

Georgetown Water Reclamation

April 23, 2017 Incident After Action Review

Narrative

The Georgetown Water Reclamation Facility has been in service as part of the City of Savannah's Water Reclamation Department since 1988. The facility has consistently produced an excellent effluent. The facility utilizes both biological treatment and filtration processes. Since its commissioning the plant has never had an issue with maintaining an effluent discharge that is well below permitted parameters issued by the Georgia Environmental Protection Division. The Georgetown's stellar performance can be attributed to the Design of the facility and its operations staff. On April 23rd the facility experienced an equipment failure on a portion of its effluent filtration process which resulted in an effluent discharge that was turbid and not within the City of Savannah's internal standards for effluent quality. The City of Savannah's internal standards for its discharges at all facilities are well below permit limits issued by the Georgia Environmental Protection Division. It is the Water Reclamation's philosophy and duty to produce the best effluent from its facilities as possible. We understand that this comes at a cost, but believe the receiving streams associated with our effluent discharge are the lifeblood of our community. The Water Reclamation Department tries to actively engage with the Citizens of the City of Savannah and Chatham County areas. We welcome citizens into any of our facilities to explain and show off our processes.

What Happened:

April 23, 2017 at 1602 hrs the Water Reclamation Director was notified that there was a sewage discharge at the Vallambrosa Plantation. The Director dispatched the Georgetown Water Reclamation Facility Supervisor and Treatment Administrator to the facility immediately thereafter. The City of Savannah's Lift Stations and Conveyance Department responded as well, they were notified prior to Water Reclamation Staff. In route to the Georgetown Facility the Director was notified by Lift Station personnel that they were at the Georgetown outfall and that the discharge looked like "muddy" water and had no odor. The Director was also in contact with the Georgia Environmental Protection Division's Spill response while in route. The initial thought while in route was that the Georgetown facility suffered a media loss in its tertiary sand filter and that filter media was probably causing the outfall to look abnormal, which was conveyed to Ga EPD.

The Director arrived on scene at the Georgetown facility at approximately 1625 hrs. The plant supervisor was already on scene and the Treatment Administrator arrived at approximately 1630 hrs. It was noted that the effluent was turbid and not normal. The plant supervisor had already manually by passed the effluent to the facility's emergency storage pond. He was in the process of trouble shooting the process to find possible problems that would have caused the turbid discharge.

The Treatment Administrator and Director traveled to the plant discharge at Vallambrosa Plantation. Upon their arrival they noted that there were remnants of solids in the static aerator. Lift Station Personnel, the General Manager of the Vallambrosa Plantation, and owner of Vallambrosa Plantation were on site. The Owner of the Vallambrosa plantation communicated to the Director

that the he noted the discharge while at the area. He didn't know the appropriate entity to notify and subsequently called the Georgia EPD's spill response hotline, which in turn was eventually able to notify City of Savannah staff.

While on site at the discharge the Treatment Administrator and Director noted that the evidence at the static aerator confirmed there was a problem that occurred at the facility. The Treatment Administrator and Director returned to the plant site to assist in trouble shooting the problem. Upon returning to the facility it was noted that the downstream side of the filter system was still turbid, but significantly better than what was noted at the outfall. Since all effluent from the Georgetown facility must pass through filtration prior to discharge it was felt that there was a failure at some point in the filtration process. This information was relayed to the Georgia Environmental Protection Divisions Spill Response representative. City of Savannah staff continued to monitor the backwash cycle of the filter system to see if any anomalies were noted. It was noted that when the traveling Bridge traveled to the last cells of the sand filter the effluent discharging from these cells were indicative of what was observed at the outfall. Plant staff added sand media to these cells to compensate for any failure that was occurring and reduce the throughput of these cells by increasing filtration. The plant remained in bypass mode for the remainder of the night until corrections could be made and effluent quality improved to its normal state. It is currently unknown the exact length of time that the turbid discharge occurred. The Plant supervisor was on site the morning of April 23rd from the hours of 0600 to 0730 and no abnormalities were noted at the time. The owner of the Vallambrosa Plantation noted he had been in the vicinity throughout the day giving tours and noted the problem later in the day. He was unsure how long the discharge lasted.

The effluent quality improved throughout the evening in to the morning hours of April 24, 2017. Plant staff resumed discharge between the hours of 0600 and 0700, the effluent quality from the filters had returned to normal. However, the discharge force main still had remnants of the turbid effluent from the previous day. Once pumping resumed the discharge remained turbid for this reason for two to three hours.

The Water Reclamation Departments Water Shed Assessment sampling team began obtaining samples throughout the Georgetown facility's discharge water shed as the discharge resumed. The Fecal/Coliform analyses are as follows.

Plant Effluent Fecal/Coliform: >1.8 MPN (#100 ml) Plant Effluent Enterococcus: 1.0 MPN

Plant Effluent TSS: 10.8 mg/L - Note this is not consistent with the plant's normal discharge, which is typically less than 2 mg/L. This supports the turbid effluent that was noted.

Ogeechee River Samples Obtained April 24, 2017

Ogeechee at Hwy 17 Fecal/Coliform Analysis: 170 MPN (#100 ml)

Ogeechee at railroad trestle Fecal/Coliform Analysis : 140 (#100 ml)

Ogeechee at Ft McAlister Fecal/Coliform Analysis : 20 (#100 ml)

The City of Savannah routinely samples the Ogeechee River for its Water Protection Plan. The historical fecal/coliform data for comparison to recent analysis are as follows:

Samples are obtained at the City of Savannah's Water Shed Protection Sample point #91 located at Ogeechee River at HWY 17.

9/11/2014 = 7900 (#100 ml)	9/16/2014 = 78 (#100 ml)	9/18/2014 = 68 (#100 ml)
9/22/2014 = 700 (#100 ml)	11/18/2014 = 45 (#100 ml)	3/18/2015 = 330 (#100 ml)
5/7/2015 = 78 (#100 ml)	9/28/2016 = 130 (#100 ml)	10/4/2016 = 230 (#100 ml)
10/12/2016 = 200 (#100 ml)	10/18/2016 = 45 (#100 ml)	2/07/17 = 170 (#100 ml)

What should have happened:

The Georgetown facility should have performed as it has since commissioning in the late 80's. The filtration system should have performed to its normal standards.

There should have been adequate signage at the static aerator for contact purposes, which would have expedited the response time. Signage is/was posted at the river, but not visible from the Static Aerator.

The Georgetown facility should have automatically bypassed to the emergency storage pond once the turbidity increased. The mechanism to trigger this mode of operation lies within the U.V. disinfection system. In the event that the U.V. lamp intensity or transmittance is impaired the system goes into alarm state, notifies plant staff and automatically bypasses to the emergency storage pond. Although this technology is dated it was functional. The U.V. system performed as designed, as the transmittance decreased the intensity of the lamps increased as well as additional modules of lamps energized.

What Changes are pending/installed to prevent future occurrences:

The traveling bridge sand filter is in need of rehabilitation. This project was underway prior to the event of April 23, 2017. City of Savannah staff had the system evaluated by the manufacturer for general condition and repairs/upgrades needed. The City of Savannah is following the manufacturer's recommendations and expects a complete rehab project to be completed within the next two months. The actual rehab will only take one to two days. The additional time is needed for delivery of materials and equipment.

City of Savannah staff installed a turbidity meter upstream from the disinfection system. This meter will monitor turbidity prior to the U.V. disinfection system. In the event there are future problems with plant turbidity, they system will automatically bypass to the emergency storage pond. The monitoring system for U.V. transmittance and intensity are still in operation.