Preserving the Health and Safety of the Greater Richmond Community and Environment

Secondary Clarifier Rehabilitation
One of several current major treatment plant construction projects

May 31, 2018

ANNUAL OPERATING REPORT
2017

RICHMOND WASTEWATER TREATMENT PLANT -

SANITARY AND STORM WATER COLLECTION SYSTEMS

CITY OF RICHMOND, CALIFORNIA

RICHMOND, CA WASTEWATER TREATMENT PLANT

ANNUAL OPERATIONS REPORT
January 1, to December 31, 2017

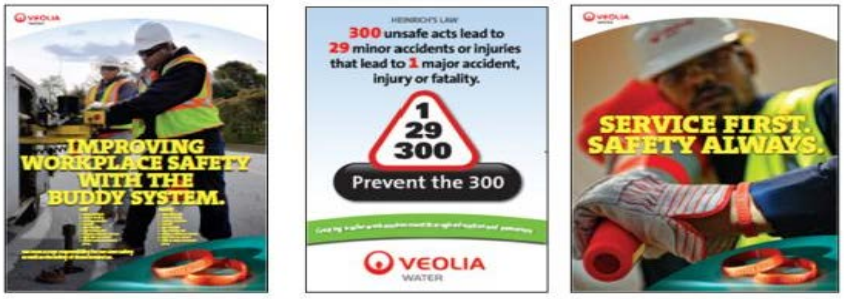
Prepared by

Veolia North America

TABLE OF CONTENTS

SAFETY PROGRAM STATUS/REVIEW:

It's a Culture, Not a Campaign



Safety Achievements

- Veolia Richmond has had no lost time safety incidents since October 7, of 2008. There was a single OSHA recordable safety incident in 2017 and prior to that none since November of 2014. In July an employee suffered a minor elbow injury during an after-hours service call while exiting a Vactor truck; there was no lost work time involved.
- Plant staff conducted all of the required Veolia Water monthly safety training as well as specialized safety training from outside providers. Additionally staff held frequent internal departmental safety tailgate meetings.
- Completed all required monthly internal safety inspections and also audited by Veolia's Regional Safety staff.
- Plant staff participated in the Great California Shakeout earthquake preparation drill in October. The drill was coordinated by Veolia regional safety management staff with many of the company's West Region sites participating.

WASTEWATER TREATMENT PLANT PERFORMANCE STATUS/REVIEW

2017 Operational Status and Statistics:

- 2.658 billion gallons of wastewater was treated through the Richmond WPCP and discharged into San Francisco Bay in 2017. 44% or 1.165 billion gallons was treated during the first three months of the year, an extremely wet period. By comparison, the total volume treated in 2016 was 2.431 billion gallons. The increase in discharge in 2017 over 2016 was 227 million gallons or 9% and resulted from the high, rain induced plant flows mentioned previously. During the first three months of 2017 25.56 inches of rain fell (just over the annual average) according to the rain gauge at the Richmond WPCP. Rainfall in 2017 was 32.25 inches and in 2016 the total was about 30.18 inches; the annual average is about 25 inches. Average plant flow was

7.28 million gallons per day (MGD) in 2017 and 6.66 MGD in 2016.

- **9.34**% of biochemical oxygen demand (BOD) was removed
- **94.6**% of total suspended solids (TSS) were removed

Operational Improvements Implemented and Noteworthy Activities Included:

- The most significant operational upgrade in 2017 was the complete rehabilitation of the treatment plant's # 1 Secondary clarifier.
- Veolia's CPM (Capital Projects) group with plant operations support and Central Sierra Electric (prime subcontractor) nearly completed the full replacement of the plant's electrical infrastructure. (The replacement project includes primary and secondary electrical systems and is expected to close out in the first quarter of 2018). Two scope additions for the electrical project were plant lighting improvements and installation of a plant wide fiber optic network. Both were completed.
- City street sweeper fleet has been successfully relocated off the treatment plant grounds and to a specially constructed maintenance area adjacent to the plant.

