

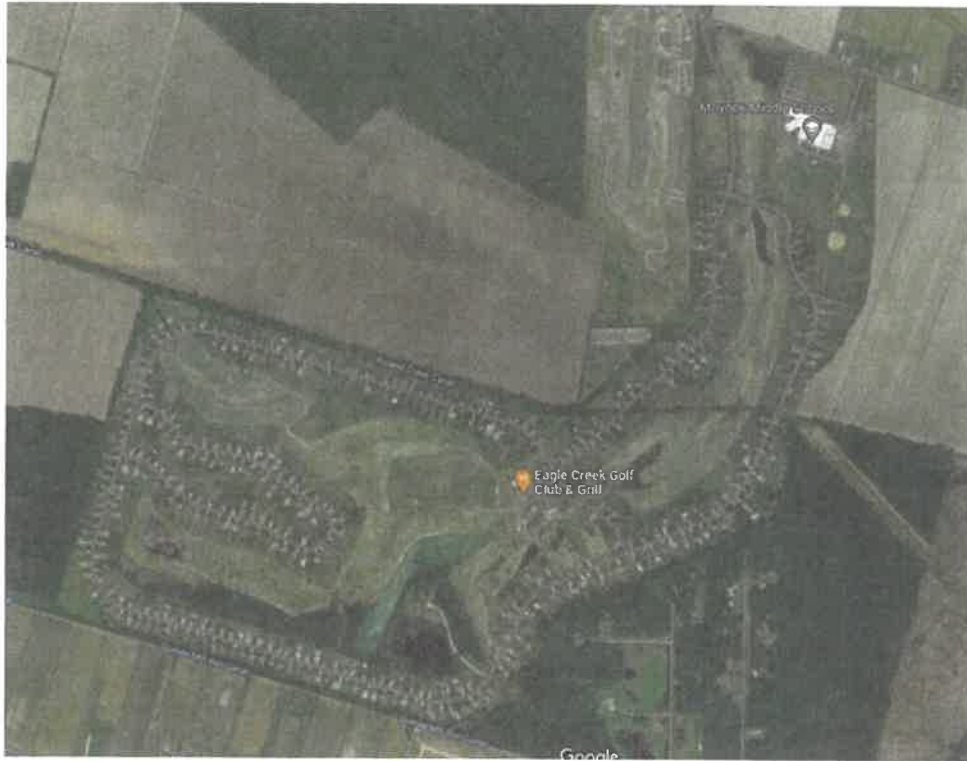
Myers Rebuttal Exhibit A

Century Engineering Evaluation Feb. 28, 2022

Myers Exhibit A

A

Eagle Creek Subdivision Vacuum Sewer Collection System Independent Engineering Evaluation

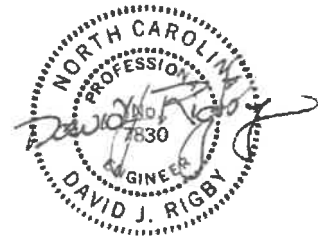


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February 28, 2022



Eagle Creek Subdivision Vacuum Sewer Collection System Independent Engineering Evaluation

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Eagle Creek Subdivision Vacuum Sewer Collection System Independent Engineering Evaluation

A. Executive Summary

During his fifty-year career, the Engineer has inspected more than one hundred domestic sewer collection and treatment systems and designed upgrades thereto. Without question, the Eagle Creek vacuum sewer collection system is one of the most poorly maintained systems the Engineer has ever seen. The system suffers from absentee ownership, lack of properly trained operators, lack of routine and preventive maintenance, lack of redundancy, lack of spare parts, lack of adequate user revenues necessary to properly support the facilities and the facility operations, and lack of pride.

There have been eight independent third-party technical evaluations of the system dating back to 2010 which all consistently document numerous problems with the Eagle Creek vacuum sewer collection system including excessive infiltration and inflow, sanitary sewer overflows, vacuum leaks, vacuum pit valve and controller failures, vacuum station problems including vacuum pump failure and sewage pump failure, and the catastrophic system failure of September and October 2020.

There is a wealth of published literature which describes the design, operation, and maintenance of vacuum sewer systems in general which all consistently describe numerous problems and difficulties in operating and maintaining the systems, all of which are consistent with the findings of the eight third-party technical evaluations.

The Engineer has identified more than two-dozen near-term improvements which should be made to improve the reliability of the system while longer-term improvements are being developed and pursued.

The Engineer strongly recommends further investigations into converting the privately owned Eagle Creek Subdivision vacuum sewer collection and treatment system to a public utility by creating a local public sanitary district and applying for IIJA grant and or loan funding which has recently been allocated to the State of North Carolina by EPA.

The Engineer further recommends abandoning the vacuum sewer system in favor of an individual grinder pump and low-pressure force main collection system which will result in a more environmentally sound, more reliable, and more cost-effective long-term solution.

However, if the project stakeholders prefer to continue to rely on the old and depreciated vacuum sewer collection system, then the Engineer recommends splitting the current system into three separate smaller systems each with its own main vacuum tank and sewage pump station with separate force mains to the wastewater treatment plant.

B. Purpose and Scope

The Eagle Creek Subdivision, consisting of 420 single family homes and a public golf course, is served by the Sandler Utilities vacuum sewer collection and wastewater treatment system. The collection system consists of 4.8 miles of vacuum sewer lines and utilizes vacuum pumps to maintain a constant negative pressure within the sewer pipes. Domestic sewage from the

individual homes connects to the system through containment tanks which are referred to as “pits” with each pit serving two homes. The sewage from the homes is conveyed through the sewer pipes to a central vacuum receiving station from where it is pumped to the adjacent Sandler Utilities wastewater treatment plant which is permitted for 350,000 gallons per day.

Due to persistent problems with sanitary sewer overflows (SSOs) escaping from the vacuum sewer collection system during the past two years, including a catastrophic failure of the system in September 2020 which lasted nearly a month, the North Carolina Department of Environmental Protection and Natural Resources, Division of Water Quality, took legal action against Sandler Utilities to cease and desist and to take immediate steps to prevent further SSOs from occurring including requiring an Independent Engineering Evaluation of the system, the problems and the operations.

This Independent Engineering Evaluation is being hereby provided in compliance with the AMENDED CONSENT JUDGEMENT dated December 28, 2021. The scope of this report details both near-term and long-term actions necessary to prevent future sanitary sewer overflows (SSOs) and system performance issues, including but not limited to: (1) changes in staffing, (2) operation and maintenance procedures, (3) equipment replacement, (4) acquisition of additional backup equipment, and (5) upgrades to the design and physical infrastructure of the Collection System.

C. Engagement

On December 6, 2021, Brittney Willis, P.E., of Wakefield Development contacted Century Engineering, Inc. and requested assistance to provide an evaluation of the Eagle Creek Vacuum Sewer Collection System. On December 9, 2021, William Silverman, Esq. from Wood Smith Henning & Berman LLP, Raleigh, North Carolina, the attorney representing Sandler Utilities at Mill Run, forwarded the Engineer's resume to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for acceptance.

D. Background Information Provided

The Engineer was provided with thirty-six separate project related documents plus a copy of the Eagle Creek Phase I Sewer System construction drawings to be used as the basis of the review. The documents consist of the Permit to operate the Eagle Creek Collection System issued by the North Carolina Department of Environmental and Natural Resources, Division of Water Quality (DWQ), Notices of Violation and Notices of Intent to Enforce for the operation of the sewer collection system issued by DWQ, technical reports of field observations by Bissell Professional Group, Flovac, Inc., Airvac, Inc., and A3-USA, Inc., several compliance response letters to the DWQ from Sandler Utilities, North Carolina Utilities Commission Public Staff Data Requests, miscellaneous vacuum sewer system operation and maintenance instructions, and the AMENDED CONSENT JUDGEMENT. The list of the documents provided is included as Appendix A.

E. Field Inspections by the Engineer

The Engineer made two visits to the Eagle Creek project to observe the physical conditions of vacuum sewer system and to provide perspective and verification of the observations, comments

and recommendations made in the third-party Bissell Professional Group, Airvac Inc., Flovac Inc. and A3-USA, Inc. technical reports of field investigations.

The Engineer visited the project on December 16, 2021, and met with Clayton Goris, an attorney assisting William Silverman in the matter. After being cleared by the area manager for Envirolink, Inc. (the contract Operator in Responsible Charge – ORC), the Engineer and Mr. Goris had a brief conversation with the operator and performed a cursory inspection of the vacuum sewer receiving station. The wastewater treatment plant was not inspected or observed during the visit.

The Engineer and Mr. Goris visited the project again on February 4, 2022. During the visit, time was spent talking with the Envirolink wastewater treatment plant operator who provided a tour of the treatment plant during which the conditions of the facility were discussed and noted. The Engineer performed a more detailed inspection of the vacuum sewer receiving station including the building, the operating equipment, and supplies. The Engineer and Mr. Goris also accompanied the Flovac, Inc. field technician as he demonstrated the procedures that were being taken to remove the vacuum controllers out from the individual vacuum pits and relocate them into above ground protective pedestals. The Flovac, Inc. field technician also described the procedures for installing new battery operated, mobile phone monitored vacuum pit alarm systems. The Flovac, Inc. field technician was extremely knowledgeable in the operation and maintenance of vacuum sewer collection systems.

F. Field Observations with Photographs

When the Engineer arrived at the vacuum sewer receiving station at 9:30 am on February 4, 2022, the one and only operator at the facility was asleep in his car. It took a few minutes of tapping on the window of the car to wake the operator.



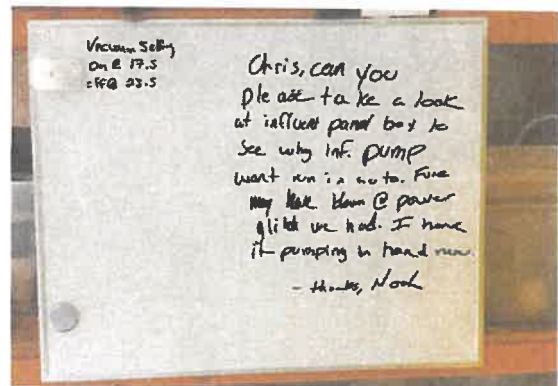
Shortly after waking the operator, the wastewater treatment plant operator arrived. He said he was relatively new to EnviroLink and to the wastewater treatment plant and that he lived two hours away. He said he had been trained on a larger plant. He was very knowledgeable about the plant and wastewater treatment in general, and he was conscientious in his work. He was however being tasked with running an old and poorly maintained facility in which the secondary effluent filters were off line.



Inside the vacuum sewer receiving station building is the main vacuum tank. There is a robust coat of gray paint on the tank exterior, however, it had been recently reported the interior is in poor condition. The Engineer was not able to verify this. What was observed was an extremely messy and cruddy vacuum tank pit with water, sewage and oil on the floor, old broken and worn-out parts, rusty pipes and pump platforms, broken ladders, and loose wires.



Mounted on wooden shelves on the main floor level of the vacuum sewer receiving station building is a white board for operator instructions, comments and communications. On the white board the lead operator left instructions to an assistant operator as follows: "Chris, can



you please take a look at influent panel box to see why the influent pump won't run in auto.

Fuse may have blown @ power glitch we had. I have it pumping in hand now. Thanks, Noah."

The vacuum pumps are located on the main floor of the vacuum sewer receiving building. The vacuum pumps are mismatched and one of the motors is scuffed. The pump platform is rusted, and loose and uncapped wires are strewn about. Oil and water are on the floor.



The main room in the vacuum sewer receiving station houses the electrical controls, the aeration blowers for the wastewater treatment plant, spare chemicals, vacuum sewer valve pit spare parts, the ultraviolet disinfection lights, and two cabinets for small parts. The condition of the room and equipment is trashy. There are buckets of unknown fluids lying around, there is a spare blower motor which may or may not be operable. Chemical bags are torn open and improperly stored. There is water on the floor. The spare vacuum valve pit assemblies are strewn in a heap, and it is unknown if any are operable or not.



The bathroom is as dilapidated as the vacuum sewer tank pit area and main vacuum building blower and vacuum pump operating room. There is water on the floor. The toilet doesn't work properly and there is a sign on the wall above which says, "Make sure flapper closes." Spent and broken ultraviolet light tubes are stacked in one corner. For some reason there is a disconnected dishwasher in the bathroom that has junk lying on top of it. There is a spare blower motor placed behind the dishwasher. Above the dishwasher is a shelf with junk and a fan that doesn't work and a roll of original construction drawings that is old and so washed out that it is unreadable.



Also located in the main room in the vacuum sewer receiving station are two small cabinets and the ultraviolet disinfection lamps. The cabinets have oily junk stacked on them and the cabinet doors hang open. The ultraviolet lamp area has unsecured electrical equipment and wires strewn around in the wet environment.



G. Summaries of Third-Party Inspection Reports

1. **Updated Preliminary Report Eagle Creek Wastewater Treatment Plant Evaluation**, April 21, 2010, Bissell Professional Group. This report was prepared by the original sewer system design engineer at the time the system had been in operation for nine years. The purpose of the report was to provide an evaluation of the then current condition of the Eagle Creek sewer system for the prospective event of a third-party investment. Problems identified with the collection system included the following:

- *48 hours after a 2" rainfall, the wastewater plant was experiencing excess flow from infiltration into the collection system.*

- *4 or 5 vacuum pits need to be repaired because infiltration is leaking in through cracks in the fiberglass pit bottoms.*
- *One of the vacuum pumps needs repair.*
- *The intake filter casings on the vacuum pumps have deteriorated and need to be replaced immediately.*

2. Site Survey Report Eagle Creek, NC, September 30, 2020, Airvac, Inc. This report was prepared following a significant vacuum sewer failure event on September 28, 2020. The purpose of the report was to engage the supplier of the original vacuum sewer system equipment to assess the system, to determine the causes of the failure and provide suggestions for system improvements. Problems identified with the collection system included the following:

- *The current operators have no experience with vacuum technology systems.*
- *One vacuum pump was locked up and the other could only pull 5 inches of vacuum.*
- *Only one of the two sewage pumps would run but would not pump.*
- *Vacuum from the tank was leaking through the pump seals and when the pump ran sewage leaked onto the floor.*
- *The motor windings were faulty on the other sewage pump.*
- *The conical screens on the vacuum pumps were plugged with grease.*
- *When the vacuum pump was finally started it would not produce the required vacuum pressure.*
- *No backup vacuum valves or controllers were on site.*

- *During the site visit the power to the main vacuum panel board went down and the standby generator wasn't working. The operator had removed some wiring with the power turned on and a hot wire touched the panel box, and it blew the fuse.*
- *No spare fuses were on site.*
- *In all pits inspected by the Airvac technician, there were no clamps on the vacuum control hoses and breather hoses had been disconnected.*

3. Report of System Support, October 7 - 9, 2020, Flovac, Inc. This report was prepared by a competitive vacuum system manufacturer in support of the initial observations and recommendations made by Airvac. Problems identified with the collection system included the following:

- *The 10" main vacuum plug valve at the vacuum station was inoperable.*
- *After working most of the day to identify leaking valves in the collection system, vacuum returned to the system only to fail again before the end of the day.*
- *A review of the vacuum station discovered that the only previously believed functioning sewage pump was actually not working due to rotating unit bearing failure.*
- *It appeared the second sewage pump that wasn't working also had failed bearings.*
- *The dedicated vacuum pump truck that was supposed to be on-site was not there and the system had to be shut down to protect the vacuum pumps from flooding from sewage.*
- *The water level probes in the vacuum tank were not functioning properly if at all.*
- *The operators claimed the internal condition of the vacuum tank was poor.*

- *The vacuum tank was cleaned and placed back in service.*
- *With the system down for so long many of the valve pits were flooded.*
- *There were almost no spare parts on hand.*

4. Site Survey Report Eagle Creek, NC, October 30, 2020, Airvac, Inc. This report was prepared as a follow-up to the previous report by Airvac, Inc. to document the improvements made to correct the earlier identified problems and to identify any remaining problems.

