelerator; (2) an early (seed) stage grant/loan/equity fund to finance entrepreneurial start-ups; and (3) a national virtual network of water-industry incubators and clusters. Today, the Initiative is announcing that it will, over the next three years, work with its 30 vertically and horizontally integrated water-industry partners to support 10 companies through the accelerator and provide \$2 million in seed funding.
- **Cleantech Open** is announcing the launch of its CTO-H2O water-innovation accelerator program. Through CTO-H2O, Cleantech Open and its partners will deliver commercialization training, access to capital, peer-to-peer connections, talent acquisition, water-industry expertise, and mentorship for innovative water startups. The six-month program, which expects to support approximately 30 water startups during its first year, seeks to provide national and global visibility to water technologies focused on efficiency, re-use, data, and infrastructure monitoring in the water space.
- The **Cleveland Water Alliance**, in partnership with the **Great Lakes Biomimicry Institute** and the **University of Akron**, is announcing the Water Innovation Biomimicry Program.

The program will: (1) develop and bring to market biomimicry-inspired solutions (solutions based on natural patterns and strategies) to improve water quality in watersheds; (2) prepare design guidelines, protocols, and policy frameworks to support integration of these solutions; and (3) conduct workshops on these solutions for interested private- and public-sector groups. The program's first project will utilize 3D-printing technology to bring biomimicry-inspired green bulkheads to the Cuyahoga River.

- This year, **Confluence**, a water-technology innovation cluster serving the Ohio River Valley, will hold a Technology Showcase connecting utilities with the technologists, developers, and manufacturers that can help enable specific solutions to 21 urgent water challenges identified by utilities at a conference in November 2015. Confluence will announce the Confluence "W" Prize prior to the Showcase, recognizing innovative use of technologies that address water challenges and protect public health. EPA's Environmental Technology Innovation Clusters Program works closely with EPA researchers in Cincinnati to support Confluence.
- The **Everglades Foundation** is announcing its international partnership with the **Ontario Ministry of Environment and Climate Change** on its \$10 million George Barley Water Prize, a freshwater innovation challenge that seeks to find a cost-effective solution to the phosphorus-pollution problem threatening the Everglades and water bodies across the globe. This partnership aligns with recent targets made by the United States and Canada to reduce algae-feeding phosphorus entering Lake Erie by 40%. The Ontario Ministry of Environment and Climate Change has agreed to participate in the design of the challenge and in the development of cold climate parameters for testing technologies in conditions similar to the Great Lakes. Additionally, the Ministry is exploring sites and facilities to potentially host one stage of the Prize on an impacted water body in Ontario.
- **H2OTECH**, a water-technology innovation cluster headquartered at **Georgia State University** and supported by EPA's Environmental Technology Innovation Clusters Program, is announcing two efforts to grow the water-innovation economy in this area. H2OTECH, which serves 60 million people in the southeast United States, will:
 - Leverage \$2.5 million per year by 2020 to support startup companies and academics for water-technology development and commercialization.
 - Expand the regional water economy job base from 30,000 to 35,000 jobs by 2020 by focusing on the emerging water-resource strategy of indirect potable water reuse in the region.
- **Imagine H2O**, a water-innovation accelerator, has launched a multiyear initiative to develop data solutions in the water industry. Today, the non-profit organization is announcing that it will expand its portfolio to source, launch, and scale 30 new water-data businesses, from monitoring and sensing to software and analytics. Imagine H2O will also double its existing partner network of utilities and companies, which provide water supply to 30 million residents across the country.
- The **International Desalination Association (IDA)** is committing to host an Energy and Environment Symposium in the United States in early 2017, bringing together approximately 250 leaders in the global desalination community to explore desalination and

water-reuse issues and facilitate discussions to shape a path to a sustainable water supply for future generations.

- The **Israel-California Green-Tech Partnership** builds on California and Israel’s March 2014 Memorandum of Understanding to cooperate on developing water and green technology solutions. Today, the partnership is announcing a new joint venture with the city of **Los Angeles’ Cleantech Incubator (LACI)** that will culminate in the introduction of 10 Israeli companies in water, energy, and agricultural technologies to the California market. These companies will help accelerate the shift to a greener economy, with a particular focus on benefiting drought-stricken populations across the state, including the nearly 123,000 farmers in California.
- The **Massachusetts Institute of Technology (MIT) Climate CoLab**, an online crowdsourcing platform, is launching a new Energy-Water Nexus contest, soliciting high-impact proposals on the interrelated challenges of climate change, water, and energy. The challenge seeks to harness the power of collective problem-solving to catalyze innovative solutions at the water-energy nexus to build a sustainable water future.
- The **National Water Research Institute (NWRI)** is establishing a consistent validation program for innovative water-treatment technologies. Through the program, teams of experts will review the technical merits and provide a site audit of a new technology, and produce a freely accessible validation report of the technology. By providing data on the performance of new water-treatment technologies to purchasers, permittees, vendors, and the public, this program aims to significantly reduce the cost and time it takes to bring a new technology to the marketplace. In addition, later this year, NWRI – in partnership with the **WaterReuse Research Foundation (USA)** and **National Centre of Excellence in Desalination (Australia)**, will hold a workshop for approximately 50 delegates from the Pacific Rim nations to facilitate breakthroughs in advanced water-treatment technologies. NWRI will produce a publicly available workshop report providing a framework for funding and collaboration on advanced water-treatment technology R&D.
- **Pentair** will establish two centers over the next three years to help accelerate innovation in industrial water reuse in manufacturing, and water stewardship in food and beverage processing. Pentair expects that these centers will reach an audience of more than 100,000 stakeholders by engaging Pentair’s customers and third-party organizations to innovate, validate, and collaborate. The centers will also serve to share best practices to help municipal, industrial, and commercial companies reduce their water footprint.
- The **State of Colorado** is working with private, public, and philanthropic partners to create new institutions that will help drive water innovation and infrastructure. These institutions are:
 - [A Water Data and Innovation Hub](#) in Denver to serve as a laboratory for innovation and data analytics specifically focused on water. This “Hub” is the product of a two-and-a-half day summit of private and community foundations that Colorado Governor John Hickenlooper convened in February 2016.
 - [A Center of Excellence and an Intermountain Infrastructure Exchange](#) in Colorado to (1) help leverage Federal and state funds for public-infrastructure projects with

private capital; (2) assist project proponents in considering how up-front capital can be supplied from private-sector partners; and (3) assess how project risk can be transferred to private-sector capital partners and away from the public.

- **Toray** is announcing plans to develop an R&D center in the United States to further water treatment and membrane research efforts. The center will develop research collaborations with universities and U.S. National Laboratories to further reduce the cost and energy use of desalination technologies.
- The **Toro Company** is announcing three new grants to help drive water sustainability: (1) \$24,000 to support the **Wyland Foundation's** 2016 National Mayor's Challenge for Water Conservation; (2) \$6,000 per year for the next three years to support the **Western Growers Association's** new Technology and Innovation Center and business incubator in Salinas, CA; and (3) \$5,000 in training support and \$3,000 in school garden drip kits as part of an educational initiative to teach children the value of water and growing food.
- The **US Water Alliance** and the **San Francisco Public Utilities Commission** are committing to convene a national commission to accelerate the adoption of urban on-site water reuse. The Commission will bring together stakeholders to develop concrete, actionable policy and regulatory recommendations for establishing standards and practices to dramatically increase the adoption of on-site water reuse in communities across America.
- **WaterNow Alliance** will recruit 100 public utilities to join the Alliance and sign on to its Statement of Principles, committing to implement sustainable-water solutions to address drought and climate change in their communities. The Alliance will work with these member utilities to substantially increase their portfolios of innovative and sustainable water solutions, with a goal of reaching at least 10 million people by the end of 2016. In addition, the Alliance is committing to work with two to three municipalities to implement sustainable water-use projects on the ground in order to demonstrate the feasibility and benefits of the projects.
- **WaterStart** (founded as Nevada's Water Center of Excellence) is a public-private partnership that has raised more than \$2 million to help address the biggest technical challenges to managing water in Nevada. Today, WaterStart is announcing that **MGM Resorts** is joining the partnership to recruit, evaluate, and demonstrate new water technologies.

A key component of ensuring the adoption of groundbreaking water solutions is demonstrating that solutions are successful beyond the laboratory. Today, institutions are announcing new efforts to pilot such solutions at scale.

- **Hampton Roads Sanitation District** and its project partner **CH2M** are committing to pilot test this summer two process concepts for advanced water treatment for indirect potable reuse and several emerging technologies for mainstream wastewater treatment and nitrogen removal. These pilot studies are part of a \$1 billion sustainable water-recycling initiative that will pump up to 120 million gallons of water into a coastal plain aquifer to provide a sustainable source of groundwater, inhibit saltwater intrusion, slow the rate of land

subsidence in Eastern Virginia, and significantly reduce surface-water discharges from HRSD facilities into Chesapeake Bay tributaries.

- The **Iowa Department of Agriculture and Land Stewardship** and **Iowa Agriculture Water Alliance** are co-leading the Midwest Agriculture Water Quality Partnership (MAWQP), a \$47M public-private partnership that leverages a \$9.5M Regional Conservation Partnership Program (RCPP) award from USDA. Today, MAWQP is announcing its first major effort: the launch of a new Platform Integration Pilot, which will combine conservation and business-planning tools and environmental metrics to help agribusinesses implement conservation practices and more efficiently use resources like fertilizer, reducing nutrient loss and improving water quality and farm profitability. The partnership estimates that this pilot will reach 10,000 farmers and improve resource management on at least 50,000 acres of farmland.
- The **MIT** and the **University of Hawaii** are announcing the formation of an international team – comprised of researchers from the **Arava Institute**, **Jordanian German University**, **MIT**, **Technion**, **Tel Aviv University**, the **University of Hawaii**, and the **Weizmann Institute** – to launch a pilot study in the Red Sea region of an Advanced Pumped Hydro and Reverse Osmosis (APHRO) system to provide renewable-based energy storage and fresh water through sustainable desalination. Based on the success of the pilot, the team will explore opportunities to establish APHRO plants in other water-scarce regions, including Southern California and Hawaii.
- **Natel Energy, Inc.**, and the **University of California, Berkeley's** Renewable and Appropriate Energy Lab are partnering to select, deploy, and assess a 1–5 megawatt project in California that will deliver 1.6 to 3.2 million gallons of groundwater recharge annually. This pilot project will help inform approaches to deliver cost-effective renewable energy while simultaneously increasing groundwater recharge, improving flood mitigation, and restoring wetland habitat.
- **River Islands**, a planned community located in the San Francisco Bay Area, is announcing a new partnership among **Nexus eWater**, local reclamation and irrigation districts, the River Islands developer, area builders, and the **City of Lathrop** to implement a system to provide River Islands with on-site water and energy recycling. By allowing homeowners to directly treat approximately two-thirds of the home's water to a quality suitable for outside irrigation, the system will reduce the intake of fresh potable water to the home.
- The **Sonoma County Water Agency**, which provides drinking water to more than 600,000 residents north of the Golden Gate, is collaborating with Federal and non-Federal partners on the Lake Mendocino Forecast Informed Reservoir Operations research and demonstration project. Working with **Army Corps**, this project will use new technologies and better weather forecasting to improve management of the Lake Mendocino Reservoir, potentially leading to water savings of roughly 10–25%.

Supporting Critical Research

Addressing water challenges requires understanding of the cause, scope, and impact of such challenges, as well as investigation into possible solutions. That's why today, institutions are announcing new funding and initiatives to support critical water research.

- **American Water** will invest \$3 million in new research projects in 2016 to help improve water service and quality. This announcement builds on American Water's commitment to invest \$5.5 billion over the next five years into needed infrastructure renewal. In addition, American Water is announcing two new collaborations: (1) with **General Electric**, to identify and explore advances in the Internet of Things to help solve pressing challenges within the water industry; and (2) with **ComEd**, to pilot an Advanced Metering Infrastructure (AMI) project that will harness new information technologies to better manage water usage and quality.
- **Arizona State University (ASU)** is launching FutureH2O, a new, five-year research initiative focused on identifying opportunities for domestic and global water security. The effort will connect ASU researchers with private- and public-sector partners to drive solutions to the most difficult water problems facing society. Specific commitments of this initiative include funding an urban landscape design and renovation campaign that reduces residential outdoor water use in at least one Phoenix metro service area by one-third by 2025; training 1,000 undergraduate and professional leaders across the U.S. Sunbelt in the next ten years to find solutions to challenges at the food-energy-water nexus; and building a food-energy-water technology test bed on the ASU campus to test innovative approaches to agriculture in the arid Southwest.
- Three universities in the Los Angeles area – the **University of Southern California**, the **University of California, Los Angeles**, and the **University of California, Riverside** – are forming a consortium to partner with the **Los Angeles Conservation Corps** and local water utilities at the SEA Lab facility in Redondo Beach, CA. The consortium will take advantage of the Lab's access to ocean water to run bench and small pilot testing on desalination, and to carry out ocean and marine studies separate from desalination. The consortium is exploring potential partnerships with the West Basin Municipal Water District and other local water agencies that are looking at ocean desalination as a water supply. The test area will be accessible to tour groups, with SEA Lab corps members demonstrating testing procedures and outcomes.
- The **Chicago Council on Global Affairs** is launching a new Global Water Policy Initiative (GWPI) to study and make recommendations on leading themes in international water policy – especially those of particular relevance to Chicago and the Midwestern United States. With quarterly workshops, in-depth research, and coordination with other major institutions involved in global water policy, the GWPI aims to engage a growing number of academics, experts, and policymakers on these issues, ranging from dozens initially to hundreds by the second year of the GWPI.
- The **City of Oceanside, CA** is launching a comprehensive pathogen study to support potable water reuse. By examining the effectiveness of upstream processes in removing and

inactivating pathogens from treated wastewater, the study will provide critical data for health departments seeking to assess the safety of potable water reuse, and will help determine the level of additional treatment that reused water must undergo after passing through natural systems. The results of this study will support the City's goal of putting more than 1.6 billion gallons of recycled water annually to beneficial use.

- The **Cleveland Water Alliance**, with support from the **Coca-Cola Foundation**, is launching the second phase of its Value of Water Study. The study explores the link between clean and reliable water to regional economic growth and business, including industry, jobs/workforce development, and gross regional product. The study will tie direct, indirect, and induced economic impacts directly to regional commitments to clean water.
- This spring, the **Colorado School of Mines (Mines)** will synergistically integrate multiple water-focused research centers into the Colorado School of Mines Water Resources Institute. Through this new Institute, over 100 faculty and associated researchers will work to explore, develop, and deploy engineering and science solutions, across scales, to address water scarcity and sustainable future water supplies for people, environment, industry, and agriculture. The Institute will also help educate future water scientists, engineers, and practitioners, and help connect communities and other stakeholders to address challenges related to water and other limited resources.
- The **Electric Power Research Institute, Inc. (EPRI)** is planning to invest approximately \$200 million in research and development (R&D) over the next decade to minimize the environmental impacts of water withdrawal and consumption in the electricity sector; address issues concerning the availability and cost-effectiveness of plant water-treatment options; and provide more energy-efficient and demand-responsive options for the transportation, treatment, and storage of water. In addition, EPRI is building industrywide R&D collaboratives, with participation from **DOE, NSF, and ARPA-E**, to evaluate the performance of a number of new, early-stage technologies that have the potential to reduce power-plant water use by 15% to nearly 100%.
- **GE** is announcing that over the next decade, it will (1) invest over \$500 million into research and development to fuel innovation, expertise, and global capabilities in advanced water, wastewater, and reuse technologies; and (2) increase its customers' daily water-treatment capacity to more than seven billion gallons of water per day, up from three billion today. In addition, the **GE Foundation** is announcing that over the same time, and in partnership with **Emory University, Assist International, GE Water, and UNICEF**, it will support the design, installation, and training of small-scale water-purification units to produce over three billion gallons of treated water at select health facilities in developing countries. This commitment builds on the \$4.7 million that the GE Foundation has already invested in this space.
- In 2014, **Georgetown University** launched a course dedicated to helping business and diplomatic leaders understand how they can reduce the water-related risks they face and contribute to water stewardship. Today, Georgetown is announcing it will expand this training to current and future diplomats and global leaders studying in its Business School and School of Foreign Service. The university will train at least 500 additional leaders in

water stewardship by 2021, and will share its educational approaches and lessons with others.

- **Kansas State University** is committing approximately \$200,000 to support teams of researchers, educators, and outreach specialists working to advance scientific understanding and technology development that will minimize water use and maximize water quality in agricultural settings and at the rural/urban water interface. The teams will include 20 dedicated and 80 auxiliary researchers.
- The network of 54 **National Institutes for Water Resources (NIWR)**, in partnership with USGS, is announcing that over the next five years, approximately \$18 million will be invested annually in more than 200 new, locally identified water projects. In addition, over the next five years, NIWR institutes pledge to increase strategic state, regional, and national partnerships that enhance their student-training activities, work with public and private sectors, and research addressing pertinent national and regional water issues.
- The **National Renewable Energy Laboratory (NREL)** is launching a \$50,000 project to explore linked energy-water microgrids. The project, funded by NREL's Laboratory Directed Research and Development Program and conducted in collaboration with the **University of Arizona**, will explore how to improve co-management of distributed water and energy systems, with applications for remote locations around the world.
- The **Oklahoma State University (OSU)**, in collaboration with **Texas A&M University, Kansas State University**, and **USDA**, recently initiated a new project promoting the use of advanced sensor-based technologies to improve agricultural water management and minimize irrigation losses, thereby helping conserve declining agricultural water resources in the southern High Plains. Today, the collaboration is announcing that the universities and USDA will each provide over \$770,000 over the next three years to develop three research sites and ten demonstration sites in collaboration with growers. In addition, the collaboration will develop new mobile apps and an online video series to assist agricultural producers, crop consultants, and government personnel in using modern sensors to increase irrigation efficiency. Finally, OSU is announcing a new research initiative on sustainable methods of augmenting limited freshwater resources for crop irrigation with produced water from oil and natural-gas exploration.
- This year, the **Pacific Institute** will address the world's pressing water challenges by: (1) working with the Business Alliance for Water and Climate Change to improve the resilience of the private sector to the greatest risks to water systems from unavoidable climate change; (2) conducting a comprehensive assessment, which will be made publicly available, of the impacts of California's severe drought on the economy and environment; and (3) expanding the efforts of the CEO Water Mandate – a corporate water-stewardship initiative administered in partnership with the UN Global Compact – to tackle water challenges facing industrial and agricultural businesses.
- **Texas A&M University's** Water-Energy-Food (WEF) Nexus Initiative is announcing three efforts to advance awareness and understanding of, and solutions at, the WEF Nexus. The Initiative will (1) launch a community of practice that will identify and respond to national

and global opportunities to assist the development of effective WEF management practices, and to develop a set of common, integrated metrics to better understand the WEF system; (2) develop an educational framework to teach stakeholders about the Nexus, through which the Initiative expects to develop 100 WEF leaders over the next five years; and (3) release comprehensive, multi-scale tools to define and quantify the interconnectivity between WEF and infrastructure. The tools will be initially deployed in the rapidly developing San Antonio, TX area and will ultimately be tested, adapted, and applied nationally.

- Researchers at the **University of California, Berkeley** and the **University of Colorado, Boulder** are launching a project to quantify the influence of vegetation and terrain snowmelt-driven runoff, which provides over half of the water supply in the western United States. By analyzing high-resolution snowpack data from the Tuolumne River Basin, the project will learn more about how this influence varies from one year to the next and from one point in the watershed to another, helping scientists to develop a new generation of predictive snowpack models and understand how climate-driven changes in vegetation may affect snowpack.
- The **University of California, Los Angeles (UCLA)** is announcing nearly \$3.5 million in funding for new water-related research in alignment with the Sustainable LA Grand Challenge, a multisector research collaboration that aspires to transition Los Angeles County to 100% locally sourced water by 2050. UCLA's Water Technology Research (WaTeR) Center is announcing two new efforts to support water sustainability and security. First, the WaTeR Center will develop and test technologies for remotely monitored and controlled autonomous water-treatment and purification systems designed to serve communities and small towns, and will deploy three to four distributed water systems in remote and disadvantaged communities in California within the first two years of this project, with plans to ultimately expand to rural areas across the United States. Second, the WaTeR Center will launch new research initiatives focused on reducing the operational and energy cost of water desalination. These research projects complement UCLA's collaboration with the City of Los Angeles to construct a satellite wastewater treatment plant that is expected to provide UCLA with at least 360 million gallons per year of recycled water – supporting the university's goal to reduce potable water use per capita on campus by 36% by 2025.
- The **Prairie Research Institute** at the University of Illinois at Urbana-Champaign, in cooperation with the **National Great Rivers Research and Education Center** in Alton, IL, is launching the Resilient Watersheds Initiative, an interdisciplinary research project focused on developing coupled models to inform decision making related to water in the Illinois River Drainage Basin. The initiative will also deliver science-based education and extension services to the people living in the floodplains of the Illinois River and its major tributaries who are managing these issues. The Prairie Research Institute is planning to provide \$300,000 annually to support this Initiative.
- The **University of Notre Dame's** Environmental Change Initiative and **Indiana University** are improving water quality in the Nation's heartland through the Indiana Watershed Initiative, using watershed-scale conservation to reduce nutrient runoff from farms. Today,

the project team, with collaborators at **Iowa State University**, and funding from the **USDA Natural Resources Conservation Service**, **USGS**, **The Nature Conservancy**, **Walton Family Foundation**, **Indiana Soybean Alliance**, and **Indiana Corn Marketing Council**, is announcing the expansion of the project to include economic valuation. With farmer cooperation, the team will quantify the economic and environmental benefits of on-farm conservation to facilitate implementation of these practices across the 11 million corn and soybean acres in Indiana.

- The newly established interdisciplinary undergraduate-degree program in Water: Resources, Policy, and Management at **Virginia Tech** is designed to prepare students for rapidly expanding employment opportunities to address complex water-resources challenges for a sustainable and secure water future. Today, Virginia Tech is committing to expand this program by reaching enrollment exceeding 100 undergraduate students, increasing the program's endowment to \$2 million, and expanding by 2018 to include a graduate program offering M.S. and Ph.D. degrees for students seeking advanced interdisciplinary training.
- The Leaders Innovation Forum for Technology (LIFT) is a joint initiative by the **Water Environment Research Foundation (WERF)** and the **Water Environment Federation (WEF)** to accelerate innovation in the water industry. Today, WERF/WEF are announcing the launch of a new LIFT Technology Focus Area on Water Reuse, which will establish a new network of water users identifying, evaluating, and demonstrating innovative technologies to help improve the effectiveness and reduce the costs of water reuse. WERF and WEF will collaborate with **WaterReuse** on implementing the new Focus Area. In addition, in September, WEF will release a Water Reuse Roadmap to encourage resource recovery from wastewater.
- **Xylem** will help drive innovation with an intention to invest at least \$300 million in water-focused research and development activities through 2018. In addition, in collaboration with the **U.S. Water Partnership** and with technical advice and input from other public and private partners, Xylem will issue a new national water-innovation challenge with funding of \$50,000, focused on themes including meeting growing demand for water, protecting cities from flood and drought, and protecting the Nation's water resources. Finally, Xylem will support the efforts of the **Everglades Foundation** and the George Barley Water Prize by providing Xylem instrumentation as well as technical expertise to support field evaluations of nutrient-sensing and removal technologies.

Enhancing Data Collection, Access, and Usability

Recognizing that “you can't manage what you can't measure,” institutions are announcing new efforts to enhance water-data collection, access, and usability.

- **10.10.10** is will support creation of a global center for water-data innovation. In addition, 10.10.10 is committing to launch a water-focused iteration of its “10.10.10” convenings, which will challenge entrepreneurs over the course of 10 days to solve 10 “wicked problems” in a water policy area.

- The **California Data Collaborative** is a joint effort of six California agencies to establish and accelerate the development of smart conservation targets by collectively leveraging water-use data from the 3.7 million people the agencies serve. The Collaborative is announcing that over the next six months, it will use its more than 1.8 billion records to develop a new, statewide water-conservation framework, customized to the unique needs of California's diverse communities, which these agencies will strive to implement.
- The **Community Collaborative Rain, Hail and Snow (CoCoRaHS)** network, a nationwide, volunteer precipitation-monitoring program, is announcing that later this spring, it will launch a citizen-science soil-moisture monitoring program. In collaboration with the National Integrated Drought Information System, measurements gathered through this program will be used to help validate and calibrate the increasing volumes of soil-moisture data being collected by terrestrial and satellite instrumentation worldwide.
- **Corona Environmental Consulting's** WaterSuite™ enables real-time monitoring and management of water systems and facilitates collaboration within the water community. Today, Corona is announcing expansion of two WaterSuite™ applications. First, by the end of 2016, the Monitoring Plan Portal application, which was developed in partnership with the **State of Louisiana Department of Health and Hospitals** Drinking Water Program, will integrate more than 100,000 crowd-sourced field-sample results collected by water operators using internet-connected mobile devices. These data, and other data on the Portal, will be freely available to all 1,343 Community Water Systems in Louisiana. Second, by the end of 2016, coverage of the Source Water Protection Application will extend to 25 states and include data from more than 700 Federal, state, local, and user-specific sources; up from 13 states and more than 300 sources today. This commitment will extend active assessment and protection of watersheds supplying drinking water to more than 13.5 million customers.
- The **Desert Research Institute (DRI)** and **University of Idaho (UI)**, motivated by the White House Climate Data Initiative and in partnership with **Google**, developed ClimateEngine.org, a web application that enables users to quickly process and visualize satellite earth observations and gridded weather data for environmental monitoring and to improve early warning of drought, wildfire, and crop-failure risk. Today, DRI and UI commit to expanding ClimateEngine.org to include new drought and water-demand monitoring metrics and over 30,000 place-based averaging domains relevant for Federal and local agency rangeland, agricultural, and water-resource management in the western United States.
- The **Earth Genome** is committing \$1 million over the next 12 months to build out a public data set on viable wetland-restoration opportunities in the continental United States. Wetlands are a critical component of green infrastructure to modulate freshwater supply for industry, agriculture, and municipalities. This commitment will extend a pilot developed with the **World Business Council for Sustainable Development** and in collaboration with **Dow** to assess the financial value of wetland restoration in the Brazos River Basin in Texas.
- **Los Alamos National Laboratory (LANL)** is announcing that in May, it will release new data on the impact of climate-driven heat-stress and forest mortality on Colorado River flow. The data will include basin-wide flows for multiple climate and disturbance scenarios

out to the year 2100. LANL is working with multiple DOE national laboratories, Federal agencies, and large power utilities to examine these impacts on the energy-water nexus and to develop strategies for response.