Operational Challenges Included:

- Continuing to operate facility lacking functional grit removal system
- Significant failure of the DAFT skimmer/collector drive in May of 2017. The DAFT process is used to remove and thicken solids from the secondary system; there is no redundancy for the unit. Its drive assembly suffered a break due to corrosion; the tank was drained and the drive column welded back together as a temporary repair. The system was scheduled for replacement during 2017 but the project has been delayed for lack of funding. Ultimately the DAFT system will be replaced with a different technology known as rotary drum thickeners. The DAFT system continues to operate but the concern remains of a process failure.
- Maintenance needs of the automatic bar screen. Currently there is no redundancy for this piece of equipment though that will change with construction of the new plant headworks.
- Difficulty with the automated dechlorination system (process that removes chlorine from effluent prior to discharge). The SBS (used for dechlorination) storage and feed system was scheduled for rehabilitation in 2017 and has been designated as a priority project; the project has been delayed due to the lack of funding.
- Multiple aeration mixer failures and replacements during the year. The system is due for replacement with alternative aeration technology.

COMPLIANCE SUMMARY STATUS / REVIEW:

NPDES

There were no instances of non-compliance with the WCA/Richmond NPDES permit during 2017.

Richmond WPCP 2017 Blending Summary

As a result of rain and high treatment plant flows, there were nine blending events during 2017 as noted in the Table 1.0 below (blending is the modified treatment plant process mode whereby more wastewater comes into the plant than can be treated by the biological process). There are requirements in the NPDES permit regulating the Richmond WPCP to implement measures and activities to reduce blending events at the treatment plant. Table 1.0 also reflects the correlation between rainfall and blending over the past several years. Primary treated flow is diverted around the biological processes then disinfected and blended with fully treated plant effluent. Generally speaking, about 40 million gallons per day (MGD) can be pumped into the treatment plant but only about half that volume (20 MGD) can receive full secondary treatment.

Table 1.0

Year	Number of Blending Events	Total Duration of Blending Events (hours)	Volume of Blended Effluent (MG)	Rainfall [1] (inches)
2014	6	188.2	92.84	29.49 (17% above normal)
2015	2	9.8	1.57	10.79 (57% below normal)
2016	8	151.6	78.45	30.18 (21% above normal)
2017	9	431.6	194.85	32.25 (29% above normal)

[1]Normal annual rainfall in Richmond is about 25 inches. Rainfall data are taken from the manual rain gauge at the treatment plant. The rainfall numbers have been changed slightly in this table to reflect calendar year total as opposed to the typical wet season (October thru March)/dry season format.

2018-2019 Goals and Process Improvement Recommendations

- Continue to evaluate and plan for converting from the Rockwell RS View platform to an Ignition or Wonderware operating system as the plant and collections (lift stations) SCADA operating platform. An RFP has been developed; proposals will be solicited for the project however a funding source has not yet been identified.
- Upgrade aeration system by converting to fine bubble diffused air or similar system (**90% designed; awaiting funding with construction expected to begin in 2019**)
- Replacement/rehabilitation of the SBS (sodium bisulfite; removes chlorine prior to discharge) storage, distribution and feed system; **(on hold pending funding)**
- Upgrade grit removal facilities (**90% designed; awaiting funding with construction**

expected to begin in 2019 or 2020*)*

- Secondary clarifier rehabilitation project; on schedule for 2018 completion
- Primary clarifier rehabilitation project; added to plant priority projects and on schedule for 2018 completion
- Rehabilitation of 3 water distribution system (**currently on hold**)
- Upgrade of plant security camera system; expected 2018 completion
- Engineering evaluation of treatment plant site and grounds to eliminate storm water runoff (actually run on) from adjacent hillsides and properties (**project is essentially complete with report pending**)

Odors and H2S Alerts

Table 2.0 below shows the year over number of telephoned odor complaints to the treatment plant and call center from 2014 through 2017. Telephoned odor complaints have averaged about 20 over the past 4 years. That number includes 36 calls in 2016 when nearly 60% percent where attributed to nearby odor sources. In 2017 there were 22 calls and it is noteworthy that Webster Environmental Associates (Webster) completed an updated Treatment Plant Odor Evaluation. Webster has been conducting these odor evaluations about every 5 years since 2007. The 2013 report concluded that the primary clarifier and grit removal systems at the treatment plant are the sources of some 95% of odors from the facility. They also concluded that there has been an increase in odor emissions since the study done in 2013. That increase is at least partially attributable to the fact the facility (and process units) are 5 years old than when the last odor study was performed and many process units are overdue for replacement.