Problems identified with the collection system included the following:

- *Workers were on site with a pump truck trying to pump out water and sewage from the upper pit chambers.*
- *After working all day to locate leaks the system was running with good vacuum.*
- *There are still a lot of hoses without clamps.*
- *At least one and as many as four water level probes in the vacuum tank were missing wires and therefore were malfunctioning.*
- *At least two of the solenoid valves were not working.*
- *Missing parts included test hoses, 6 vacuum pit valves, 20 controllers, 3 probes and 3/8" and 5/8" hose clamps.*

5. Trip Report Eagle Creek, Moyock, NC, November 20, 2020, Flovac, Inc. This report was prepared as a follow-up to the previous report by Flovac to document the improvements made to correct the earlier identified problems and to identify any remaining problems.

Problems identified with the collection system included the following:

- *The starter contacts for vacuum pump number 1 were melted / welded shut and the pump would not turn off.*
- *There were insufficient spare parts to rebuild the system.*
- *The operator was so busy searching for leaking valves that he had no time to rebuild the valve pit controllers.*
- *The assistant operators lacked technical experience with vacuum sewer systems and wastewater collection systems in general.*
- *There were still multiple houses where raw sewage was overflowing from the candy cane air vents.*
- *Raw sewage was found backing up into the upper valve pit chambers in several cases.*

6. Eagle Creek Vacuum System Review, July 2021, A3-USA, Inc. This report was independently funded by Envirolink, Inc., the ORC. The report is properly described as an overview of the vacuum sewer collection system with recommendations for a complete overhaul. Undocumented and unspecified criticisms with the collection system include the following:

- *The poor condition of the system and the current service issues are the result of years of neglect due to inadequate maintenance and inadequate investment.*
- *The frequency of pit valve failures coupled with design limitations have resulted in the need to increase the number of operators assigned to the collection system.*
- *Often operators are too busy to acknowledge calls of problems from home owners.*
- *The vacuum tank and controls are in poor condition.*
- *The capacity of the vacuum pumps does not provide for a safety factor.*

- *The system lacks alarms to alert both operators and home owners.*

7. Trip Report Eagle Creek, Moyock, NC, October 5-8, 2021, Flovac, Inc. A year after the catastrophic failure of the system in October 2020, and multiple efforts and expenditures to improve the vacuum sewer collection system, Flovac, Inc. returned to the project to assess the condition of the system and identified the ongoing problems:

- *There had been extended periods of low vacuum pressure.*
- *The alarm panel was turned off.*
- *The safety high level lock out for the compressor was turned off.*
- *There were leaks in the high level lock out air line.*
- *The chart recorder was not working and was out of calibration.*
- *The vacuum pump and sewage pump run time recording was not up to date.*
- *Both vacuum pumps were leaking oil and were low on oil.*
- *The 8" main vacuum valve would not seat properly.*
- *The 10" main vacuum valve was inoperable.*
- *The main sewer pump couplings were not properly aligned, and bolts were missing from the mounting bases.*
- *One of the sewage pumps was inoperable.*
- *The pump recirculation lines were shut off.*
- *It appeared as if the water level probes were at improper levels or were dirty.*
- *The station was unkempt with oil and absorbents on the floor.*
- *There were no spare parts on site including no vacuum pump oil.*
- *Used parts were being used to rebuild controllers and valves.*

- *The was no clean space / environment in which to work or carry out operator duties.*
- *The conical screens were missing from the vacuum pumps.*
- *In every valve pit that was opened, there were incorrect valve rebuilds, missing parts and disconnected hoses.*
- *There is a general lack of direction, goals, or cohesiveness among the operators.*

8. Monitoring Observations Eagle Creek, Moyock, NC, December 22, 2021, Flovac, Inc.

Following the installation of some monitoring and charting equipment which provided limited diagnostic information, Flovac, Inc. visited the system and identified the following problems:

- *Vacuum pump run times were excessive being 14 hours per day in lieu of the design 6 hours per day.*
- *An unidentified leak or leaks had occurred resulting in excessive run times.*
- *Confirmed waterlogging within the piping system occurs at unidentified locations throughout the system.*

H. Published Literature on Vacuum Sewer System Operations

To put the facts and observations reported herein in perspective, it is appropriate to include commercially published and manufactures' technical support information regarding the reliability of vacuum sewer systems. The publications and important operation and maintenance information are as follows:

1. United States Environmental Protection Agency, (1978) Pressure and Vacuum Sewer Demonstration Project – Bend Oregon. EPA-6002-78-168, Municipal Environmental Research Laboratory, Cincinnati, Ohio.

In 1978 EPA funded a pilot study to compare grinder pump pressure sewers to vacuum sewers in Bend, Oregon. The pilot lasted fifteen months. At the end of the testing period no problems were reported with the pressure sewer. The vacuum sewer was 1,847' long and collected sewage from 11 homes. Problems reported with the vacuum sewer system included the following:

- Problems with the operation of the sliding-vane vacuum pumps occurred repeatedly.
- An excessive amount of water condensed in the lubrication system of the pumps.
- Manometer-type condensate drains installed on the vacuum pumps required manual draining of the condensate every day which resulted in the pumps losing their oil.
- Bearing surfaces on one pump had to be rebuilt.
- Failure of the vacuum valves resulted from malfunctions in the valve controller.
- One valve failed in the open position due to a small particle of debris in the pneumatic circuit of the valve controller.
- Another valve failed because of freezing moisture in the control circuit check valve.

2. Obradović, D., Šperac, M, & Marenjak, S. (2019), Maintenance Issues of the Vacuum Sewer System. *Environmental Engineering - IO*, 6, No. 2.

Obradović, Šperac and Marenjak, members of the Civil Engineering Faculty at the Josip Juraj Strossmayer University of Osijek, Croatia, published a very well documented and

detailed professional paper on the maintenance of vacuum sewers in Europe. The disadvantages reported included the following:

- High energy consumption.
- Additional cost for vacuum valves and vacuum stations.
- Expert design is needed.
- Needs energy to maintain vacuum
- Network length is limited.
- Skilled operators are required – training necessary.
- Number of system providers limited.
- Faults of individual valves can affect the entire system
- System components not quickly available everywhere.

Included in the paper was Table 2, Maintenance tasks and their frequencies, which is as shown below.

Table 2. Maintenance tasks and their frequencies (Mohr et al. 2016; Mäkinen 2016; Buchanan et al. 2010)

Frequency	Maintenance Tasks
Daily	General inspection at the station Visually check gauges/ charts Record all pump run times Check oil level in vacuum pump sight glass Check alarms at the control cabinet Fill out daily equipment check-up log book Check alarm dialer function
Weekly	Exercise generator (if applicable) Check vacuum system for leaks with manometer and record findings Check oil level Check for unusual noises Check vacuum pump exhaust filter gauge Visually/audibly check vacuum station operation
Monthly	Change oil and oil filters (depends on manufacturer's recommendations) Remove and clean inlet filters on vacuum pumps Test all alarm systems Check all motor couplings and adjust (if needed) Clean all sight glasses Exercise all shut off valves (vacuum station) Check appearance of station (cleanliness and accessibility) Check biofilter (humidity, odours, appearance) Check sump for proper valve cycling Check vacuum sensor (absolute pressure)
Semi-annually to annually	Conduct external leak test on all vacuum valves Check electrical connections at the station Check tank for deposits and remove them Check alarm signals of the vacuum pumps Check pump motors and couplings (wear, misalignment, deterioration, overheating)
Every year	Exercise division valves Inspect vacuum and sewage pumps for wear Visual inspection of all pits and valves Check valve timing and adjust if needed Check functionality of alarms Change oil of vacuum pump Change oil filter of vacuum pump Check state of construction of the station (e.g. corrosion, structures, etc.) Floating switch cleaning and testing
Every 3 years	Rebuild controller (buffer tank valves only)
Every 5 years	Rebuild controller (most valves)
Every 15 to 25 years	Replace a vacuum station equipment

3. State of Florida, (2022), Design Considerations – Vacuum Sewer Systems. *Florida Administrative Code (62-604.600(7)(a)).*

The State of Florida has rigorous requirements for the design of vacuum sewer systems. The requirements include 100 separate items divided into eight sections including General, Vacuum Collection System, Vacuum Valves, Valve Pits, Buffer Tanks, Individual Gravity Laterals, Vacuum Pump Stations, and Emergency Operations for Vacuum Pump Stations. A copy of the State of Florida code is included as Appendix B. A review of these requirements provides perspective into the difficulty in properly constructing a vacuum sewer collection system and into the numerous ways a vacuum sewer collection system can under perform.

4. Lauwo, S., Sharvelle, S. & Roesner, L., (2012) A review of Advanced Sewer System Designs and Technologies. *Water Environment Research Foundation. INFR4SG09d.*

Lauwo, Sharvelle and Roesner while working at Colorado State University, performed an extensive review of several advanced sewer system technologies including the vacuum sewer technology. Their reported disadvantages with a vacuum sewer system include the following:

- The system will not operate during power outages or a malfunction at the vacuum station.
- A good air to liquid ration is necessary to avoid water logging but may be difficult to maintain.
- Grease can cause problems at the collection pit.

I. Summary of the Engineer's Observations

1. Review of Records and Visual Observations

Arguably, the Eagle Creek vacuum sewer collection system is one of the most poorly maintained system the Engineer has ever seen. The system suffers from absentee ownership, lack of properly trained operators, lack of routine and preventive maintenance, lack of redundancy and spare parts, lack of adequate user revenues necessary to properly support the facilities and the facility operations, and lack of pride.

Records indicate the system was constructed in 2000 and placed into service in 2001. It is now twenty-one years old. In 2010, when the sewer collection system was only nine years old, the original design engineer, Bissell Professional Group, issued the Eagle Creek Wastewater Treatment Plant Evaluation which identified several problems with the vacuum sewer collection system including:

- Two days after a 2" rainfall the wastewater plant was experiencing excess flow from infiltration into the collection system.
- Four or five vacuum pits needed to be repaired because infiltration was leaking in through cracks in the fiberglass pit bottoms.
- One of the two vacuum pumps needed to be repaired.
- And the intake filter casings on the vacuum pumps had deteriorated and needed to be replaced immediately.

Four years later in 2015, the State of North Carolina Public Utility Commission (PUC), ordered Sandler Utilities to take immediate corrective action to inspect all vacuum pits and

raise them above grade to minimize infiltration and inflow and to install main line isolation valves to prevent the collection system from losing vacuum and to repair other necessary equipment. In May 2016, Enviro-Tech, the then Operator in Responsible Charge (ORC) sent a report to the PUC documenting some of the actions taken to comply with the order. Then in September 2020 the system experienced catastrophic failure and was down for more than a month. Since then, there have been eight independent third-party investigations into the circumstances of the failure and the conditions of the vacuum sewer collection system. Those fully detailed reports are presented Section G above.

Those nine reports plus the letter from Enviro-Tech describe countless problems with the system that have been recurring for more than a decade. The numerous problems listed are consistent with the Engineer's experience with poorly maintained vacuum sewer collection systems in general and with absentee ownership vacuum sewer systems specifically. The inspections and observations offered no surprises.

The Engineer also searched the literature for professional articles relating to the reliability of and maintenance issues with vacuum sewer collection systems. Published information provided by the U. S. Environmental Protection Agency, the Water Environment Research Foundation, the State of Florida and two academic groups from the Colorado State University and from the University of Osijek, Croatia are listed in Section H above. All four documents present both actual and potential operation and maintenance issues with vacuum sewer collection systems which are consistent with the problems reported by the eight third-party reports and the Enviro-Tech letter in Section G.

In addition to published information, the Engineer made his own observations of the Eagle Creek facilities. Specific observations are reported in Section F above and include the following. The one operator in attendance on the morning of February 4, 2022, was asleep in his car at 9:30 in the morning. The vacuum tank pit was dirty, oily, and unkempt with rusty and broken parts and equipment lying around. There were loose electric wires in the building that seemed to be associated with the vacuum pumps and controls but were disconnected. One sewage pump was reported to be malfunctioning. Bags of chemicals were torn open and unsecured, there were drums of unknown liquids and materials strewn around, and there were numerous used vacuum valve parts stacked in a heap. There was no ear protection, no safety signage and the entire facility was in a very poor housekeeping condition. The building fails to fully comply with OSHA regulations and statewide building codes. There was no security for the facility or grounds and the access road was nearly unpassable.

2. Engineer's Concerns from Industry Experience

Besides the problems and issues which can be verified by published reports and actual field observations, the Engineer has additional concerns stemming from his lengthy career experience. Those concerns include the following.

- The wastewater treatment plant operator reported the average dry weather flow is approximately 50,000 gallons per day. In a 10" diameter pipe the average velocity is 0.144 feet per second. The rule of thumb velocity for design of closed piping systems is a minimum velocity of 2.0 feet per second to prevent settling and deposition of

solids. The condition of the interior of the vacuum collection pipes is unknown and it would not be surprising if there is a build-up of solids and grease inside the pipes.

- Currently, work is underway to move all the vacuum valve controllers out of the below ground pits up into above grade pedestals. In addition to the valve controllers, work is underway to install battery operated sensors at each pit to monitor several operating functions and to wirelessly report any problems to a cell phone accessible, central monitoring station. This work is NOT intended to lessen the occurrence of vacuum system failures or to reduce maintenance requirements, it is intended to make it easier and quicker for an operator to identify a leaking valve and repair it to lessen the chance of a lengthy or catastrophic system failure. The concern with this approach is now hundreds of new electrical / mechanical devices have been added to the system which must be maintained, and which can themselves fail, and which now exposes the system to cyber-attack.
- In the past eighteen months alone, Sandler Utilities has spent approximately \$674,000 in maintenance and repairs to the vacuum sewer collection system. Considering the system is still in very poor or unknown condition(s) it is likely that additional funds will be necessary to continue upgrading and improving the facilities. The Engineer speculates that historically, the customer user rates have been too low to produce sufficient revenue to properly provide for adequate routine and preventive maintenance of the vacuum sewer collection system.

J. Conclusions and Recommendations

In accordance with the AMENDED CONSENT JUDGEMENT the Engineer hereby provides both near-term and long-term actions to prevent (minimize to the extent possible) future sanitary sewer overflows (SSOs) and system performance issues.