- Today, **OmniEarth**, which provides technology that combines and analyzes data to determine how much water homes and businesses need, is announcing that it will expand its efforts to promote residential water conservation in California by launching commercial and agricultural water-efficiency analysis on a national scale. As part of this effort, OmniEarth will make its land-cover data available through the **California Data Collaborative**.
- **SciStarter**, a research affiliate of Arizona State University's Center for Engagement and Training in Science and Society (ASU CENTSS), is committing to advance citizen science to build a sustainable water future by:
 - Expanding the network and impact of citizen science. SciStarter has trained over 40 citizen-science teams (representing over 1,700 individuals) nationwide to take soil-moisture measurements validating data captured by NASA's Soil Moisture Active Passive satellite. Today, SciStarter is committing to train an additional 60 teams over the next 18 months – including at least one team in every U.S. state – as well as at least one trained “citizen-science ambassador” per state. SciStarter will also work with **EPA, USGS, and USDA** to make this citizen-science data easily discoverable and available online, and will work with **USGS** to launch a data analysis and visualization challenge based on soil-moisture data.
 - Establishing a “Lending Library” of monitoring equipment. This year, SciStarter will launch a program in four cities – Atlanta, Philadelphia, Research Triangle Park, NC, and Tempe/Phoenix – to partner with local science museums and libraries to provide training and lend out equipment to support volunteer soil-moisture monitoring. These cities will serve as pilots for a planned collaboration among SciStarter, **ASU CENTSS**, and the **National Informal STEM Education Network (NISE Network)** to establish regional networks of lending libraries anchored in science museums across the country.
- Researchers at **Stanford University** and **Aqua Geo Frameworks** have been using a helicopter equipped with geophysical sensors to collect data on buried patches of sand, gravel, clay and water in California's drought-stricken Central Valley, down to a depth of 1,600 feet. Stanford and Aqua Geo are announcing that in April, lithologic maps based on these data of the hidden aquifers and water pathways that make up the region's poorly understood groundwater system will be made freely available for the first time. Farmers and resource managers will be able to use these lithologic maps to inform decisions about where and when to pump water or refill depleted aquifers, thus helping to ensure the long-term viability of their water supplies for domestic and agricultural uses.
- The **Gulf of Mexico Coastal Ocean Observing System**, one of eleven regional programs of the U.S. Integrated Ocean Observing System, is announcing the launch of two open data portals to monitor the health of Gulf coastal ecosystems. The Hypoxia-Nutrient Data Portal, developed in partnership with the **Gulf of Mexico Alliance**, aggregates information from multiple sources to support informed strategies needed to reduce nutrient inputs and

hypoxia impacts to Gulf coastal ecosystems, extending from the inshore waters of estuaries to the continental-shelf break of the five U.S. Gulf states. The Citizen Science Data Portal aggregates data gathered by hundreds of students and citizens Gulf-wide who are monitoring environmental conditions in their local areas, allowing State, Federal, and academic programs to supplement their datasets with much more granular, localized information.

- **The Water Council**, working with the Innovation Exchange, has launched the Global Water Port, an online research tool which enables access to thousands of real-time water-data sources. Today, the Water Council is partnering with the **Federal Lab Consortium (FLC)** and the **U.S. Water Partnership** to make data from Federal labs more accessible through the Global Water Port.
- The **University of Alaska Anchorage**, as part of the EPA-funded **DeRisk Center**, is developing a GIS application that makes the data housed within the EPA Safe Drinking Water Information System database usable for a water-plant operator. The app's goal will be to allow an operator to easily determine where else in their state a particular water-treatment process is being used, thus reducing the steps and cost required in seeking process assistance. Today, UAA is committing to complete the app and make it publicly available through the Center's website by summer 2017, and to share the app at state, national, and international conferences throughout its development.
- The **University of California Water Security and Sustainability Research Initiative** is committing to develop, by 2018, an integrated water-accounting system. The system will include a new basis for managing groundwater by using a novel combination of conventional groundwater-level data and modeling tools that will be disseminated to hundreds of water managers by 2017, including those in 127 California state-defined groundwater basins.
- Over the next 18 months, **Water Canary** will launch a water-quality data collection service, offering real-time nutrient data collected from sensors the company installs and maintains to make it affordable for businesses, farmers, scientists, and government agencies to use water more efficiently and eliminate the waste of excess fertilizer in agriculture. The company has set the goal of bringing all major river systems in the continental United States online by 2020, increasing the total number of publicly available real-time data points from under 5 million a year today to over 10 billion.
- The **Water Funder Initiative** is launching Project Water Data. Project Water Data is an effort to work with Federal, state, and local governments, as well as private- and social-sector partners, to modernize data systems that support healthy communities, thriving agricultural systems, and clean waterways for our wildlife. With seed funding provided by philanthropic partners in the Water Funder Initiative, and support from the **Association of California Water Agencies**, the **City of Los Angeles**, the **Colorado Water Conservation Board**, **Environmental Defense Fund**, **DC Water**, the **Metropolitan Water District of Southern California**, **Milwaukee Metropolitan Sewerage District**, **Northern California Water Association**, the **State and Federal Contractors Water Association**, **The Nature Conservancy**, **Trout Unlimited**, and others like the **Aspen Institute**, Project Water Data

will: (1) mobilize a coalition to highlight the value of open, integrated water data in supporting better decision-making and citizen engagement; (2) develop a core set of principles for open and integrated water-data systems; and (3) unlock water data from all sectors and develop products that increase the discoverability, usability, and interoperability of data.

- **WaterSmart Software** will, over the next ten years, expand its utility partnership community to reach more than 45 states and over 5,000 water utilities with its digital customer-engagement technologies. The company estimates that as a result of this expansion, more than 128 billion gallons of water (the equivalent annual water use of 1.2 million households) will be saved, and carbon-equivalent emissions will be reduced by more than 1 million metric tons. In an effort to advance understanding of water use and related energy consumption and impact on greenhouse-gas output and global climate change, WaterSmart is committing to make newly available aggregated and anonymized water-consumption and demographic data from its operations freely available in a standardized format for public-research purposes.

Conserving Water and Watersheds

Reducing water use and maintaining the integrity of our Nation's natural systems are two important parts of ensuring that everyone – humans, animals, plants, and ecosystems – have access to sufficient water when and where they need it. Individuals and institutions responded to the White House call to action with new steps to conserve water and water basins across the United States.

- The **Alliance for Water Stewardship (AWS)-North America**, a program of **The Water Council**, is promoting corporate water stewardship in the United States through implementation of the AWS International Water Stewardship Standard (AWS Standard) across U.S. industrial and agricultural sectors. Today, AWS is committing to working with 200 large industrial and agricultural water-using sites to implement the AWS Standard, to provide a framework to help sites use water more strategically and identify and mitigate internal and external water-related risks. AWS expects this effort to save more than one billion gallons of freshwater over the next decade.
- At the **Society of Freshwater Science** annual meeting in May 2016, **American Rivers** will host a special session entitled “Rivers at Risk,” at which distinguished scientists in the field will assess threats to rivers in the 21st century and launch a series of papers and a special journal issue leading up to the 50th anniversary of the Wild and Scenic Rivers Act on October 18, 2018.
- The **Beverage Industry Environmental Roundtable (BIER)** will this year launch a “Project Cost Curve Database” that will collect information on projects related to energy and water conservation at BIER's 20 global beverage-company members and their 1800 facilities. BIER members and facilities will be able to use this information to inform the development of their own resource-conservation projects. In addition, BIER is launching “Future Scenarios 2025”, an integrated effort to explore how access to water and other resources is

likely to change over the next decade, and to introduce business leaders and other stakeholders in the beverage industry to practices that could increase water sustainability.

- Under the leadership of the **Bonneville Environmental Foundation**, the business water-stewardship networks **Change the Course** and **Protect the Flows** are merging. The new organization is announcing that over the next 18 months, it will work to educate and engage 500,000 Americans in water-conservation practices, and will provide an award to a network business member for innovation and water conservation in the West.
- **Coca-Cola** will work to establish 10 corporate partnerships by 2017 to expand its efforts to engage with local communities, government, and business partners to support the sustainability of local watersheds.
- **Cox Enterprises** has set goals of becoming water- and carbon-neutral and sending zero waste to landfill by 2044. As part of these goals, Cox is committing to reduce its water use by 6.5% annually through four parallel efforts: (1) reclaim approximately 10 million gallons of water annually through Water Conservation Centers; (2) partner with American Rivers and Ocean Conservancy for water cleanups in Cox locations across the Nation; (3) deploy new technology and water-efficient fixtures throughout Cox facilities; and (4) use xeriscaping at locations with large land footprints to save more than 42 million gallons of water annually.
- In response to the ongoing western drought, the **East Bay Regional Park District** in California, the largest regional park system in the United States, has established a goal to save 250 million gallons of water over the next five years. As part of this effort, the Park District is announcing that it will (1) eliminate standard grass in some high-use areas (replacing with drought-tolerant grasses), and partner with local sod growers and seed companies to make drought-tolerant grasses available to the general public; and (2) convert a number of grass areas into native plant gardens for water-efficiency and public-education purposes. These two initiatives will potentially cut water use by 30%-50%.
- **Ecolab** is committing to improve water-productivity intensity by 30% in its United State facilities by 2020 (from a 2015 baseline). This will conserve approximately 100 million gallons of water over five years.
- The **Environmental Defense Fund (EDF)** is announcing a partnership with **Pecan Street, Inc.** to gather data and conduct analysis to help 50 households in Houston and Austin understand the connection between their water and energy use. Results of this analysis will help Houston and Austin reduce the water and energy footprint of the more than 3 million utility customers in the two cities. In addition, EDF will work with the **University of Texas at Austin**, the **University of Texas at San Antonio**, and the **University of California, Davis** to help water providers of three to five major Texas cities better manage the energy use embedded in their water systems, with an additional one or two states to be announced later this year.
- **General Mills** is committing to champion development of stewardship plans by 2025 for high-risk watersheds in its global supply chain. As part of this commitment, General Mills

will work to develop the science and tools necessary to achieve sustainable groundwater management in relevant California watersheds, working in partnership with stakeholders in each watershed, **The Nature Conservancy**, and **Sustainable Conservation**.

- To minimize water use in apparel manufacturing, **Levi Strauss & Co.** has created Water<Less™ finishing techniques, which save up to 96% of the water typically used in the denim-finishing process. Today, Levi Strauss & Co. is committing to produce 80% of its products using its Water<Less™ techniques by 2020, and to make its Water<Less™ methods, along with other water-conservation approaches and tools, publicly available to others within and outside the apparel industry. In addition, Levi Strauss & Co. is committing to, by 2020, use 100% sustainable cotton from sources such as Better Cotton and recycled cotton that use less water and fewer pesticides.
- **Nestlé** is announcing that it will implement the Alliance for Water Stewardship standard in its California operations. Additionally, by 2017, Nestlé will put in place operational plans that will save 144 million gallons of water annually in Nestlé’s California factories, building on its commitment to transform one of its nine California factories into a “zero water” facility.
- The **Sonoran Institute**, in partnership with **the Central Arizona Conservation Alliance**, is announcing an initiative to develop a collaborative conservation plan for the Phoenix metropolitan area. The plan will help the 24 cities and towns in Maricopa County protect local watersheds and encourage sustainable recharge of aquifers, and thereby fulfill state requirements for water availability needed to permit future growth. Wide-spread adoption of this plan will support the long-term supply of groundwater needed to sustain the economic vitality of the region while ensuring the conservation of the region’s ecology.
- The **Texas Environmental Flows Initiative**, a joint effort of the **Meadows Center for Water and the Environment**, **Harte Research Institute**, **National Wildlife Federation**, **The Nature Conservancy**, **Ducks Unlimited**, and the **National Fish and Wildlife Foundation** is committing to the development of the foundational science and market analysis to launch a water-transaction market in Texas for the benefit of bays and estuaries. Over the next two years, the Initiative will execute at least one significant water transaction with demonstrable benefit to ecological resources injured by the Deepwater Horizon oil spill, and lay the groundwork for market development in three bay systems whose ecological health and commercial fishing productivity are imperiled by declining freshwater inflows.
- **Trout Unlimited (TU)** is announcing two new efforts to improve drought resilience in two river basins in the western United States. First, in the upper Green River flowing through Wyoming, TU will work with Wyoming cattle ranchers to identify workable approaches for ranchers to share water with downstream municipalities. This effort will potentially save approximately 1.5 million gallons of consumptive water use per year. Second, TU will finish work in 2016 with the **Methow Valley Irrigation District** in eastern Washington State, investing in aging water infrastructure in a way that increases the reliability of their irrigation-water delivery, sends water to the town of Twisp, and increases flows for imperiled salmon and steelhead.

- With support from the **William Penn Foundation**, the **University of Delaware** and **Nature Conservancy of Delaware** are announcing the formation of the Brandywine Christina Healthy Watershed Fund in Delaware and Pennsylvania. The water fund is designed to provide up to \$5 million per year from public-private water utilities and other public-private sources for agricultural conservation programs upstream in the regional watershed that provides drinking water to over a half million people in both Delaware and Pennsylvania.
- **Water Quality Indiana (WQI)** is launching a three-year river-restoration and conservation initiative that will engage more than 50 high-school seniors and undergraduates from private and public universities in east-central Indiana. With 2016 funding of \$28,000 from the Virginia B. Ball Center for Creative Inquiry at **Ball State University**, this inter-institutional partnership will develop a virtual space for student-contributed water quality data and scholarship shared through learning modules and multimedia. Core aspects of this initiative will be disseminated to over 250 educators through national-level workshops and replicated within a growing network of partner institutions.
- The **World Wildlife Fund**, together with bi-national partners including **The Coca-Cola Company**, **Tecnológico de Monterrey**, **Desert Landscape Conservation Cooperative**, and **South Central Climate Science Center**, is announcing a Rio Grande/Rio Bravo Forum to be held in February 2017 to share successes and identify innovative solutions to address the region's mounting water stress. The Forum will bring together over 100 diverse water users from the United States – building towards a Binational Forum including both the United States and Mexico – to cooperate on ensuring the long-term integrity of the Rio Grande/Rio Bravo basin, which provides fresh water for over 13 million people.

Helping Communities in Need

Access to clean, safe drinking water is often a particular problem for predominantly poor, minority, or rural communities. Today's announcements include responses to the White House call to action that will target water assistance to those in need.

- The **Dow Chemical Company** is partnering with **Genesee County Habitat for Humanity** to offer free water-filtration systems to 150 Habitat for Humanity homes in Flint, MI. Through this partnership, Dow will provide the reverse osmosis (RO) technology for the the water-filtration systems that will be installed in residents' homes.
- **Evoqua** will donate 10 Sky Hydrant water-filtration units – each with the capacity to meet the daily water needs of more than 6,000 people – to underserved, emergency, and disaster-relief efforts in the United States. In addition, Evoqua is committing to (1) invest an additional \$50 million in research and development to further expand water reuse and reclamation efforts across municipal and industrial applications in the United States; and (2) to, by 2021, increase the amount of water the company treats for reuse and reclamation to 5 billion gallons of water a day – double Evoqua's current capacity.
- **Micronic Technologies** is announcing that it will provide its MicroDesal™ technology at reduced cost to small community water/wastewater facilities to moderate deteriorating

infrastructure. Micronic is also committing to developing this technology through partner collaborations – in particular, with the **University of Virginia's** College at Wise – to provide secure, safe, potable water to small, remote communities throughout the United States and the world.

- In response to extreme drought in the State of California, the **San Francisco Foundation** is investing \$150,000 in partner organizations to address social vulnerability and build community resilience to water scarcity in low-income communities and communities of color. The grants will help community groups engage in the implementation of California's new drought measure and ensure that the associated public revenues build sustainable water projects in disadvantaged communities, among other activities.
- **Triple Clear Water Solutions, Inc.**, a company that provides plug-and-play water-purification technologies, is committing 1% of its sales – which is expected to be more than \$1 million over the next several years – to fund clean-water initiatives in communities in need of help.
- **WaterFX** and **Partners in Health** have teamed up to form OpenWATER, a non-profit organization dedicated to accelerating the deployment of innovative water technologies for enhancing water security in resource-poor and underrepresented communities such as rural communities, tribal nations, and island territories. OpenWATER will draw on WaterFX's experience in sustainable water treatment – to deliver water technologies in tens of communities over the next two to three years.

Raising Public Awareness

With water often traveling hundreds of miles before flowing out of a tap, many Americans don't know where their water comes from, the underlying stresses facing their water supply, or approaches that can be adopted to help ensure long-term water security. Individuals and institutions are today announcing new efforts in response to our call to action to raise awareness and improve knowledge of water in the United States.

- This year, **America's Watershed Initiative (AWI)** will launch a #raisethegrade communications campaign on the importance of the Mississippi River watershed, which received a D+ in the most recent AWI Report Card. The campaign will focus outreach to key private- and public-sector leaders in the watershed, including representatives of 400 institutions that participated in the Report Card process. AWI will pair this leader outreach with a mass-media strategy targeting all five basins of the Mississippi River watershed.
- **Blue Legacy, Global Water Challenge, the U.S. Water Partnership, Veolia** and partners are launching SOURCE, a new, freely accessible water-storytelling platform that will educate the public about the importance of water and offer recommended water-management practices.
- A diverse coalition of global businesses with significant supply chains or operations in California are announcing their commitment to join *Connect the Drops*, a campaign urging policy measures by decision-makers to maximize California's local and state water

resources. Launched by **Ceres**, a nonprofit sustainability advocacy organization, the campaign has 23 signatories from the private sector. The signatories joining the campaign today – Anheuser-Busch InBev, Annie’s, Eileen Fisher, Kellogg Company, and Xylem – have collectively committed to saving nearly 1 billion gallons of water through 2020 through current efforts and new goals.

- This spring, **GRACE Communications Foundation** is releasing a Spanish version of its Water Footprint Calculator, a free, nationally used tool that illustrates how everyday actions impact water use. The new release will allow the tool to help an even wider audience understand their water use and reduce their water footprint.
- For the past eight years, **Green Schools** has been honoring environmental excellence, innovation, and stewardship across the United States through its Annual Green Difference Awards program, which is sponsored this year by the **Walmart Foundation**. This year, Green Schools will add a category for Best Practices in Water Innovation. In addition, Green Schools is announcing a new Water Innovation Challenge. K-12 students will compete in three areas – Best Green Schools Water Practices, Best Student-led Water Practices in our Community, and Best Innovative Water Business Idea – and will have the opportunity to pitch their ideas to leading businesses and government officials at the 9th Annual Green Schools Summit.
- The **Interstate Council on Water Policy (ICWP)** is announcing that over the next 24 months, it will engage over 100 partners – including State water-management agencies, interstate basin commissions, and NGOs – in (1) communicating the importance of water data and science in informing water resources policy and planning; and (2) identifying and promoting opportunities to enhance State and regional water-resource planning efforts. As part of this effort, ICWP will convene at least two national stakeholder workshops focused on water-data collection and water use, and at least two workshops highlighting successful practices from State and interstate water-plan development.
- The **Irrigation Association** and the **National Ground Water Association** are partnering to launch a new educational campaign aimed at helping the Nation’s 121,000 farms enhance water efficiency and reduce energy consumption of their 476,000 irrigation wells. The campaign will include an online resources portal; a national series of presentations, seminars, and webinars; and collaborations with USDA’s Natural Resources Conservation Service and extension office.
- **Itron** has partnered with Professor Michael Webber at the **University of Texas at Austin** to create and distribute an interactive curriculum that teaches key concepts about water and energy for K-12 students, colleges, industry, and the general public. This curriculum will combine traditional content with multimedia components such as audio and video, along with dozens of interactive exercises, maps, and games in order to improve water and energy literacy, encourage conservation and resourcefulness, and inspire the next generation of innovators. Working with its community partners nationwide, Itron will make the app-based curriculum available free of charge, with a goal of reaching at least 10,000 students in 2016 and expanding globally in 2017.

- **Levi Strauss & Co.** will expand its partnership with the **Project WET Foundation** to train Levi Strauss & Co. employees to become water-conservation ambassadors, empowered to educate their local communities about the importance of saving water. Together, Levi Strauss & Co. and Project WET have developed a training curriculum to teach employees and local communities about the impact their clothing has on the planet, and changes individuals can make in their daily lives to conserve water. Levi Strauss & Co. is committing to provide this water-education training to 100% of the company's corporate employees by 2020.
- The **National Environmental Health Association (NEHA)** is announcing an initiative to increase awareness of (1) the effect of the environment on water supplies and the role environmental-health professionals play in keeping water safe; and (2) approaches to ensure that water reuse systems do not negatively impact public health. Under this initiative, NEHA will work with its members and 50 affiliate organizations to compile information on these topics, and share the information collected with partner organizations, environmental-education programs, and local health departments.
- **The Smithsonian's** Museum on Main Street program will initiate a traveling educational exhibition, *Water/Ways*, which explores the centrality of water in our lives as an environmental necessity and an important cultural element. Beginning in May 2016, the Smithsonian, in partnership with state humanities councils, will launch the exhibition on simultaneous year-long tours of five states – Florida, Idaho, Illinois, Minnesota, and Wyoming – and will also support the exhibition traveling to more than 180 towns across 30 states over the next six years. The exhibition will be accompanied by the launch in June 2016 of a website that will serve as a gateway to share resources and collect stories on water.
- Over 1.6 million people in the United States still lack basic plumbing facilities such as a toilet, a shower or bathtub, and running water. **Southeast Rural Community Assistance Project, Inc. (SERCAP)**, working with the **National RCAP**, is committed to reducing this number by 10% over the next ten years. Through a combination of social-media campaigning, crowd-funding, and its "A Day Without Indoor Plumbing Challenge", SERCAP will bring awareness of this problem to the general public, in addition to the private and government sectors.
- The **Theodore Roosevelt Conservation Partnership (TRCP)** is announcing that more than 800 sportsmen and women have signed a petition recognizing serious risks to the American water supply, including fish and wildlife habitat, and calling for action to reduce the risks of water shortages, create flexibility in water management, and improve the reliability of water systems on a basin scale.
- **ThinkWater** is a national campaign supported by **USDA's** National Institute of Food and Agriculture and led by the **University of Wisconsin-Extension** and **Cabrera Research Lab** to help people think differently, and care more deeply, about water. Today, ThinkWater is committing to work over the next two years to build a national coalition of at least six state-based networks to engage water researchers, educators, and extension agents in solving water-related problems through better systems thinking. This effort will begin this spring with the Wisconsin Water Thinkers Network. ThinkWater expects to directly engage

approximately 200 experts and practitioners directly involved with water issues through the Wisconsin network, and approximately 1200 once all networks in the coalition have been established. In addition, ThinkWater is announcing that this spring it will launch “Systems Thinking Made Simple,” a free, interactive online course designed to introduce systems-thinking concepts, tools, and resources to water researchers, educators, extension agents, and citizens across the country.

- **Water Education of Latino Leaders (WELL)** is launching WELL 2.0, a new effort to provide basic education about water infrastructure and finance to municipal officials in California. WELL 2.0 is a series of fully-funded conferences, roundtables, and gatherings that bring special-district elected directors into contact with municipal elected leaders to enable local communities to overcome water challenges and ensure that safe, sufficient, and affordable drinking water is available to poor and underrepresented minority communities.
- Through their water-focused corporate citizenship initiative Watermark, **Xylem** has set a goal of logging 100,000 hours of employee volunteer time over the next three years in projects to include presentations and hands-on water-monitoring activities at local schools and community centers, water source clean-up activities to protect local water resources, and charity “Walks for Water” to raise funds and awareness of water issues.
- **Zurn Industries LLC** will provide water-efficiency training to 1,000 municipal agencies and utilities as well as 10,000 building owners, architects, engineers, and contractors. The training will be focused on reducing water use through water-efficient products and practices with the goal of saving 114 billion gallons of water over the next decade.

Delivering Tools and Resources

Today’s announcements include the release of a broad range of tools and resources to support individuals, communities, and governments of all levels in developing and implementing solutions to key water challenges in the United States.

- This year, the **Alliance for Global Water Adaptation (AGWA)** is publishing the Climate Risk Informed Decision Analysis (CRIDA) methodology, a guidance document that seeks to enable water managers to plan for and manage water resources sustainably over decades and centuries despite deep future climate uncertainty. Also this year, AGWA will launch a global community of practice based on the publication, along with a series of graduate and post-professional courses offered initially through universities in the United States and Europe.
- The **American Water Works Association** is releasing Water Loss Audit Software version 5.0, a free tool that has been updated to support audits for water systems of all sizes. AWWA is challenging 1,000 water utilities to complete a water audit using AWWA's newest software in the next two years and report their findings on AWWA's website.
- The **Association of Metropolitan Water Agencies (AMWA)**, together with EPA, the **Association of Clean Water Administrators**, the **American Public Works Association**, the **Association of State Drinking Water Administrators**, the **American Water Works**

Association, the National Association of Clean Water Agencies, the National Association of Water Companies, and the Water Environment Federation, is releasing important updates to the Effective Utility Management (EUM) and the Keys to Management Success, a framework for sustainable water-utility management. The updates incorporate new science and approaches in water-utility management, such as performance monitoring and expanded use of data from automated and smart systems to optimize operations and minimize water loss.

- This spring, the **Climate Registry** will begin a pilot of the Water-Energy Greenhouse Gas (GHG) Guidance with water agencies located in Southern California Edison's territory. This pilot will serve to operationalize the Guidance as a resource for water agencies to potentially improve their water-, energy-, and GHG-reduction abilities with better data.
- **DC Water** and the **Water Environment Federation** are developing a National Green Infrastructure Certification Program to promote a skilled green infrastructure (GI)-workforce and help support community-based job creation in U.S. cities. The Program will provide certifications to individuals performing the installation, inspection, and maintenance of GI as having the required knowledge, skills, and abilities to support long-term performance and sustainability of GI systems, which can help reduce combined sewer overflows and provide triple-bottom-line benefits. The **Milwaukee Metropolitan Sewerage District** is joining with **WEF** to help advance the certification.
- The NSF-funded **Engineering Research Center for Re-inventing the Nation's Urban Water Infrastructure (ReNUWIt)**, a research partnership among **University of California, Berkeley, Colorado School of Mines, New Mexico State University, and Stanford University**, will seek to advance urban water governance by releasing a set of decision-support tools this year that will allow utilities to quantify regional urban water resiliency and sustainability; promote the diversification of urban water-supply portfolios by enabling virtual trading in regions with shared water resources; and support integrated management of water-reuse and stormwater-recharge systems. These tools are being developed in collaboration and partnership with water and wastewater utilities in California and Colorado, and will be tested by utilities and regional planning agencies.
- The **Family Farm Alliance** is releasing a report compiling case studies in several states (CA, CO, NM, OR, WA, and WY) that highlight real-world examples of water conservation, water transfers and markets, aging infrastructure problems, watershed restoration, and ecosystem enhancement on farms and ranches. The report will describe unique complications facing local water users and creative solutions, helping to scale efforts that support better management of water for both economic purposes and environmental uses.
- The **Global Lake Ecological Observatory Network (GLEON)** and the **North American Lake Management Society (NALMS)** are announcing new resources to allow broader participation in lake- and water-quality monitoring. In partnership with the U.S. Geological Survey, Esri, and other institutions, GLEON will further develop the Lake Observer mobile application with new mapping and data-visualization features to help researchers and citizen-scientists record lake and water-quality observations. GLEON and NALMS will also make the app available for use in the annual Secchi Dip-in event and partner with the

EPA to make collected data publicly available for the first time via the Water Quality Portal. In addition, NALMS is working with graduate students to develop online video tutorials to help interested students participate in water-quality monitoring and lake management. The tutorials will be posted online this summer.