Table 2.0 **Richmond, CA WPCP**

Year	Number of Phoned in Odor Complaints
2017	22
2016	36*, **
2015	12
2014	12

* 4 calls in March were related to a flaring event at a refinery

** 9 calls in September and 8 of 12 calls in October were associated with activities at the West County Landfill

Table 3.0 shows the total tabulated H2S alerts measured at the treatment plant North, South and Brickyard Cove H2S monitors from 2014 through 2016. In late 2017 the existing H2S monitoring

network was decommissioned and as of this writing the number of alerts in 2017 is not available. Because most of the monitors in the old network had failed, alerts would not have been sent when H2S was present. Hadronex, the past vendor for H2S monitoring discontinued providing this type of service and City staff contracted with an alternative vendor (Sonoma Technologies) for their equipment and services. (Plant North and South fence line H2S monitors are expected to be operational in the first quarter of 2018).

Table 3.0

H2S Alerts

	2016			2015			2014		
	North	South	Brickyard	North	South	Brickyard	North	South	Brickyard
December	0	0	0**	0**	OOS	OOS	0	1	OOS
November	1	3	OOS	OOS	OOS	OOS	5	7	0
October	1	0	OOS	OOS	OOS	0	0	2	OOS
September	2	1	0**	OOS	OOS	0	1	0	0
August	0	0	OOS	OOS	1**	0	1	1	0
July	0	0	0**	OOS	0	0	0	0	OOS
June	0	0	0	0**	0	0**	0	0	OOS
May	0	0	0	0**	1	0	0	1	OOS
April	1	OOS	0	0**	1	0	0	0	OOS
March	0	0**	OOS	OOS	3	0	0	0	OOS
February	OOS	0**	OOS	0	3	0	0	0	0
January	0	0	OOS	1	8	0	0	1	0
Total	**5**	**4**	**0**	**1**	**17**	**0**	**7**	**13**	**0**

OOS = meter out of service **** = 50% or less meter uptime for the month**

Only H2S alerts above the regulatory response threshold (30 ppb) are included

MAINTENANCE DEPARTMENT STATUS / REVIEW:

A tabulated work order summary for 2017 is provided below based on the preventative and corrective maintenance performed at the facilities by area.

Table 4.0 **Work Order Summary**

	Preventative Maintenance		Corrective Maintenance		Total	
	2017	**2016**	**2017**	**2016**	**2017**	**2016**
Storm Lift Stations	893	747	9	2	902	749
Sanitary Lift Stations	1045	1155	13	2	1058	1157
WWTP	832	958	179	33	1011	991
Total	**2770**	**2860**	**201**	**37**	**2971**	**2897**

Below in Table 6.0 are major maintenance expenditures made during 2017. The costs do not account for all maintenance expenditures; they are representative of major equipment

replacement, maintenance or substantial overhaul. Veolia's contractual requirement for major maintenance expenditure is $60,000 annually.

Table 5.0 2017 Richmond WPCP Major Maintenance and Projects

Process Area	Project Description	Project Cost (Rounded)
VEOLIA FUNDED TREATMENT PLANT RELATED		
Chemical Feed	Replace both Encore 700 Hypochlorite Diaphragm Pumps.	$22,000.00
Boiler System	Annual maintenance service and emissions testing.	$5,000.00
Bar-Screen	Repair Bar-Screen rake-arm collector drive, replace all pin rack rollers/bushings and drive hub assemblies. .	$10,000.00
Bar-Screen	Overhaul Bar-Screen washing screw compactor.	$5,000.00
Influent Pump System	Overhaul Fairbanks Morse Influent centrifugal Pump	$20,000.00
Electrical and Control	Install new SCADA control and power system upgrades located in the Operations control Room.	$5,000.00
Primary Clarifier System	Replaced Primary Clarifier #1 & #2 collector Flights & wear pads.	$5,000.00
Primary Clarifier System	Replace both Primary Clarifier Auger/Scum motor drives and screw collectors.	$8,000.00
Aeration Basin	Overhaul Aerator 1A, replace gear drive, motor and shaft. Repair & re-install Aerator 2A & 2B.	$15,000.00
Secondary System	Install new RAS hypochlorite injection line system.	$5,000.00
Sludge Thickening	Overhaul DAF #2 Rake Arm drive, overhaul DAF pressurization pumps #1 & #2. Replace electrical service disconnects with new, rebuild DAF TWAS pump #2, replace DAF TWAS pump #1 with new positive displacement Lobe-Pro pump. Upgrade/replace DAF system Allen Bradley PLC controller.	$15,000.00
Digester Heating System	Replace digester recirculation Muffin Monster grinder #3.	$12,000.00
Digester Gas System	Installed & wired two SCADA gas flow monitors on digester tanks #1 & #2.	$8,000.00
Dystor System	Complete Bi-Annual Digester Dystor Cover inspections	$17,000.00
General Plant	Replace Leachate/Sludge Grundfos centrifugal flush pump.	$6,000.00
General Plant	Installed new burglar/fire-alarm system in	$28,600.00