1. Near-Term Corrective Actions

Near-term corrective actions recommended include the following:

- Inspect the vacuum collection lines where possible. The construction drawings indicate the collection lines have been installed with a sawtooth profile, which means it will be difficult to insert a camera and view a long length of line. It also means there will be pockets of sewage at various points. It is recommended that two or three inspection sites be selected for short time inspections. Once the system is opened for inspection vacuum will be lost. This procedure must be performed quickly and carefully.
- Install shut-off valves on the main collection lines at strategic points and install valved riser pipes for connection to portable vacuum sewage pumps which will allow for continuance of the collection operations while shutting down the vacuum tank station for maintenance and repairs.
- Purchase or lease a portable vacuum system pump.
- Clean and repair the vacuum tank.
- Upgrade the vacuum tank controls systems.
- Upgrade and replace the vacuum station electrical control panel.
- Purchase a spare vacuum pump and a spare main sewage pump to have on hand.

- In the vacuum station, insert all electrical and control wiring into conduits, properly mount and install avoiding tripping hazards, and discard broken and unused wires and cables.
- Inspect spare vacuum valves and discard damaged and unusable parts.
- Make the building, electrical and lighting code compliant.
- Make the building OSHA complaint.
- Secure and label all chemicals.
- Provide sound enclosures around the blowers.
- Start a daily log book.
- Provide fall and eye protection around the UV system.
- Install building heating and ventilation to code.
- Install a security fence and gate with locks and lock the building.
- Bring in sufficient gravel to properly repair the access road.
- Fix the toilet.
- Purchase any spare parts that should be on hand.
- Clean and repair the cabinets
- Discard broken and unused junk including the old UV lamps, the blower motors, the dishwasher, etc.
- Label everything as appropriate
- Obtain new copies of the plans and specifications and vacuum system operating and maintenance manuals.
- Improve overall housekeeping.

2. Long-Term Corrective Actions

This independent engineering evaluation report clearly documents the overwhelming number of problems with the Eagle Creek vacuum sewer collection system that have been going on for at least twelve years, and with vacuum sewer collection systems in general. It is beyond the scope of this report to perform a detailed life-cycle cost analysis of the variety of sewer collection systems which will provide more environmentally sound, more reliable, and more cost-effective performance over the long-term. However, from the Engineer's experience in performing similar life-cycle cost analyses when comparing the costs of installing and operating vacuum sewer systems, grinder pump and low-pressure force main systems, and conventional gravity sewer systems with central sewage pump stations in flat sandy areas with high water tables like Eagle Creek, the grinder pump with low-pressure force mains always proves to be the most cost-effective, long-term alternative. This has become especially true with the advent of trenchless, directional bore technology for the installation of the low-pressure, HDPE or PVC force main pipes.

Considering the above, the Engineer offers the following long-term recommendations.

- a. Convert the vacuum sewer collection system to a grinder pump low-pressure force main system beginning at Eagleton Circle.
- b. Depart from the ineffective contract maintenance program of the past by having the Eagle Creek subdivision apply for the creation of public utility district (PUD) status which could be expanded to encompass a larger territory in the future. This will place the ownership of the system in the hands of the property owners who then will control the operation, maintenance, and management of the system.

- c. The U. S. Congress recently passed the Infrastructure Investment and Jobs Act (IIJA) and designated the US Environmental Protection Agency the managing agency for water and wastewater infrastructure funding. The State of North Carolina has been allocated \$199,211,000 to its State Revolving Loan Fund for 2022. The IIJA has provisions for 100% grants and forgivable loans under certain circumstances. The Engineer recommends once a PUD has been established, pursuing public funding for future long-term capital improvements.

However, if the project stakeholders collectively decide that neither a grinder pump and low-pressure force main system nor a gravity sewer system with central pump stations is to be considered, and the continued reliance on an old and depreciated vacuum sewer collection system is preferred, then the Engineer offers these recommendations.

- a. Perform a detailed technical hydraulic analysis of the vacuum collection system to thereby isolate the system into at least separate regions.
- b. Design two new main vacuum tank and pump stations with separate force mains.
- c. Replace all two-piece valve pits with single piece valve pits to significantly reduce infiltration and inflow and eliminate SSOs.
- d. Replace the existing main vacuum receiving tank.
- e. Clean and flush as many of the existing vacuum collection lines as possible.

Appendix A**Eagle Creek Sewer System - Documents Provided for Review**

1. Flovac Operations Group, (March 2010) Preventative Maintenance Program (for Vacuum Sewer Systems), Flovac Inc., consisting of 6 pages.
2. Bissell Professional Group, (April 21, 2010) Updated Preliminary Report Eagle Creek Wastewater Treatment Plant Evaluation, consisting of 11 pages.
3. Envirolink, Inc, (January 2012) Emergency Action Plan, consisting of 38 pages.
4. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, (May 2, 2103) Permit No. WQCS00290 Eagle Creek Collection System.
5. North Carolina Utilities Commission, (December 2, 2015) Proposed Order Granting Rate Increase to Sandler Utilities at Mill Run, LLC.
6. Enviro-Tech, (May 3, 2016) Letter to North Carolina Public Service Commission.
7. Airvac, (September 30, 2020) Site Survey Report Eagle Creek, NC.
8. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, (October 7, 2020) Notice of Violation / Notice of Intent to Enforce.
9. Sandler Utilities at Mill Run, LLC, (October 27, 2020) Letter Response to North Carolina Department of Environmental and Natural Resources, Division of Water Quality.
10. Flovac Inc., (November 20, 2020) Inspection Report of Eagle Creek Sewer System by Michael Pringle.
11. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, (November 23, 2020) Notice of Violation / Notice of Intent to Enforce.
12. North Carolina Department of Environmental Quality, (December 10, 2020) Order for Violations of Collection System Permit WQCS00290, Findings and Decisions and Assessment of civil Penalties.
13. Sandler Utilities at Mill Run, LLC, (December 15, 2020) Letter Response to North Carolina Department of Environmental and Natural Resources, Division of Water Quality.
14. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, (December 16, 2020) Notice of Violation.
15. North Carolina Department of Environmental and Natural Resources, Division of Water Quality, (January 14, 2021) Notice of Violation / Notice of Intent to Enforce.

Appendix A

Eagle Creek Sewer System - Documents Provided for Review

Myers Rebuttal Exhibit B

AIRVAC PROJECT LIST

Myers Exhibit B

Arthur Proctor Ltd

AIRVAC PROJECT LIST

Jun 12

Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Mariners Cove 6CA	WA	16			2012	Water Corporation		
Port Hedland 9A-9B	WA	238			2011	Water Corporation		
Minnamurra - Retrofit	NSW	180			2011	Sydney Water		
Waterfall Gully – Retrofit	SA	30		1	2011	SA Water		
Millbridge Estate – Stages 12-15	WA	20		1	2011	Water Corporation		
Glenleigh Road - Retrofit	WA	80			2010	Water Corporation		
Bayview West	NT	15		1	2010	Power & Water Authority		
Waterside	NSW	110	400	1	2006	Stockland Trust		
Broadwater	WA	90	350	1	2006	Water Corporation		
Pacific Harbor	QLD	88	440	1	2006	QM Properties		
Vasse Newtown (Dowell Rd)	WA	70	500	1	2006	Water Corporation		
Port Kennedy	WA			1	2006	Meriton		
Calypso Bay	QLD	104	520	1	2005	Roche Group		
Carnarvon	WA	56	336	1	2005	Water Corporation		
Ashley	NSW	43	172	1	2005	Moree Council		
Port Botany Retrofit	NSW	14	14		2005	Maritime Board		
Mariners Cove (Waterlily Dr.)	WA	8	40	1	2005	Water Corporation		
Ningi Retrofit	QLD	20	80		2004	Caboolture Council		
Caltex Oil Refinery Kurnell	NSW	16	16		2004	Sydney Water		
Sanctuary Lakes Retrofit	VIC	16	64		2004	City West Water		
Ningi Extension	QLD	14	43		2004	Caboolture Council		
Exmouth Marina	WA	14	64	1	2004	Water Corporation		
Ibis Gardens	WA	13	78		2004	Water Corporation		
Machams Beach	QLD	133	532		2003	Cairns Water		
Hat Head	NSW	97	450	1	2003	Kempsey Council		
Manning Point	NSW	68	120	1	2003	MidCoast Water		
Millbridge Estate	WA	65	390	1	2003	Water Corporation		
Haywards Bay	NSW	53	212	1	2003	2004 Winten Group		
Port Geraldton	WA	21	60	1	2003	2004 Port Authority		
Port Headland Retrofit	WA	20	80		2003	Water Corporation		
Coomera Waters	QLD	123	492	1	2002	2003 Gold Coast Council		
South Geraldton	WA	116	580	1	2002	Water Corporation		
Dora Creek Retrofit	NSW	115	460		2002	2003 Hunter Water		
Port Geographe Retrofit (Ford Rd.)	WA	14	84		2002	Water Corporation		
Bundeena	NSW	112	448	1	2001	Sydney Water		
Cocos Islands	WA	99	340	2	2001	KRSP		
Noosaville	QLD	42	120	1	2001	Noosa Council		
Barrack Square Marina	WA	16	16	1	2001	Dept of Transport		
Lytton Berri Extension	QLD	1	1		2001	Australand		
Clydebank, Busselton Retrofit	WA	166	830		2000	2001 Water Corporation		
Falcon 2A	WA	60	240		2000	2003 Water Corporation		
Cloisters, Busselton	WA	12	42		2000	Water Corporation		

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Harrington Waters Estate	NSW	133	552	1	1999	2002	MidCoast Water	
Bayview Haven Estate	NT	57	228	1	1999		Power & Water Authority	
Marlow Lagoon	NT	37	85	1	1999	2000/05	Power & Water Authority	
Bayswater	WA	19	160	1	1999		Water Corporation	
Picton Road, Bunbury	WA	15	75	1	1999	2000	Water Corporation	
Hemmant Extension	QLD	7	7	1	1999		Brisbane City Council	
Busselton 14A (Lyrebird Rd.)	WA	225	500	1	1997		Water Corporation	
Couran Cove Eco Resort,								
South Stradbroke Island	QLD	180	400	1	1997		Interpacific Resorts	
South Yunderup	WA	52	175	1	1997		Water Corporation	
Cox Bay (Olive St.)	WA	48	240	1	1997		Water Corporation	
Port Kennedy	WA	15	50	1	1997		Water Corporation	
Bonnet Bay & Sylvania								
Waters Stage 1 - Retrofit	NSW	434	700	3	1996		Sydney Water	
Baradine	NSW	120	300	1	1996		Coonabarabran Shire Council	
South Guildford (Wilkie St.)	WA	113	452	1	1996		Water Corp WA	
Rockingham 9A	WA	76	276	1	1996		Water Corp WA	
Kupungarri	WA	40	100	1	1996		Homeswest	
Maroochy - Scum Extraction								
Sewage Treatment Plant	QLD	8		1	1996		Maroochy Shire Council	
Furnissdale	WA	52	200	1	1995		Water Corp WA	
Dardanup	WA	39	73	1	1995		Water Corp WA	
Eagleview Industrial Subdiv.	QLD	10	20	1	1995		Brisbane City Council	
Kenmore	QLD	0	12	1	1995		Brisbane City Council	
West Gosford	NSW	36	45	1	1994	95/03	Gosford City Council	
North Yunderup	WA	18	75	1	1994		Water Corp WA	
Lytton Industrial Estate Stage 2	QLD	17	34	1	1994		Brisbane City Council	
Port Botany - Retrofit	NSW	6		0	1994		Maritime Services Board	
Barrenjoey	NSW	105	300	1	1992		Sydney Water	
Shay Gap - Retrofit	WA	12			1992		BHP Iron-Ore Ltd	
Davistown	NSW	420	850	1	1991		Gosford City Council	
West Byron Bay	NSW	22	64	1	1991		Byron Shire Council	
Port Mandurah	WA	225	1200	1	1990		Water Corp WA	
Riverglenn Marina Murray Bridge	SA	5	61	1	1990		Copdale Pty Ltd	
Kurnell	NSW	460	1400	1	1989		Sydney Water	
Hindmarsh Island	SA	152	650	2	1989	-2005	Marina Hindmarsh	
Police Berths Sydney	NSW	6	6	1	1986		Police Department	
AUSTRALIA TOTAL		5752	17904	60				
West End - Bahamas -Phase 1		217	711	1	2009		Ginn Development Company	
West End - Bahamas -Phase 2		154	325	1	2009		Ginn Development Company	
BAHAMAS		371	1036	2				

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Vacuum
Main

Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.
Paranagua	Parana	38	228	1	2004	Aguas de Paranagua	
Jurere International	Santa Catarina	65	189	1	2003	Habitasul	
BRAZIL		103	417	2			
Beach House 2		14		1	1998	Amedeo Corporation	
Bolkiah Stage B		67	138	1	1995	Brunei Water Authority	
Bolkiah Stage A		71	147	1	1994	Brunei Water Authority	
BRUNEI TOTAL		152	285	3			
St. Paul de l'Isle-aux-Noix	Quebec	132	265	1	2007		
Quebec City Lac St. Charles	Quebec	72	140	1	1998		
Town of Maria	Quebec	450	1200	1	1995		
Canton de Magog	Quebec	66		1	1989		
Sherbrooke Ville de Rock Forest	Quebec	65		1	1989		
Invermere - Retrofit	British Columbia	15		1	1988		
Black Tusk Village - Retrofit	British Columbia	95	95	1	1987		
Surrey - Retrofit	British Columbia	900	900	3	1987		
CANADA TOTAL		1795	2600	10			
Zdar		368		1	2011		
Sokolec Extension		22			2010		1020
Uzice Extension		15			2010		1300
Zatcany Extension		50			2010		
Veltruby Extension	Kolin	103			2009		1650
Zatcany Extension		25			2009		480
Jestrebi-Provodin	Cseka Lipa	110	140	1	2008		
Jestrebi-Provodin	Cseka Lipa	110	140	1	2008		
Veltruby	Kolin	255	305	1	2008		
Veltruby	Kolin	255	305	1	2008		
Jizni Polabi	Nymburk	332	720	1	2006		1650
Rajhradice	Brno	350	370	1	2006		1300
Veltruby 2. Stadium	Kolin	375	403	1	2006		1020
Velky Osek	Kolin	314	650	1	2005		2000
Vrbova Lhota	Kolin	145	195	1	2005		480
Dobrichov Pecky	Kolin	79	173	1	2004		400
Sendrazice	Kolin	116	180	1	2004		1200
Budimerice Slotava	Nymburk	188	264	1	2003		500
Cirkvice	Kutna Hora	182	275	1	2003		1100
Jestrebi	Cseka Lipa	109	113	1	2003		800
Veltruby 1. Stadium	Kolin	58	59	1	2003		180
Zvole Stage 2	Sumperk	100	124	1	2003		370

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Bystrice	Benesov	110	35	1	2002		35	
Dolni Berkovice & Vlineves	Melnik	188	360	1	2002		1200	
Klecany	Praha	28	50	1	2002		150	
Dubicko	Sumperk	29	180	1	2001		400	
Opatovice	Brno	119	299	1	2001		900	
Prisovice	Liberec	56	96	1	2001		400	
Dolni Studenky	Sumperk	202	380	1	2000		1300	
Hrncire	Praha	357	380	1	2000		1200	
Luzany u Prestic	Klatovy	59	192	1	2000		600	
Luzec nad Vltavou	Melnik	130	260	1	2000		900	
Zvole Stage 1	Sumperk	178	178	1	1999		800	
Chodouny-Lounky-Cerneves	Litomerice	101	320	1	1998		1000	
Prague Coll. Drainage C1A	Prague Center	12		1	1998		Qmax= 3 l/s	
Tuchlovice	Kladno	26	26	1	1998		100	
Svitavy Lacnov	Svitavy	103	269	1	1997		1200	
Veltrusy	Melnik	146	386	1	1997		3050	
Bohuslaice u Sumperka	Sumperk	72	137	1	1996		400	
Horatev u Podebrad	Nymburk	75	270	1	1996		700	
CZECH REPUBLIC TOTAL		5652	8234	35				