- The **International Association of Plumbing and Mechanical Officials** is releasing *The Drought Toolkit: A Community Guide to Achieving Water Efficiency Today*. The freely available toolkit will help diverse stakeholders – including city councils, local planning and development departments, code-enforcement officials, state construction boards, and state legislatures – realize more than 20% in water savings in the built environment.
- **Mammoth Trading** is launching two new trading markets for water leasing in over 500,000 acres of irrigated farmland: (1) for groundwater trading in western Nebraska; and (2) for surface-water trading in central Washington State. These markets, which will be set up for municipalities and communities for free, will seek to leverage the power of computer optimization to automate the process of checking complex regulatory rules for trading and to generate economic gains among participants. By monetizing the value of conserved water, water leases generate a potential new revenue for water users and reward innovation in water use at the farm level. Mammoth Trading grew out of NSF- and USDA-funded research, which was commercialized through the NSF Innovation Corps.
- In 2017, the **MIT Center for Advanced Urbanism (CAU)**, with funding from the MIT Abdul Latif Jameel World Water and Food Security Lab, will release new design guidelines for building constructed wetlands to enhance urban water resiliency and flood protection through stormwater capture in cities. These guidelines incorporate a unique combination of engineering, design, and ecological systems to rethink how the natural landscape, water infrastructure, resiliency, and urbanism come together. This effort builds on CAU's New Meadowlands proposal to address flooding in New Jersey.
- In 2016, the **NELAC Institute** will release a new standard to improve the competency of laboratories that conduct testing on drinking, wastewater, and surface water. This standard will build upon existing standards regarding how laboratories measure and report contaminants in water at low concentrations.
- The **North American Lake Management Society (NALMS)** is announcing the addition of a new track to its Certified Lake Manager (CLM) and Certified Lake Professional (CLP) programs, allowing the participation of undergraduate and graduate students. This new track will help grow the water workforce by (1) giving students an opportunity to gain skills needed to become proficient water-quality professionals; (2) increasing the number of certified CLMs and CLPs; and (3) expanding the network of people with the knowledge of basic freshwater science, ecology, and other areas needed for informed lake management.
- In July 2015, **Rancho California Water District (Rancho)** launched MyWaterTracker, a digital platform that enables water users to visually see and track their water use on a day-by-day basis and compare current water consumption to individual household water budgets. To date, Rancho reports that use of the tool has resulted in District-wide water savings of 30% over 2013, or enough to serve approximately 20,000 households. Today,

Rancho is announcing that it will launch a mobile-app version of this tool in summer 2016, which will include additional hourly water-use data and leak alerts and is expected to reach over 33,000 residential and agricultural customers.

- **Texas A&M University (TAMU)** will develop and implement a web-based technology that provides real-time water-usage information directly to water-utility customers, empowering them to make more informed decisions about their water consumption. TAMU is partnering with the Texas cities of Arlington and Round Rock to expand use of the technology, and will continue to partner with other water utilities to test and refine the system.
- **The Nature Conservancy**, in partnership with the **American Planning Association**, the **Association of State Floodplain Managers**, the **National Association of Counties**, and **Sasaki Associates**, will develop a free, publicly available online siting guide that communities can use to identify a suite of potential nature-based solutions to flooding challenges. The guide will serve as a helpful tool to support municipalities in investing in natural systems and nature-based solutions to address their flooding challenges.
- The **Water-Culture Institute**, in collaboration with **University of Arizona** and the **Southwest Water Technology Cluster**, is developing an “Ethics-Based Decision Support Tool” (EBDST) for guiding technology, policy, and investment decisions in the water sector. Each EBDST shares a common framework, which is tailored to specific users through community engagement to set value priorities for water decision-making. The resulting decision tool can be incorporated into existing water-governance arrangements. The EBDST will be piloted in Santa Fe, NM and three other cities in 2016 and 2017, and scaled nationwide beginning in 2018.

HRSD COMMISSION MEETING MINUTES
March 22, 2016

ATTACHMENT #2

AGENDA ITEM 2. – Consent Agenda

CONSENT AGENDA ITEM 2.b.1. – March 22, 2016

Subject: Oracle E-Business Suite Managed Support Services
Rejection of all Offers (>\$200,000)

Recommended Action: Approve rejection of all offers submitted for Oracle E-Business Suite Managed Support Services contract.

Type of Procurement: Competitive Negotiation

Offeror
ST Tech, Inc.
Applications Software Technology Corporation

HRSD Estimate: \$1,188,000

Contract Description: This solicitation was for a one-year blanket purchase contract with four annual renewal options. The contract was to include functional and technical managed support services for all modules recently implemented as part of HRSD's Oracle E-Business Enterprise Resource Planning (ERP) System.

HRSD staff re-evaluated the ERP business needs in relation to the solicitation requirements. Rejection of all offers and advertisement of a revised solicitation is recommended. Revisions will include numerous clarifications and the inclusion of additional requirements related to HRSD management and usage of contract support hours for report development, customizations for new functionality and business processes, and training. Other revisions will include minimum consultant qualifications and contract monitoring, analysis and status reporting.

CONSENT AGENDA ITEM 2.c.1. – March 22, 2016

Subject: Infrared Thermographic Inspection Services
Contract Award (>\$200,000)

Recommended Action: Award a blanket purchase contract for Infrared Thermographic Inspection Services to Vick Companies, Inc. DBA Infralogix in the estimated amount of \$61,365 for year one with four annual renewal options and an estimated cumulative value of \$318,086.

Type of Procurement: Competitive Negotiation

Proposers	Technical Points	Recommended Selection Ranking
Vick Companies, Inc. DBA Infralogix	95	1
Menezil Engineering	80	2
ABM Electrical Power Solutions, Inc.	48	3
Electrical Equipment Company	45	4

HRSD Estimate: \$59,317

Contract Description: This contract is an agreement to conduct infrared thermographic inspection services of all electrical equipment within the nine treatment plants; pump stations; Middle Peninsula facilities; and the North Shore, South Shore and West Point Operation Centers. In accordance with HRSD competitive negotiation procedures, the Procurement Division advertised and solicited proposals from potential Offerors. A total of four proposals were received and evaluated based upon the requirements of the Request for Proposal.

Independent interviews and negotiations were held with the two top ranked Offerors to negotiate a fair and reasonable cost. The proposal submitted by Infralogix was ranked by technical points to be highest qualified. Negotiations resulted in no increase for year two with the remaining renewal years not to exceed three percent and subject to Consumer Price Index adjustments.

CONSENT AGENDA ITEM 2.d.1. – March 22, 2016

Subject: Central Trunk Interceptor Force Main A & B Main Line Valves
Task Order (>\$200,000)

Recommended Action: Approve a task order with T.A. Sheets General Contractors, Inc. under the contract for Sewer Repairs and On-Call Services in the amount of \$600,053.

CIP Project: CE011200

Budget	\$3,128,000
Previous Expenditures and Encumbrances	(\$1,118,600)
Available Balance	\$2,009,400

Contract Status:	Amount
Total Value of Previous Task Orders	\$557,513
Requested Task Order	\$600,053
Total Value of All Task Orders	\$1,157,566

Project Description: This project will add two main line valves to the Central Trunk Interceptor Force Main A & B (SF-119). This project will also be needed to support the planned Chesapeake-Elizabeth Treatment Plant closure and diversion of flow to the Atlantic Treatment Plant. This project is part of the approved Rehabilitation Plan – Phase I as part of the Federal Consent Decree to reduce sanitary sewer overflows in the region.

Task Order Description: This task order will provide the installation of one main line valve on the force main in the median. This will be the second of two main line valve insertions for this CIP project. A task order was approved at the September 2015 Commission meeting for the first valve insertion. Due to the potential impacts to the public if the work is not performed as planned, T.A. Sheets will be performing this work under their on-call contract. The cost of the previous valve insertion was lower because HRSD provided the line stop saddles.

Analysis of Cost: The cost for this task order is based on the unit costs defined in the blanket purchase order awarded to T.A. Sheets in 2013 but has been negotiated as a lump sum.

Schedule:	PER	June 2014
	Design	February 2015
	Construction	February 2016
	Project Completion	June 2016

CONSENT AGENDA ITEM 2.e.1. – March 22, 2016

Subject: Telephony Customer Interaction Center Service Contract
Contract Change Order (>25% or \$50,000)

Recommended Action: Approve a change order with Interactive Intelligence Group, Inc. DBA Interactive Intelligence in the amount of \$239,000.

Contract Status:	Amount	Cumulative % of Contract
Original Contract with Interactive Intelligence	\$288,549	
Total Value of Previous Change Orders	\$45,560	16%
Requested Change Order No. 3	\$239,000	
Total Value of All Change Orders	\$284,560	99%
Revised Contract Value	\$573,109	

Time (Additional Calendar Days)		0
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Change Order Description: This change order includes adding the associated funds for all services related to extension of the agreement through January 27, 2017.

CONSENT AGENDA ITEM 2.f.1. – March 22, 2016

Subject: Aqualog[®] Spectrometer
Sole Source (>\$10,000)

Recommended Action: Approve Aqualog[®] Spectrometer for use by the Technical Services Division.

Sole Source Justification:

- Compatibility with existing equipment or systems is required
- Support of a special program in which the product or service has unique characteristics essential to the needs of the program
- Product or service is covered by a patent or copyright
- Product or service is part of standardization program to minimize training for maintenance and operation, and parts inventory
- Only known source

Details: Aqualog[®] Spectrometer is used for simultaneous measurement of both absorbance spectra and fluorescence Excitation-Emission Matrices for Chromophoric Dissolved Organic Matter. It uses a Charge Coupled Device detector for environmental monitoring to perform the analysis of pollutants in water delivering results 100 times faster than previously used technology.

CONSENT AGENDA ITEM 2.f.2. – March 22, 2016

Subject: Banking, e-Billing, Lockbox and Related Services
Sole Source (>\$10,000)

Recommended Action: Approve collective extension of the following contracts through April 2017 for Finance:

1. Banking and Armored Car Services – Bank of America
2. e-Billing and related services – Kubra Data Transfer, Ltd.
3. Lockbox and Commercial Electronic Office Services – Wells Fargo Financial

Sole Source Justification:

- Compatibility with existing equipment or systems is required
- Support of a special program in which the product or service has unique characteristics essential to the needs of the program
- Product or service is covered by a patent or copyright
- Product or service is part of standardization program to minimize training for maintenance and operation, and parts inventory
- Only known source

Details: Service includes various scopes of work related to banking, bill printing and mailing, one-time payments, document management, e-payment concentration and lockbox processing services. In some instances, custom file interfaces are built to integrate transactions and the customer billing system. This extension is requested to prepare a new consolidated Request for Proposal.

CONSENT AGENDA ITEM 2.f.3. – March 22, 2016

Subject: Daparak, Inc. Re-Chroming Services
Sole Source (>\$10,000)

Recommended Action: Approve Daparak, Inc. for Re-Chroming Services on Moyno brand parts for use at HRSD.

Sole Source Justification:

- Compatibility with existing equipment or systems is required
- Support of a special program in which the product or service has unique characteristics essential to the needs of the program
- Product or service is covered by a patent or copyright
- Product or service is part of standardization program to minimize training for maintenance and operation, and parts inventory
- Only known source

Details: Re-chroming services are required for an existing pump rotor due to the replacement part no longer being available. These services are a specialized process and are authorized through Daparak by Moyno, Inc. for all Moyno parts.

CONSENT AGENDA ITEM 2.g.1. – March 22, 2016

Subject: Interceptor Line Inspection Camera Van
HRSD Use of Existing Competitively Awarded Contract Vehicle (>\$200,000)

Recommended Action: Approve the use of the National Joint Powers Alliance contract for Public Utility Pipeline and Manhole Inspection Systems to Maryland Industrial Trucks, Inc. in the estimated amount of \$336,968 for a onetime purchase.

HRSD Estimate: \$336,968

Contract Description: This is for the purchase of a RapidView Premium Mainline Sewer Camera system including the PANORAMO[®] SI Manhole Inspection System. The system is mounted on a 2016 Chevrolet Express Cutaway 4500 Diesel chassis and a 14 Cube Body used to conduct interceptor line inspections. This vehicle will replace an obsolete camera truck at North Shore Interceptors purchased in 2009.

HRSD COMMISSION MEETING MINUTES
March 22, 2016

ATTACHMENT #3

AGENDA ITEM 4. - King William Treatment Plant Effluent Utilization Monitoring Station Agreement



United States Department of the Interior

U.S. GEOLOGICAL SURVEY
Virginia Water Science Center
1730 E Parham
Richmond, VA 23228

February 25, 2016

Work Plan for Installation and Operation of a Streamflow Site on Moncuin Creek near Manquin, Virginia

The U.S. Geological Survey has been working with Hampton Roads Sanitation District regarding monitoring of Moncuin Creek in the vicinity of the King William treatment facility. Two site visits and an online areal investigation of the stream reach in the vicinity of the treatment plant indicated that the optimal location for installation of a streamflow monitoring site would be upstream from the treatment facility where Mount Pleasant Road crosses the creek. This location provides the best opportunity to collect the most accurate data representative of local stream conditions.

Funding for site installation and operation will be provided by the Hampton Roads Sanitation District. Installation and annual operational costs are provided in table 1. The total installation and operation costs for 5-years will be **\$95,550.00**. Specifications and further details for site installation and operation are attached in document that will be submitted to Virginia Department of Transportation requesting access to use the bridge crossing site.

Table 1. Installation and operation cost for fiscal years 2016 to 2020 (April 1, 2016 to June 30, 2020) for streamflow at Moncuin Creek near Manquin, Virginia.

[NA, not applicable]

Task	Year				
	1	2	3	4	5
Installation	\$30,000	NA	NA	NA	NA
Operation	\$3,650	\$15,000	\$15,300	\$15,600	\$16,000
Total cost	\$33,650	\$15,000	\$15,300	\$15,600	\$16,000

The site will be operated according to USGS standards using near-real time data collection technology. Tasks pertaining to the operation of the site will include collecting water surface elevation readings (stage) at fixed intervals, making flow (discharge) measurements in sufficient numbers to develop and maintain stage-discharge relation (ratings), producing a near-continuous time series of streamflow data, and making the data available. Data will be processed, stored, and displayed on the USGS Virginia Water Science Center web page (<http://va.water.usgs.gov/>). Calculated current and historical streamflow data will available through web page delivery at <http://waterdata.usgs.gov/va/nwis/nwis>.

Following execution of the agreement quarterly invoices for those services provided by the USGS will be issued for the continued monitoring. If there are any questions, please contact Shaun Wicklein, Hydrologic Network Operations Chief, at (804) 261-2605.



Scope of Work for Installation and Operation of USGS streamgage; Moncuin Creek near Manquin, Virginia

The US Geological Survey (USGS) is proposing the installation of a real-time, permanent tide monitoring station on Moncuin Creek at the bridge on Mount Pleasant Road (fig.1). The purpose of this station is to provide accurate and reliable water level and streamflow information of Moncuin Creek. The data collected by this gage will help the Hampton Roads Sanitation District (HRSD) monitor the amount of water flowing in Moncuin Creek and make decisions regarding the volume of effluent being from the King William treatment facility.

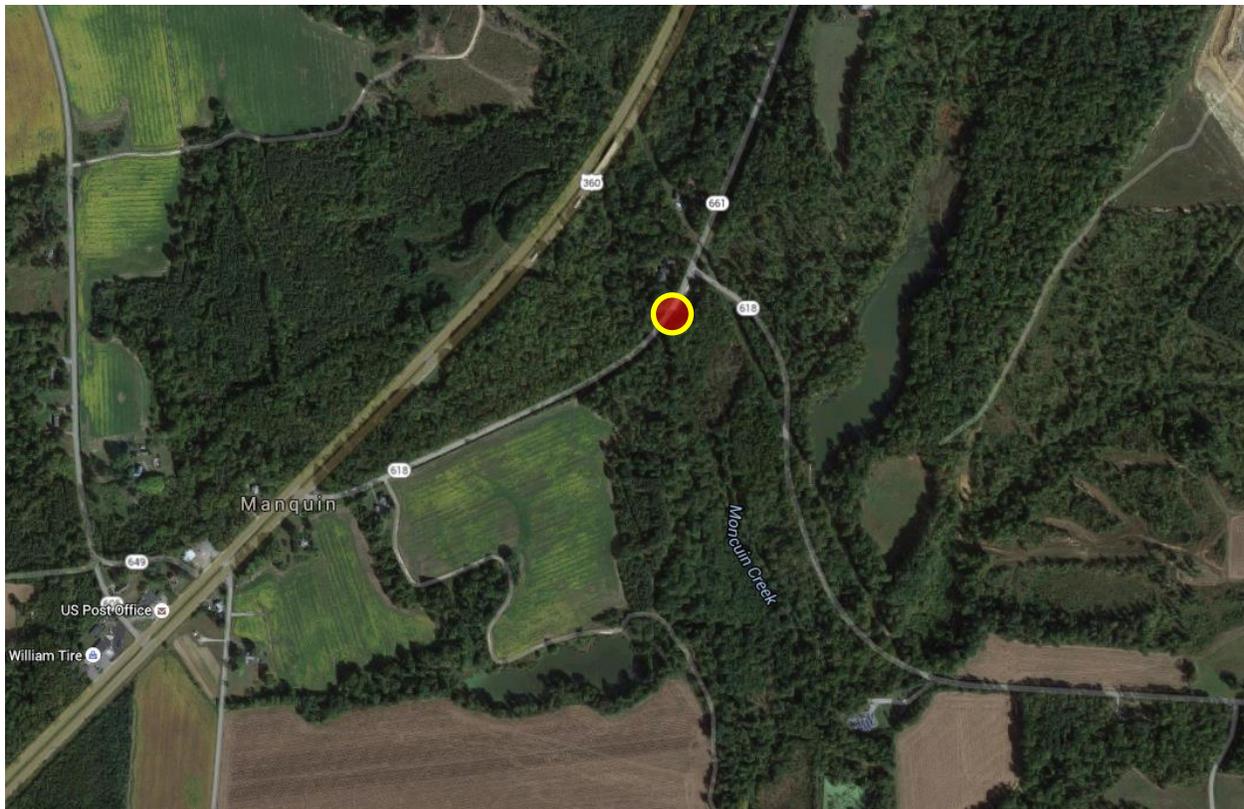


Figure 1. Satellite image showing the proposed gage location.

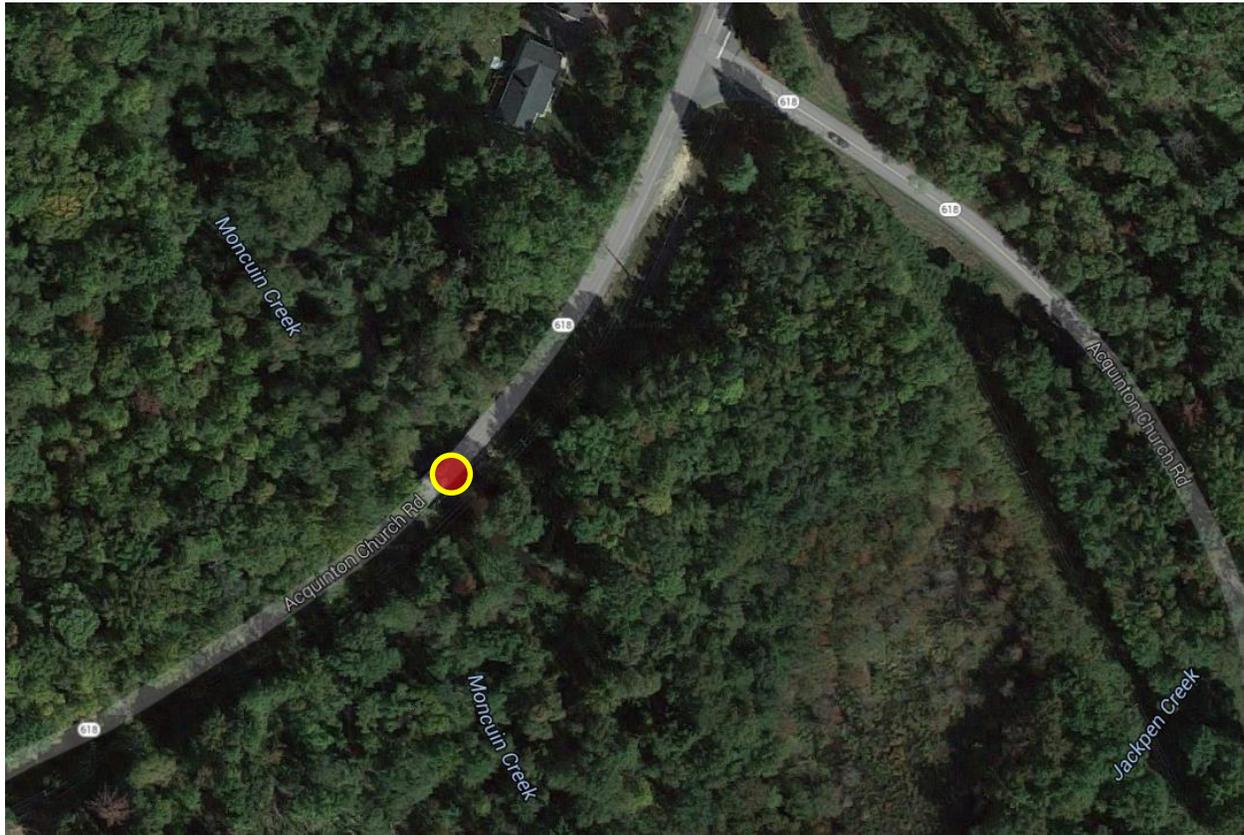


Figure 2. Satellite image showing closer view of the proposed gage location.

The USGS, along with HRSD, has identified a location that is suitable for installing a gage structure on the south facing bridge rail of the bridge over Moncuin Creek (fig. 2). The coordinates for the location, shown in figure 3, are N 37.712262°; W -77.146359°. The gage will be owned by the USGS. Operation and maintenance items, including repair and replacement of equipment, will be conducted by the USGS. Data quality assurance and storage operations will be conducted by the USGS. The cost for the installation and annual operation and maintenance will be paid by HRSD.

The gage structure will consist of the following:

- 30" x 24" x 12" aluminum enclosure mounted to two 6x6 wooden posts.
- The posts will be installed on the northeast corner of the bridge right-of-way.
- A GOES satellite antenna and 30-watt solar panel will be attached to a short 2-in pipe mast on the back of the posts.
- 1-inch diameter flexible conduit will be run along the top of the concrete curb to the center of the creek.
- A 6-in x 6-in plastic junction box will be installed at both ends of the conduit.
- An aluminum bracket will be bolted to the outside of the railing and will extend 12-inches out over the water.
- Four 3/8-in dia., 4-in long Blue Hawk concrete lag shields will be installed on the top of the curb and stainless steel anchor bolts will be screwed into the shields to attach the aluminum stand.
- A radar gage will be mounted at the end of the arm and will measure the distance to the water surface.
- A USGS wire-weight gage will be clamped to a vertical railing stanchion near the radar gage bracket.
- The wire-weight gage will be clamped using 3/8-in dia all-thread and aluminum flat bars. The all-thread will be cut flush with the nuts and will not extend into the roadway.

- The wire-weight gage will serve as the reference gage for the radar and will be used to calibrate the sensor during site inspections.
- A 2-in diameter galvanized steel pipe will be mounted to the northeast wingwall using four ¾-in dia., 4-in long Blue Hawk concrete lag shields and stainless steel anchor bolts.
- This pipe will serve as a peak-stage indicator to confirm the data collected by the radar gage is accurate.
- A similar installation is shown in Figure 4.



Figure 3. Picture showing proposed gage installation on Moncuin Creek.



Figure 4. Pictures showing similar USGS gage installations.

The GOES antenna is needed to transmit the data from the site to the GOES satellite and then to the USGS National Water Information System (NWIS). Once the data is in NWIS, it can then be displayed on the USGS NWISweb and can be accessed by the public (<http://va.water.usgs.gov/>). The solar panel is needed to charge the 12-volt battery that will be in the equipment shelter and will power the entire system.

The purpose of this letter is to inform the Virginia Department of Transportation of our plans and gain approval to begin installation of the station. Please contact Russ Lotspeich (rlotspei@usgs.gov; 804-261-2637) for more information.

HRSD COMMISSION MEETING MINUTES
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ATTACHMENT #4

AGENDA ITEM 9. – Informational Items

- a. Management Reports
 - (1) [General Manager](#)
 - (2) [Engineering](#)
 - (3) [Finance](#)
 - (4) [Information Technology](#)
 - (5) [Operations](#)
 - (6) [Special Assistant for Compliance Assurance](#)
 - (7) [Talent Management](#)
 - (8) [Water Quality](#)
 - (9) [Report of Internal Audit Activities](#)
- b. [Strategic Planning Metrics Summary](#)
- c. [Effluent Summary](#)
- d. [Air Summary](#)

March 15, 2016

Re: General Manager's Report

Dear Commissioners:

Significant rain during February combined with a wet January to produce some of the highest average daily flows seen in years at most treatment plants. While flows were significantly above normal, the interceptor system performed well with only two spills during this very wet month. The treatment plants also performed very well, meeting permit in challenging conditions throughout the month. We could not achieve such positive results without our incredibly dedicated and well trained people and the support of the Commission providing the resources necessary for success.

The attached monthly reports review activities throughout the month, with a few items highlighted below:

1. **Treatment, Compliance and System Operations:** All plants met permit requirements. There were two capacity related spills in the interceptor system due to significant rain events and very high ground water levels.
2. **Internal Communications:** I participated in the following meetings/activities with HRSD personnel:
 - a. A meeting to review the status of the Infiltration/Inflow program associated with the Regional Wet Weather Management Plan (RWWMP)
 - b. A conference call to discuss the status of the legal action related to the beneficial reuse of ash to remediate agricultural lands in southern Virginia Beach
 - c. A meeting to review options related to performance and management of HRSD's coatings program
 - d. Two new employee orientation sessions
 - e. One employee length of service recognition breakfast
 - f. A meeting to review final claim status related to work in the Rivermont area of Newport News

- g. A meeting to review some preliminary factors to be used in the affordability analysis as part of the RWWMP
- h. A conference call to discuss follow up actions in response to the U.S. Environmental Protection Agency's (EPA) letter regarding the Sustainable Water Recycling Initiative (SWRI)
- i. A meeting to identify options and strategy for land acquisition related to the SWRI
- j. A workshop to finalize the planning for the treatment train pilots related to the SWRI

3. **External Communications:** I participated in the following meetings/ activities:

- a. Multiple calls with Surry County regarding their interest in becoming part of HRSD
- b. The annual legislative reception for *VIRGINIAforever*
- c. The monthly Hampton Roads Planning District Commission (HRPDC) meeting of the regional chief administrative officers to present the SWRI
- d. The monthly HRPDC Director of Utilities Committee meeting
- e. Two conference calls with the Value of Water Coalition to discuss national poll results and the impact of Flint
- f. A briefing of the Governor, Secretary of Natural Resources, Director of the Virginia Department of Environmental Quality and other senior administration officials about the SWRI
- g. The Virginia Beach State of the City address
- h. Several conference calls related to the potential acquisition of the treatment plant at Lawnes Point in Isle of Wight
- i. A meeting with the Commanding Officer of Oceana and senior staff to discuss an access road to the Atlantic Treatment Plant through property currently owned by the Navy at Dam Neck
- j. A presentation by a contractor with extensive experience in aquifer storage and recovery along the east coast
- k. The monthly meeting of the HRPDC to present the SWRI
- l. A presentation of the SWRI with HRSD staff to the Virginia Institute of Marine Science

- m. A conference call with a joint committee (Water Environment Federation (WEF), Water Environment Research Foundation, National Association of Clean Water Agencies (NACWA), WaterREUSE and EPA representatives) to develop a new national utility recognition program
- n. A tour of Orange County Sanitation District and Orange County Water District facilities in California with HRSD staff and Commissioners Glenn and Lynch
- o. The NACWA winter conference and associated board of directors meeting
- p. The WEF Utility Management Conference

The SWRI continues to receive positive feedback. Planning for the pilot treatment trains to be built at the York River Treatment Plant in late spring 2016 is underway. Planning for the demonstration project has begun as well.