	Admin & Heat Exchange Buildings.	
#3 Water System	Replaced 100' 4" pipe and valves for plant #3 water system.	$5,000.00
	VEOLIA FUNDED COLLECTIONS SYSTEM RELATED	
Annex Lift Station	Replace ARV valve and piping at South West Annex Strom Water Lift Station.	$5,000.00
Lift Stations	Lift Station Emergency Back-up Generator Preventative Maintenance Service.	$27,000.00
Lift Stations	Replaced Pump #2 at Ferry Point Sewer Sanitary Lift Station.	$10,000.00
Lift Stations	Replace existing Homa Centrifugal pumps with Flygt Non-clogging Pumps at Sunset Sewer Sanitary Pump Lift Station.	$10,000.00
	CITY FUNDED	
Forklift	Replacement clean-power Hyster Forklift for Plant facility.	$27,500.00
Bar Screen	Installed new M&C Sonic Transducer level control electrical panel at Influent Bar-screen	$35,000.00
Plant Facility	Replaced 90% Plant facility building entry & roll-up doors.	$80,000.00
Plant Facility	Zaps Influent monitoring system	$85,000.00
	City Funded	**$227,500.00**
	Veolia Funded	**$243,600.00**
	Total	**$471,100.00**

Table 6.0 **2018 Preliminary Planned Procurement and Maintenance Projects**

2018 Planned Projects
Potable Water Pump System Control Panel Level Control System Replacement Project.
Replacement Wet-well safety hatch replacement for 5 Sewer & Storm Pump Lift Stations.
Purchase redundant back-up submersible pumps for Sewer & Sanitary Pump Lift Stations.
Overhaul Influent Pump #1
Replace back-up electrical diesel generator located at I.C.I. Sewer Sanitary Pump Lift Station.
Replace RAS flow monitors.
Replace Influent Wet-Well Bio-Odor bed with new bark and materials.
Replace (3) plant facility personnel golf-carts.
Replace Digester Ferric Chloride Injection Pump with Watson Marlow SCADA unit.
Replace Confluent Channel De-watering submersible pump.
Bi-annual Digester Dystor Cover Inspections.
Annual Boiler Service Maintenance & Emission Testing.

Replace both motorized Plant Facility Entry Access Gates.
Plant facility Security Camera Installation.
Digester Sludge and Leachate Exchange Monitoring and Control Upgrade Project. (West County Agency)
Replace Primary Clarifier progressive cavity scum pumps.
Replace Secondary Process Aeration Blending Mixer.
City Funded Projects
Replace/refurbish Primary Sedimentation Basins #1 & #2 with new collector drives and flight collector system.
Replace/refurbish Secondary Clarifier #2 & #3.

2018 Maintenance Department Goals & Objectives

- Assist with design, implementation, and construction of capital projects, physical improvements, routine/preventative/corrective maintenance programs and OWAM maintenance (work order management) programs.
- Continue to maintain plant facility & Pump Lift Station systems and equipment at a high level of reliability.
- Manage facility physical assets through infrastructure stabilization – high quality repairs and intensive preventive maintenance to attain high levels of reliability and service availability.
- Complete update of the treatment plant 5 Year Capital Improvement (major maintenance projects) Plan.
- Provide and maintain a safe, well-kept and effectively operating plant and work place with high quality service
- Maintain safe working conditions and continued implementation of Veolia's required safety programs to obtain zero preventable and recordable accidents in 2018.
- Begin to implement the recommended repairs & upgrades per the recently completed 2018 Sewer Sanitary Lift Station Assessment Plan.