Peteborough	Cambridgeshire	45		1	2011	O&H Hampton Ltd
Addlingfleet	Goole	35		1	2011	Severn Trent Water
Stock Green	Redditch	24			2011	Severn Trent Water
Medway Valley Park Phase 2	Kent	9			2010	Blue Circle
Oasby	Lincolnshire	34	71	1	2008	Anglian Water
Pickworth	Rutland	27	63	1	2008	Anglian Water
Great Yarmouth	Norfolk	36	149	1	2005	Landfast Ltd.
Peterborough - Area 300	Cambridgeshire	52			2005	O&H Hampton Ltd
Upwell & Outwell Phase 4	Norfolk	107	191	1	2004	Anglian Water
Upwell & Outwell Phase 3	Norfolk	141	397	1	2004	Anglian Water
Upwell & Outwell Phase 1	Norfolk	99	328	1	2004	Anglian Water
Upwell & Outwell Phase 2	Norfolk	79	240	1	2003	Anglian Water
Peterborough - Area 200	Cambridgeshire	13		1	2002	O&H Hampton Ltd
Parson Drove	Cambridgeshire	103	367	1	2002	Anglian Water
Marshland St James	Norfolk	120	308	1	2002	Anglian Water
Walpole St Andrews/St Peter	Norfolk	84	556	1	2001	Anglian Water
Stowbridge Village	Cambridgeshire	35	96	1	2001	Anglian Water
East Bilney	Norfolk	11	25	1	2001	Anglian Water
Markham Moor	Nottinghamshire	77	236	1	2000	Severn Trent Water
Central Veterinary Labs	Surrey	13		1	2000	Kier Construction
Burton Waters Lincoln 1-5	Lincolnshire	85		1	2000	2008 Eastman Securities
Harleford Lakes Marlow 1 & 2	Buckinghamshire	4	12	1	1999	Harleyford Estates

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Crossways 25 Phase 4	Kent	19		1	1999	Blue Circle		
Peterborough - Area 100	Cambridgeshire	33		1	1998	O&H Hampton Ltd		
Earth Center Doncaster	Doncaster	2		1	1998	Bovis Europe		
Longstowe	Cambridgeshire	39	96	1	1997	Anglian Water		
Thrupp Village	Gloucestershire	9	40	1	1997	Anglian Water		
Medway Valley Park Phase 1	Kent	30		1	1995	Blue Circle		
New Bollingbrooke	Lincolnshire	37	120	1	1995	Anglian Water		
Bunwell	Norfolk	65	200	1	1994	Anglian Water		
Eyke	Suffolk	41	140	1	1994	Anglian Water		
Henlow Hitchin Road	Bedfordshire	13	40	1	1994	Anglian Water		
Kings Lynn Willow Park	Norfolk	3		1	1994	Dosser East		
Marsh Road Gernard	Isle of Wight	12	40	1	1993	Southern Water		
Shouldham	Norfolk	78	200	1	1993	Anglian Water		
Claxby	Lincolnshire	14	100	1	1992	Anglian Water		
Shiplake Lock	Berkshire	9	30	1	1992	Thames Water		
Watermans Way	Berkshire	8	40	1	1992	Thames Water		
Wygate Park Spalding 1-8	Lincolnshire	130		1	1989	1997 Swallow Homes		
Hamm Court Runnymede	Surrey	31	120	1	1989	Thames Water		
West End Village	Surrey	24	100	1	1989	Thames Water		
Woolram Wygate Spalding	Lincolnshire	30	30	1	1989	Martin Baker		
Thorncott & Hatch		22	66	1	1988	Anglian Water		
Bromley Green	Kent	42	110	1	1988	Southern Water		
Castle Rising	Norfolk	30	140	1	1988	Anglian Water		
Thorganby Village	Yorkshire	28	120	1	1988	Yorkshire Water		
Pagham Beach Phase 1-3	Sussex	72	250	1	1987	1991 Southern Water		
Crossways Dartford Phase 1-6	Kent	150		1	1987	Land Securities Ltd		
Earl Stonham	Suffolk	55	150	1	1987	Anglian Water		
Priory Road North Dartford	Essex	30	120	1	1987	Thames Water		
Beacons Way Skegness	Lincolnshire	30	120	1	1986	Anglian Water		
Church Lane Moor Monkton	Yorkshire	20	80	1	1986	Yorkshire Water		
Southfields Estate Orsett	Essex	36	160	1	1986	Anglian Water		
Oldbury on Severn (The Naith)	Gloucestershire	52	150	1	1986	2009 Wessex Water		
Gosport Factory	Hampshire	8		1	1985	Sweetheart Int.		
Holton St Mary	Suffolk	60	200	1	1985	Anglian Water		
High Street Spalding	Lincolnshire	14	60	1	1982	Anglian Water		
Low Fulney Estate Spalding	Lincolnshire	28	60	1	1982	Anglian Water		
Chelmsford Hospital	Essex	40		1	1980	Mid-Essex HA		
ENGLAND TOTAL		2577	6121	56				

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Vert Le Petit (91)	Essonne	16		1	2010	Centre Etudes du Bouchet	800	
Biscarosse Bosque Nord - Gouben (40)	Landes	23		1	2008	MAIRIE	270	
Challans (85)	Vendee	49		1	2008	MAIRIE	300	
Chateauneuf Les Martigues (13)	Bouches du Rhone	31		1	2008	Marseille Provence Metropole	220	
Pont De Ce (49)	Maine-et-Loire	51		1	2008	SODEMEL	300	
Thenec 2 (17)	Charente-Maritime	14		1	2008	Syndicat des Eaux 17	363	
Amneville (57)	Moselle	21		1	2007	MAIRIE	420	
Marcoule (30)	Gard	130		1	2007	COGEMA		
Thenac 1 (17)	Charente-Maritime	13		1	2007	Syndicat des Eaux 17	819	
Ambronay (1)	Ain	21		1	2005	DDAF de l'Ain	800	
Biscarosse Millas (40)	Landes	34		1	2005	MAIRIE	675	
Bonneuil (94)	Val-de-Marne	64		1	2005	PORT Autonome de PARIS	3400	
Cap D'Agde -L'ile St. Martin (34)	Herault	14		1	2005	SCCV L'ILE ST MARTIN	800	
Port Medoc (33)	Gironde	20		1	2004	GUINTOLI Marine	700	
Sete (34)	Herault	41		1	2004	PROJETC Sud	1500	
CHM Montalivet (33)	Gironde	48		1	2003	SOCNAT	4500	
St. Tropez Port (83)	Var	18		1	2003	OTH Mediterranee	1600	
Chamigny (77)	Seine-et-Marne	40		1	2002	B&R Ingenierie	350	
Berry au Bac		29		1	2001	DDE Laon		
Ury (77)	Seine-et-Marne	124		1	2001	SAFEGE	1100	
Bury (60)	Oise	47		1	2000	DDE Clermont	400	
Holzwihr (68)	Haut-Rhin	134		1	2000	DDE Colmar	1000	
Val de la Haye (76)	Seine-Maritime	56		1	2000	CC agglomeration Rouen	500	
Batz Sur Mer 2 (44)	Loire-Atlantique	31		1	1999	SetPraud	720	
Belz Saint Cado (56)	Morbihan	106		1	1999	Cabinet Guitton	2750	
Chize (79)	Deux Sevres	85		1	1999	DDE des Deux Sevres	1480	
Coquelles (62)	Pas-de-Calais	70		1	1999	DDE Calais	630	
La Chapelle des Marais (44)	Loire-Atlantique	62		1	1999	Sivom d'Herbignac	1080	
Marans (17)	Charente-Maritime	41		2	1999	DDAF de la Charente Maritime	400	
Souppes Sur Loing 2 (77)	Seine-et-Marne	44		1	1999	DDE Nemours	150	
Biscarosse Latecoere (40)	Landes	21		1	1998	DDA 40	1800	
Dassault Aviation Merignac (33)	Gironde	21		1	1998	Dassault Aviation	800	
Riedwihr (68)	Haut-Rhin	59		1	1998	DDE Colmar	816	
St. Julien de Concelles (44)	Loire-Atlantique	82		1	1998	Sogreah / Praud	700	
Hopital du Vesinet (78)	Yvelines	40		1	1997	Beture	1750	
Jaux (60)	Oise	13		1	1997	Sogeti	279	
Outreau (62)	Pas-de-Calais	55		1	1997	DDE Samer Desvres	68	
Pontoise les Noyon Varesnes (60)	Oise	78		1	1997	DDA Beauvais DDE Noyon	1450	
Souppes sur Loing 1 (77)	Seine-et-Marne	43		1	1997	DDE Nemours	2030	
St. Jean aux Bois (60)	Oise	52		1	1997	Sogeti	385	
Garennnes sur Eure (27)	Eure	190		1	1996	DDA Evreux	1011	

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Fort Mahon 2 (80)	Somme	18		1	1995	DDE Rue	2000	
Holtzwihr Wickerschwih (68)	Haut-Rhin	118		1	1995	DDE Colmar	1800	
Mouy (60)	Oise	65		1	1994	DDE Clermont	3240	
Noyelles sur Mer (80)	Somme	105		1	1994	DDA Amiens	1950	
Precy sur Marne (77)	Seine-et-Marne	24		1	1994	DDE Claye Souilly	500	
Thionville (57)	Moselle	38		1	1994	Service Technique Thionville	450	
Gisy les Nobles (89)	Yonne	100		1	1993	DDA Auxerre	800	
Hourtin Piqueyrot (33)	Gironde	22		1	1993	DDE 33	1300	
Marignane (13)	Bouches du Rhone	35		1	1993	1994 Societe des Eaux de Marseille	1500	
Orconte (51)	Marne	82		1	1993	DDE Chalon s/Mame	600	
Batz sur Mer (44)	Loire-Atlantique	56		1	1992	1996 Set Praud	1000	
Port St. Louis du Rhone (13)	Bouches du Rhone	16		1	1992	1995 SI Borel	1800	
St. Ciers sur Gironde (33)	Gironde	75		1	1992	1998 Cabinet Merlin St. Andre de Cubzac	4500	
Pont Remy (80)	Somme	42		1	1991	DDA Amiens	2000	
La Teste PRL (33)	Gironde	28		1	1990	1996 DDE la Teste Cabinet Baure	3500	
St. Avit (33)	Gironde	152		1	1990	2004 DDAF de la Gironde	2500	
Allonne (60)	Oise	41		1	1989	DDA de Beauvais	1000	
Fort Mahon (80)	Somme	45		1	1989	DDE Rue (80)	1330	
						DDE de la Gironde Arrondissement		
Hourtin Lanchanau (33)	Gironde	56		1	1989	2005 Ouest	1500	
Lagny sur Marne (77)	Seine-et-Marne	25		1	1989	DDE de Melun	400	
L'Untxin Ciboure (64)	Pyrenees Atlantique	50		1	1989	2004 DDE st. Jean de Luz	7500	
Milly sur Therain (60)	Oise	101		1	1989	DDA de Beauvais	2000	
Sissonne (2)	Aisne	90		1	1989	DDE de Laon	2400	
St. Louis de Montferrand (33)	Gironde	106		1	1989	2000 Lyonnaise des Eaux Dumez	3000	
Ingre (45)	Loiret	70		1	1988	Service Technique	1000	
St. Maixant (33)	Gironde	142		1	1988	1994 DDAF de la Gironde	1250	
Arbonne la Foret (77)	Seine-et-Marne	165		1	1987	DDA de Seine et Marne	1300	
Castres (2)	Aisne	34		1	1987	DDA de l'Aisne	240	
Hostens le Lac (33)	Gironde	8		1	1987	1988 DDAF de la Gironde	400	
Izon Ouest (33)	Gironde	77		1	1987	2005 Cabinet Socama a Merignac	1900	
Izone Centre (33)	Gironde	149		1	1987	2003 Cabinet Socama a Merignac	2600	
Sadirac (33)	Gironde	33		1	1987	1993 DDAF de la Gironde	300	
St. Macaire (33)	Gironde	140		1	1987	2003 Cabinet Socama a Merignac	2600	
St. Nicolas de Redon (44)	Loire-Atlantique	26		1	1987	1991 Services Technique	1900	
Thourotte Longueil Annel (60)	Oise	105		1	1987	DDE Ribecourt	1000	
Vayres (33)	Gironde	151		1	1987	2005 Cabinet Socama a Merignac	3000	
Vieux Moulin (60)	Oise	135		1	1987	DDA Oise DDE Compiègne	800	
Biscarrosse Ispes (40)	Landes	60		1	1986	2004 Cabinet Merlin St. Andre de Cubzac	5500	
Caudrot (33)	Gironde	117		1	1986	DDAF de la Gironde	1500	
Pineuilh (33)	Gironde	196		1	1986	2005 DDAF de la Gironde	1200	
Biscarrosse Navarosse (40)	Landes	53		1	1985	2004 DDA 40	9600	

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Biscarrosse Mayotte (40)	Landes	53		1	1985	2003	DDA 40	5200
Fossoy (2)	Aisne	10		1	1985		DDE de l'Aisne	1600
Gensac (33)	Gironde	82		1	1985	1992	DDAF de la Gironde	800
Hourtin ZAC (33)	Gironde	70		1	1985	1993	Cabinet Duchassaing Merignac	6800
Tracy le Mont		16		1	1985		DDE de Ribecourt	300
Bruges Quartier du Tasta (33)	Gironde	75		1	1984	1996	CUB Cabinet Sogelerg	12000
Hostens VVF (33)	Gironde	25		1	1984		VVF	3500
St. Pierre d'Aurillac (33)	Gironde	86		1	1984	1988	DDE de la Gironde	650