The support for Surry becoming part of the territory covered by HRSD is growing and I anticipate some decisions by Surry officials and direction for us within the next 30 days.

Thanks for your continued dedicated service to HRSD, the Hampton Roads region, the Commonwealth and the environment. **I look forward to seeing you on Tuesday, March 22, 2016 in Virginia Beach.**

Respectfully submitted,

Ted Henifin

Ted Henifin, P.E.
General Manager

TO: General Manager

FROM: Director of Engineering

SUBJECT: Engineering Monthly Report for February 2016

DATE: March 9, 2016

A. General

1. Capital Improvement Program (CIP) spending for the seventh month of Fiscal Year-2016 was \$11.9 million, while the planned expenditure for the month was estimated at \$13.5 million. There were no Water Quality Improvement Fund grant reimbursements for the month.
2. Due to the relatively mild winter, many of the CIP projects under construction were able to progress with little delay. For the numerous pipelines, pump stations and treatment plant projects, particularly the work at the Virginia Initiative Plant (VIP), relatively warm temperatures allowed for the placement of concrete with little delay or the need for special cold weather procedures. Precipitation for the month of February was above normal, which did cause some project delays, but with warmer weather and longer daylight hours in the month of March construction efforts should improve.

B. Asset Management Division

1. Locating undetectable pipe has been a challenge for the Interceptor Systems Divisions for many years. An evaluation has been initiated to assist the Miss Utility Locators to improve the ability to find and mark non-metallic pipe and to consider new technologies to permanently locate buried infrastructure. Improved tools for locating existing pipe will help us reduce the chance of incorrectly marking facilities and the resulting potential damage by third parties doing work in and around our facilities.
2. Staff has begun the process of updating the Computerized Maintenance Management System Standard Operating Procedures (SOP). Each section of the SOP will be reviewed with the Maintenance Specialists assigned to the various work centers within the Operations Department. The draft revisions of the SOP will be presented to the Operations Department in June for final approval.

C. Design & Construction Divisions

1. Construction efforts are underway to replace the existing 33rd Street Pump Station located on the Huntington Ingalls Industries Newport News Shipbuilding property. The existing pump station was built in 1944 and is located below grade. The new pump station will be located above grade, will have increased hydraulic capacity and will be located outside the Shipyard property. Coordination to find a new site for the replacement pump station has been slow and has taken three years to complete. Portions of the influent gravity sewers adjacent to the pump station will also be replaced due to concerns with their condition. This pump station has a deep wet well and the limited site area makes construction in this area challenging. Excavation and sheeting for the new pump station is complete and the base slab will be placed in March.
2. Construction has been completed to rehabilitate a section of gravity sewer as part of the Locality Sewer Rehabilitation Pilot project. This project is one of three pilot projects each using different project delivery methods as part of the Regional Hydraulic Model and Other Consent Order Requirements. The project area covers approximately 114 acres and has approximately 23,800 linear feet of publicly owned gravity sewer main and public laterals, generally in the triangle between Newtown Road, Baker Road and Weblin Drive in the City of Virginia Beach. The work was completed using a Design-Build project delivery method. The contractor is currently addressing punch-list items and we will be conducting a validation effort over the coming months to verify that the Design-Build team met the project targets for infiltration and inflow reduction. This was HRSD's first attempt to use this delivery method for a sewer rehabilitation project and we look forward to learning the pros and cons for the possible application on future projects.

D. Planning & Analysis Division

1. Preparation of the Fiscal Year-2017 CIP continues. Internal coordination meetings with the Operations Department have been held to discuss new projects and update existing efforts. The CIP process now includes the use of the Hyperion budgeting program included within the ERP. This will allow for a more seamless process from initial approval to management of all financial aspects of projects within the ERP. There are 150 existing projects within the CIP with a total value of \$1.2 billion and 10 new CIP projects under consideration with a total value of \$22 million. The first CIP review meeting has been scheduled for March 7 with a follow-up meeting scheduled for March 31.

2. Staff is working closely with the Small Communities Division to address a number of gaps related to asset data information. These gaps include a lack of verifiable data related to property ownership, sewer manhole rim elevations and sewer pipe invert elevations. Using HRSD's geographic information system, staff is working to address these data gaps, quantify the extent of the issue and prioritize future data gathering efforts. This will be a long-term effort which will allow the Small Communities Division to better manage their assets.

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 4
 - a. Staff made a presentation to the Hampton Roads Public Works Academy on the subject of engineering and surveying principles related to public works on February 23.
 - b. Staff participated in a panel discussion with Tidewater Community College engineering students on the subject of career opportunities in various engineering disciplines on February 23.
 - c. Staff participated in a panel discussion at the February 25, 2016 Utility Management Conference on the subject of Change Implementation Concepts for Effective Utility Management. This conference was jointly sponsored by the American Water Works Association and the Water Environment Federation.
 - d. Staff also made a presentation at the 2016 Utility Management Conference entitled, "The Design-Build Project Delivery Method." This conference is jointly sponsored by the American Water Works Association and the Water Environment Federation.
2. Number of Community Partners: 4
 - a. Hampton Roads Public Works Academy
 - b. Tidewater Community College
 - c. American Water Works Association
 - d. Water Environment Federation

Item #	Strategic Planning Measure	Unit	February 2016
M-1.4a	Total Training Hours per Full Time Employee (39) - Current Month	Hours / #FTE	3.31
M-1.4b	Total Training Hours per Full Time Employee (39) - Cumulative Fiscal Year-to-Date	Hours / #FTE	24.90
M-5.2	Educational and Outreach Events	Number	4
M-5.3	Number of Community Partners	Number	4

Bruce W. Husselbee, P.E.

Bruce W. Husselbee, P.E.

TO: General Manager
FROM: Director of Finance
SUBJECT: Monthly Report for February 2016
DATE: March 9, 2016

A. General

1. Staff successfully executed the largest Revenue Bond sale in HRSD's history. HRSD sold \$247 million of par in fixed rate debt to fund the capital improvement program, refund existing bonds and pay off the interim financing established in October 2015. The deal priced when interest rates were near all-time historic lows. The new money interest rate was the lowest ever at 3.21 percent. As a comparison, the 2008 bonds were issued at 4.89 percent, which is near the long run average of 5.25 percent.
2. The advanced bond refunding saved \$21.18 million or 14.5 percent of refunded par, both of which are the largest savings ever on a Net Present Value and percentage of par basis. The savings in fiscal year 2016 will be \$3.19 million and \$1.19 million annually through 2038. Another benefit of the refunding is that 24 percent of the senior debt was moved to the subordinate level. The competitive rates allowed us to accelerate our refunding plan, moving more debt from senior to subordinate than originally planned.
3. HRSD is planning to redeem our existing \$25 million of Series 2011 Variable Rate Demand Bonds (VRDB) and issue \$50 million of Series 2016B VRDB on April 1, which will result in \$25 million in new money proceeds. HRSD's underwriters do not anticipate any issues with the sale, primarily because we are a high grade credit that provides our own self-liquidity. The weekly interest rate for our VRDB increased to 4 basis points, up from 1 basis point, in the first week of March. This is expected around tax season, but it also reflects the volatility in the short term market associated with the Securities and Exchange Commission's Money Market Reform (Rule 2a-7) to be effective in October 2016. As a result of the new rule, a number of money markets funds have decided to close in March, which will cause volatility through July 2016. While we have enjoyed historically low variable interest rates (approximately 1 basis point) we budget at 2 percent (200 basis points) and anticipate volatility in the variable rate market.
4. Revenues and transfers are tracking slightly higher than budgeted. Expenses and transfers continue to track lower than budgeted primarily due to lower Personnel Services. Expenditures for Major Repairs and Capital Assets are also tracking lower than budget but we expect these items to meet their budgets by the fiscal year's end.

B. Interim Financial Report

1. Operating Budget for the Period Ended February 29, 2016

	Amended Budget	Current YTD	Current YTD as % of Budget (67% Budget to Date)	Prior YTD as % of Prior Year Budget
Operating Revenues				
Wastewater	\$ 221,000,000	\$ 150,965,393	68%	67%
Surcharge	2,000,000	1,424,969	71%	74%
Indirect Discharge	2,400,000	1,653,790	69%	77%
Norfolk Sludge	300,000	161,123	54%	47%
Fees	3,000,000	1,877,826	63%	69%
Municipal Assistance	1,300,000	734,363	56%	56%
Miscellaneous	750,000	458,715	61%	91%
Total Operating Revenue	230,750,000	157,276,179	68%	67%
Non Operating Revenues				
Facility Charge	6,000,000	3,414,815	57%	91%
Interest Income	1,400,000	1,053,875	75%	68%
Build America Bond Subsidy	2,400,000	1,212,434	51%	50%
Other	1,090,000	711,128	65%	41%
Total Non Operating Revenue	10,890,000	6,392,252	59%	72%
Total Revenues	241,640,000	163,668,431	68%	67%
Transfers from Reserves	5,063,984	3,375,990	67%	57%
Total Revenues and Transfers	\$ 246,703,984	\$ 167,044,421	68%	67%
Operating Expenses				
Personal Services	\$ 53,040,035	\$ 31,961,772	60%	63%
Fringe Benefits	24,395,846	14,718,808	60%	63%
Materials & Supplies	5,924,877	4,778,064	81%	58%
Transportation	1,385,278	762,668	55%	60%
Utilities	12,492,365	6,932,338	55%	53%
Chemical Purchases	9,078,868	4,714,056	52%	50%
Contractual Services	24,530,628	13,989,978	57%	58%
Major Repairs	9,135,316	3,039,649	33%	46%
Capital Assets	3,450,181	1,211,836	35%	27%
Miscellaneous Expense	2,505,084	1,357,592	54%	32%
Total Operating Expenses	145,938,478	83,466,761	57%	57%
Debt Service and Transfers				
Debt Service	59,622,000	42,220,741	71%	69%
Cost of Issuance Bonds	900,000	223,488	25%	70%
Transfer to CIP	39,983,506	26,655,671	67%	67%
Transfer to Risk management	260,000	173,335	67%	0%
Total Debt Service and Transfers	100,765,506	69,273,235	69%	69%
Total Expenses and Transfers	\$ 246,703,984	\$ 152,739,996	62%	62%

2. Notes to Interim Financial Report

The Interim Financial Report summarizes the results of HRSD's operations on a basis of accounting that differs from generally accepted accounting principles. Revenues are recorded on an accrual basis whereby they are recognized when billed. Expenses are generally recorded on a cash basis. No provision is made for non-cash items such as depreciation and bad debt expense.

This interim report does not reflect financial activity for capital projects contained in HRSD's Capital Improvement Program.

Transfers represent certain budgetary policy designations as follows:

- a. Transfer to CIP: represents current period's cash and investments that are designated to partially fund HRSD's capital improvement program.
- b. Transfers to Reserves: represents the current period's cash and investments that have been set aside to meet HRSD's cash and investments policy objectives.

3. Reserves and Capital Resources (Cash and Investments Activity) for the Period Ended February 29, 2016

	General	Risk Management	Debt Service Reserve	Capital
Beginning of Period - July 1, 2015	\$ 146,889,275	\$ 2,480,500	\$ 44,117,890	\$ 22,550,555
Add: Current Year Sources of Funds				
Cash Receipts	185,974,930			
Capital Grants				11,640,661
Line of Credit				56,094,468
Bond Proceeds (includes interest)				3,220
Transfers In	33,150,819	173,334		59,806,490
Sources of Funds	<u>219,125,749</u>	<u>173,334</u>	<u>-</u>	<u>127,544,839</u>
Total Funds Available	<u>\$ 366,015,024</u>	<u>\$ 2,653,834</u>	<u>\$ 44,117,890</u>	<u>\$ 150,095,394</u>
Deduct: Current Year Uses of Funds				
Cash Disbursements	160,710,454			109,471,503
Transfers Out	59,979,826			33,150,819
Uses of Funds	<u>220,690,280</u>	<u>-</u>	<u>-</u>	<u>142,622,322</u>
End of Period - February 29, 2016	<u>\$ 145,324,744</u>	<u>\$ 2,653,834</u>	<u>\$ 44,117,890</u>	<u>\$ 7,473,072</u>

4. Capital Improvements Budget and Activity Summary for Active Projects the Period Ended February 29, 2016

Classification/ Treatment Service Area	Expenditures		Year to Date		Total Expenditures	Outstanding Encumbrances	Available Balance
	Budget	prior to June 30, 2015	Expenditures	FY2016			
Administration	\$ 40,961,073	\$ 32,680,220	\$ 2,329,551	\$ 35,009,771	\$ 409,784	\$ 5,541,518	
Army Base	156,834,000	108,608,104	5,116,507	113,724,611	3,218,868	39,890,521	
Atlantic	94,616,147	27,303,169	5,791,949	33,095,118	11,897,297	49,623,732	
Boat Harbor	82,892,347	21,912,992	5,569,827	27,482,819	8,093,482	47,316,046	
Ches-Eliz	5,679,274	2,814,828	584,712	3,399,540	2,019,435	260,299	
James River	74,881,504	22,744,827	8,406,491	31,151,318	15,227,029	28,503,157	
Middle Peninsula	36,633,823	1,365,967	2,233,633	3,599,600	5,399,926	27,634,297	
Nansemond	71,832,012	11,117,562	8,258,091	19,375,653	14,619,095	37,837,264	
VIP	251,441,502	140,443,785	27,817,853	168,261,638	70,154,835	13,025,029	
Williamsburg	10,512,783	1,990,543	1,658,017	3,648,560	6,123,703	740,520	
York River	43,917,467	20,361,478	7,037,172	27,398,650	11,722,868	4,795,949	
General	197,077,972	119,099,544	11,909,392	131,008,936	39,481,942	26,587,094	
	<u>\$ 1,067,279,904</u>	<u>\$ 510,443,019</u>	<u>\$ 86,713,195</u>	<u>\$ 597,156,214</u>	<u>\$ 188,368,264</u>	<u>\$ 281,755,426</u>	

5. Debt Management Overview

	Debt Outstanding (\$000's)				
	Principal 1/31/16	Principal Payments	Line of Credit Draws	Principal 2/29/16	Feb Interest Payments
Fixed Rate					
Senior	\$ 594,816	\$ 133	\$ -	\$ 594,683	\$ 73
Subordinate	66,917	186	-	66,731	50
Variable Rate					
Subordinate	25,000	-	-	25,000	-
Line of Credit	42,591	-	13,503	56,094	-
Total	<u>\$ 729,324</u>	<u>\$ 319</u>	<u>\$ 13,503</u>	<u>\$ 742,508</u>	<u>\$ 123</u>

Series 2011 Variable Rate Interest Summary - Key Statistics of Comparable Bonds (Since October 2011)
Pricing Analysis as of 2/25/2016

	SIFMA Index	HRSD	Spread to
			SIFMA
Maximum	0.26%	0.23%	0.04%
Average	0.08%	0.08%	0.00%
Minimum	0.01%	0.01%	0.00%
As of 2/25/2016	0.01%	0.01%	0.00%

6. Financial Performance Metrics for the Period Ended February 29, 2016

	Current YTD	Policy Minimum
Capital % Cash Funded	26%	15%
General Reserve as % of Operations	100%	75-100%
Risk Management Reserve as % of Projected Claims Costs	25%	25%

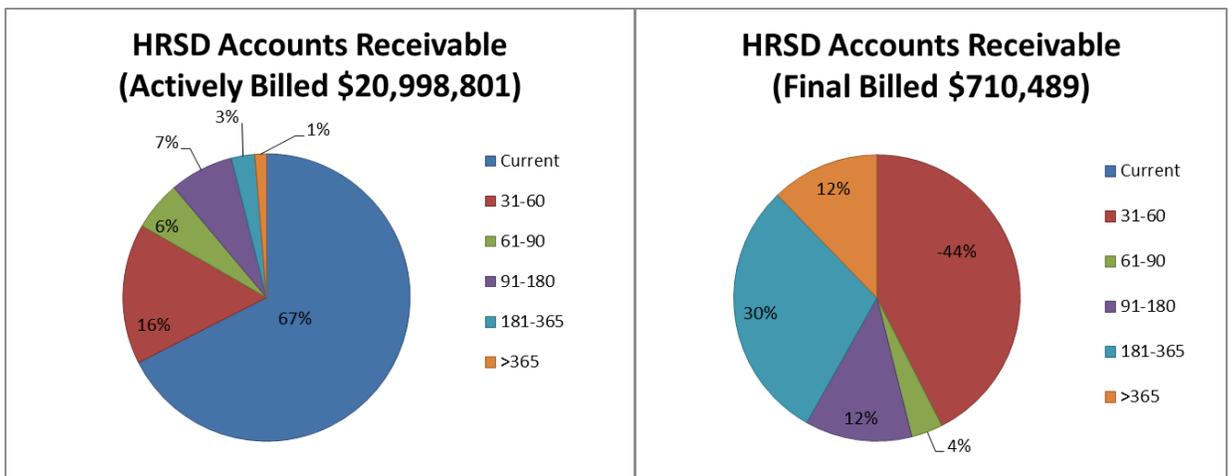
7. Summary of Billed Consumption

Summary of Billed Consumption (ccf)							
Month	Cumulative 3 Year Average	Cumulative 2015 Actual	2016 Cumulative Budget Estimate	2016 Cumulative Actual	% Difference		
					From Budget	From 2015	From 3 Year Average
July	4,871	4,798	4,452	4,819	8.2%	0.4%	-1.1%
Aug	10,201	9,517	8,904	9,783	9.9%	2.8%	-4.1%
Sept	14,879	14,128	13,356	14,290	7.0%	1.1%	-4.0%
Oct	19,759	19,005	17,808	18,976	6.6%	-0.2%	-4.0%
Nov	24,086	22,900	22,260	23,486	5.5%	2.6%	-2.5%
Dec	28,291	27,361	26,712	27,626	3.4%	1.0%	-2.4%
Jan	32,951	31,997	31,164	31,843	2.2%	-0.5%	-3.4%
Feb	37,417	35,413	35,616	35,959	1.0%	1.5%	-3.9%
March	41,660	40,813	40,068	-	N/A	N/A	N/A
Apr	45,900	45,287	44,520	-	N/A	N/A	N/A
May	50,273	49,601	48,972	-	N/A	N/A	N/A
June	54,952	54,058	53,424	-	N/A	N/A	N/A

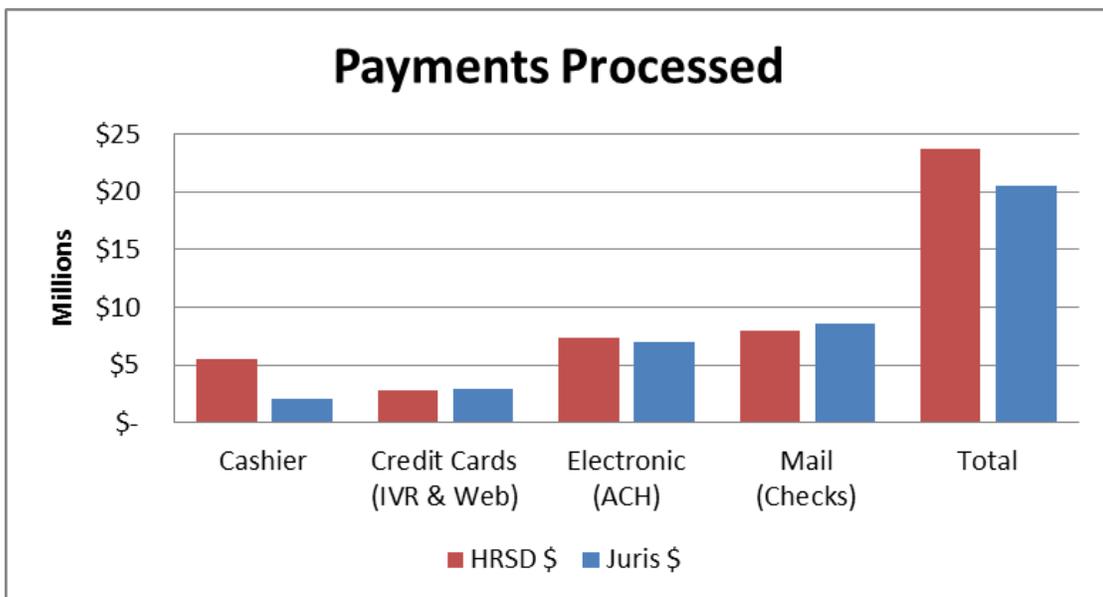
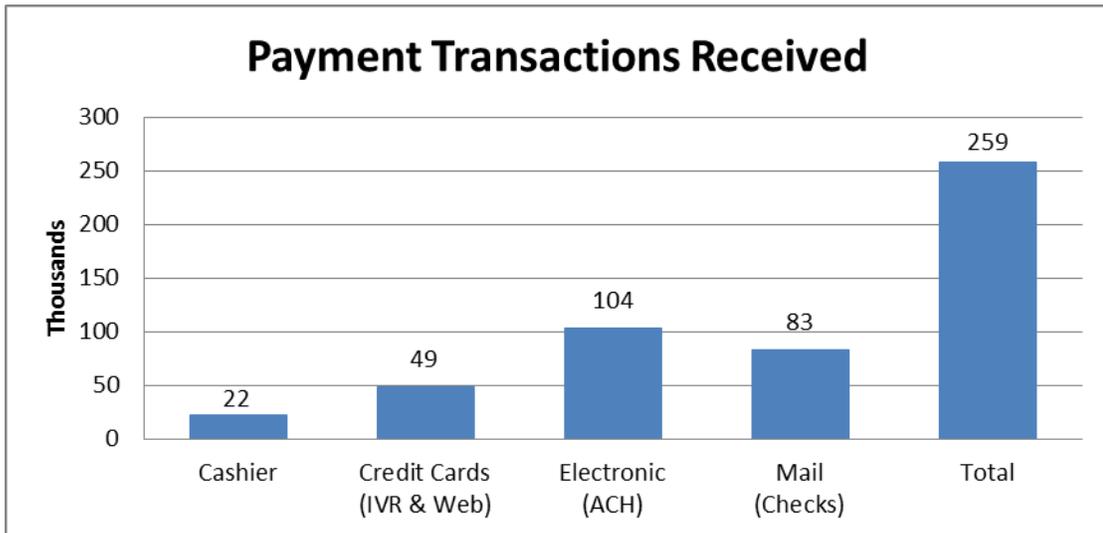
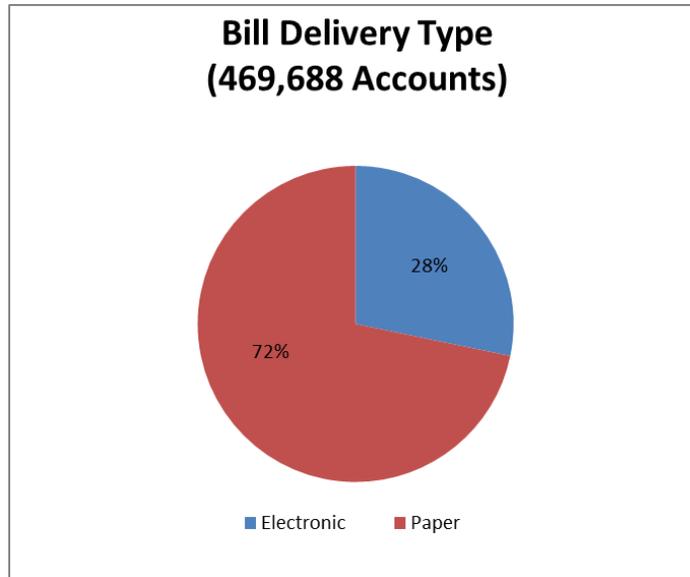
C. Customer Care Center

1. Accounts Receivable Overview

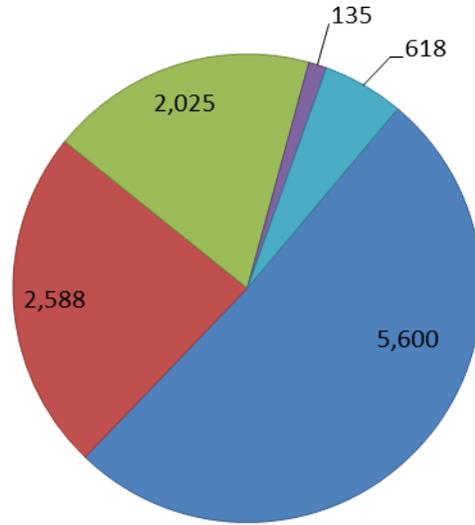
	HRSD	Juris	Total
Roll Forward			
January A/R Balance	\$ 23,074,365	\$ 25,284,965	\$ 48,359,330
Billings	18,259,823	22,565,523	40,825,346
Payments	(22,159,838)	(20,843,344)	(43,003,182)
Delinquency Activity Fees	125,860	-	125,860
Late Payment Charges	81,574	13,561	95,135
Adjustments	2,473,430	(2,656,984)	(183,554)
Balances Written Off	(145,923)	(175,364)	(321,287)
February A/R Balance	\$ 21,709,291	\$ 24,188,357	\$ 45,897,648