VEOLIA CAPITAL PROJECTS MANAGEMENT (CPM):

Achievements in 2017

CPM is the construction arm of Veolia Water responsible primarily for capital projects and providing the construction management function for those projects. Following are the projects and improvements status for 2017:

- Continued construction of the **Richmond Wastewater Treatment Plant Electrical Upgrade Project**; the project was substantially complete in November 2017

- Began construction on the **13th Street & Dunn and 23rd Street Rehabilitation Project** – the project replaces over 30,000 lf of pipe in the City of Richmond; completed approximately 40% of the project in 2017; also provides CM consultant inspection for the project

- Began construction on the **WWTP High Priority Project**, Secondary Clarifiers – the project replaces aging infrastructure and improves treatment reliability and operating efficiency, beginning with the secondary Clarifiers; the project was approximately 30% complete in 2017; also provides CM consultant inspection for the project

- Completed the **Hazel Avenue Emergency Sinkhole Repair Project** – this project installed HDPE and new manholes to connect existing storm drain lines and circumvent corroded pipes which caused a hazardous sinkhole on a homeowner's property

- Completed the **Richmond Trash Capture Device Project** - this project involved installing two below-ground, flow-through treatment devices that use multiple treatment processes to screen, separate and trap trash, debris, sediment, hydrocarbons and other pollutants from stormwater runoff

- Completed the **Tewksbury/Maine Project** - this project installed new manholes and pipe, cleaned out existing pipe and installed laterals in the sanitary sewer area near the intersections of Tewksbury Avenue, Marine Street and Morgan Avenue in the City of Richmond, as these sewers are old and have tree roots in the pipes, causing Sanitary Sewer Overflows (SSOs)

- Completed design of the **Cutting, Carlson, and Hoffman Boulevard Wet Weather Improvements** sewer project; construction is planned to begin mid-2018. The project replaces pipelines with NASSCO PACP Structural Grade 4 and 5 defects in the sewer sheds that flow to Cutting Boulevard

- Completed design of the **WWTP Critical Improvement Projects** Design, which includes the High Priority Projects

- Began design engineering work on the **WWTP Biosolids to Energy Plan**, which provides engineering services to prepare a Biosolids and Energy Plan for the Richmond Waste Water Treatment Plant; the project was 65% complete in 2017

- Began design engineering work on the **WWTP Perimeter Site Evaluation**, which involves a review of existing information, topographic surveys and field data collection, preliminary hydrologic and hydraulic analyses, review regulatory and permitting requirements, and develop improvement alternatives for stormwater flows and flooding that come from the hillside watershed area to the west of the Richmond Water Pollution Control Plant during wet weather; the project was 45% complete in 2017

- Began design engineering work on the **Sludge Leachate Line Condition Assessment**, which involves assessing the current condition of the City of Richmond's Sludge Leachate Line, which is old and in need of repair; the project was 95% complete in 2017; a final condition assessment report to be supplied

- Began construction on the **Manhole Lining Rehabilitation Project** to replace 80 manholes within the City's collection system; the project is ongoing

- Began construction of the **Yard Expansion Project** to (a) abandon the obsolete diesel and gasoline fuel system at the Richmond Plant and (b) remove and relocate the street sweeper yard to a different location outside of the WWTP; construction was 90% complete in 2017

- Began effort to Assess and develop a Sewer Pump/Lift Station Master Plan

LABORATORY STATUS / REVIEW:

Achievements in 2017

- A new floor meeting safety and service needs has been installed in the laboratory.
- Laboratory personnel attended training on anticipated new state certification requirements and have begun preparing new documentation to meet those requirements.
- Laboratory successfully participated in the State Proficiency Testing for Laboratory QA/QC.
- All Self-Monitoring Reports and Discharge Monitoring Reports were successfully uploaded into the CIWQS database for electronic submittal to the State and to the Regional Water Quality Control Board.
- Laboratory data is managed through the Veolia Corporate standard Hach WIMS program.
- Utilizing the on-site and contract laboratories, staff completed all National Pollutant Discharge Elimination System (NPDES) permit required sampling and analyses as well as all nutrient monitoring and reporting requirements.
- Laboratory staff provided support to the operations group for daily process control as well as for unscheduled high flow events and odor monitoring.
- Veolia Richmond Project laboratory analyzed 1,761 compliance samples and 7,783 process control samples.
- The laboratory maintained its Environmental Laboratory Accreditation Program certification for applicable analyses
- Laboratory staff continued to implement and comply with Veolia's corporate internal quality control/quality assurance program.
- Laboratory staff worked with the City's IPP personnel to implement in-house monitoring of CODs to assist in detecting irregularities in the influent composition.
- Laboratory staff assisted with improvement of the plant-wide safety program and assisted administration personnel.