FRANCE TOTAL 5699 0 91

Stadl/Brunn, 2.BA		20	20	1	2008			
Staning		80	80	1	2008			
Hennersdorf		40	40	1	2008			
Hilders		126	132	1	2007			
Stad/Brunn Phase 1	(with VAB Tronic)	33	60	1	2006			
Hörwalting Phase 1	(with VAB Tronic)	19	19	1	2006			
Christinedorf	(with VAB Tronic)	71	90	1	2006			
Doberlug Ost	(with VAB Tronic)	59	150	1	2006			
Scheppenbachtal Phase 1	(with VAB Tronic)	25	25	1	2006			
Mainleus	(with VAB Tronic)	13	13	1	2005			
Oberporing	(with VAB Tronic)	57	57	1	2005			
Cham Phase 3.BA	(with VAB Tronic)	61	61		2005			
Schmalensee		50			2005			
Barenklau	(with VAB Tronic)	78	78	1	2005			
Gressenwohr	(with VAB Tronic)	68	76	1	2005			
Ernsgaden		20			2005			
Jena		8			2005			
Genderkingen		6	6		2004			
Schmalensee		10	10		2004			
Bitterfeld (Retrofit)	(with VAB Tronic)	8	8		2004			
Basel				1	2004			
Athen/Flisvos	(with VAB Tronic)	7		1	2004			
Stavenhagen (Midjetstation)	(with VAB Tronic)	12	12	1	2004			
Blaibach	(with VAB Tronic)	55	55	1	2004			
Triftlfing		43	43	1	2004			
Altenwillershagen/Ahrenshagen	(with VAB Tronic)	89	420		2004	2005		
Guben Phase 2 + 3 + 4	(with VAB Tronic)	59	59		2004	2005		
Cham Phase 2	(with VAB Tronic)	60	60		2004			
Pirow/Bresch	(with VAB Tronic)	60	126	1	2003			
Schonebeck	(with VAB Tronic)	45	45	1	2003			
Guben Phase 1	(with VAB Tronic)	19	19	1	2003			
Altenwillershagen	(with VAB Tronic)	24	75	1	2003			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Cham Phase 1	(with VAB Tronic)	58	58	1	2003			
Berlin Spandau	(with VAB Tronic)	14	200	1	2002	2003		
Thurungen	(with VAB Tronic)	35	85	1	2002	2003		
Dasswang	(with VAB Tronic)	158	170	1	2002	2006		
Chemiepart Erweiterung								
Glauberstrasse Retrofit		17	17	1	2002	2006		
Kablow Retrofit		40	40	1	2002			
Bohlendorf	(with VAB Tronic)	8	120	1	2002	2005		
Berlin Charlottenburg Ost 1	(with VAB Tronic)	21	260	1	2001			
Berlin Charlottenburg Ost 2	(with VAB Tronic)	16	180	1	2001			
Groben		106	106	1	2001			
Grost Retrofit		38	90	1	2001			
Kablow		301	320	1	2001	2006		
Parkstetten		18	18	1	2001			
Tricat Industrial		4	1	1	2001			
Wentdorf / Cumlosen		205	225	1	2001			
Edengarten		80	220	1	2000	2006		
Berlin Charlottenburg	(with VAB Tronic)	133	2500	1	2000	2002		
Deggendorf Phase 1		103	103	1	2000			
Grost Retrofit		32	50	1	2000			
Jena Phase 1, 2,3, 4		337	337	1	1999	2002		
Karstadt		73	73	1	1999	2000		
Rudisleben Phase 1,2		185	185	1	1999	2000		
Burgheim		45	45	1	1998			
Wathlingen		45	45	1	1998			
Winkel Phase 1, 2, 3		289	289	1	1997	1999		
Campingplatz Niemtsch 1,2,3		22	190	1	1997	1999		
Schwarza Industrial	(with VAB Tronic)	64	64	1	1997	1998		
Probfeld		40	40	1	1997			
Rosa		22	22	1	1997			
Tornau		190	190	1	1997			
Schwemsal		185	235	1	1996	1997		
Goldenstedt Retrofit		8	8	1	1996			
Braunschweig		68	68	1	1995	1996		
Genshagen		60	280	1	1995	1996		
GERMANY TOTAL		4345	8673	56				
Flisvos Harbour	Athens	8	12	1	2004	Harbour Authority of Athens		
GREECE TOTAL		8	12	1				

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Ujlengyel-Pusztavacs	Pest	254	1270	3	2005	Ujlengyel-Pusztavacs		16.1 km
Furta	Hajdu	161	566	1	2002	Zsaka Furta	3140	11.3 km
Zsaka	Hajdu	183	741	1	2002	Zsaka Furta	3140	12.9 km
Korsladany Phase 1	Bekes	144	686	1	2002	Korsladany	2050	9.7 km
Berettyoujfalu Phase 2	Hajdu	179	1363		2001	Berettyoujfalu	3600	11.9 km
Kondoros Phase 1	Bekes	130	698	1	2001	Kondoros	2100	9.4 km
Alsonemedi	Pest	451	1975	2	1998	Alsonmedi	4800	26.7 km
Hernad	Pest	323	1250	1	1998	Hernad	3500	29.8 km
Berettyoujfalu Phase 1	Hajdu	105	505	2	1997	Berettyoujfalu	1300	6.0 km
HUNGARY TOTAL		1930	9054	12				
Allenwood	Kildare	35	90	1	2005	UC County Kildare		
IRELAND TOTAL		35	90	1				
Correzzola-Cive (PD)	Veneto	25	50	1	2003			1307m
Venice S Erasmo Island (VE)	Veneto	125		1	2003	2006		8765m
Venice SS Giovanni E Paolo								
Hospital (VE)	Veneto	53		1	2002	2003		1064m
Venice GB Giustinian (VE)	Veneto	22	50	1	1995	1996		911m
Saonara (PD)	Veneto	37	70	1	1993	1994		2100m
Ceneselli (RO)	Veneto	19	30	1	1992			
ITALY TOTAL		281	200	6				
Kazuno City Yuze	Akita	13		1	2010			.7Km
Shimonoseki City Kikugawa	Yamaguchi	477		5	2010			
Yatomi City Jyuushiyamaseibu	Aichi	60		1	2009			8.1Km
Sakura City	Tochigi	58		1	2009			
Matsushige City Nagahara	Tokushima	18		1	2009			1.2Km
Tsuruoka City Watamae	Yamagata	164		1	2007			
Kure City Hirokotsubo	Hiroshima	4		1	2007			1.0Km
Mima City Anabuki	Tokushima	63		1	2006			2.3Km
Kuwana City Nagashimahokubu	Mie	241		1	2006			13.1Km
Uken Town Uken-chuo	Kagoshima	51		1	2006			
Kouhoku Town Kamisou	Saga	27		1	2005			1.8Km
Takashima City Oota	Siga	55		1	2005			1.5Km
Kooriyama City Suimon	Fukushima	26		1	2005			0.7Km
Tsuyama City Hitori	Okayama	50		1	2005			1.5Km
Hamada City Kawaichi	Shimane	50	165	2	2005			7.8Km
Shimonoseki City Yoshiga	Yamaguchi	72	265	2	2005			10.1Km
Minamiawaji City Maruyama	Hyougo	30	323	1	2005			3.9Km
Sakata City Gunnkyou	Yamagata	83		1	2005			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Moseushi City Moseushi	Hokkaido	382		1	2005			
Maibara City Tawada	Shiga	73		1	2004			3.4Km
Tsuyama City Kume	Okayama	200		2	2004			10.8Km
Tamana City Oobiraki	Kumamoto	150	310	1	2004			8.0Km
Shyouwa Town Shimosyouwa	Fukushima	5	30	1	2004			0.6Km
Yatomi City Jyuushiyamaseibu	Aichi	200	1091	2	2004			23.3Km
Sanjyou City Honnjyouji	Niigata	140	318	1	2003			6.8Km
Maibara City Samegaikita	Shiga	36		1	2003			0.9Km
Maibara City Samegainishi	Shiga	9		1				0.3Km
Maibara City Samegaihigashi	Shiga	76		1	2003			2.9Km
Iki City Cyuuou	Nagasaki	75		1	2003			1.5Km
Kisugi Town Hinobori	Shimane	122	300	1	2003			
Iwaki Prefecture Nagai	Fukushima	69	131	1	2003			
Kawasato Town Kamiege	Saitama	47	84	1	2003			
Kohoku Town Haccho	Saga	184	190	1	2003			
Urakawa Town Ogibushi	Hokkaido	76	208	1	2003			
Shin-asahi Town Warazono	Shiga		182	1	2002			
Tamagawa Town Oura	Yamaguchi	8	23	1	2002			
Kaihu Town Kawanishi	Tokushima	228	205	1	2001			
Maibara Town Samegai	Shiga	113		1	2001			
O'mi Town Terakura	Shiga	51		1	2001			
Tobishima Village Takenogo	Aichi	55		1	2001			
Kogota Town Hirabari	Miyagi	101		1	2000			
Nango Town First District	Miyagi	250	471	1	2000			
O'ami-shirasato Town	Chiba	234		1	2000			
Uken Village Hirata	Kagoshima	43	101	1	2000			
Uken Village Taken	Kagoshima	11		1	2000			
Yatomi Town Hiroomi	Aichi			1	2000			
Yatomi Town Hokuseibu	Aichi	86		1	2000			
Yokahama City								
Minami-hommoku	Kanagawa	11		1	2000			
Jushiyama Village Hokubu	Aichi	184	343	1	1999			
Kikukawa Town Kamitabe	Yamaguchi	40	292	1	1999			
Kogota Town Ogizone	Miyagi	145	142	1	1999			
Kohoku Town Sarushi	Saga	315	450	1	1999			
Nakajima Town Kasashiho	Ishikawa	108	297	1	1999			
Shirako Town Third District	Chiba	556	556	1	1999			
Uken Village Ashiken	Kagoshima	90		1	1999			
Inagaki Village	Aomori	74	116	1	1998			
Isawa Town Atago	Iwate	360	368	1	1998			
Kogota Town Nakazone	Miyagi	190	165	1	1998			
Matsubushi Town	Saitama	80		1	1998			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Nagato City	Yamaguchi	60	148	1	1998			
Rokugo Town	Akita	150	1000	1	1998			
Seto Town	Okayama			1	1998			
Tamagawa Town	Yamaguchi	60	270	1	1998			
Uken Village Chuo	Kagoshima	94	320	1	1998			
Yokoshima Town Kuban	Kumamoto	150		1	1998			
Yuge Town	Ehime	211	753	1	1998			
Esashi Town	Iwate	78	157	1	1997			
Isawa Town Tsuji	Iwate	102		1	1997			
Mobara City	Chiba	520		1	1997			
Onga Town	Fukuoka	50	95	1	1997			
Onishi Town	Ehime	130	301	1	1997			
Shin'asahi Town	Shiga	130	420	1	1997			
Sobetsu Town	Hokkaido	52	140	1	1997			
Tsushima Town	Ehime	31		1	1997			
Kazuno City	Akita	60		1	1996			
Nango Town Fourth District	Miyagi	121	190	1	1996			
Nango Town Third District	Miyagi	326	567	1	1996			
Ota-ku	Tokyo	1		1	1996			
Tobishima Village	Aichi	120	204	1	1996			
Yokkaichi City	Mie	123	602	1	1996			
Isawa Town Kuyozuka	Iwate	235	336	1	1995			
Kikukawa Town Chuo	Yamaguchi	300	1007	1	1995			
Nango Town Second District	Miyagi	302	524	1	1995			
Shirako Town Second District	Chiba	806	796	1	1995			
Yokoshima Town Kurinoo	Kumamoto	244	441	1	1995			
Yokoshima Town Kyodomari	Kumamoto	163	302	1	1995			
Moseushi Town	Hokkaido	386	803	1	1994			
Okayama City	Okayama	26	119	1	1994			
Sapporo City	Hokkaido	15	16	1	1994			
Yahaba Town	Iwate	340	509	1	1994			
Miasa Town	Tottori	50		1	1993			
Yokoshima Town Yokoshima	Kumamoto	123	184	1	1993			
Hamamatsu City	Shizuoka	140	798	1	1992			
Shirako Town First District	Chiba	312	312	1	1992			
Saijo City	Ehime	78	215	1	1991			
Sanwa Village	Niigata	73	144	1	1991			
JAPAN (E) TOTAL		12881	18799	104				

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Kogota Town	Miyagi	155		1	2003			
Yokkaichi City	Mie	8		1	2003			
Yokohama City Isesaki	Kanagawa	10		1	2003			
Yokohama City Naka-ku	Kanagawa	26		1	2003			
Yokohama City Nishi-ku Chuo	Kanagawa	16		1	2003			
Wakayama City Kusumoto	Wakayama	54		1	2003			
Noichi Town	Kouchi	59	230	1	2002			
Saya Town Chuo	Aichi	123		1	2001			
Kamitonda Town	Wakayama	239	420	1	2001			
Saya Town	Aichi	123		1	1998			
Yakake Town	Okayama	57		1	1998			
Hirata Town	Yamagata	100	216	1	1997			
Isawa Town	Iwate	200	370	1	1997			
Tsuroka City	Yamagata	36	99	1	1997			
Saya Town	Aichi	234	848	1	1996			
Shibetsu City	Hokkaido	176		1	1996			
Yahaba Town	Iwate	114	215	1	1996			
Fujishima Town	Yamagata	181	446	1	1995			
Nobeoka City	Miyazaki	100	736	1	1995			
Kikukawa Town	Yamaguchi	125	287	1	1994			
JAPAN (H) TOTAL		2136	3867	20				

Inashiki-Shi	Ibaraki			1	2009			
Aishin Light Metal	Toyama			1	2007			
Yokohama City (Station only)	Kanagawa			1	2006			
Hanoura-Nishi	Tokushima			1	2005			
Hachikai Vlg Hachikai-hokubu	Aichi		167	1	2003			
Hachika Vlg Hachikai-nambu	Aichi		200	1	2003			
Hachikai Vlg Hutako	Aichi	95	276	1	2003			
Kamimine Town Emukae	Saga	273	290	1	2003			
Hachikai Vlg Hachikai-chubu	Aichi	71	162	1	2002			
Yawara Village	Ibaraki		195	1	2002			
Hachikai Village / Higashikawa	Aichi	61	135	1	2001			
Nanao City	Ishikawa	44	162	1	2001			
Tako Town	Chiba	82	288	1	2001			
Hachikai Village Akame	Aichi	57	168	1	2000			
Yoshikawa Town	Niigata	83	233	1	2000			
Nagato City	Yamaguchi	61	229	1	1999			
Sanagouchi Village	Tokushima	130	168	1	1999			
Simokamakari Town	Hiroshima	88	383	1	1999			
Hachikai Village	Aichi	95	188	1	1998			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Konan Town	Saitama	134	315	1	1998			
Hirata Town	Gifu	200	335	1	1997			
Kotake Town	Fukuoka	84	230	1	1997			
Yuubetsu	Hokkaido	65	132	1	1997			
Katsuura Town	Tokushima	112	269	1	1996			
Utsunomiya City	Tochigi	14		1	1996			
Akiho Town	Yamaguchi	109	212	1	1995			
Fukui City	Fukui	94	287	1	1995			
Karuizawa Town	Nagano	42	160	1	1994			
Konan Town	Saitama	140	325	1	1994			
Nanno Town	Gifu	14	50	1	1994			
Kamimine Town	Saga	128	200	1	1993			
Kaizu Town	Gifu	6	142	1	1992			
Oshino Village	Yamanashi	190	490	1	1991			
Kawamoto Town	Saitama	3		1	1990			
JAPAN (K) TOTAL		2475	6391	34				