2. Customer Care Center Statistics for the Period Ended February 29, 2016

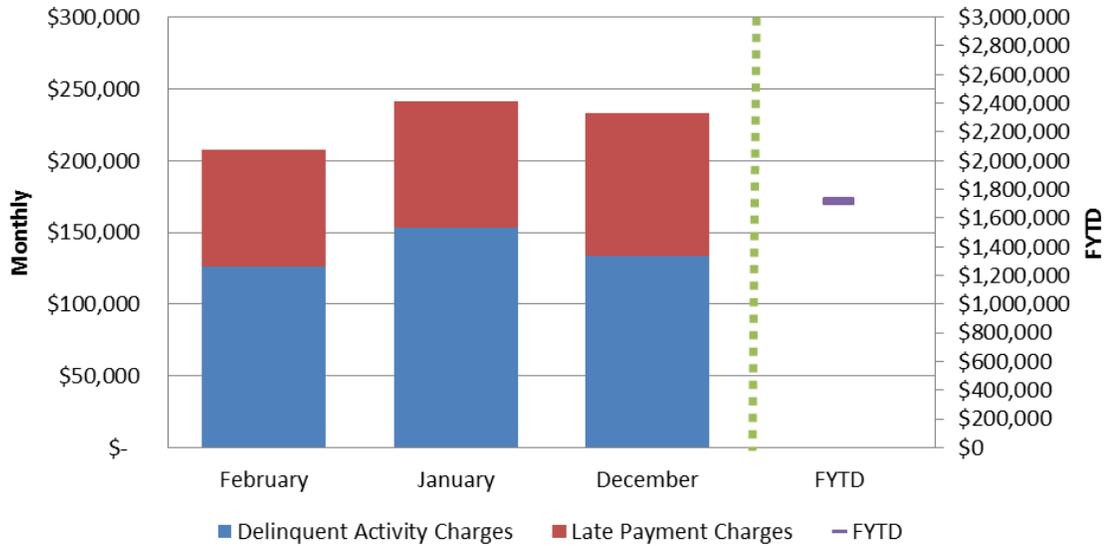


Delinquent Field Activity

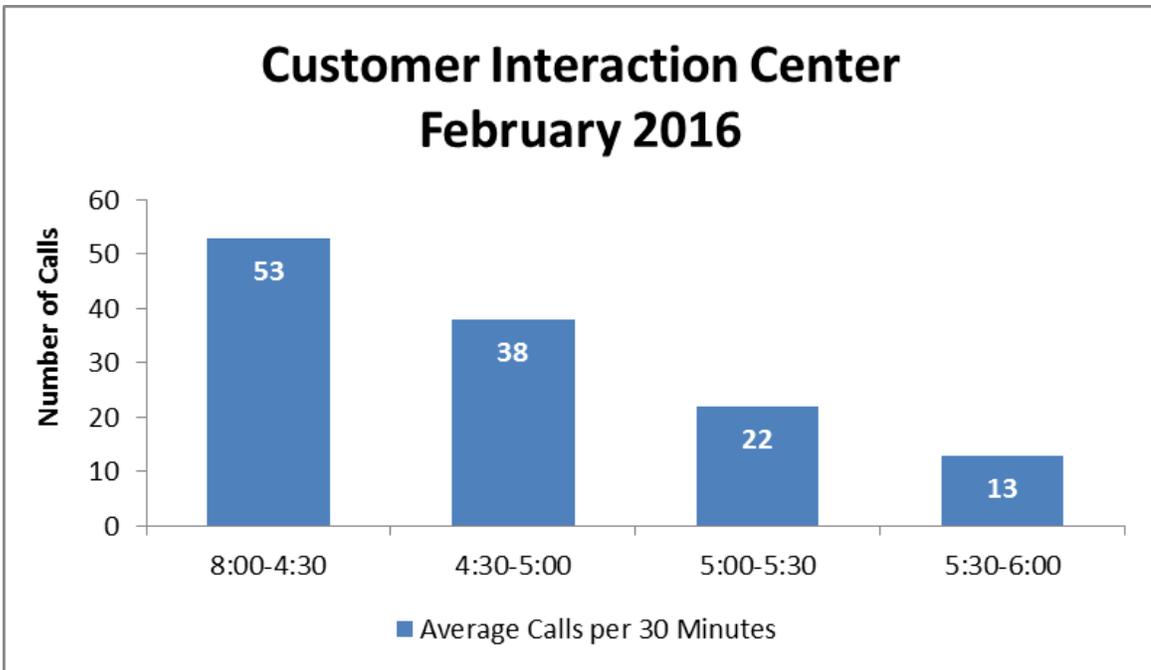
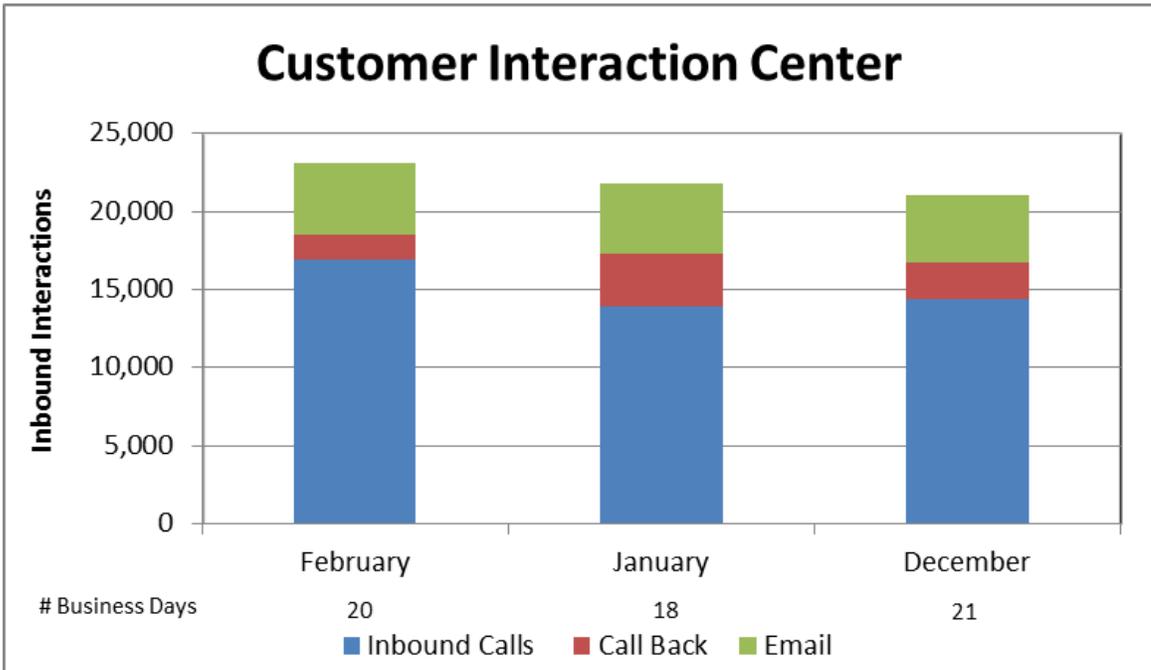


■ Leave Tag
 ■ Cut off
 ■ Turn On
 ■ Lock Meter
 ■ Back Check

Delinquent Fees



■ Delinquent Activity Charges
 ■ Late Payment Charges
 ■ FYTD



Customer Interaction Statistics	February	January	December
Calls Answered within 3 minutes	76%	64%	73%
Average Wait Time	2:09	4:06	3:10
Calls Abandoned	1,748	2,738	2,048

D. Procurement

1. Procurement Statistics

	Current Period	FYTD
Bid Cost Savings	\$ 232,054	\$ 2,201,040
Negotiated Cost Savings	\$ 7,966	\$ 174,036
Salvage Revenues	\$ 30	\$ 26,931
Corporate VISA Card - Estimated Rebate	\$ 18,209	\$ 136,172

Average Cycle Time (Receipt of Requisition to Award)

Solicitation Types	Award Amounts	Jan-16		Feb-16	
		No. Days	Count	No. Days	Count
RFQs	<\$5,000	6	4	6	12
	\$5,000 - \$10,000	40	12	40	3
	\$10,000 - \$50,000	38	4	66	13
IFBs	\$50,000 - \$100,000	49	3	40	5
IFBs/RFPs	>\$100,000	73	1	0	0

Requisition Volume Comparison

Requisition Amounts	7/1/2014 - 6/30/2015 Requisitions	7/1/2015 - 2/29/2016 Requisitions	Percent Comparison of Past Year
<\$5,000	198	119	60%
\$5,000 – \$10,000	69	36	52%
\$10,000 – \$50,000	252	160	63%
\$50,000 – \$100,000	64	33	52%
>\$100,000	99	47	47%
Total	682	395	58%

2. Some of the more formal technical competitive bid solicitations for the month included:

- a. Coating and Concrete Rehabilitation of Digesters One and Two for Support Systems
- b. Matthews Valve Pit Replacement- Phase Two for the Small Communities Division
- c. Arc Flash Electrical Safety Training for the Nansemond Treatment Plant
- d. Employee Assistance Program for Human Resources

E. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0
2. Community Partners: 0

Item #	Strategic Planning Measure	Unit	February 2016
M-1.4a	Training During Work Hours Per Full Time Employee (99) – Current Month	Hours / #FTE	8.62
M-1.4b	Total Training During Work Hours Per Full Time Employee (99) – Cumulative Fiscal Year-to-Date	Hours / #FTE	36.35
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0
	Wastewater Revenue	Percentage of budgeted	101%
	General Reserves	Percentage of Operating Budget less Depreciation	100%
	Accounts Receivable (HRSD)	Dollars	\$21,709,291
	Aging Accounts Receivable	Percentage of receivables greater than 90 days	23%

Respectfully,

Jay Bernas

Jay Bernas, P.E.

Director of Finance

TO: General Manager

FROM: Director of Information Technology (IT)

SUBJECT: Information Technology Department Report for February 2016

DATE: March 10, 2016

A. General

1. The system engineering group is designing a rack-mounted, standardized, hardware and software solution which will meet the general, networked, computing needs of all HRSD treatment plants. Once configured, tested and implemented, hardware failures will be easily remedied by swapping-out the malfunctioning rack with a replacement. The rack being replaced will be transported back to the IT repair center and repairs made. This will minimize system downtime and increase staff's efficiency in effecting repairs.
2. Over the past few months, staff has worked closely with staffs from Finance and Talent Management Departments, ensuring the requisite compensation and health care data was extrapolated, transmitted and processed in accordance with applicable compliance standards and laws.
3. The industrial automation group, now a part of the IT Department, in coordination with Engineering and Operations staff, recently completed the installation, configuration, programming and startup of a Distributed Control System (DCS) at the Boat Harbor Treatment Plant. This milestone achievement represents the first DCS implementation completed solely by HRSD staff, without the involvement of any third parties.
4. The Enterprise Data Services Division, in support of the Water Quality Department, is in the process of identifying and testing cloud based solutions capable of replacing many of the paper forms used by field technicians, increasing accuracy and efficiency.
5. The Data Retention and Governance (DRG) team has completed its classification of all HRSD business data in compliance with The Library of Virginia's classification guidelines and schedules. The DRG team is now compiling and categorizing a list of that HRSD data which is not called-out by the existing guidelines and schedules, but rather, will be incorporated within HRSD's proposed Data Retention and Governance Plan (DRGP). The DRG team will then prepare and present a draft DRGP to the QST for review and comment. Once approved by the QST, the DRGP will be sent to

The Library of Virginia for review and approval. Once approved, HRSD will begin retaining and destroying its business data in accordance with the approved DRGP.

B. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0
2. Number of Community Partners: 0

Item #	Strategic Planning Measure	Unit	February 2016
M-1.4a	Training During Work Hours Per Full Time Employee (46) – Current Month	Total Training Hours / # FTE	0.84
M-1.4b	Total Training During Work Hours Per Full Time Employee (46) – Cumulative Fiscal Year-to-Date	Total Training Hours / # FTE	20.25
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0

Respectfully,
Don Corrado

TO: General Manager
FROM: Director of Operations
SUBJECT: Operations Report for February 2016
DATE: March 3, 2016

A. Summary

1. All treatment plants met all Virginia Pollutant Discharge Elimination System (VPDES) permit requirements.
2. North Shore (NS) Interceptor Systems experienced one sanitary sewer overflow (SSO) of an unknown quantity due to a rain event on February 5.
3. South Shore (SS) Interceptor Systems experienced one SSO at the Chesapeake Boulevard Pump Station in Norfolk due to a heavy rainfall event on February 5. The estimated overflow was approximately 19,000 gallons.

B. Interceptor Systems

1. North Shore (NS) Interceptor Systems experienced a few operational issues during the month of February. One overflow occurred at the Bridge Street Tide Gate associated with a rain event on February 5. Crews could not see the tide gate due to inundation; therefore, it was not possible to obtain an estimated quantity. NS Interceptor Systems received no odor complaints. However, staff responded to a total of 11 alarms and eight interceptor complaints, which were all resolved.

Significant effort continued on the finalization of the proposed Fiscal Year-2017 Operating Budget.

NS Interceptor Systems and Small Communities Division (SCD) had their first joint management meeting to assess workload and review areas where they could assist SCD in a repair project in West Point. The partnering between these two groups should only grow over time.

2. SS Interceptor Systems experienced one SSO during the month of February. It occurred at the Chesapeake Boulevard Pump Station in Norfolk due to a heavy rainfall event causing an estimated overflow of approximately 19,000 gallons. Support for the Interceptor Systems

Pump Station Control and Supervisory Control and Data Acquisition Upgrades and Enhancements Capital Project continued.

C. Major Treatment Plant Operations

1. Army Base Treatment Plant (ABTP) performed Maximum Achievable Compliance Technology (MACT 129) testing for Incinerator #2. All test parameters appeared favorable. Staff expects final test results next month.

Phase III construction approaches completion as most unit processes have now been turned over to plant operations.

2. The average daily flow to the Atlantic Treatment Plant (ATP) was 26 million gallons per day (MGD) for the last six months. Four and one-half inches of rain fell during the month of February, which caused the average daily flow to increase to 30 MGD. The ATP plant manager and superintendent of maintenance spent a significant amount of time reviewing the 60 percent design plans and specifications for the Thermal Hydrolysis Project, which included over 400 plan sheets. A lithium tracer study is underway to determine the effectiveness of the linear motion mixer in digester #3 and the draft tube mixers in digester #4.

Two employees took part in the Founders Week at Ocean Lakes High School, where they explained their job duties, education and the importance of HRSD.

3. On February 29, the Boat Harbor Treatment Plant (BHTP) started feeding solids to furnace #1. The furnace is now entirely controlled by the newly installed Distributed Control System (DCS). The DCS controls the furnace based on Operator set points in the program. The plant's goal was to complete the Furnace Automation Project by March 1, 2016, to coincide with the new MACT 129 air regulations. Achievement of this goal would not have been possible without the concerted efforts of the Electrical and Instrumentation and the Industrial Control groups.

Wet weather throughout the month caused multiple issues with treatment. A high concentration of solids is required at BHTP to achieve nitrification. Despite recently losing the nitrification process, and the plant not wasting enough microorganisms out of the system, the plant inventory of microorganisms/solids in the aeration and secondary treatment processes remained high. The high flows and higher-than-normal inventory resulted in a loss of solids out of the secondary clarifiers during peak flows.

4. Staff finalized and implemented changes to the Chesapeake-Elizabeth Treatment Plant's (CETP) Daily Operating Report and EDS data for collection and recording.

Staff replaced both receiving pumps, cleaned out the receiving well and installed a new level sensing system at the Indirect Discharge Receiving Facility.

USP Technologies completed removal of their hydrogen peroxide and ferric storage and feeding equipment at the Preliminary Treatment Facility.

5. James River Treatment Plant (JRTP) averaged higher-than-normal Final Effluent Total Nitrogen values of about 11 mg/L during the month of February. This was due to cold raw influent temperatures as low as 14 degrees Celsius and average plant influent flows of about 20 MGD. JRTP experienced one reportable wastewater discharge caused by a malfunction at the step screen influent gates. Staff recovered most of the discharge and pumped it back into the plant for treatment; they are investigating the cause of the malfunction. Staff also made repairs to the #4 secondary clarifier, replaced the grit classifier drain piping, and performed inside coating work on piping and walls in the grit classifier room.
6. The effluent flow at the Nansemond Treatment Plant (NTP) for the month was 20 percent higher than normal due to multiple wet weather events. The biological nutrient removal processes met all monthly target concentrations. The aeration system operated using the Ammonia Based Aeration Control (ABAC) for the entire month.
7. The Virginia Initiative Plant (VIP) conducted a second stack test in preparation for the new MACT 129 air permit requirements. During the first test, VIP passed all the test parameters with the exception of Cadmium (Cd) levels. In an effort to improve the Cd removal, staff increased the incinerator off-gas particulate removal. We expect final test results next month.

Monthly flows averaged 45.57 MGD, which are higher than the 40 MGD design flow.

HRSD worked with the contractor and consultant at VIP to complete the Dominion Virginia Power (DVP) required testing for the generator controls. The new generator controls allow the generator system and the utility to transfer the plant electrical load from one source to the other source as needed in a seamless manner. This keeps the plant staff from restarting all of the plant equipment. The testing has become more stringent over time.

VIP is the first HRSD plant where new specific criteria was required by DVP.

8. Williamsburg Treatment Plant's (WBTP) treatment was excellent, with an Average Effluent Total Nitrogen and Phosphorous of 5.9 and 0.4 milligrams per liter, respectively. The new Fats, Oils and Grease unloading station is in operation. The new station has cut grease hauler's unloading time in half and significantly increased the capture of gravel and rags. Plant staff finished final preparation for the new MACT 129 air permit regulations that become effective next month.
9. York River Treatment Plant (YRTP) raw influent flows averaged slightly below 16 MGD due to wet weather events and an elevated ground water table. The Average Effluent Total Nitrogen was good at 5.9 milligrams per liter. Contractors completed about 90 percent of underground work on the Chemical Facility Improvement Project. Plant staff completed a successful flow diversion into empty tanks to allow for removal of an old final effluent pump and installation of a new one as part of the Final Effluent Pumping Improvement Project.

D. Small Communities

One break occurred in a gravity curb collector on Mattaponi Street in West Point (WP); SCD staff worked 36 hours straight with support from NS to repair the break, with a 100 percent spill recovery rate. Work is progressing on the Urbanna Treatment Plant (UTP) rehabilitation project, the WP Pump Station #3 repair project and WPTP Chemical Facilities Building.

E. Support Systems

Staff worked with SCD to begin the UTP tank rehabilitation project and inspected Ford's Colony and Fort Eustis wet wells for the Engineering Department. Staff also met with vendors regarding the BHTP Aeration Tank to determine the effort required to rehabilitate outer tank walls. Machine Shop staff rebuilt two pumps and worked on 14 projects including modifying a struvite reactor, repairing three ISCO samplers, making a fan shaft and refurbishing a coupling drive hub. Facility Maintenance staff received the new 70-ton HVAC system for the laboratory and will coat coils with a protective spray coating when weather permits. Automotive and NS Interceptor staff coordinated the underground storage tank repair at Colonial Williamsburg Pump Station and found no leaks during pressure tests. Staff coordinated a meeting with SCD to discuss purchasing a fuel tank to fuel vehicles and equipment.

F. Electrical and Energy Management

The Chief of Electrical and Energy Management (CEEM) attended the Virginia Energy Purchasing Governmental Association (VEPGA) Board meeting to discuss VEPGA business, rates and rider changes for Fiscal Year-2017.

G. Water Technology and Research

The optimization of ammonia-based aeration control (ABAC) and supplemental carbon feed control continues at NTP. These refined approaches will be directly transferrable to ABTP and VIP. Staff recently revised the ABTP functional description for supplemental carbon feed control based on information learned at NTP; Emerson will be modifying the ABTP DCS programming in coming weeks to support methanol system startup, which is estimated to occur in June. Methanol feed is based on feed-forward control using a model calculation to predict the carbon demand using online sensors and a feedback trim of the methanol feed rate to ensure the set point nitrate concentration is maintained. This approach will be consistent among HRSD plants.

At NTP, the ABAC system has been operating relatively consistently for about two years, but staff continues to struggle to find a stable period where the true benefit of ABAC can be quantified as compared to conventional DO control. The reason for this is instability in biological phosphorus removal, primarily caused by problems with and overload of the struvite recovery facility combined with the desire to accomplish this testing during stable periods of operation. Staff scheduled testing for spring/summer 2016, but it will be costly in terms of methanol demand. Current estimates suggest that ABAC has decreased methanol usage by approximately more than 50 percent and blower power consumption by 10-15 percent. Additional power savings are limited by NTP blower size. Staff learned from this and the ABAC was specifically considered in the selection of the new blower at VIP. ABAC requires much less air flow (significant energy savings), and the larger single-stage centrifugal blowers at NTP are unable to turn down to meet the decreased air requirements. As a result, excess air must be wasted from out-of-service (OOS) aeration tanks.

Staff is pursuing several efforts to better manage this issue, including:

1. automation of OOS aeration tank air valves to minimize blow off and energy wasting;
2. operation of a smaller multi-stage blower during periods of very low air flow requirements; and
3. implementation of a hybrid “most open valve” concept within the existing header pressure control approach to automatically minimize the blower headed pressure setpoint.

ABAC and AVN control have also been used at BHTP successfully. AVN control may be eventually deployed at NTP, but not until testing has been completed to clearly quantify the benefit of ABAC. This refinement is tentatively planned for NP in 2017.

H. Strategic Measurement Data

1. Education and Outreach Events: 18

- a. Atlantic Treatment Plant Staff attended the Ocean Lakes High School Founders week
- b. Automotive Superintendent attended a meeting held by the Tidewater Community College Diesel Advisory Committee
- c. Boat Harbor Treatment Plant Tour for Phoebus High School, AP Environmental students
- d. Charles Bott - Keynote presentation at the Florida Water Environment Association, Wastewater Process Workshop (2)
- e. Charles Bott - Participation and podium presentation at Virginia Tech graduate student recruiting weekend
- f. Charles Bott - Participation at an EPA Nutrient Center review meeting at University of South Florida
- g. Charles Bott - Participation in Orange County Water District/Orange County Sanitation District site visits
- h. Charles Bott - Plant tour – Christiansburg, VA WWTP
- i. Charles Bott - Podium presentation of Sustainable Water Recycling Initiative project at Virginia Institute of Marine Science – Henifin, Mitchell, Holloway
- j. Chesapeake-Elizabeth Treatment Plant staff assisted the Lynnhaven River Now organization in conducting a floating wetlands island workshop for 25 people.
- k. Chesapeake-Elizabeth Treatment Plant tour for a 12-person group of Old Dominion Engineering students and US Navy Facility Engineers
- l. Chesapeake-Elizabeth Treatment Plant tour for 3 US Navy Sea Bee petty officers who perform water and wastewater utility maintenance work
- m. The Facility Maintenance (FM) Superintendent, along with VIP's Maintenance Specialist, developed a new curriculum on Physical Plant Maintenance (PPM) as part of the Hampton Roads Public Works Academy (HRPWA). The two delivered a presentation to students at the Pruden Center for Industry and Technology in Suffolk.
- n. Nansemond Treatment Plant Regional Residuals Facility Tour for Clearfield MMG (formally Soilex) staff

- o. The Chief of Electrical and Energy Management attended advisor meetings at Tidewater Community College (TCC) and New Horizons Technical Center (NHTC).
- p. The South Shore Electrical Manager and other HRSD personnel attended Career Day at Ocean Lakes High School.
- q. VIP Tour for Granby High School Engineering Club

2. Community Partners: 16

- a. Chesapeake Bay Foundation – Oyster Restoration
- b. Granby High School
- c. Hampton Roads Public Works Academy
- d. Lynnhaven River Now Organization
- e. New Horizons Technical Center
- f. Ocean Lakes High School
- g. Old Dominion University
- h. Old Dominion University College of Engineering
- i. Phoebus High School
- j. Pruden Center
- k. Tidewater Community College
- l. Tidewater Community College Diesel Advisory Committee
- m. US Navy Little Creek Facility Engineering
- n. US Navy Sea Bees
- o. Virginia Institute of Marine Science
- p. Virginia Tech

Item #	Strategic Planning Measure	Unit	February 2016
M-1.4a	Training During Work Hours per Full Time Employee (FTE) (503) – Current Month-	Hours / FTE	2.92
M-1.4b	Total Training During Work Hours per FTE (503) – Cumulative Year-to-Date	Hours / FTE	26.06
M-2.3a	Planned Maintenance Total Maintenance Hours	Total Recorded Maintenance Labor Hours	33,079.25
M-2.3b	Planned Maintenance – Preventive and Condition Based	% of Total Maintenance Hours	38
M-2.3c	Planned Maintenance-Corrective Maintenance	% of Total Maintenance Hours	29
M-2.3d	Planned Maintenance-Projects	% of Total Maintenance Hours	33

Item #	Strategic Planning Measure	Unit	February 2016
M- 4.1a	Energy Use: Treatment *reported for January 2016	kWh/MG	2,185
M-4.1b	Energy Use: Pump Stations *reported for January 2016	kWh/MG	162
M-4.1c	Energy Use: Office Building *reported for January 2016	kWh/MG	87
M-5.2	Educational and Outreach Events	Number	18
M-5.3	Number of Community Partners	Number	16

Respectfully submitted,

Steve de Mik
Director of Operations

TO: General Manager
FROM: Special Assistant for Compliance Assurance
SUBJECT: Monthly Report for February 2016
DATE: March 5, 2016

A. General

HRSD continues to implement the hybrid regionalized approach to the Regional Wet Weather Management Plan (RWWMP) with the next major Consent Decree milestone, the submittal of the Alternatives Analysis Report, scheduled for August 1, 2016.

B. Submittals Completed in February 2016 – A summary of the January Quarterly Briefing with the United States Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality was provided on **February 12**.

C. Activities

1. **Phase 6 – Rehabilitation Plan.** Construction continued on the gravity sewer repair work at 13th Street (SR-052) in West Point.

A map-based tool to track Rehabilitation Action Plan projects and Interim System Improvement projects using ArcGIS Online has been developed and its use demonstrated to Chiefs at HRSD involved in tracking or managing those projects and related assets. Refinements are being made to the tool and pilot use of the portal in parallel with established tracking lists will begin soon.

2. **Phase 7 – Regional Wet Weather Management Plan (RWWMP).** HRSD continues to develop an Integrated Plan to evaluate the Sustainable Water Recycling proposal as a component of the RWWMP.

Capacity evaluation was completed in February using the Regional Hydraulic Model (RHM) and Locality Hydraulic Models (LHMs) as part of the RWWMP. Technical coordination meetings were held on **February 11 and 25**. Coordination meetings were also held with the Localities on **February 22 and 24** to review preliminary results of the Capacity Evaluation. Solution set development has begun based on the RHM and LHM capacity evaluation scenarios (2-, 5- and 10-year) with initial focus on the Atlantic Treatment Plant service area.

The Infiltration and Inflow (I/I) Reduction Program results have been provided for the RHM and alternatives analysis. Ongoing efforts include documentation of the program development framework and individual catchment reports.

Work also continued on three rehabilitation pilot projects to be used to validate the assumptions and criteria used in I/I reduction planning. Two of the three projects are substantially complete and post-rehabilitation flow monitoring has begun. The third pilot should be substantially complete in March.

3. **Phase 8 – EPA Consent Decree Services.** HRSD continues to share information with the localities through the regional SharePoint site and flow, pressure and rainfall data portal.

Development of the annual update to the Sanitary Sewer Overflow (SSO) Response Plan is underway.

4. **Phase 9 – Supplemental Services.** A monthly compliance program meeting was held on **February 3** to review the RWWMP program with HRSD staff.

Management, Operations and Maintenance (MOM) Program elements are ongoing including the Hydrogen Sulfide (H₂S) Monitoring Program and implementation of a Business Intelligence (BI) system for the Small Communities Division (SCD). This includes a MOM update manual guidance document for use on the next major update expected in 2018.

The Flow, Pressure and Rainfall (FPR) monitoring program continued in February with data collection and analysis being performed as part of the MOM Program.