Goals for 2018

- Advance in development of documentation to comply with new TNI requirements as the state of California moves toward their adoption.
- Continue to participate in cross training with other departments and provide assistance as needed.

SANITARY SEWER AND STORM WATER SYSTEM STATUS/REVIEW:

2017 Department Goals and Objectives

2017 marked the 14th year that Veolia Water operated and maintained the City of Richmond's 187 miles sanitary sewer collection system, lift stations and storm water assets. The following primary goals continue to guide Veolia's efforts in the operation and management of the City of Richmond's sanitary and storm water collection systems and requires working closely with City staff:

- Minimize the number of non-capacity related sanitary sewer overflows (SSO's) by focused O&M efforts.
- Focus on continual improvement to customer satisfaction through quick response times, effective and regular face to face interactions, and prompt follow-up.
- Protect public and employee health, environmental quality and property from SSOs and related hazards
- Protect the City's sanitary sewer system assets by appropriate and effective maintenance and repair and replacement activities.
- Implement Sewer System Management Plan for sanitary collection system O&M
- Maintain well developed, effective and well defined cleaning/CCTV plans and schedules for sanitary and storm systems based on asset needs and equitable resource allocation.
- Continue to implement quality assurance processes to validate sewer cleaning methods
- Encourage and to incentivize staff to increase their CWEA certification levels and other job skills

Sanitary System

Tables 7.0 and 8.0 below indicate the number and volume of overflows from the engineered overflow structures (weirs) at Harbor and Wright and Boat Ramp between 2016 and 2017. It should be noted that inflatable plugs have been installed in both engineered overflow structures to prevent sewage from overflowing into the storm water conveyance.

Space intentionally left blank.

Table 7.0 **SSO from Engineered Overflow Structure**

2017Harbor and Wright Overflow			
Date of Spill	**Gallons spilled**	**Start time**	**End time**
	0		
2016 Harbor and Wright Overflow			
Date of Spill	**Gallons spilled**	**Start time**	**End time**
	0		

2017 Boat Ramp Overflow			
Date of Spill	**Gallons spilled**	**Start time**	**End time**
1/11/2017	36,250	00:05	02:30
2/7/2018	625,710	00:00	13:00
2016 Boat Ramp Overflow			
Date of Spill	**Gallons spilled**	**Start time**	**End time**
	0		

Table 9.0 below shows SSO occurrences in 2016 and 2017. The Baykeeper Settlement of 2006 set SSO reduction goals and included a target SSO limit of 10 for the 2017 calendar year.

A total of (58) SSOs were reported to CIWQS in 2017; (10) were capacity-related (i.e. SSOs resulting from unusually high wet-weather during January 2017), (21) during a similarly wet February 2017, and the remaining 27-SSOs were spread throughout the remainder of the year. From a CIWQS SSO Category standpoint, SSOs in 2017 were as follows:

- Category 1 (reached surface water and/or storm water collection system)
  - = (40)
- Category 2 (> 1000-gallons that did not reach surface water and/or storm water collection system)
  - = (1)
- Category 3 (all other discharges)

o = (17)

Wet weather/capacity related SSOs occur in areas of the system that have insufficient capacity to convey sewage when infiltration from extended or heavy rains increases the flow within the sewer pipes. Additionally, the high flows tend to mobilize solids (grease, rags, sediment etc.) in the sanitary sewers and those materials are redeposited in other areas when the flows subside. This action sometimes results in a higher frequency of SSOs following rainy periods (independent of capacity).

During dry weather, infrastructure issues (pipe failure due to age or pipe settling creates offsets in joints) or blockages (caused by grease build-up, rags, intruding lateral connections or tree roots, for example) predominate as the primary cause of SSOs.