Pyeongtaek K-6 Dujung	Kyunggido	85	450	1	2010	UC	Pyeongtaek City
Shingori Nuclear Power Plant (#3,4)	Kyungsang bukdo	16	30	1	2010	UC	Korea Hydro & Nuclear Power
Seocheon	Chungcheong namdo	190	950	1	2009		Seocheon City
Nuclear Low & Intermediate Level Waste Disposal	Kyungsang bukdo	6	8	1	2009		Korea Hydro & Nuclear Power
Shinwolsung Nuclear Power Plant (#1,2)	Kyungsang bukdo	16	30	1	2008		Korea Hydro & Nuclear Power
Hyundai Steel	Chungcheong namdo	120	150	4	2008		Hyundai Steel
Gyeongju	Kyungsang bukdo	220	1120	2	2008		Korean Environmental Mgmt
POSCO Extension(Finex #2)	Kyungsang bukdo	10	40	0	2007		POSCO
Shingori Nuclear Power Plant (#1,2)	Kyungsang bukdo	13	30	1	2007	UC	Korea Hydro & Nuclear Power
POSCO Extension (Finex)	Kyungsang bukdo	12	50	0	2006		POSCO
Naegak	Kyunggido	36	150	1	2006		Korean Environmental Mgmt
Shinwol	Kyunggido	55	220	1	2006		Korean Environmental Mgmt
POSCO 2nd	Kyungsang bukdo	36	35	2	2005		POSCO
POSCO 1st	Kyungsang bukdo	37	35	1	2005		POSCO
HYNIX 2nd	Kyunggido	80	41	2	2004		HYNIX
HYNIX 1st	Kyunggido	73	45	2	2004		HYNIX
Doyang	Jeonra namdo	13	40	1	2004		Korean Environmental Mgmt
Samsung Electronics Suwon Plant - 2 new vacuum stations	Kyunggido			2	2003		Samsung Electronics
Kwangju	Kyunggido	72	232	1	2001		Korean Environmental Mgmt
Samsung Electronics Suwon Plant Extension	Kyunggido	36	18	0	2001		Samsung Electronics
Samsung Electronics Suwon Plant	Kyunggido	270	155	5	1994		Samsung Electronics
KOREA TOTAL		1396	3829	30			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Palemona	Litvia	67	100	1	2000		600	
LITHUANIA TOTAL		67	100	1				
Indah Pulau		110	130	1	2004	JAKS		
MALAYSIA TOTAL		110	130	1				
Foviste (Ciudad de la Carmen)	Campeche	23	200	1	2009	SMAPAC		
Mahahual - Phase 2	Quintana Roo	33	280	0	2008	CAPA		
Chiquila	Quintana Roo	36	18	1	2005	CAPA		
Holbox	Quintana Roo	84	880	1	2004	CAPA		
Mahahual	Quintana Roo	42	240	1	2002	CAPA		
Villas Chactemal	Quintana Roo	12	25	0	2002	Grupos Doms		
San Manuel	Campeche	26	180	1	1999	SMAPAC		
Isla Mujeres Retrofit	Quintana Roo	28	240	1	1999	Aguakan		
Progreso Zone 1	Yucatan	100	886	2	1999	SMAPAP		
Campeche	Campeche	178	887	2	1997	SMAPAC		
Chetumal Phase 1	Quintana Roo	159	1861	2	1997	CAPA		
Flamboyanes	Yucatan	138	1100	1	1982	SMAPAP		
MEXICO TOTAL		859	6797	13				
GW Amstelveen Extension		68			1998			
GW Gramsbergen Extension		42			1997			
GW Hardinxveld Giessendam								
Extension		15			1997			
GW Leiden Extension		10			1997			
GW Oirschot Extension		62			1997			
GW Amstelveen Extension		27			1996			
GW Dantumadeel Extension		32			1996			
GW Gramsbergen Extension		20			1996			
North Refinery		26		1	1995			
GW Dantumadeel		1		1	1988			
GW Huissen		16			1988			
GW Soest		1			1988			
GW Zevenaan		2		1	1988			
GW Neerynen		118		1	1986			
GW Neerynen		82			1986			
GW Soest		5		1	1986			
GW Heesch Project Wijstraat		59		1	1985			
GW Wijchen		32		1	1985			
GW Zeeland Project Graspeel		112		1	1985			
GW Zevenaar Project Babberich		115		1	1985			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
GW Kollum Project Triemmen		49		1	1984			
GW Soest Project Wieksloterweg		72		1	1984			
GW Wijchen Div. Projecten		188		1	1984			
GW Zevenaar Project Uitbreiding Ooy		16		1	1984			
Heidemij Project GW Geffen		58		1	1984			
GW Hoogeveen GW								
Zuidwolde Project Alteveer		68		1	1983			
GW Huissen Project de								
Hoeve 1e Ease		48		1	1983			
GW Zevenaar Project Ooy		69		1	1983			
GW Edam-Volendam								
Project Oorgat		33		1	1982			
GW Haskerland Project Rohel		54			1982			
GW Haskerland Project								
St. Johannesga		74		1	1982			
GW Valburg Project Hervelo		114		1	1982			
NETHERLANDS TOTAL		1688	0	20				
Khasab		52	169	1	2001	Sultanate of Oman - Ministry of Regional Municipalities		
OMAN TOTAL		52	169	1				
Celestynow Phase IX		76			2011			
Celestynow Phase X		11			2011			
Gmina Rokietnica		4			2011			
Rzgow Phase 2011		14			2011			
Gmina Rokietnica		30			2010			
Rzgow Phase IId		49			2010			
Rzgow Phase IIc		104			2009			
Rzgow Phase IIb		70			2008			
Rzgow Phase IIa		41			2007			
Celestynow		96			2006			
Halinow		65			2006			
Imielin Phase 1		187		2	2006			
Rzgow Phase 1		160			2006			
Celestynow 2.stage		180		0	2003			
Celestynow B		57		0	2003			
Duszniki		31		1	2003			
Gmina Celestynow m. Glina		57		1	2003			
Gmina Rakoniewice m.								
Rostarzewo		50		1	2003			

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Gmina Rokietnica 3.stage		15		0	2003			
Gmina Rokietnica 4.stage		136		0	2003			
Miasteczko Slaskie		240		1	2003			
Potworow 2		30		0	2003			
Tworog		112		1	2003			
Wielbark		100		1	2003			
Celestynow 1.stage		30		0	2002			
Gmina Rokietnica 2.stage		126		2	2002			
Warszawa Ursynow - Natolin Zachod		38		1	2002			
Gmina Ilowa		579		2	2001	2002		
Gmina Rokietnica 1.stage		90		1	2001			
Lesznawola		137		1	2001	2002		
Potworow 1		33		1	2001	2002		
Gmina Miescisko		193		1	2000			
Jedlnia Letnisko		55		1	2000			
Zakrzew		150		1	2000			
Gmina Ludwin m. Kaniwola		54		1	1999			
Gmina Zakrzew m. Milejowice		150		1	1998			
Miasto Olawa os. Odrzanska		144		1	1998	1999		
Miasto Skoko		104		1	1998	1999		
POLAND TOTAL		3798	0	23				
Almada Aroeira		32		1	2000	Silcoge SA / CM Almada	500	
PORTUGAL TOTAL		32	0	1				
Cantera	PR	505	1170	1	2010	Puerto Rico Water & Sewer Auth.		
Culebra	PR	230	600	1	2009	Puerto Rico Water & Sewer Auth.		
Barrio Obrero South - Phase I	PR	270	900	1	2008	Puerto Rico Highway Authority		
PUERTO RICO TOTAL		1005	2670	3				
Doha Block 1200 Vacuum Sewerage		54	129	1	1995	Ministry of Municipal Affairs & Agriculture Doha, Qatar		
QATAR TOTAL		54	129	1				
Archerfield Extension	East Louthian	10			2010	Caledonian Heritable Ltd		
Drum	Perth & Kinross	61	150	1	2006	Scottish Water		
Archerfield Golf	East Louthian	59	200	1	2005	Caledonian Heritable Ltd		
SCOTLAND TOTAL		130	350	2				
Vajnory 1st Stage	Bratislava (SR)	78	235	1	1998		2500	
SLOVAKIA TOTAL		78	235	1				

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Dornava		37		1	2006			
Logatec		16		1	2004	UC		
SLOVENIA TOTAL		53	0	2				
Empuriabrava Phase 3	Catalunya	118		1	2010	UC		Town Hall Castello d'Empuries
Empuriabrava Phase 4	Catalunya	83		1	2009	UC		Town Hall Castello d'Empuries
America's Cup	Valencia	26	60	1	2005			Consorcio 2.007
Marxuquera Phase 1	Valencia	35		1	2005			Town Hall of Gandia
Callosa del Segura	Valencia	118	535	1	2005			Generalitat Valenciana
IMT Tarragona	Catalunya	12	32	1	2005			International Marina Tarraco
Marenys de Rafalcaid	Valencia	131	472	1	2005			Town Hall of Gandia
Gandia Playas	Valencia	25	25	1	2004			Private Company
Roses Harbor	Catalunya	7	21	1	2004			Generalitat Harbors Authority
Vilanovia i la Geltru Harbor	Catalunya	8	15	1	2004			Generalitat Harbors Authority
Arenys de Mar Harbor	Catalunya	7	10	1	2003			Generalitat Harbors Authority
Barcelona Maremagnum								
Port 2,000	Catalunya	55	115	1	2003			Barcelona Harbor Authority
Empuriabrava Phase 2	Catalunya	90	962	1	2003			Town Hall Castello d'Empuries
Barcelona Commercial Harbor	Catalunya	39	49	1	2001			Barcelona Harbor Authority
Empuriabrava Phase 1	Catalunya	72	870	1	1999			Town Hall Castello d'Empuries
SPAIN TOTAL		826	3166	15				
Pen Bay Racetrack - Phase 2	Pingtung	12		0	2012			Pen Bay Co.
Pen Bay Racetrack - Phase 1	Pingtung	22		1	2011			Pen Bay Co.
TAIWAN TOTAL		34	0	1				
Muang Thong Bangna		60		1	1992			Bangkok Land Company
THAILAND TOTAL		60	0	1				
Madinat Jumeirah	Dubai	7		1	2004			Madinat Jumeirah
UNITED ARAB EMIRATES TOTAL		7	0	1				
Alakanuk	AK	140	130	1	95			Village of Alakanuk
Emmonak	AK	240	240	1	86			Emmonak Water & Sewer
Kaktovik (NSB)	AK	100	100	1	2002			North Slope Borough
Kotlick	AK	75	84	0	98			Native Health Service
North Slope Borough	AK	205	205	0	2000			North Slope Borough
Point Hope (NSB)	AK	220	220	1	99			North Slope Borough
Savoonga	AK	43	43	0	98			Native Health Service
Selawik	AK	80	80	1	96			Village of Selawik
Mobile / Scott Paper	AL	28	0	1	72			Turner Supply

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Calico Rock	AR	93	150	1	93	City of Calico Rock		
Oppelo	AR	159	300	2	96	City of Oppelo		
Ward	AR	84	250	1	94	Ward City Hall		
Fallen Leaf Lake S. Tahoe	CA	13	200	1	82	Lake Tahoe P.U. District		
New Haven Train Station	CT	30	30	1	95	New Haven Train Station		
Apalachicola	FL	508	1,176	1	2002	City of Apalachicola		
Bay Point	FL	161	348	1	2005	F.K.A.A.		
Carrabelle	FL	286	793	1	2002	City of Carrabelle		
Carrabelle Extension	FL	67	237	0	2003	City of Carrabelle		
Cedar Grove, CDBG	FL	25	52	1	2001	City of Cedar Grove		
Cedar Grove, North & South	FL	410	900	1	2003	City of Cedar Grove		
Dinner Key	FL	135	250	1	94	City of Miami		
Eastpoint, Ph 1-2	FL	315	541	2	75	Eastpoint Water & Sewer		
Englewood, AV4 & AV5	FL	24	75	0	2000	Englewood Water District		
Englewood, V1 Ph 1, 3-8	FL	420	2,000	1	96	Englewood Water District		
Englewood, V2 Ph 2	FL	415	1,100	1	99	Englewood Water District		
Englewood, V3	FL	482	1,300	1	2000	Englewood Water District		
Englewood, V4	FL	423	1,129	1	2000	Englewood Water District		
Englewood, V5	FL	210	539	0	2000	Englewood Water District		
Englewood, V6	FL	344	420	1	2003	Englewood Water District		
Englewood, V6 Private	FL	24	24	1	99	Englewood Water District		
Englewood, V7	FL	189	500	1	2004	Englewood Water District		
Englewood, V8	FL	133	460	0	2003	Englewood Water District		
Gulfstream Park	FL	46	524	1	2004	Gulfstream Park		
Indian River/Rockridge	FL	257	400	1	2008	Indian River County		
Key Largo Basin BCD/Lake Surprs.	FL	1,020	2,900	2	2009	KLWTD		
Key Largo TPTV	FL	201	612	1	2006	Key Largo WW Treatment Distr.		
KLWWTD Area A	FL	321	903	1	2010	KLWWTD		
KLWWTD Area D	FL	230	803	1	2010	KLWWTD		
KLWWTD Area E/F	FL	537	2,110	1	2010	KLWWTD		
KLWWTD Area G/H	FL	360	1,441	1	2010	KLWWTD		
KLWWTD Area I	FL	477	1,906	1	2010	KLWWTD		
KLWWTD Area J/K	FL	538	2,150	1	2010	KLWWTD		
Lake Forest	FL	413	965	1	2009	J.E.A.		
Lanark Village	FL	88	450	1	91	Lanark Water & Sewer		
Little Venice & Extension	FL	371	840	1	2004	F.K.A.A.		
Longwood	FL	20	39	1	96	City of Longwood		
Loxahatchee Nature Ctr	FL	1	1	1	95	City of West Palm Beach		
Marathon Area 3	FL	177	407	1	2010	City of Marathon		
Marathon Area 5	FL	454	1,240	1	2010	City of Marathon		
Marathon, Area 4	FL	317	792	1	2009	City of Marathon		
Marathon, Area 6 + Alt 4	FL	114	276	1	2009	City of Marathon		

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Marathon-Marlin Bay Yacht Club	FL	37	82	1	2008			
Marathon-Sombrero Beach Road	FL	36	79	0	2007	City of Marathon		
Martin Co., Lighthouse / Seagate	FL	139	500	1	2005	Martin Co. Utilites & SWD		
Martin County (Canopy Creek)	FL	159	240	1	2010	Martin Co. Utilites & SWD		
Martin County (North River Shores) ph 1	FL	176	525	1	2010	Martin Co. Utilites & SWD		
Oakwood Villa	FL	459	1,311	1	2008	J.E.A.		
Ocean Reef	FL	175	275	1	2002	North Key Largo Utility Corp.		
Okeechobee Ousley Estates	FL	70	81	1	2002	Okeechobee Utility Authority		
Okeechobee Taylor Creek West	FL	310	1,356	1	2004	Okeechobee Utility Authority		
Pattersontown	FL	35	70	1	91	City of Milton		
Ponte Vedra Beach	FL	368	811	1	2005	J.E.A.		
Sanford, Ph 1-4	FL	400	1,250	1	90	City of Sanford		
Sarasota Area D	FL	493	1,163	1	2009	Sarasota County		
Sarasota Area N	FL	690	1,900	1	2010	Sarasota County		
Sarasota, Area C	FL	346	629	1	2008	Sarasota County		
Sarasota, Area E	FL	229	565	1	2003	Sarasota County		
Sarasota, Area F	FL	448	1,150	1	2005	Sarasota County		
Sarasota, Area K East	FL	594	1,323	1	2009	Sarasota County		
Sarasota, Area K West	FL	710	1,294	1	2009	Sarasota County		
Scott Mill	FL	293	320	1	2008	J.E.A.		
Silver Palms (RV Park) Ph 1	FL	63	230	1	2010	Okeechobee Utility Authority		
Stock Island	FL	119	1,200	1	2003	Keys Environmental		
Village of Palm Springs	FL	53	91	1	99	Village of Palm Springs		
VPS, 10th & Kirk	FL	164	350	1	2005	Village of Palm Springs		
VPS, YMCA/ Congress	FL	179	350	1	2000	Village of Palm Springs		
Waterside Pointe -Phase 1	FL	131	288	1	2008	Ryland Homes		
Sarasota, Area A	FL	383	1,150	1	2005	Sarasota County		
Ivey, Lake Tchukolako	GA	265	500	2	2003	Town of Ivey		
Peoria/Keystone Steel	IL	14	14	1	76	Keystone Steel		
Adams Lake	IN	209	389	3	92	Adams Lake Sanitary District		
Bruceville	IN	120	300	1	2009	Town of Bruceville		
Country Squire Lake (N. Vernon)	IN	500	950	7	74	Jennings NW Regional		
Foxcliff/Mapletown (Martinsville)	IN	38	38	1	73	Mapletown Utilities		
Gnawbone	IN	50	106	1	2000	Gnawbone Reg. Sewer Distr.		
JNRU	IN	550	1,200	8	UC	Jennings NW Regional		
Lafayette	IN	30	0	1	77	Information Confidential		
Lake Bruce	IN	132	324	2	2008	Lake Bruce Sewer District		
Lake Manitou	IN	435	775	3	88	City of Rochester		
Monterey	IN	77	122	1	2001	Town of Monterey		
Montezuma	IN	256	472	1	UC	City of Montezuma		
North Webster	IN	212	410	2	94	Town of North Webster		
Oaktown	IN	136	336	1	99	Town of Oaktown		