Field work for Phase II of the Force Main Condition Assessment (FMCA) Program and Phase II of the Gravity Sewer Inspection Program were approved to resume. Field work is expected to restart in March.

The Condition Assessment Annual Report for FY2015 is under review by HRSD.

D. Next Submittals

Semi-Annual Report – May 1, 2016

E. Program Budget Status

The overall program budget is **\$128,093,142**, excluding the Master Metering Program. A [summary](#) of appropriations and expenses is attached.

F. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 0
2. Number of Community Partners: 0

Item #	Strategic Planning Measure	Unit	February 2016
M-1.4a	Total Training Hours Per Full Time Employee (1) – Current Month	Total Training Hours / # FTE	0
M-1.4b	Total Training Hours Per Full Time Employee (1) – Cumulative Fiscal Year to Date	Total Training Hours / # FTE	67
M-5.2	Educational and Outreach Events	Number	0
M-5.3	Number of Community Partners	Number	0

Respectfully submitted,

Phil Hubbard, P.E.

Attachments: [Consent Order State & EPA Expenditures](#)

Consent Order State & EPA Expenditures

	Total Appropriation	February 2016 Expenditures	Available Balance
Regional Consent Order and Other Consent Order Requirements			
Regional Hydraulic Model	101,254,812	91,174,229	10,080,583
Manhole Rehab/Replacement Phase I & North Shore Siphon Chamber	2,834,000	203,063	2,630,937
Pump Station Wet Well Rehabilitation Phase I	2,890,000	284,520	2,605,480
Locality System Monitoring and Condition Assessment	14,146,000	10,200,051	3,945,949
Locality Monitoring Unit Price	2,300,000	216,893	2,083,107
Locality Monitoring Design Build Pilot	1,626,330	388,526	1,237,804
Locality Monitoring Design Bid Build Pilot	2,482,000	978,191	1,503,809
West Point Pump Station 3 - Gravity System Repairs	560,000	35,507	524,493
Subtotal - In progress	128,093,142	103,480,980	24,612,162

Completed Work

Regional Consent Order and Other Consent Order Requirements	(Included in subtotal above)
Master Metering Program III	2,005,140
Master Metering Program IV	13,628,635
Total	119,114,755

TO: General Manager
FROM: Director of Talent Management
SUBJECT: Monthly Report for February 2016
DATE: March 10, 2016

A. Human Resources

1. Recruitment Summary

New Recruitment Campaigns	12
Job Offers Accepted	
Internal Selections	8
External Selections	4
Internal Applications	65
External Applications	211
Average Days to Fill Position	54

2. Enterprise Resource Planning (ERP)

- a. The core team worked to finalize Post-Implementation punch list items mostly related to Business Intelligence (BI) reporting, anticipated to be complete in March.
- b. Employee 1095C forms were completed and mailed to employees last month. Work continued with AST consultants for filing 1094C employer forms to meet Affordable Care Act requirements.
- c. The interface with CIGNA for employee health benefits is near completion and is expected to be in production in March.

3. Benefits and Compensation

- a. The HRSD Benefits Survey team completed and deployed a survey to gather feedback and assess the value of new and existing benefits to HRSD employees. Survey results will be compiled and evaluated by the team for future recommendations.
- b. HRSD's Benefits Consultant presented the 2016 Benefits Renewal proposal, outlining current costs trends and projections and Fiscal Year 2017 (FY-17) renewal options.

- c. Changes to part-time employment categories and benefits were completed in ERP. An Open Enrollment period began and several informational meetings were held with eligible employees.
- d. Phase II of a multi-phase compensation study continued. The report and recommendations are being finalized.
- e. Staff attended Mercer’s annual healthcare seminar on 2015 healthcare benefits and trends, compliance and healthcare reform and new strategies for value based care.
- f. Proposals were received and are being reviewed for Employee Assistance Program services.

4. Wellness

a. Participation Activities

Year 3 Participation Activities	Unit	February 2016	Year to Date (March – January 2016)
Biometric Screenings	Number	340	506
Preventive Health Exams	Number	131	332
Preventive Health Assessments	Number	117	587
Coaching Calls	Number	69	143
On-Line Health Improvement Programs	Number	1172	4891
Web-MD Online Health Tracking	Number	324	1862
Challenges Completed	Number	0	88
Fit-Bit Promotion	Number	12	124

- b. Four hundred twenty-seven employees/spouses completed their biometric screenings over 12 on-site screening sessions.
- c. With the Wellness Year ending, HRSD’s Wellness Specialist revisited all of the treatment plants and Interceptor System’s work centers to perform blood pressure and waist measurement re-checks and to assist employees with completing wellness activities.

5. Workers Compensation

- a. Six new cases were opened with 13 cases remaining active.
- b. HR and Safety staff participated in the Annual Claims Review meeting with HRSD's insurance broker and carrier to review open claims related to workers compensation and auto accidents.

6. Employee Relations

- a. HR staff continued to partner and meet with work center supervisors to review issues, provide guidance and clarify policies. HR Manual revisions were completed to address changes to part-time employment categories and benefits.

7. General

- a. The Director attended the regional HR Directors' meeting hosted by Hampton Roads Planning District Commission. Discussions included health benefits, compensation surveys, Family Medical Leave Act issues and Fair Labor Standards Act changes.
- b. Cross-functional workgroups began meeting to address communication and collaboration, Web-Center implementation, training delivery methods and resources and job shadowing/cross training. Workgroups presented goals and plans at the quarterly Department meeting.

B. Organization Development and Training

1. Training

- a. Five RGB workshops were facilitated for Customer Care Center employees. Participants provided positive evaluations and found the assessments beneficial and meaningful. Next steps involve applying RGB results to work tasks and to optimizing teamwork.
- b. All current training was entered into the ERP Learning Management system. Functional areas of the system are being evaluated to maximize capabilities.
- c. The new employee orientation process is being reviewed along with developing next progressive steps for new employees. Work

Centers will be surveyed to determine orientation processes and follow-up with new employees.

- d. Staff worked with the Director of Finance to develop survey questions to assess satisfaction with ERP implementation as well as within the Procurement Division.

2. Apprenticeship Program

- a. The program is being evaluated to provide flexibility with course offerings while maintaining program quality.
- b. Staff brainstormed several ideas for program strategic initiatives to be presented to the Apprenticeship Committee.

3. Quality

- a. A Your Role in Quality Class was held. Student personal projects will be presented next month.
- b. Staff began to explore options for conducting a survey of HRSD's culture.

C. Safety

1. Mishaps and Work Related Injuries

- a. HRSD-wide Injury Mishap Status to Date (OSHA Recordable)

	<u>2015</u>	<u>2016</u>
Mishaps	49	9
Lost Time Mishaps	11	2
<i>Numbers subject to change pending HR review of each case.</i>		

b. MOM Program Year Performance Measure Work Related Injuries

February 2016 Injuries For Operations	February 2016 Injuries for Other HRSD Departments	Total Lost Time Injuries Since July 2015	Total HRSD Injuries Since July 2015
5	0	5	38

c. Follow-up investigations were performed on five initial reports of work related injuries and two auto accidents.

2. HRSD Safety Training

Strategic Planning Measure	Unit	February 2016
Total Safety Training Hours per Full Time Employee (769) All HRSD – February 2016	441.82 Hours / 769 FTE	0.57
Total Safety Training Hours Per Full Time Employee (769) – Cumulative July 2015	2952.06 Hours / 769 FTE	3.84

- a. In addition to regularly scheduled safety training and medical monitoring, the following sessions were conducted:
- b. Three external briefings for contractors working at HRSD treatment plants and pump stations
- b. Forklift training for York River Treatment Plant employees
- c. Safety Stand Down training for Operations work centers
- d. Multiple Hot Work Permit training sessions for State Street and Washington Street Pump Station contractor employees
- e. Chemical Hygiene Plan training for new Water Quality employees
- f. CPR/First Aid/AED training for Technical Services Division and North Shore Electrical employees

items as a result of an inspection conducted pursuant to an employee injury that occurred at the Williamsburg Treatment Plant. The response included documentation of corrective actions to prevent future incidents.

- b. The Safety Team presented 2015 work related injury and auto accident data to the QST and made recommendations for the FY17 Safety Recognition Program.
- c. New technologies were evaluated for replacement of obsolete Industrial Hygiene Meters.
- d. Staff completed updates to Emergency Response Procedures for all work centers.
- e. The following was performed for Confined Spaces:
 - 1) Evaluated a confined space entry into a Chesapeake-Elizabeth Treatment Plant septic well
 - 2) Evaluated new confined spaces at Army Base Treatment Plant and developed space specific permits
- f. Updates to the Superfund Amendments and Reauthorization Act Title II, Tier I and II reports were completed for all HRSD locations. Virginia Beach and Norfolk location information was also entered into E-Plan.
- g. The Safety Manager completed Department of Labor and Industry Bureau of Labor Statistics survey for 2015 work related injuries.
- h. Arc Flash Labels were applied to Coliseum Pump station electrical panels.
- i. The Safety Coordinator continued to maintain the Operations Safety Accident Tracking report.
- j. Staff attended e-training on computer cards presented by the CPR training equipment provider.

D. Monthly Strategic Planning Metrics Summary

- 1. Education and Outreach Events: (4)
 - a. Ocean Lakes High School Career Day
 - b. Hampton University's Career Fair
 - c. Norfolk Vocational Technical Education Center

- d. Mega-Genesis Job Fair
2. Community Partners: (1)
- a. Public Works Academy

Item #	Strategic Planning Measure	Unit	February 2016
M-1.1a	Employee Turnover Rate (Total)	Percentage	0.13
M-1.1b	Employee Turnover due to Service Retirements	Percentage	0
M-1.4a	Total Training Hours Per Full Time Employee (14) – Current Month	Total Training Hours/ FTE	1.79
M-1.4b	Total Training Hours Per FTE (14) Cumulative Fiscal Year-to-Date	Total Training Hours/ FTE	44.19
M-5.2	Educational and Outreach Events	Number	4
M-5.3	Community Partners	Number	1

Respectfully submitted,
Paula A. Hogg
 Director of Talent Management

TO: General Manager

FROM: Director of Water Quality (WQ)

SUBJECT: Monthly Report for February 2016

DATE: March 13, 2016

A. General

1. Two facilities were assessed a Civil Penalty this month.

Virginia International Terminals, LLC. - Norfolk

Enforcement Orders were issued to Virginia International Terminals, LLC in Norfolk in August 2015, November 2015, December 2015 and January 2016. The August 2015 Enforcement Order contained an invoice for a \$1,000 Civil Penalty resulting from a failure to analyze a required parameter (Zinc). The November 2015 Enforcement Order contained an invoice for a \$1,000 Civil Penalty resulting from a failure to respond to a Notice of Violation within the required timeframe. The December 2015 Enforcement Order contained an invoice for a \$2,000 Civil Penalty resulting from a failure to respond to a Notice of Violation within the required timeframe and a permit limit exceedance for a required parameter (Zinc). The January 2015 Enforcement Order contained an invoice for a \$3,000 Civil Penalty resulting from a permit limit exceedance for a required parameter (Zinc) and a failure to respond to a Notice of Violation within the required timeframe. All of the violations have been addressed and corrective actions have been put into place. The Enforcement Orders were accepted and the Civil Penalties paid in February 2016.

Marva Maid Dairy

An Enforcement Order was issued to Marva Maid Dairy in Newport News on December 21, 2015 along with an invoice for a \$49,000 Civil Penalty. The enforcement order was a result of a review of multiple months of data that was resubmitted in November 2015, due to discrepancies noted by HRSD staff. The Order was issued for low pH permit violations at both the FRNT and SIDE sample points. pH violations at the FRNT manhole occurred in December 2014, May 2015, June 2015, July 2015, August 2015, and September 2015. pH violations at the SIDE manhole occurred in April through July 2015, October 2015 and November 2015. The Order also included administrative violations for late submittal of data over multiple months and for failure to follow the special conditions of their discharge permit. Marva Maid Dairy has addressed the violations and

corrective actions have been put into place. The Enforcement Order was accepted and the Civil Penalty was paid on February 26, 2016.

2. The Water Quality Department (WQD) Director attended a one-day workshop with National Association of Clean Water Agencies (NACWA) and United States Environmental Protection Agency (EPA) staff to review EPA's NPDES (National Pollution Discharge Elimination System) permit writers' training materials for developing permit conditions related to instream impacts associated with nutrients. This is a significant issue for many permittees across the country because most states have not adopted numeric water quality criteria for nutrients or criteria that are intended to protect for nutrient impacts (dissolved oxygen, chlorophyll). Permit writers, without criteria in place, are being instructed to make very environmentally conservative assumptions when developing permit conditions addressing nutrients. Overly stringent permit conditions can result in the expenditure of funds to reduce the discharge of nutrients to receiving waters without meaningful benefits to those waters. EPA was very receptive to the comments provided. NACWA plans to continue working with EPA on these nutrient and other permitting issues.

3. The WQD Director attended the annual NACWA Winter Conference and led the association's meeting of its Water Quality Committee as its chairman. One general session of the conference addressed issues and questions regarding the "smart" utility and "big data." Much of the discussion focused on operations and service area collections and the value of data to manage these systems. However, there can be disadvantages to collecting information including more strict regulation of wastewater treatment facilities. A shift in thought on the part of regulators and the regulated community is required to overcome the current approach to data - the regulated community minimizes information to avoid risk of more stringent regulations and regulators use information to more strictly regulate. There are even examples of where permittees actually collect more data to address a question but regulators use conservative assumptions to more strictly regulate despite the added information. EPA must reinforce the value of more information with permit writers to more accurately assess discharges and their implications for meeting water quality standards; this will facilitate a move by the regulated community to collect more data. EPA could provide an incentive to permittees for collecting more information; more information reduces uncertainty in management decisions which provides for more flexibility in those decisions (innovation) while protecting the environment.

4. The Central Environmental Lab (CEL) reports that significant accomplishments were made in the Wet Chemistry section of the CEL in preparation for the Sustainable Water Recycling Project including:
 - a. Method development for the analyses of disinfection byproducts and other parameters using ion chromatography (IC) was completed. The CEL began sample analysis and preparations for Virginia Environmental Laboratory Accreditation Program (VELAP) drinking water accreditation by completing the required quality system documentation and analysis of proficiency testing samples.
 - b. The CEL continued working to obtain low level limits of quantitation for Total Organic Carbon (TOC) and began preparation for analyzing Dissolved Organic Carbon samples using specialized equipment and cleaning techniques.
 - c. The development and implementation of standard operation procedures (SOPs) for UVT-254 and color analyses was completed.

B. Quality Improvement and Strategic Team Activities

1. The Sustainability Advocacy Group (SAG) reported plans for an April roll out the 2016 "One Thing Challenge," which focuses on material reuse. The SAG held many face-to-face meetings with the treatment plants in February and will continue these in March. Presentation to other work centers will occur throughout 2016.
2. The Pretreatment and Pollution Prevention (P3) Technology Team reported that Information Technology (IT) provided P3 with the power inverters and tablet pens to finalize the current hardware needs of the Mobile Workforce efforts.
3. The Pretreatment Information Management System (PIMS) Team reported that in February, work on the new internet based Publicly Owned Treatment Works Administration and Compliance System (iPACS) and the Field Assistant Service Tracking (FAST) application continued. The iPACS and FAST production database was refreshed from the current PIMS system in late February. Testing of this recent data migration is ongoing and there will be one more refresh before go-live.
4. The Technical Services Division (TSD) Technology Team and HRSD's IT Department continue to evaluate a digital transformation forms program. This new technology allows users to digitally capture data in the field with immediate validation. The digital forms program could be run on various platforms including iPads and tablets. Demo testing of the application began in February.

5. The WQ Communication Team continues to monitor and measure inter-divisional communication issues within the WQ Department. Quarterly reports will be distributed to the WQ Quality Steering Team (QST).

C. Municipal Assistance

HRSD provided sampling and analytical services to Accomack County and Northampton County to support their groundwater monitoring programs.

D. Strategic Planning Metrics Summary

1. Educational and Outreach Events: 1

- a. Staff provided a tour to Old Dominion University's (ODU) wastewater technology class.

2. Community Partners: 5

- a. TSD and the Laboratory Division assisted the City of Newport News with a microbial source tracking project at Hilton Beach.
- b. TSD and the Laboratory Division assisted the City of Virginia Beach in its bacteria/nutrient resuspension study in Mill Dam Creek/Broad Bay watershed.
- c. TSD and the Laboratory Division assisted the City of Suffolk in a nutrient/bacteria study for Shingle Creek.
- d. TSD and the Laboratory Division provided Chlorophyll Monitoring and Assessment Program support to the Department of Environmental Quality (DEQ) and ODU in monitoring the James River.
- e. TSD staff assisted the City of Newport News to identify the sources of bacterial contamination in high priority watersheds as identified through citizen monitoring.

3. North Shore/South Shore Capacity Related Overflows: 2

Item #	Strategic Planning Measure	Unit	February 2016
M-1.4a	Training During Work Hours Per Full Time Employee (102) (Current Month)	Total Hours / # FTE	2.15
M-1.4b	Total Training During Work Hours Per Full Time Employee (102) (Cumulative Fiscal Year-to-Date)	Total Hours / # FTE	52.34

Item #	Strategic Planning Measure	Unit	February 2016
M-2.5	North Shore/South Shore Capacity Related Overflows	# within Level of Service	2
M-3.1	Permit Compliance	# of Exceedances: # of Permitted Parameters	1:34994
M-3.2	Odor Complaints	#	0
M-3.4	Pollutant Removal	Total Pounds Removed	125,180,730
M-3.5	Pollutant Discharge	% Pounds Discharged/Pounds Permitted	22%
M-5.2	Educational and Outreach Events	#	1
M-5.3	Community Partners	#	5
	Average Daily Flow	Total MGD for all Treatment Plants	203.09
	Industrial Waste Related System Issues	#	0

Respectfully submitted,
James Plett, Ph.D
 Director of Water Quality



Engagement Background

We have continued to progress with our internal audit of the Design & Construction: CIP Project Management process.

Our audit process consists of three phases:

- **Planning:** reviewing relevant background information and gaining an understanding of and documenting the key areas to be reviewed
- **Fieldwork:** testing and examining pertinent documents, reports, transactions, and information to confirm the strength of the processes and related controls
- **Reporting:** discussing the conclusions of our audit work and ultimately issuing a written report with suggestions being provided (if identified)

Project Accomplishments

To date we have completed the Planning phase of the audit and have progressed into the Fieldwork phase. We have identified five audit objectives:

- Assess the effectiveness of the management and oversight of CIP project schedules and costs.
- Evaluate the project management procedures to ensure the expected level of quality is achieved for CIP projects from inception to completion.
- Assess the effectiveness and efficiency of the current Design and Construction Division organizational structure and internal communication procedures.
- Ensure the existence and effectiveness of communication between the CIP project management and external stakeholders.

In order to achieve the audit objectives outlined, we developed an audit program describing the audit steps to be performed during the course of the audit.

We are currently progressing with our test work in the Fieldwork phase to achieve the audit objectives.

Projected Tasks for March

During the month of March, our team plans to:

- Complete the fieldwork activities to address the audit objectives
- Begin compiling reporting material (e.g. preliminary findings)
- Communicate any potential/preliminary findings to the appropriate representatives

Our goal is to complete the audit process by the end of the month. Once finalized, the results will be shared with the Commissioners.

Engagement Notes/Delays

To date, we have encountered some delay in retrieving the necessary information to conduct the fieldwork testing due to a few challenges with the IT systems/networks. However, we should be in a good position to meet all projected deadlines.

Future Activity/Engagements

We anticipate moving on to the next internal audit project in mid-April, not later than the last week in April.

Annual Metrics

Item	Strategic Planning Measure	Unit	Target	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15
M-1.1a	Employee Turnover Rate (Total)	Percentage	< 8%	5.63%	4.09%	6.64%	7.62%	8.22%	9.97%
M-1.1b	Employee Turnover Rate within Probationary Period		0%		2.22%	8.16%	14.58%	9.68%	0.66%
M-1.2	Internal Employee Promotion Eligible	Percentage	100%		59%	80%	69.57%	71.43%	64.00%
M-1.3	Average Time to Fill a Position	Calendar Days	< 30		70	60	52	43.76	51
M-1.4	Training Hours per Employee - cumulative fiscal year-to-date	Hours	> 40		30.0	43.8	37.5	35.9	42.8
M-1.5a	Safety OSHA 300 Incidence Rate Total Cases	# per 100 Employees	< 3.5	6.57	6.15	5.8	11.2	5.07	3.87
M-1.5b	Safety OSHA 300 Incidence Rate Cases with Days Away	# per 100 Employees	< 1.1	0.74	1.13	1.33	0.96	1.4	0.82
M-1.5c	Safety OSHA 300 Incidence Rate Cases with Restriction, etc.	# per 100 Employees	< 0.8	3.72	4.27	2.55	4.5	2	1.76
M-2.1	CIP Delivery - Budget	Percentage			113%	96%	124%	149%	160%
M-2.2	CIP Delivery - Schedule	Percentage			169%	169%	161%	150%	190%
M-2.3a	Total Maintenance Hours	Total Available Mtc Labor Hours Monthly Avg			16,495	22,347	27,615	30,863	35,431
M-2.3b	Planned Maintenance	Percentage of Total Mtc Hours Monthly Avg			20%	27%	70%	73%	48%
M-2.3c	Corrective Maintenance	Percentage of Total Mtc Hours Monthly Avg			63%	51%	12%	10%	18%
M-2.3d	Projects	Percentage of Total Mtc Hours Monthly Avg			18%	22%	20%	18%	32%
M-2.4	Infrastructure Investment	Percentage of Total Cost of Infrastructure	2%		8.18%	6%	6%	4%	7%
M-3.3	Carbon Footprint	Tons per MG Annual Total			1.61	1.57	1.47	1.46	1.44
M-3.6	Alternate Energy	Total KWH			0	0	0	5,911,289	6,123,399
M-4.1a	Energy Use: Treatment	kWh/MG Monthly Avg			2,473	2,571	2,229	2,189	2,176
M-4.1b	Energy Use: Pump Stations	kWh/MG Monthly Avg			197	173	152	159	168
M-4.1c	Energy Use: Office Buildings	kWh/MG Monthly Avg			84	77	102	96	104
M-4.2	R&D Budget	Percentage of Total Revenue	> 0.5%		1.0%	1.4%	1.0%	1.3%	1.0%
M-4.3	Total Labor Cost/MGD	Personal Services + Fringe Benefits/365/5-Year Average Daily Flow		\$1,028	\$1,095	\$1,174	\$1,232	\$1,249	\$1,279
M-4.4	Affordability	8 CCF Monthly Charge/ Median Household Income	< 0.5%		0.48%	0.48%	0.41%	0.43%	0.53%
M-4.5	Total Operating Cost/MGD	Total Operating Expense/ 365/5-Year Average Daily Flow		\$2,741	\$2,970	\$3,262	\$3,316	\$3,305	\$3,526
M-5.1	Name Recognition	Percentage (Survey Result)	100%	67%	71%	N/A	62%	N/A	60%
M-5.4	Value of Research	Percentage - Total Value/HRSD Investment			129%	235%	177%	149%	181%
M-5.5	Number of Research Partners	Annual Total Number			42	36	31	33	28
	Rolling 5 Year Average Daily Flow	MGD		157.8	155.3	152	154.36	155.2	151.51
	Rainfall	Annual Total Inches		66.9	44.21	56.21	46.65	46.52	51.95
	Billed Flow	Annual Percentage of Total Treated		71.9%	82.6%	78%	71%	73%	74%
	Senior Debt Coverage	Net Revenue/Senior Annual Debt Service	> 1.5	2.51%	2.30%	2.07%	1.88%	1.72%	1.90%
	Total Debt Coverage	Net Revenue/Total Annual Debt	>1.4	1.67%	1.67%	1.46%	1.45%	1.32%	1.46%

*These metrics will be reported upon closeout of fiscal year financials.