Table 8.0

		Sanitary Sewer Overflow Statistics			
	Q1 (January – March)	Q2 (April – June)	Q3 (July - Sep)	Q4 – (October – November)	
2017	35	3	9	11	**58**
2016	22	7	2	15	**46**
Reduction/Increase	59.1%	-57.1%	350%	-26.7%	**26%**
2017 Baykeeper Target	**2.5**	**2.5**	**2.5**	**2.5**	**10**
2016 Baykeeper Target	**4**	**4**	**4**	**4**	**16**
2017 SSO Percentage	60.3	5.2	15.5	19.0	
2016 SSO Percentage	47.8	15.2	4.3	32.6	
2017 SSO Type	**Number**	**Total Volume**	**% Volume to Surface Water**		
Capacity – Wet Weather	46	1,941,043	**99.9**		
SSOs - Other Causes	12	2,308	**0**		
Volume Reaching Surface Waters from Non Capacity/Wet Weather Causes			**253**		

Volumes Presented in Gallons
Wet Season = Q1 and Q4 **Dry Season = Q2 and Q3**

Program Metrics and Achievements

- Lead and supervisory members of the collections O&M staff maintained their PACP (Pipeline Assessment & Certification Program) certifications.

- Collection Technicians attend CWEA classes to prep for Grade 1certification test. Collections

staff participated in daily morning safety meetings and review of daily accomplishments to share with management and the rest of the staff. This sharing of information develops growth in each individual and prevents redundancy in our tasks to improve group overall productivity.

- The collections department responded to 233 sanitary customer calls during 2017 as well as assisting with responses and requests from other City departments.
- The collections crew cleaned 81.93 miles of sewer pipeline as part of the underground preventative maintenance program during 2017.
- Televised (or CCTV) 21 miles of the sewer system during 2017.
- Completed 0 manhole inspections in 2017
- Collections completed 32 QA/QC of pipe cleaned via CCTV in 2017
- Completed 23 point repairs and 3 manhole repairs to the sanitary sewer collection system in 2017.
- The Maintenance team completed 1045 sanitary pump stations PM activities and 13 corrective maintenance activities.
- In 2017 $155,575 was spent on (29) point repairs in the sanitary sewer system; (12) of the (29) point repairs were completed to address pipe failures that too resulted in sink holes.
- Currently, fifteen Smart Cover monitors are installed in various locations within the City of Richmond sewer service area. The monitors allow for remote level monitoring of key locations known to have capacity or periodic blockage issues increasing the potential for SSOs.
- Veolia Collection System staff efficiently and effectively responded in 2017 to (35) wet-weather and (23) dry weather SSOs; by CIWQS SSO Categories this translated to forty (40) Category 1, one (1) Category 2, and seventeen (17) Category 3 SSO events.
- In 2017 staff made (0) sanitary sewer point repairs to eliminate sinkholes (caused by the defective underground pipes).

Recommendations

- Continue developing and execute plan to resolve capacity related SSOs within two (2) years.
- Bundle and execute repairs to correct defects linked to past SSOs in the collection system whether it be sewer line replacement/lining, point repairs or manhole rehabilitation.
- Continue to resolve areas with maintenance access issues. No Change.
- Achieve 100% compliance with the wastewater collection system O&M standards as described in the 2018 Baykeeper Settlement Agreement

Storm Water System

The City of Richmond storm system includes various features provided in Table 9.0 below. The system is vast and the currently known list of assets and their scale are greater than understood when Veolia began work in Richmond in 2004. In recent years, the addition of duck bills, flap gates and trash capture devices has expanded the asset list. Portions of the City's storm water collection system are located in unincorporated parts of the area away from the City core serviced by the sanitary sewer. The storm water system is roughly constructed in many areas with easements and aspects that are much more loosely defined and less understood than the sanitary sewer system.

Table 9.0

Storm Mainlines	142 miles
Storm Manholes	1685
Pump Stations	8
Flap Gates/Duck Bills	12
Corrugated Metal Pipes	5 miles
Overflow Weirs	2
Catch Basins	1529
Ditches	7 miles
Concrete Swales	12 miles
Storm Edges	11 miles
Infiltration Basins	4
Storage vaults,	4
Drop Inlets	1175
Trash Inserts (small)	125
Trash Inserts (large) GZRD'S	2
Curb Inlets	1834
Pipe Culverts	2 miles
Retention Basins	0
Outfalls	127
End walls	12
Inlets	222
Sluice Gates	11
Detention Basins	18
Treatment Vault	1

Veolia's storm water O&M strategy, developed with City staff, is focused on maintaining the storm water drainage facilities based on available resources using a blended approach. The approach combines visual inspections and cleaning and televising programs utilizing performance measures (non-numerical, for example CCTV work for one week of every month) and metrics that

can be evaluated based on targeted numeric values (for example number of inspections or total linear feet cleaned).