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Pine Lake (LaPorte)	IN	77	160	1	98	Pine Lake Conservancy Dist.		
Plainville	IN	163	270	1	75	Town of Plainville		
Rome City / West Lakes RSD	IN	155	320	1	2008	West Lakes RSD		
Silver Lake	IN	192	300	2	92	Silver Lake Utilities		
Skinner Lake (Albion)	IN	70	145	1	97	Skinner Lake Reg. Sewer Dist.		
Stockwell	IN	132	197	1	2004	Lauramie Township RSD		
Tri-Lakes (Columbia City)	IN	540	1,000	4	94	Tri-Lakes Sewer District		
Tri-Lakes, Big & Loon Lakes	IN	320	700	2	2001	Tri-Lakes Sewer District		
Witmer Lake/Wolcottville	IN	115	225	1	96	Town of Wolcottville		
Wolcottville North	IN	275	500	1	99	Town of Wolcottville		
Alton	KY	210	430	4	87	Alton Water & Sewer District		
Baton Rouge/Poulene	LA	8	8	1	74	Rhone Poulene		
Barnstable, Route 28	MA	39	40	1	2002	Town of Barnstable		
Plum Island	MA	580	1,056	1	2006	City of Newburyport		
Provincetown	MA	259	2,265	1	2003	Town of Provincetown		
Bay City	MD	223	750	1	95	Queen Anne's Co. San. District		
Cedar Cove/Spyglass	MD	19	156	1	85	St. Mary's/Oxford Association		
Cloverfields	MD	336	950	1	94	Queen Anne's Co. San. District		
Crisfield	MD	157	300	1	97	Somerset Co. Sanitary District		
Fairmount/Somerset	MD	159	238	1	81	Somerset Co. Sanitary District		
Queen Anne's County	MD	1,300	3,500	12	81	Queen Anne's Co. San. District		
St. Michaels/Martingham	MD	140	175	1	72	Martingham Utilities		
Swan Point/Charles Co. (LaPlata)	MD	109	175	1	88	Charles Co. Public Utility		
Gregory	MI	63	231	1	2002	Multi-Lake Reg. Sewer District		
Patterson Lake/Kaiserville	MI	157	320	1	2002	Multi-Lake Reg. Sewer District		
Iron Mountain Lake	MO	241	368	1	2000	City of Iron Mountain Lake		
Poplar Bluff, East Butler	MO	227	443	1	2003	East Butler Sewer District		
Caswell Beach	NC	136	358	1	UC	Town of Caswell Beach		
Eagle Crk/Mill Run (Moyock)	NC	152	423	1	99	Arland Community Develop.		
Grimesland	NC	97	228	1	2003	City of Grimesland		
Holden Beach Service Area 1	NC	480	1,352	1	2006	Town of Holden Beach		
Holden Beach Service Area 2-3-4	NC	830	1,575	3	2006	Town of Holden Beach		
Locust/Brown's Hill	NC	46	108	1	98	City of Locust		
Locust/Meadow Creek Church	NC	161	322	1	2000	City of Locust		
New Bern/Haywood	NC	43	130	1	94	City of New Bern		
New Bern/Highway 55	NC	40	75	1	94	City of New Bern		
New Bern/Pembroke	NC	97	150	1	94	City of New Bern		
New Bern/Woodrow	NC	45	90	1	94	City of New Bern		
North River Club Beaufort Ph 1	NC	61	158	1	2007	Town of Beaufort		
Northwest	NC	120	238	1	2009	City of Northwest		
Oak Island Ph 1	NC	1,200	2,600	3	2009	Town of Oak Island		
Oak Island Ph 2	NC	2,400	7,200	6	2010	Town of Oak Island		

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Stanfield	NC	129	190	1	2001	Town of Stanfield		
Sunset Beach	NC	597	1,085	1	UC	Brunswick County		
Trentwoods	NC	586	854	2	2004	City of New Bern		
Alloway	NJ	98	190	1	2009	Alloway Township		
Albuquerque NV Area B & F	NM	184	628	1	2000	City of Albuquerque Water Utility		
Albuquerque NV Area C	NM	36	72	0	2003	City of Albuquerque Water Utility		
Albuquerque NV Area D Ph 1	NM	215	500	1	2003	City of Albuquerque Water Utility		
Albuquerque NV Area D Ph 2	NM	347	728	0	2004	City of Albuquerque Water Utility		
Albuquerque NV Area E	NM	76	187	0	2003	City of Albuquerque Water Utility		
Albuquerque NV Area K Ph 1 & 2	NM	162	327	1	2005	City of Albuquerque Water Utility		
Albuquerque NV Paseo del Norte	NM	246	493	1	95	City of Albuquerque Water Utility		
Albuquerque SV Coors	NM	166	378	1	2006	City of Albuquerque Water Utility		
Albuquerque SV Gun Club Ph 2	NM	264	414	1	95	City of Albuquerque Water Utility		
Albuquerque SV Gun Club Ph 4-5	NM	170	364	1	98	City of Albuquerque Water Utility		
Albuquerque SV Los Padillos Ph 1-3	NM	450	980	1	95	City of Albuquerque Water Utility		
Albuquerque SV Pajarito VI-IX Ph 1	NM	91	177	1	2003	City of Albuquerque Water Utility		
Albuquerque SV Pajarito VI-IX Ph 2	NM	145	290	1	2003	City of Albuquerque Water Utility		
Albuquerque SV Polk	NM	264	600	1	2003	City of Albuquerque Water Utility		
Albuquerque SV Polk Ph 2A	NM	298	625	0	2004	City of Albuquerque Water Utility		
San Pablo	NM	62	167	1	2004	City of Las Cruces		
San Pablo Ph 2	NM	35	55	0	2005	City of Las Cruces		
Sunland Park	NM	5	120	1	2002	City of Sunland Park		
Truth or Consequences	NM	80	150	1	96	City of Truth or Consequences		
Glen Park (Watertown)	NY	97	166	1	95	Village of Glen Park		
Jimmersontown (Salamanca)	NY	98	135	1	99	Seneca Nation of Indians		
Lafargeville	NY	142	238	1	83	Lafargeville Sewer District		
Lake Chautauqua (Celeron)	NY	868	1,800	4	86	Lake Chautauqua PSD		
Morristown	NY	144	218	1	87	Village of Morristown		
Steamburg	NY	84	84	1	UC	Seneca Nation of Indians		
Theresa	NY	141	237	1	89	Village of Theresa		
Bellwood/Geauga Co.	OH	66	66	1	99	County of Geauga		
Brayton Trail (Chardon)	OH	7	13	1	94	Geauga County		
Clifton	OH	61	126	1	94	Greene Co. Sanitary Engineer		
Crystal Lake/Medway	OH	438	975	2	94	Clark Co. Utilities		
Damascus	OH	52	96	1	2002	Mahoning Co. Bd. Of Commiss.		
Damascus Extension	OH	60	110	0	2003	Mahoning Co. Bd. Of Commiss.		
Forest, Ph 1	OH	65	146	1	2002	Village of Forest		
Forest, Ph 2	OH	79	206	0	2004	Village of Forest		
McCartyville	OH	44	100	1	2007	Shelby County Sewer District		
McGuffey, Ph 1-2	OH	142	258	1	2000	Village of McGuffey		
Montpelier	OH	50	80	1	93	Village of Montpelier		
Montpelier Extension	OH	45	82	0	2002	Village of Montpelier		

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Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.	Vacuum Main
Montpelier, Ph 2	OH	50	102	1	98	Village of Montpelier		
N. Lima/Mahoning Co.	OH	117	200	1	2001	Mahoning County		
Parkman	OH	83	130	1	2007	Geauga Co. Water Res.		
Randolph Co. / Portage	OH	43	156	1	2008	Portage Co. Water Res.		
Bend, Woodriver Village	OR	75	148	1	2002	City of Bend		
Miles Crossing	OR	331	340	1	2009	City of Miles Crossing		
Lanse/Kylertown/Winburne	PA	389	747	3	2002	Cooper Twp. Municipal Auth.		
Beallsville	PA	127	235	1	91	Borough of Beallsville		
Cooper Twp/Grassflats	PA	165	430	1	2002	Cooper Twp. Municipal Auth.		
Fripp Island	SC	356	733	1	2006	Fripp Island PSD		
Charlotte	TN	212	360	1	84	City of Charlotte		
Westmoreland	TN	486	700	4	79	City of Westmoreland		
White House	TN	349	698	2	87	City of White House		
Beach Road MUD (Matagorda)	TX	88	320	1	98	Beach Road MUD		
Caney Creek / Sargent	TX	273	741	1	2006	City of Sargent		
Canutillo	TX	59	128	1	2001	El Paso Water Utilities		
Daingerfield State Park	TX	32	86	1	UC	Texas Parks and Wildlife		
LaSalle Ranch Sanctuary Subdiv.	TX	287	750	1	2009	DH Development		
Orangefield - Phase 1	TX	180	270	1	2010	Orangefield Water Supply Corp.		
Orangefield - Phase 2	TX	195	270	1	2010	Orangefield Water Supply Corp.		
Port O'Connor	TX	523	1,121	2	2001	Port O'Connor MUD		
Port O'Connor Line Extension	TX	3	0	0	2010	Port O'Connor MUD		
Port O'Connor, Deerwood	TX	10	25	0	2002	Port O'Connor MUD		
Port O'Connor, Larry's Harbor	TX	27	45	0	2002	Port O'Connor MUD		
Surfside Beach	TX	11	20	1	2000	Village of Surfside		
Surfside Beach Ph 2	TX	186	250	0	2006	Village of Surfside		
Hooper	UT	640	1,280	3	2007	Hooper City		
Alanton	VA	161	305	1	2000	City of Virginia Beach		
Back Creek	VA	31	84	0	2006	County of York		
Calthrop Neck	VA	94	188	1	2000	County of York		
Cape Charles, Ph 1	VA	150	300	1	2001	City of Cape Charles		
Colony at Bay Creek	VA	98	152	1	2002	Baymark Construction Corp.		
Dandy (Grafton)	VA	89	204	1	98	County of York		
Dare (Grafton)	VA	229	473	1	99	County of York		
Dare, Ph 3 & 4	VA	119	175	0	2002	County of York		
Dozier's Bridge	VA	50	72	1	95	City of Virginia Beach		
Heron Point at Bay Creek	VA	32	50	1	2003	Baymark Construction Corp.		
High Gates Green	VA	64	80	0	96	City of Virginia Beach		
Huntersville/Suffolk	VA	12	32	1	93	City of Suffolk		
Isle of Wight/Windsor	VA	223	406	1	2000	County of Isle of Wight		
Langley Air Force Base	VA	42	92	1	2007	Langley Air Force Base		

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Vacuum
Main

Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.
Langley General Quarters	VA	80	176	1	2009	Langley Air Force Base	
Little Neck Creek	VA	207	356	1	2006	City of Virginia Beach	
Marlbank Farms/York Co.	VA	181	383	1	2006	County of York	
Mathews Courthouse	VA	150	225	1	74	H.R.S.D.	
Mt. Zion (Charles City)	VA	19	60	1	93	Charles City Co. Utility	
Nansemond Parkway	VA	50	200	1	97	City of Suffolk	
Nansemond Pkwy/Progresso Rd.	VA	49	67	1	98	City of Suffolk	
Northumberland	VA	283	472	1	2003	Northumberland County	
Patrick's Creek/Old Lakeside	VA	41	81	1	99	County of York	
Patrick's Creek/Piney Point	VA	100	215	0	2001	County of York	
Reedville	VA	87	103	1	96	Northumberland County	
Respass Beach/Harborview	VA	145	464	1	96	City of Suffolk	
Seaford, Ph 1	VA	108	275	1	95	County of York	
Seaford, Ph 2	VA	162	423	0	96	County of York	
Seaford/Claxton Creek	VA	107	204	0	2002	County of York	
Washington District/Westmoreland	VA	407	500	1	2006	Westmoreland County	
York Point, Ph 1	VA	49	118	1	2009	County of York	
Carnation	WA	304	657	1	2008	City of Carnation	
Grand Mound	WA	35	70	2	98	Thurston County	
Lower Elwah	WA	90	200	1	UC	Lower Elwah Klallam Tribe	
Ocean Shores - Sta 1	WA	7	53	1	94	City of Ocean Shores	
Ocean Shores - Sta 2	WA	878	1,400	1	96	City of Ocean Shores	
Ocean Shores- Sta 1 (new)	WA	509	1,200	1	99	City of Ocean Shores	
Ocean Shores- Sta 3	WA	1,265	1,600	1	99	City of Ocean Shores	
Ocean Shores- Sta 4	WA	582	1,200	1	99	City of Ocean Shores	
Ocean Shores- Sta 5	WA	717	1,200	1	99	City of Ocean Shores	
Ocean Shores- Sta 6	WA	405	1,600	1	99	City of Ocean Shores	
Ocean Shores- Sta 7	WA	1,036	3,500	1	99	City of Ocean Shores	
Salmon Beach/Tacoma	WA	83	83	1	91	City of Tacoma	
Vashon Island/Beulah Park	WA	30	60	1	2001	Vashon Island Sewer District	
Vashon Island/Bunker Trail	WA	25	50	1	2001	Vashon Island Sewer District	
Beech Bottom	WV	50	150	1	92	Brooke Co. PSD	
Big Sandy (Elkview)	WV	236	357	3	91	Big Sandy PSD	
Bradshaw	WV	73	147	1	94	Town of Bradshaw	
Bramwell	WV	184	300	2	94	Bluewell PSD	
Central Boaz (Parkersburg)	WV	171	355	1	88	Central Boaz PSD	
Claywood Park (Parkersburg)	WV	161	218	1	91	Claywood Park PSD	
Friendly/Ben's Run	WV	220	325	2	85	Friendly PSD	
Hancock Co. (Weirton)	WV	235	270	2	97	Hancock County	
New Cumberland	WV	101	202	1	90	City of New Cumberland	
Ohio Co. (Cedar Rocks)	WV	200	250	1	84	Ohio Co. PSD	
Ohio Co., Ph 2A (Peters Run)	WV	100	150	1	87	Ohio Co. PSD	