Monthly Updated Metrics

Item	Strategic Planning Measure	Unit	Target	FY-10	FY-11	FY-12	FY-13	FY-14	FY-15	Jan-16	Feb-16
	Average Daily Flow	MGD at the Plants	< 249		136	146.5	158.7	156.3	153.5	172.7	203.1
	Industrial Waste Related System Issues	Number	0		3	6	6	6	2	0	0
	Wastewater Revenue	Percentage of budgeted	100%		97%	96%	98%	107%	102%	103%	101%
	General Reserves	Percentage of Operating and Improvement Budget	75% - 100%		72%	82%	84%	92%	94%	97%	100%
	Accounts Receivable (HRSD)	Dollars (Monthly Avg)			\$ 17,013,784	\$ 17,359,488	\$ 18,795,475	\$ 20,524,316	\$ 20,758,439	\$23,074,365	\$21,709,291
	Aging Accounts Receivable	Percentage of receivables greater than 90 days			21%	20%	18%	19%	21%	21%	23%
M-2.5	Capacity Related Overflows	Number within Level of Service	0		25	1	30	5	11	4	2
M-3.1	Permit Compliance	# of Exceedances to # of Permitted Parameters	0		12:55,045	1:51995	2:52491	1:52491	2:52491	1:30620	1:34994
M-3.2	Odor Complaints	Number	0		6	2	7	11	5	1	0
M-3.4	Pollutant Removal (total)	Total Pounds Removed			178,163,629	171,247,526	176,102,248	185,677,185	180,168,546	110,594,708	125,180,730
M-3.5	Pollutant Discharge (% of permitted)	Pounds Discharged/Pounds Removed	< 40%		25%	22%	25%	22%	22%	20%	22%
M-5.2	Educational and Outreach Events	Number			302	184	238	322	334	33	38
M-5.3	Number of Community Partners	Number			280	289	286	297	321	25	28

EFFLUENT SUMMARY FOR FEBRUARY 2016

PLANT	FLOW mgd	% of Design	BOD mg/l	TSS mg/l	FC #/UBI	ENTERO #/UBI	TP mg/l	TP Yr Avg	TN mg/l	TN Yr Avg	TKN mg/l	NH3 mg/l	CONTACT TANK EX
ARMY BASE	13.50	75%	8	11	2	2	0.96	0.96	6.8	8.7	NA	NA	7
ATLANTIC	30.36	56%	14	8.3	1	1	NA	NA	NA	NA	NA	NA	NA
BOAT HARBOR	23.21	93%	11	9.8	2	2	0.34	0.33	14	13	NA	NA	3
CENT. MIDDLESEX	0.020	80%	<2	<1.0	1	<1	NA	NA	NA	NA	0.79	<0.20	NA
CHES-ELIZ	22.95	96%	14	17	25	4	0.79	1.1	27	28	NA	NA	5
JAMES RIVER	19.48	97%	5	6.0	1	2	0.43	0.46	12	11	NA	NA	3
KING WILLIAM	0.035	35%	<2	<1.0	NA	1	0.03	0.02	0.35	0.57	0.17	NA	NA
NANSEMOND	22.48	75%	7	6.7	1	1	0.81	0.78	7.0	6.8	NA	NA	14
URBANNA	0.039	39%	12	15	3	5	3.1	3.1	30	30	NA	<0.20	NA
VIP	45.52	114%	12	15	2	1	0.57	0.75	6.5	8.2	NA	NA	1
WEST POINT	0.836	139%	21	25	1	1	1.7	2.0	12	12	NA	4.2	0
WILLIAMSBURG	8.78	39%	5	5.0	7	4	0.46	0.43	6.2	5.8	NA	NA	0
YORK RIVER	15.89	106%	5	0.69	3	2	0.17	0.20	6.1	6.5	NA	NA	14
	<u>203.09</u>		<u>10</u>	<u>11</u>									

	<u>% of Capacity</u>
North Shore	82%
South Shore	81%
Mid Peninsula	111%

Tributary Summary				
TN	Projected	Projected	TP	Projected
WLA	TN Pounds	TN WLA	WLA	TP Pounds
Tributaries				
James River	13%	4,834,500	81%	13%
York River	18%	311,868	108%	11%
Rappahannock	41%	3,006	247%	57%

Rainfall		
	<u>North Shore</u>	<u>South Shore</u>
Month	4.93"	6.25"
Normal for Month	2.78"	2.78"
Year to Date Total	8.24"	10.87"
Normal for YTD	6.02"	5.68"

Permit Exceedances: Total Possible Exceedances, FY16 to Date: 1:34,994
Pounds of Pollutants Removed in FY16 to Date: 125,180,730
Pollutant Lbs Discharged/Permitted Discharge FY16 to Date: 22%

AIR SUMMARY FOR FEBRUARY 2016

Incineration

	Part 503			Title V			
	Hearth Temp Daily Avg Days > Max	THC 100 ppm Monthly Avg	THC Data Capture %	Precooler 3 Hr Avg Incidents	Venturi 3 Hr Avg Incidents	Tray 3 Hr Avg Incidents	VE Major > 1 Hr Incidents
Plant							
Army Base	0	39	99	0	0	0	0
Boat Harbor	0	28	98	0	0	0	0
Ches-Eliz	0	29	98	0	0	0	0
VIP	0	56	99	0	0	0	0
Williamsburg	0	19	99	0	0	0	1

Odor

	ST Days with Exceptions > 2 ppm	SH Days with Exceptions > 5 ppm	Complaints Received
Plant			
Army Base	0, 0	n/a	0
Atlantic	0, 0	0, 0	0
Boat Harbor	0	n/a	0
Ches-Eliz	0, 0	0	0
James River	0, 0	0	0
Nansemond	0	0	0
VIP	0, 0	n/a	0
Williamsburg	0, 0	0	0
York River	0	n/a	0
Pump Stations (with Odor Control)		Exceptions > 1 ppm	Complaints Received
North Shore		0	0
South Shore		0	0
System		n/a	0

HRSD COMMISSION MEETING MINUTES
March 22, 2016

ATTACHMENT #5

AGENDA ITEM 11. - Work Session – Fiscal Year 2016-2017 Annual Budget
PowerPoint Presentation



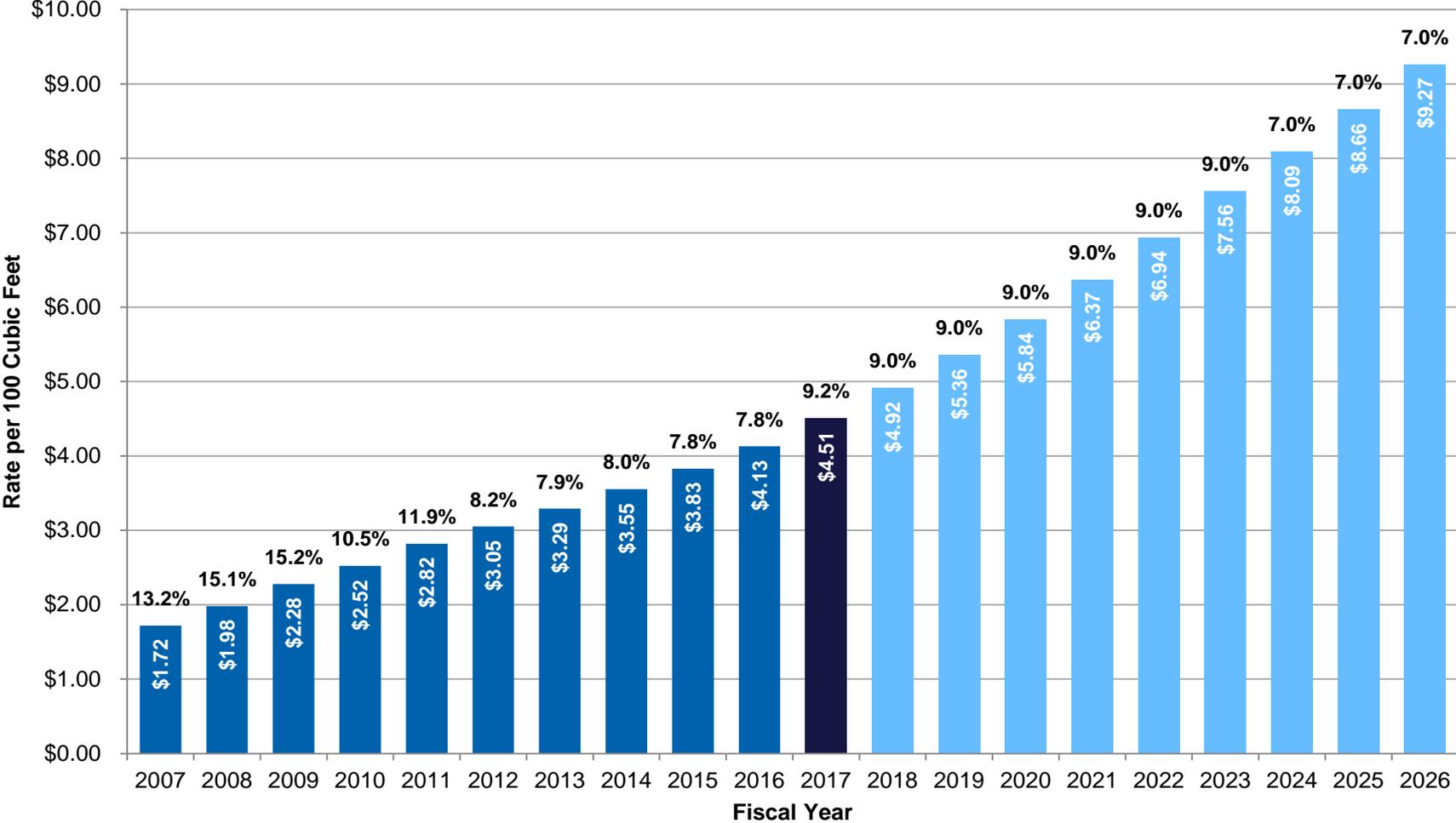
FY17 Budget Commission Work Session

March 22, 2016

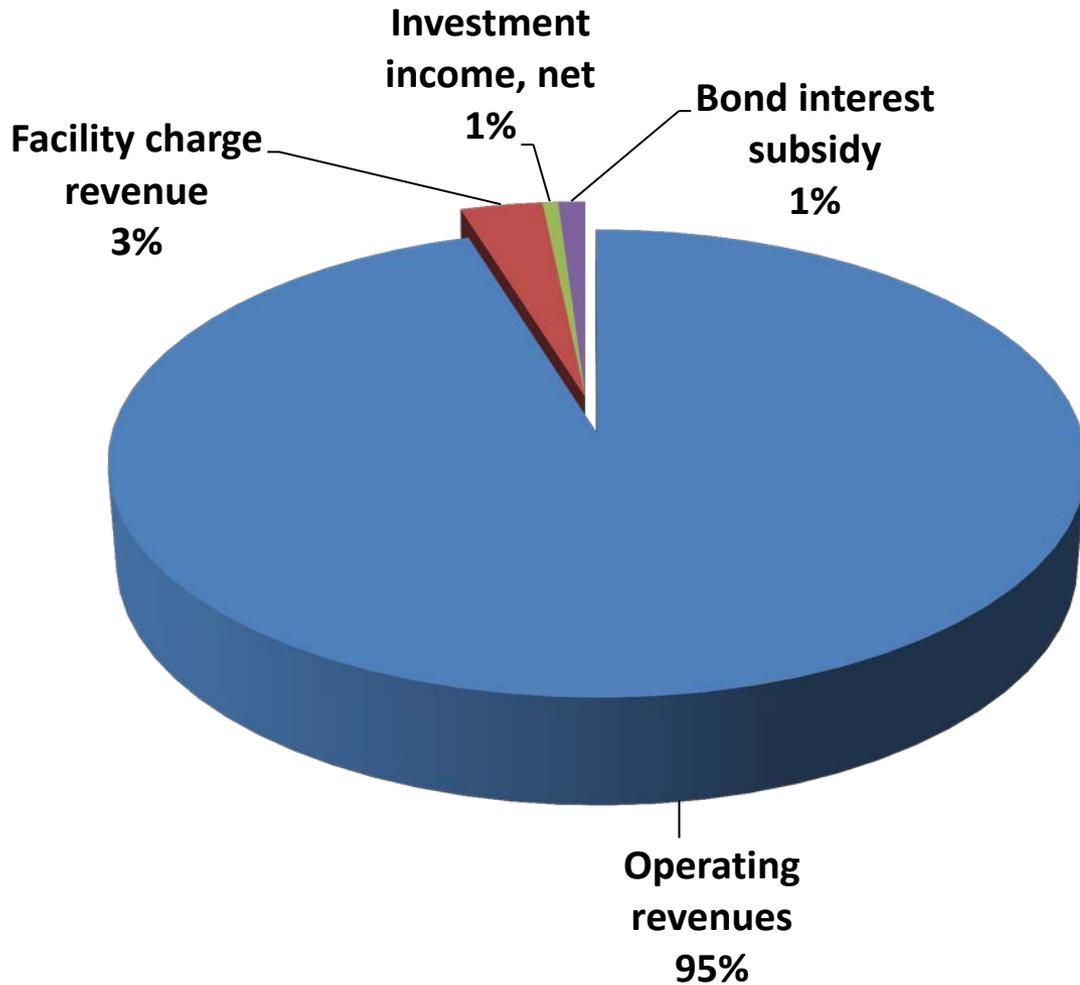
- Revenues
- Financial Model
- Compensation and Benefits
- FY 17 Operating Budget
- Next Steps

Historical Rate Increases

Retail Service Charge

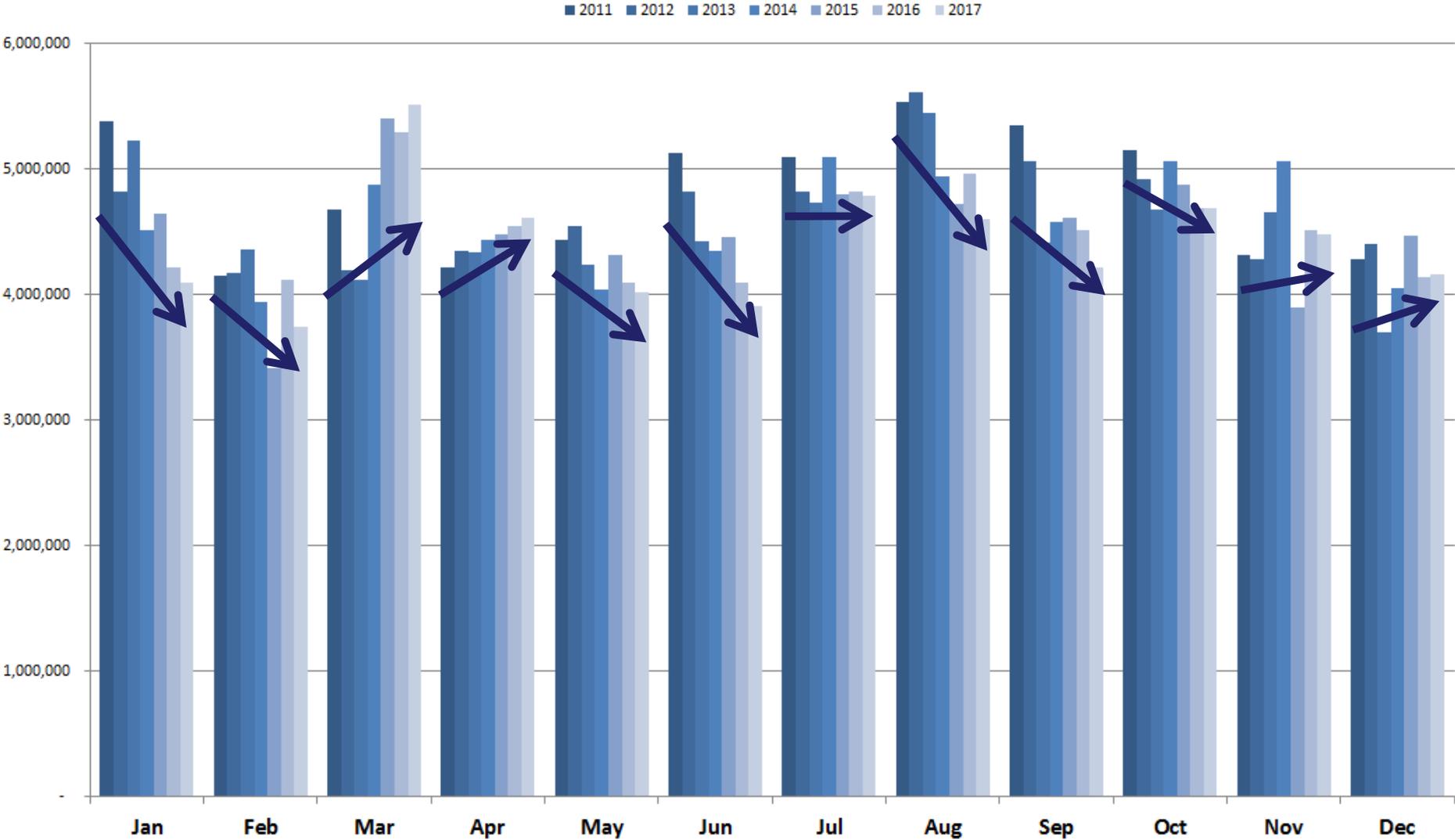


Revenues by Source



Water Consumption is directly tied to our revenues

Revenue Projections – Water Consumption Seasonality



5 Year Linear Regression Assuming Seasonality

Monthly Water Consumption (ccf)

Fiscal Year	2011	2012	2013	2014	2015	2016	2017
Jul	5,090,480	4,821,516	4,725,538	5,088,265	4,798,192	4,818,772	4,783,882
Aug	5,532,835	5,608,151	5,447,673	4,933,239	4,718,924	4,964,424	4,598,458
Sep	5,348,202	5,056,824	4,406,887	4,571,718	4,611,293	4,507,034	4,212,566
Oct	5,148,362	4,911,481	4,672,748	5,056,612	4,876,714	4,685,696	4,688,559
Nov	4,307,666	4,275,952	4,654,458	5,056,612	3,895,486	4,510,279	4,477,458
Dec	4,275,313	4,401,926	3,700,510	4,050,011	4,460,950	4,140,734	4,156,942
Jan	5,376,035	4,820,656	5,218,777	4,511,158	4,636,143	4,217,273	4,091,177
Feb	4,144,352	4,170,472	4,351,601	3,939,660	3,415,673	4,115,506	3,740,821
Mar	4,669,935	4,186,372	4,111,666	4,874,492	5,399,600	5,292,648	5,507,393
Apr	4,210,879	4,347,824	4,332,381	4,431,132	4,474,295	4,542,344	4,603,358
May	4,432,269	4,539,565	4,236,150	4,040,422	4,313,660	4,091,505	4,017,869
Jun	5,125,131	4,813,434	4,417,893	4,343,299	4,457,255	4,089,636	3,909,047
Grand Total	57,661,459	55,954,173	54,276,283	54,896,621	54,058,185	53,975,853	52,787,530

Proposed FY17 Wastewater Charge Revenue = \$238M

- \$4.51 per ccf
 - 9.2% monthly bill increases from FY16 - \$4.13 per ccf
 - Avg Bill @ 6.5 ccf = \$29.32/month
 - \$2.47 increase (*only \$0.84 higher than a 6% increase*)
- FY17 Proj = 52,787,530 ccf
 - Projected FY16 = 53.7 million ccf
 - -1.72% decline

Other FY17 Revenue Items of Interest

- Expecting \$8.8M in State grants
- BOD Credit to be implemented
 - BOD surcharge reduced
 - TN/TP surcharge increased

Strength Based Surcharge

- Additional change in surcharge related to BOD proposed in FY 2016 (inadvertently not included in FY16 rates)
 - BOD in raw wastewater provides some benefits for removal of TP and TN
 - Three “credits” applied to BOD surcharge rate and redistributed to TN and TP as appropriate
 - Due to assimilation of nitrogen and phosphorus into the biomass produced when BOD is biologically treated
 - Reduced methanol consumption otherwise needed for denitrification
 - Reduced electricity required attributable to the oxygen recovered in the denitrification process

Projected Facility Charge Revenue

- **FY15 Actual = \$7.4M**
 - YTD (Feb 15) = \$5.0M
- **FY16 Budget = \$6.0M**
 - YTD (Feb 16) = \$3.4M
 - FY16 Projected = \$5.5M (assumes summer uptick)
- **FY17 Proposed = \$5.5M**
 - FY13 Actual = \$5.8M



Virginia Retirement System (VRS)

- Employer contribution rate = 7.79% for FY17 and FY18
 - FY16 = 8.96%
 - Savings = \$576,000



Financial Model

Development of the Financial Forecast



- 20 year projection
- Attempts to focus impacts of decisions today on the long-term
- Inflation based model with sophisticated debt modeling
- Encourages transparency and is good public policy

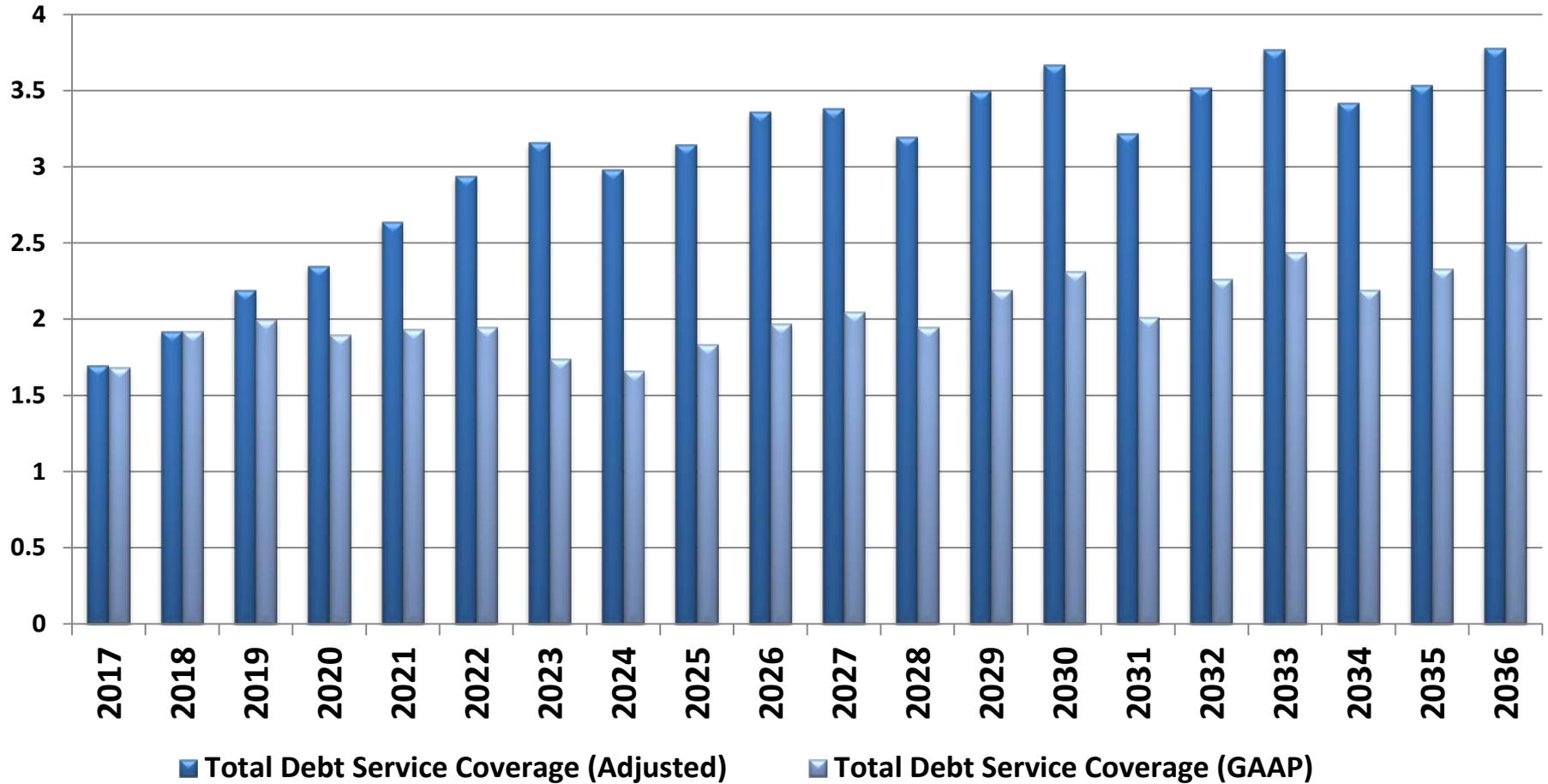
20 Year Financial Projection

Financial Forecast (in thousands)	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Operating Budget Forecast																				
<i>Rate and Fees Increase - %</i>	9%	9%	9%	9%	9%	9%	9%	7%	7%	7%	7%	7%	6%	6%	6%	6%	6%	6%	6%	6%
Revenues																				
Operating Revenues	\$ 252,383	\$ 271,668	\$ 292,451	\$ 314,855	\$ 339,008	\$ 365,047	\$ 393,120	\$ 415,962	\$ 440,144	\$ 465,744	\$ 492,846	\$ 521,539	\$ 546,963	\$ 573,634	\$ 601,611	\$ 630,959	\$ 661,745	\$ 694,040	\$ 727,919	\$ 763,458
Non-operating Revenues	9,850	10,791	10,794	11,270	11,708	12,048	12,432	13,026	13,193	13,362	13,569	13,735	13,925	13,923	14,131	14,348	14,576	14,815	15,066	15,130
Total Revenues	262,233	282,459	303,245	326,125	350,716	377,095	405,552	428,988	453,337	479,106	506,414	535,274	560,888	587,557	615,741	645,306	676,320	708,855	742,984	778,588
Operations	137,198	144,993	151,755	158,819	166,475	173,853	182,142	190,903	200,165	211,991	222,489	233,602	245,373	257,844	271,062	285,077	299,944	315,721	332,468	350,253
Major Repairs and Replacements	7,425	7,722	8,031	8,352	8,686	9,034	9,395	9,771	10,161	10,568	10,991	11,430	11,888	12,363	12,858	13,372	13,907	14,463	15,041	15,643
Capital Acquisitions	1,454	1,513	1,573	1,636	1,701	1,769	1,840	1,914	1,990	2,070	2,153	2,239	2,329	2,422	2,519	2,619	2,724	2,833	2,946	3,064
Total Operating Appropriations	146,077	154,228	161,359	168,807	176,863	184,656	193,378	202,587	212,317	224,629	235,632	247,272	259,589	272,628	286,438	301,068	316,575	333,017	350,456	368,961
Debt Service	63,795	64,394	63,848	63,911	64,310	63,429	64,265	74,051	73,666	74,040	77,830	89,672	83,996	83,908	102,727	95,875	93,685	110,894	108,958	108,062
Transfer to Capital Improvement Plan (PAYGO)	52,101	63,690	74,672	71,263	92,161	109,339	117,524	142,936	157,467	168,525	182,906	186,953	205,327	218,409	213,288	234,357	251,292	249,364	267,128	284,205
Transfer to General Reserve	-	-	3,146	21,925	17,149	19,580	30,131	9,143	9,599	11,605	9,719	11,029	11,605	12,217	12,867	13,558	14,292	15,072	15,901	16,784
Transfer to Risk Management Reserve	260	147	220	219	233	91	254	271	288	307	327	348	371	395	421	448	477	508	541	577
Total Appropriations	\$ 262,233	\$ 282,459	\$ 303,245	\$ 326,125	\$ 350,716	\$ 377,095	\$ 405,552	\$ 428,988	\$ 453,337	\$ 479,106	\$ 506,414	\$ 535,274	\$ 560,888	\$ 587,557	\$ 615,741	\$ 645,306	\$ 676,320	\$ 708,855	\$ 742,984	\$ 778,588
Capital Improvement Budget Forecast																				
Beginning Capital Reserves	\$ 66,361	\$ 72,261	\$ 25,951	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Sources of Funds																				
Debt funded	75,000	-	17,377	63,737	43,339	22,661	39,476	39,564	25,033	72,854	70,080	77,538	61,502	75,172	88,156	83,241	93,212	108,534	95,721	103,558
HRSD - Cash	52,101	63,690	74,672	71,263	92,161	109,339	117,524	142,936	157,467	168,525	182,906	186,953	205,327	218,409	213,288	234,357	251,292	249,364	267,128	284,205
Grants and Other Reimbursements	8,800	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Transfer from Debt Service Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	10,000	-	-	-	-	-	-	-
Total Capital Resources	202,261	135,951	118,000	135,000	135,500	132,000	157,000	182,500	182,500	241,379	252,985	264,491	276,829	293,581	301,444	317,599	344,504	357,898	372,849	387,763
Uses of Funds - Capital Expenditures	130,000	110,000	118,000	135,000	135,500	132,000	157,000	182,500	182,500	241,379	252,985	264,491	276,829	293,581	301,444	317,599	344,504	357,898	372,849	387,763
Ending Capital Resources	\$ 72,261	\$ 25,951	\$ -																	
Reserves Balance Forecast																				
General Reserve	\$ 129,400	\$ 129,400	\$ 132,546	\$ 154,471	\$ 171,620	\$ 191,200	\$ 221,330	\$ 230,474	\$ 240,073	\$ 251,678	\$ 261,397	\$ 272,425	\$ 284,030	\$ 296,248	\$ 309,115	\$ 322,673	\$ 336,964	\$ 352,036	\$ 367,937	\$ 384,721
Risk Reserve	3,001	3,148	3,369	3,588	3,821	3,912	4,166	4,437	4,726	5,033	5,360	5,708	6,079	6,474	6,895	7,343	7,821	8,329	8,870	9,447
Debt Service Reserve Fund	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754	31,754
Total Reserves Balance	\$ 164,155	\$ 164,302	\$ 167,669	\$ 189,813	\$ 207,195	\$ 226,866	\$ 257,251	\$ 266,665	\$ 276,553	\$ 288,465	\$ 298,511	\$ 309,888	\$ 311,864	\$ 324,476	\$ 337,764	\$ 351,770	\$ 366,539	\$ 382,119	\$ 388,562	\$ 405,923
Financial Ratios Forecast																				
Senior Debt Service Coverage (GAAP)	2.80	3.28	3.42	3.26	3.43	3.61	3.31	3.65	5.04	5.54	7.77	8.44	9.05	9.62	19.81	22.82	24.41	25.92	27.93	29.65
Total Debt Service Coverage (GAAP)	1.68	1.92	2.00	1.90	1.93	1.95	1.74	1.66	1.83	1.97	2.05	1.95	2.19	2.31	2.01	2.26	2.44	2.19	2.33	2.50
Senior Debt Service Coverage (Adjusted)	3.02	3.28	3.74	4.03	4.70	5.43	6.01	6.55	8.68	9.43	12.83	13.85	14.48	15.24	31.69	35.46	37.61	40.32	42.34	44.74
Total Debt Service Coverage (Adjusted)	1.70	1.92	2.19	2.35	2.64	2.94	3.16	2.98	3.15	3.36	3.38	3.20	3.50	3.67	3.22	3.52	3.77	3.42	3.54	3.78
CIP % Cash Funded (current year contributions)	40%	58%	63%	53%	68%	83%	75%	78%	86%	70%	72%	71%	74%	74%	71%	74%	73%	70%	72%	73%
Debt Service as a % of Total Revenues	24%	23%	21%	20%	18%	17%	16%	17%	16%	15%	15%	17%	15%	14%	17%	15%	14%	16%	15%	14%
General Reserve as a % of Operating Expenses	82%	81%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%	75%