The operations and maintenance strategy is geared towards mitigating flooding issues, reducing storm water calls, reducing risk property damage from flooding and also protecting public health and safety. The objective for televising storm pipes is to investigate and understand connectivity issues and to determine how various pipe segments fit together and convey storm water.

Recommendations

Similar to the 2018 wastewater collection system O&M Plan, develop and formalize a plan for necessary inspection and maintenance activities related to storm drain outfalls, duckbills, and flap gates.

Work with City GIS to update storm water system assets.

2017 Accomplishments

- Cleaned (338) catch basins, culverts and ditches.
- (8) Point repairs were made to the storm water collection system and (1) point repair.
- Cleaned 5,987 ft. of storm conveyance system.
- Televised 2,186 ft. of storm pipeline.
- Responded to 119 storm related service calls.
- (2) Duckbill inspections were completed in 2017
- The Maintenance team completed 893 storm pump station PM activities and 9 corrective maintenance activities
- Inspected duckbills and flap gates (designed to prevent seawater from backing up into the storm or sanitary sewers).
- Inspected and cleaned the GSRDs (trash capture devices) times in 2017.
- Staff continues to work on connectivity issues in order to further define the storm system.
- Staff is continuously working on completing tasks based storm water performance measures and other projects that arise.

COMMUNITY:

- Member Richmond Council of Industries.
- Member East Bay Leadership Council

- Member Point Richmond Business Association
- Member of the Richmond Chamber of Commerce.
- Responded to odor complaint calls and treatment plant fence line monitor H2S alerts (and provided findings via letter or e-mail)
- Attended periodic Point Richmond Neighborhood Council meetings.

ACTIVE SUPPORTER OR DONOR:

- YMCA of the East Bay
- Police and Fire Holiday Toy Drive
- Richmond Police Activities League
- Bay Area Clean Water Agencies (BACWA)
- Bay Area Consortium of Water and Wastewater Educators (BACWWE)

Continue paid OIT/Intern Program which preferably employs Richmond residents in rotating either wastewater operations or other relevant training for up to a year and a half. At the end of the training program the employees are expected to hire on to the Veolia Richmond project or, by virtue of experience and certification earned, be eligible for employment in the field of wastewater treatment operations with other agencies.

PROJECT SUPPORT STATUS / REVIEW:

Veolia Staff:

Paul Savage	Vice President of Operations, California
Ed Dix	Process Control Management Plan
Jeremiah Danielson	Veolia Water West Operating Services, Inc. Environmental Health & Safety Manager
Dennis Flosi	Instrumentation, Controls and SCADA/PLC
Tanya Barber	Human Resources

OPERATOR CERTIFICATION STATUS / REVIEW:

Facility: Wastewater Treatment Plant Contract Operator – Registration Number CO - 0010

Staff

Aaron Winer – Project Manager
Grade V Wastewater Treatment Plant Operator Certificate # 9895
Grade I, Laboratory Analyst, Certificate, # - 00013118
Grade IV, Environmental Compliance Inspector, Certificate # - 050744001

Grade II Industrial Waste Treatment Plant Operator, Certificate # - 244

Manny Molina – Assistant Project Manager; Chief Plant Operator
Grade V Wastewater Treatment Plant Operator, Certificate # 9777
Grade ll Water Treatment Operator

Reese P. Corcoran - Grade V Wastewater Treatment Plant Operator, Certificate # 8704

Kevin Barricklow - Grade III Wastewater Treatment Plant Operator, Certificate # 42965

Zane Foy – Grade II Wastewater Treatment Plant Operator, Certificate # 9972
Grade T1 Water Treatment Operator, Operator # 30879
Grade II Industrial Waste Treatment Plant Operator, Certificate # 02078203

James Beirn – Grade II Wastewater Treatment Plant Operator, Certificate # 40050

Malcolm White – Grade II Wastewater Treatment Plant Operator, Certificate # 43427

Katelyn Brown - Grade II Wastewater Treatment Plant Operator, Certificate # 43885

Mike Beck – OIT