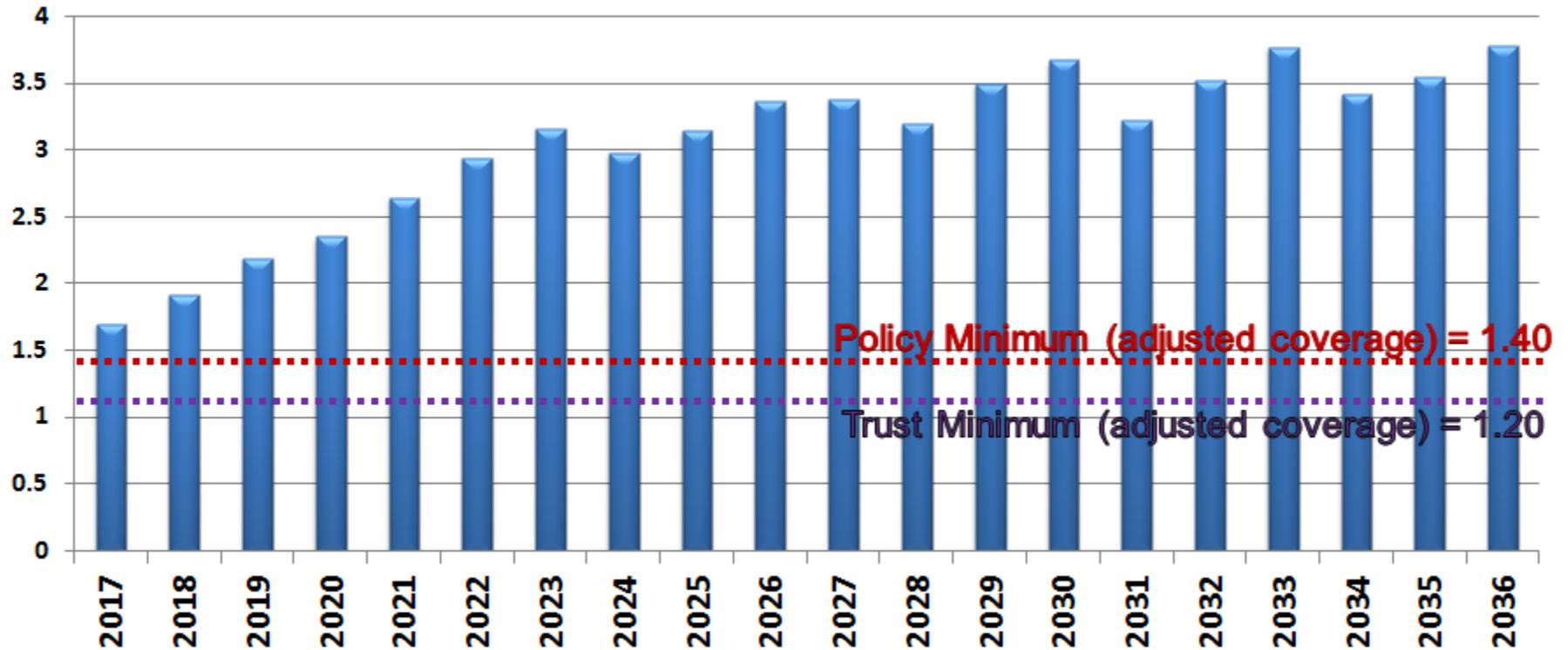
Major Assumptions

- Water consumption declines 1% per year
- \$75 million subsidized VRA loan in FY17
- General Reserve = minimum 270 days of Cash on Hand (Operating Liquidity)
 - Sensitivity, 365 vs 270 days cash on hand = -54 bps on our DSCR
 - Ex. Year 2036, DSCR = 2.52 vs 1.98
- Decline in the Debt Service Reserve Fund
 - From \$44M to \$32M
- Locality projects start FY19 (subject to change)

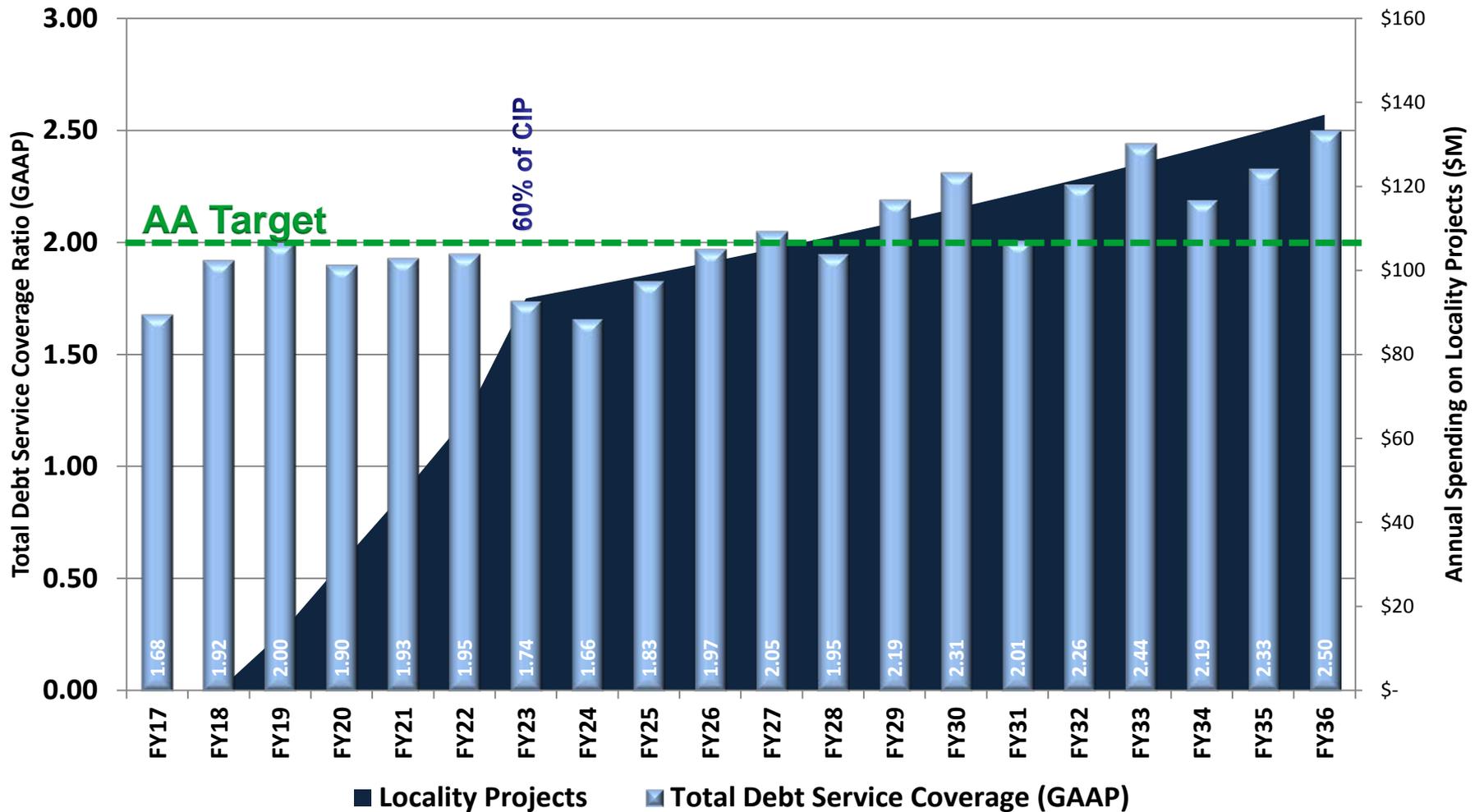
Debt Service Coverage Ratio by Type



Total Debt Service Coverage Ratio (Adjusted)



Total Debt Service Coverage (GAAP) & Locality Projects



Proposed Policy on Capitalization Rules

- Consistency
- Alignment with GFOA Standards
- Take advantage of Fixed Assets module in ERP

Proposed New Money for FY17

- Three options

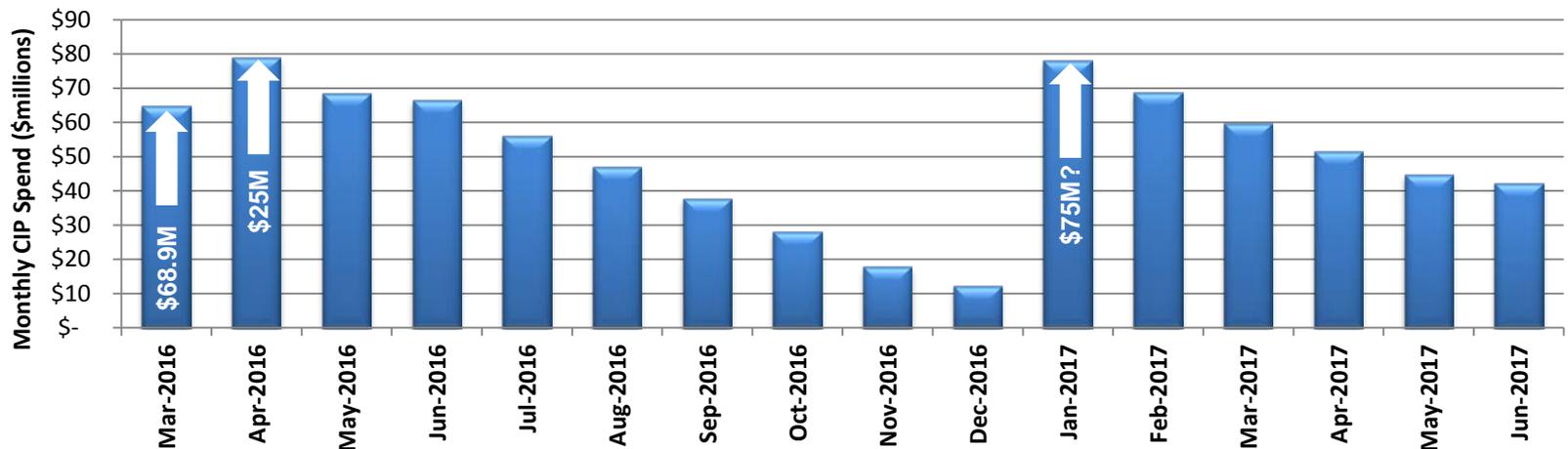
1. Va Resources Authority

- 30 year, 1% subsidy
- @ \$75M, \$15.4M savings – 3% vs 4% interest rate
- Requires Board approval to issue at subordinate level

2. Line of Credit (Bank of America)

3. Fixed-rate Revenue Bonds

Cash Burn Rate





Compensation & Benefits

- Phase II Competitive Compensation Analysis
 - Methodology
 - Key Findings
 - Recommendations
- Health Benefits Renewal
 - Changes
 - Cost Trends and Projections
- Wellness Program Trends

Compensation Study Project Overview

- Develop Compensation Market Strategy
- Data Collection
 - Market based review of HRSD's current pay scale
 - Custom survey of utilities
- Data Evaluation
 - Mid-Point, 75th & 90th percentiles
 - Average salary and ranges
 - Compensation philosophy
- Recommendations
 - Adjustments
 - Evaluation of specific jobs
 - Policy for compensation
 - Future considerations

- Compensation Market Strategy
 - Articulates markets most likely to be talent competitors
 - Establishes comparison groups by job type, industry, geography, size, and target salary
- 57 Benchmark jobs to represent HRSD
 - Difficult to retain and recruit OR
 - Represent a large population
- Custom Survey of 14 Peer Organizations
- Composite Market Review
 - Five published surveys
- Calibration
 - Geographic
 - Job Fit
 - Aging

Compensation Market Strategy

Job Type	Industry	Geography	Size of Budget/ Scope/Staff	Target Salary (Percentile)
Senior Management	Utilities, Industry, Public	Mid-Atlantic	\$400M 800 FTEs	75 th /90 th
Scientific Staff & Management	Industry Public	National Mid-Atlantic	\$400M	75 th /90 th
Technical Management	Utilities	Mid-Atlantic	\$400 800 FTEs	75 th /90 th
Engineering & IT	Industry Public	Mid-Atlantic	\$400M	75 th /90 th
Professional & Admin	Industry	Hampton Roads	\$400M	75 th /90 th
Process, Electrical & Maintenance	Industry	Mid-Atlantic	\$400M 800FTEs	75 th /90 th

- Data Analysis

- Custom survey data subset
- Compiled market results and custom survey data
- Salary

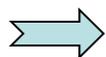
- Current average base salaries



- Minimum, mid-point, maximums

- Compensation Targets

- Salary range minimum at market median
- Salary range mid-Point at market 75th percentile



- Salary range maximum at market 90th percentile

Key Findings –Custom Survey Subset

- Average HRSD Salaries
 - 111% of market median
 - 91% of 75th percentile
 - 85% of 90th percentile
- HRSD Salary Ranges
 - 93% of average market mid-point
- Individual Average Job Salaries
 - 13 jobs fall > 20% below 75th percentile

Key Findings – Compiled Data

- Average HRSD Salaries
 - Overall aligned with 75th percentile of market
 - 99.6% Fit
 - 90.2% of market 90th percentile
- HRSD Current Salary Ranges
 - Minimum 84% of market median
 - Mid-Point 87.1% of market 75th percentile
 - – Maximum 98.6% of market 90th percentile
- Individual Job Salary Ranges
 - Maximum for 7 jobs >10% below market 90th percentile

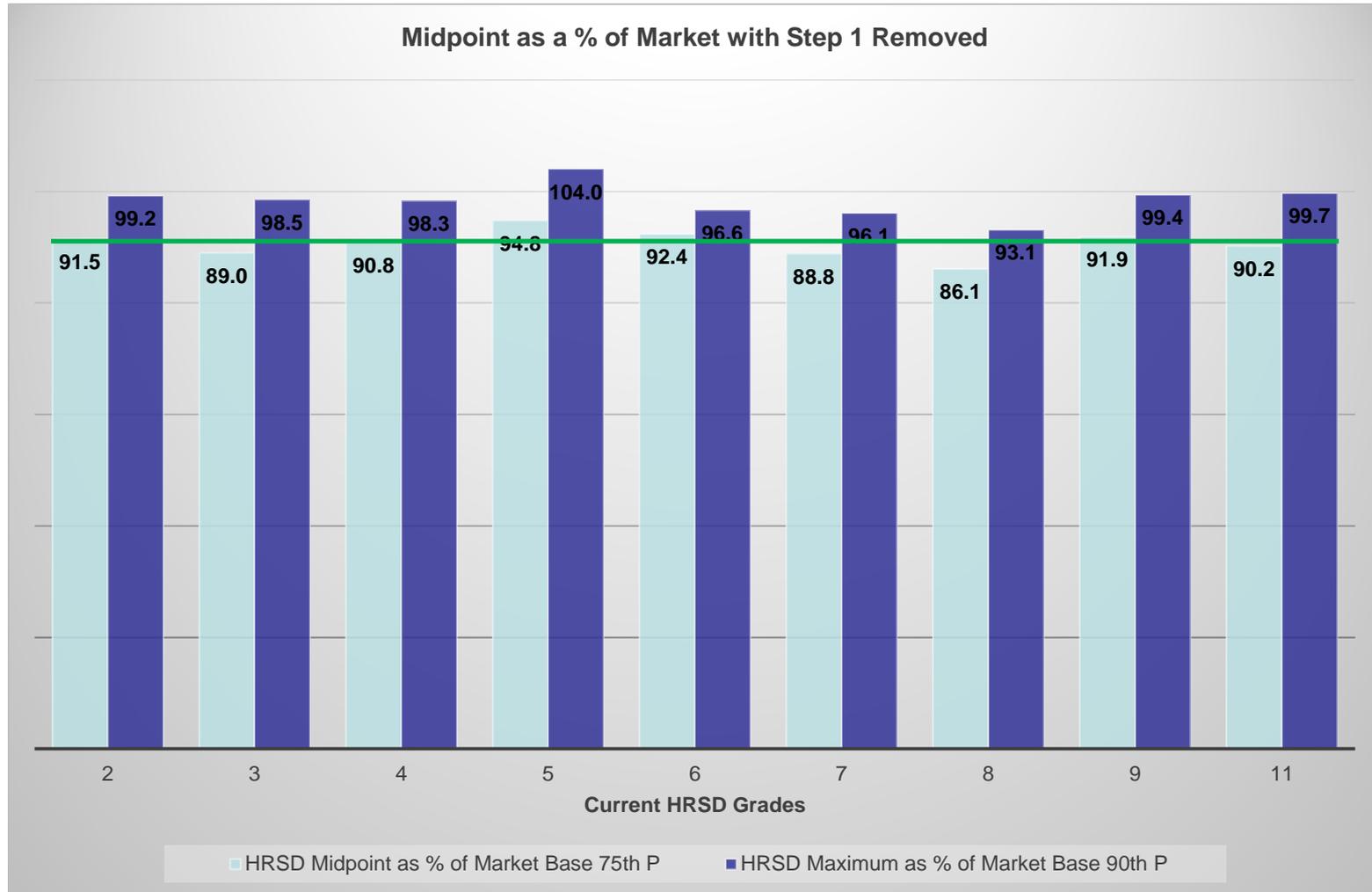
Evaluate Salary Range Adjustment

- Remove Step 1 to improve market alignment

Salary Range	w/o Adjustment	w/ Adjustment
Minimum	84% of market median	88 % of market median
Mid-Point	87% of market 75 th percentile	91% of 75 th percentile

- Impact
 - 70 Employees
 - \$106,360 Budget Increase

Adjustment-Market Comparison by Grade



- Remove Step 1 from current salary structure
- Evaluate additional adjustments for jobs where salaries appear below market
 - Compensation & Classification Evaluation
- Develop a Compensation Policy
 - Document compensation market strategy & philosophy
 - Outline frequencies and approach for future studies
- Future salary range revisions

- Summary
- Trends
 - FY15
 - FY16 YTD
 - Projections
- Renewal
 - Benefit Changes
 - Costs
- Budget Recommendations

HRSD Health Benefits

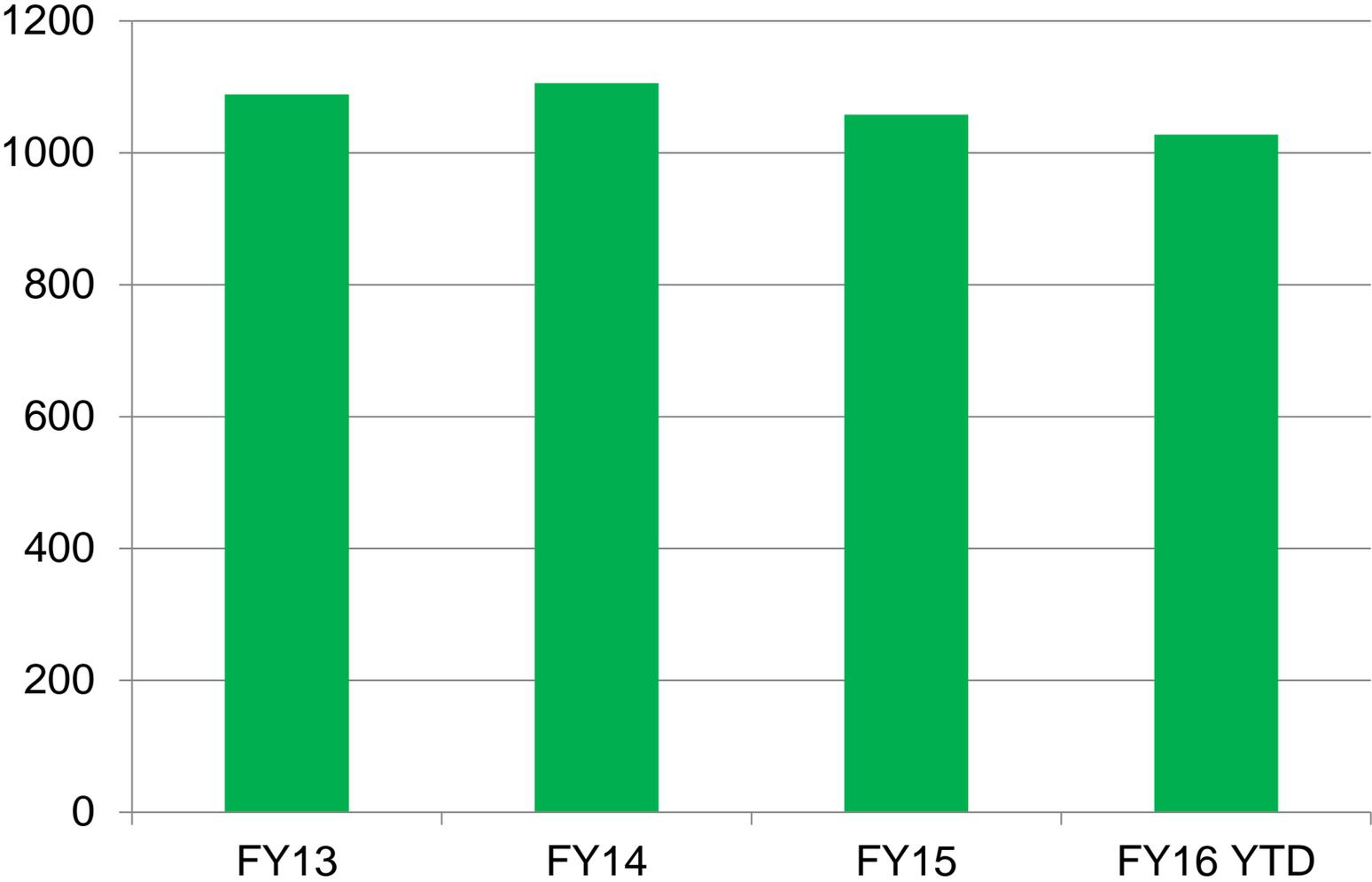
- High Deductible Health Plan- No Premiums

Type	Deductible	Out of Pocket Max
Wellness –Single	\$1500	\$3000
Non-Wellness - Single	\$1750	\$3500
Wellness - Family	\$3000	\$6000
Non-Wellness -Family	\$3500	\$7000

- Pharmacy
 - No Cost Preventative Generics
 - \$10/\$30/\$50 Co-Pays after deductibles
- Health Savings Account
- Vision
- Dental

- **FY15 Plan Year**
 - Enrollment- 749 employees
 - Expected Plan Costs: \$10, 520,161 (\$1171 pepm)
 - Actual Plan Costs: \$9, 527,705 (\$1060 pepm)
9.6% under expected liability
- **FY16 Plan Year to Date**
 - Enrollment – 766 employees
 - YTD Expected Plan Costs: \$5,714,760 (\$1243 pepm)
 - YTD Actual Plan Costs: \$4,731, 000 (\$1027.73 pepm)
10.7% under expected liability
- **FY17 Projections**
 - Enrollment – 785
 - Expected Plan Costs: \$12,224,595 (\$1297.72 pepm)

Medical PEPM Cost Trends



- HDHP
 - Increase Non-Wellness Deductible
 - \$2000 Single
 - \$4000 Family
 - Add Fertility Benefits : \$10,000 Lifetime Max
 - Add Vision Therapy
 - Add MD Live (\$38 Co-pay)
- Vision
 - No Increase for Basic Plan
 - Add Voluntary Premium Plan
- Dental
 - No Plan Changes or Increases
- Overall Budget
 - FY16 --\$12,068,532**
 - FY17 – \$12,216,638**

Wellness Program Trends

- 2014/2015
 - 47% on lowest deductible for PY participation
 - 394 employees received incentives for PY outcomes
 - Increased employee engagement
- 2015/2016 Projections
 - 56% on lowest deductible for PY participation
 - 311 employees to receive incentives for PY outcomes
- Increased Employee Engagement
 - Personal Health Assessments: 300 to 500*
- Budget
 - No Proposed Increase



Operating Budget

- Operating budget increase 4% to \$146M
 - FY 16 forecast for FY 17 budget at \$147M
 - FY 10 forecast for FY 17 budget at \$163M
 - Average increase over past 7 years 3.3%
 - Average revenue increase 5.4%
 - Average wastewater treatment rate increase 11.3%
 - \$2.52/CCF in FY 10 to \$4.51/CCF in FY 17

- FY 16 budget 803 FT
- FY 17 budget proposal 815 FT
 - Convert 7 PT to 4 new FT positions
 - 2 Custodians
 - 2 Facility Assistants
 - 2 new Coatings Inspectors in Operations
 - 2 new Business Analysts
 - Finance
 - Talent Management
 - 2 new Enterprise Architects in IT
 - 1 new Facility Assistant in SCD
 - 1 new Admin Assistant in Procurement

Operating Budget Highlights

- People related costs - wages
 - Shifted part-time to full-time
 - Reduced temporary services – related to ERP implementation
 - Reduced OT with addition of strategic new positions
 - Minor increase in total wages (less than 1%)
 - Includes new positions
 - 0.5% merits for Step 10
 - Elimination of Step 1
 - Merits per existing pay structure

Operating Budget Highlights

- People related costs - benefits
 - Retirement contribution reduced – per VRS
 - Minor increase in hospitalization (1.23%)
 - Non-wellness deductible increases

Operating Budget Highlights

- Significant increase in contractual services – many new contracts
 - Atlantic TP CHP Maintenance Contract
 - Small Communities ROW maintenance and Surry operating contracts
 - MACT 129 Testing
 - Coatings Program
 - ERP Managed services
 - Corrosion protection services
 - Roof maintenance services

Operating Budget Highlights

- Significant increase in materials and supplies (MS)
 - Computer software licensing for CMMS Mobile and PI Data Point
- Chemical costs increases
 - Ferric sulfate in lieu of ferric chloride
 - Increase in dosage of sodium hydroxide for alkalinity control related to nutrient removal efficiencies
 - Methanol increase to meet WLA with AB on line

- March 31 – CIP Review Meeting – Finance Committee
- April 15 – Budget Review – Finance Committee (need to confirm with Commission)
- April 26 – Budget Proposal – Commission
- May 24 – Budget Action – Commission
- 4 Consecutive weeks – newspaper advertisement
- July 1 – Budget Effective