AIRVAC PROJECT LIST

Jun-12

Vacuum
Main

Project Name	Prefecture Region	No. Valves	No. Conn	No. Stations	Year(s)	System Owner/Client	Pop.
Ohio Co., Ph 2B (SC,BZ,SH)	WV	240	350	3	88	Ohio Co. PSD	
Pine Grove	WV	184	380	1	94	Town of Pine Grove	
Red Jacket (Matewan)	WV	130	150	1	85	Red Jacket Public Service	
Washington Lands (Moundsville)	WV	108	162	1	87	Marshall Co. PSD	
Waverly/Union Williams	WV	114	140	1	92	Union Williams PSD	
Worthington	WV	232	329	2	95	Town of Worthington	
Worthington/Idamay/Carolina	WV	119	422	1	2000	Greater Marion PSD	
UNITED STATES TOTAL		59609	136843	315			
Big Bear Lake	CA	80	80	1	1994	San Bernardino County	
Oyster Point Marina	CA	7	7	1	1998	San Mateo County	
Ocean Pines	MD	2351	5000	15	76	Worcester Co.	
Palmetto Dunes/Broadcreek	SC	262	657	2	75	Broadcreek PSD	
Virginia Beach Sandbridge	VA	614	1000	2	2001-03	City of Virginia Beach	
UNITED STATES RETROFIT TOTAL		3314	6744	21			
Nash Village	Newport	24	49	1	2002	Welsh Water	
Four Crosses Sewerage	Powys	34	120	1	1987	Severn Trent	
WALES TOTAL		58	169	2			
Canouan Resorts Ltd		41	160	2	1995		
WEST INDIES TOTAL		41	160	2			
US		59,609	136,843	315			
US Retrofit		3,314	6,744	21			
International		56,540	101,587	614			
WORLD TOTAL		119,463	245,174	950			

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Jun 22 2022

Myers Rebuttal Exhibit C

QUAVAC PROJECT LIST

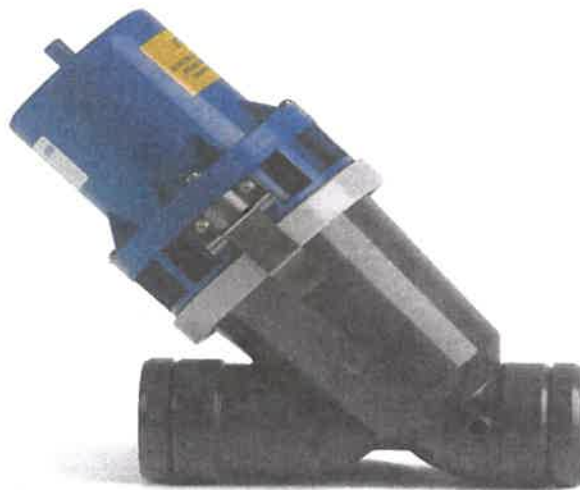
Myers Exhibit C

Green Project List



Reference list

Updated 2021



Reference list [Australia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Freemantle Sailing Club	500	2	1979
2	Station Pier	600	22	1973
3	South Wharf	200	2	1971
4	Victoria Dock	300	8	1974
5	St. Kilda Pier	450	2	1975
6	Summerhile Mobile Home Park	2010	47	1989
7	St. Kilda Peir Upgrade	450	2	1989
8	V-Line Carriage	520	1	1989
9	Tacoma	15200	295	1990
10	Pinkenba	-	24	1999/2005
11	Brighton Pathology Lab.	300	10	2012
12	Tacoma NSW		50	2017
13	Kumell (rebuild Airvac)		450	2015
14	Bonnet Bay		35	2015

Reference list [Austria](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Klagenfurt	250	9 VT / 4 GWT	1995
2	Blumenfreunde	2.500	64	1997
3	Schwendt	8.400	85	1998
4	Zirl	1.600	30	1999
5	Fritzens	1250	29	2000

Reference list [Belgium](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Recr. Park Stabo Leuven	550	4	1977
2	Zilverstrand te Mol, Recreation Area	1700	24	1990
3	Community Jabbeke Domain "Flaminckapark", Ejector station underground	1900	24	2001
4	Community Namur I	800	35	2006
5	Community Namur II	1500	75	2010
6	Dinant I	1500	45	2013
7	Dinant 2	1500	65	2014
8	Chatelet	1400	44	2015
9	Dinant 3	1600	21	2014
10	Dinant 4	1700	53	2015

Reference list [Botswana](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Kasana / Kazangula	63500	400	2015
2	Kanye	51800	547	Under construction

Reference list [Canada](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Southwestminster	40000	1000	1979
2	The District of Invermere	3000	120	1984
3	Black Tusk Village	2000	100	1983

Reference list [Denmark](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Olstykke Stationavej	2700	29	1976
2	Ledøje-Smørum.	370	7	1976
3	Aggersund	5000	48	1976
4	Skanderborg	450	6	1978
5	Purhus	650	21	1978
6	Sdr. Sejerslev.	1520	12	1978
7	Visby	2210	17	1979
8	Vestermås	2000	33	1979
9	Gundsø Jyllinge Nord	18000	187	1980
10	Hillerød	395	28	1980
11	Superfos	1250	15	1980
12	Olstykke	1580	10	1980
13	Allerød	1110	22	1986
14	Rudbøl	470	6	1990
15	Ebeltoft	3000	29	1991
16	Siltoftevej	900	12	1991
17	Emmerlev	3000	27	1994
18	Mariagerfjord Etape 3		59	2018
19	Ebeltoft			2018
20	Vejle		32	2019
21	Mariagerfjord Etape 4		95	2019
22	Ringkøbing - Skjern Forsyning		110	U.C.
23	Lalandia		110	U.C.
24	Hillrød		1	2020
25	Vestforsyning Spildevand Nørhede		120	U.C.
26	Horsens		8	U.C.

Reference list [Denmark](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Laulasma	10550	147	2019
2	Roobuka	12800	185	2020
3	Tyrisalu I		126	U.C.
4	Tyrisalu II		95	U.C.

Reference list [France](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Juvigny I	1100	21	1975
2	Juvigny II	520	18	1978
3	Juvigny III	460	18	1980
4	Souppes/Loing	1800	18	1976
5	Bethisy St. Pierre	650	11	1976
6	Longueil-Annel I	850	39	1978
7	Longueil-Annel II	1300	25	1979
8	Gujan/Mestras Camping	2400	21	1980
9	Montalivet Camping	6400	43	1981
10	Cayeux Sur Mer Camping	-	-	1981
11	Hostens	2500	40	1982
12	Ile de Ré	-	-	1983
13	Le Wafou, Cote d'Ivoire	-	-	1983
14	Bruges Le Tasta Villaboïs	-	-	1984
15	St. Pierre d'Aurillac	-	-	1984
16	Fossoy	-	-	1985
17	Hourtin Camping	-	-	1985
18	Biscarosse Camping	-	-	1985
19	Tracy le mont Community	-	-	1985
20	Romilly Camping	-	-	1985
21	Gensac Community	4385	72	1985
22	Sadirac Community	2300	45	1985
23	Gironde sur Dropt Community	3200	38	1987
24	Sahurs Community	2600	40	1987
25	Community Touffreville	1900	30	1988
26	Community Genac	4385	72	1988/92
27	Community Gironde sur Dropt	1210	13	1988
28	Community Sainte Terre	600	20	1989
29	Community Gironde sur Dropt	3490	55	1989
30	Community Gironde sur Dropt 7th.	840	11	1990
31	Comm. Sainte Terre 4th.	900	18	1990
32	Community Clères	2000	30	1991
33	Community Saint Aubin	600	13	1991
34	Comm. Sainte Terre 5/6th.	1065	25	1991
35	Community Sainte Terre	1470	30	1992
36	Community Gironde sur Dropt 8th.	810	11	1992
37	Community Daire 1st.	1600	6	1992
38	Comm. St. Aubin les Elb.	800	25	1992
39	Community Fechain	2800	50	1993
40	Community Le Havre	900	17	1993
41	Comm. Sainte Terre 8th.	1505	21	1993
42	Art sur Meurthe	1200	20	1994
43	Community Loupian	3650	52	1994
44	Community Marthon	4100	60	1995
45	Community Vorreppe	3800	59	1995/2014/2015
46	Community Le Havre, Bld. Durand	1910	28	1997
47	Community Pont à Mousson	350	11	1997
49	Community Provillie	970	20	2002
50	Community Roscy	1980	20	2003
51	Plage de Canet/Roussillon	4600	27	2003
52	Community Ury	400	3	2003
53	Community Belz-Hameau	1315	24	2003
54	Community Verberie	4000	39	2004
55	Community Le Trait	3960	40	2005

Reference list [France](#)

56	Community Bordes Aumont	4180	64	2006
57	Community Namur 1	780	29	2006
58	Community La Montagne	1500	25+14	2009
59	Community Namur 2	1550	75	2010
60	Community Sahurs Rouan	Retrofit	11	2010
61	Aerolia	600	27	2012
62	Comm. Le Havre	500	4	2012
63	Comm. Calais	600	5	2012
64	Erondelle	500	15	2013
65	Hamel L'Ecluse	895	56	2014
66	Liercourt	3400	12	2014
67	Buzancais	625	10	2015

Reference list [French Polynesia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Brando Resort	2.500	52	2012

Reference list [Germany](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Teupitz	4100	80	1997
2	Tornow	2100	65	1997
3	Neuendorf	1700	60	1997
4	Egsdorf	1420	55	1997
5	Schwerin	5500	85	1997
6	Schleswig (Rebuild Schluff)		344	2013
7	Bonauwörth		15	2013-U.C.
8	Girhorn (Rebuild Schluff)		217	2015-U.C.
9	Hardebek (Rebuild Schluff)		260	2016-U.C.
10	Markt Tüßling		10	2016
11	Teupitz II		64	2017
12	Königsmoos (rebuild Roovac)		15	2017-U.C.
13	Auwaldsee (extension)		2	2018
14	Wasserverband Wendland (extension)		3	2019

Reference list [Greece](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Faliro Marina	1051	32	2004
2	Alexandria Section I	11500	240	2008
3	Alexandria Section II	8500	225	2008
4	Olympiada	-	430	2015
5	Piragadikia	-	57	2015
6	Stratoni	-	40	2015
7	Marmaras		56	2015

Reference list [Hong Kong](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Shui Wai. Village	2.200	37	1996

Reference list [Hungary](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Szentendre town	1.216	59	1986
2	Dunakiliti village I	4800	115	1991
3	Dunakiliti village II	5700	163	1991
	Extension		15	2004

Reference list [India](#)

SL. No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Village Resort	250	10	2013
2	Goa Dhramapur	5670	77	2017
3	Agra		130	U.C.
4	Kochi		400	U.C.

Reference list [Indonesia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Graha Natura	7915	145	2013

Reference list [Ireland](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Tarbert	500	4	2014

Reference list [Italy](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Palau	1800	20	1983
2	Pinarolo po Comune	2700	25	1984
3	Pinarolo po Comune	4620	45	1987
4	Gabiano Comune	1935	8	1985
5	Avenza Centro Cm.	4000	42	1984
6	S., Benedetto Comune	13200	70	1986
7	S. Benedetto Comune	13200	70	1986
8	Cognana (SS)	800	10	1987
9	Castell. Comune	4815	31	1987
10	Belfiore (MN)	1000	40	1989
11	Roncoferraro (MN)	3200	38	1989
12	Civitavecchia (Roma)	1800	24	1989
13	Casale Monferrato Comune	17370	107	1989
14	Pescara Po	1200	12	1989
15	Verrua Po	2200	50	-
16	Genova Ist. Ital.	3000	15	1992
17	Genova Ist. Tumori	6000	50	1992
18	Portisco	9000	10	1990
19	Roversbella (MN)	2000	40	1991
20	Angiari (MN)	1800	66	1991
21	Expo '92-Genova	3000	51	1992
22	Alleghe (BL)	2200	63	1992
23	Carbonara I `	1300	19	1994
24	Carbonara II	1500	25	1995
25	Forte dei Marmi	2500	59	1995
26	Forte dei Marmi	2500	59	1995
27	Torlino Vercati	2300	50	1997
28	Urbano Venezia, All' Isola Della Giudecca	2100	360	2000
29	Venezia	-	80	2003
30	Port of Napels	-	100	2011
31	Verrua Po2200	2200	50	2015



Reference list Japan

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	"INAX Chita factory" - Industry area closed to ocean ,shipping center , office , restaurant and factories in Aichi prefecture	1.300	13	1989
2	"SHIKANOSHIMA public resort" - in Fukuoka prefecture	300	1	1990
3	"KONDOU BOUSEKI factory"-shipping center , factory dormitory, restaurant in Nagano prefecture	1.100	7	1991
4	"MINAMIWAZU public resort" - pool , camping-center in Hyogo prefecture	120	3	1991
5	"SHOWA ALUMINUM HIKONE factory"- factory , restaurant in Shiga prefecture	1.500	11	1992
6	"Temporary Sewer System in Yokohama" - in Kanagawa prefecture	300	52	1992
7	"Tokyo Power Station" factory , power station in Tokyo prefecture	400	2	1993
8	"AIZU University" - university in Fukushima prefecture	1.070	16	1993
9	"Market" - in Tochigi prefecture	1.300	17	1993
10	"Area Iwauchi" - Tanabe city , in Wakayama prefecture	350	17	1993
11	"Market" - in Saitama prefecture	1.733	21	1994
12	"Area Sonohara" - Tanabe city , in Wakayama prefecture	1.852	55	1994
13	"Park West-South of Lake Biwa in Shiga prefecture	1.132	6	1994
14	"Area Kamiakitsukawahigashi" Tanabe city , in Wakayama prefecture	16.671	338	1996
15	"Area Nakahara" - Tanabe city , in Wakayama prefecture	12.016	222	1996
16	"Area Hakogawa" - Mitagawa town , in Saga prefecture	8.200	150	1996
17	"Tokyo Power Station" power station , in Tokyo prefecture	679	4	1994
18	"Factory Tokaigomu" - Komaki city , in Aichi prefecture	2.555	34	1993
19	"MIHO Museum" - in Shiga prefecture	940	2	1996
20	"Factory XEROX" - in Kanagawa prefecture	400	5	1995
21	"Nankai Train Yard" - in Wakayama prefecture	12,04	8	1996
22	"Factory Tokyoseiko" - in Ibaragi prefecture	1.547	17	1996
23	"Area Kamihaya" - Tanabe city , in Wakayama prefecture	16.219	218	1998
24	"Area Ichinose" - Kamitonda town,in Wakayama prefecture	12.070	82	1999
25	"Town Nahari" - in Kochi prefecture	2.450	133	1997
26	"Area Shimoono" - Ube city , in Yamaguchi prefecture	16.700	78	1996
27	"Village Yamaji" - in Aichi prefecture	12.038	82	2000
28	"Area Kumano" - Hanamaki city , in Iwate prefecture	18.781	486	1997
29	"Area Bou" - Bounotsu city ,in Kagoshima prefecture	6.500	422	1998
30	"Area Misuugan" - Tanabe city , in Wakayama prefecture	9.134	282	1997
31	"Area Kyowahigashi" - Village Minabegawamura, in Wakayama prefecture	7.490	240	2001
32	"Area Nishiudo" - Village Tatuta ,in Aichi prefecture	6.858	102	2001
33	"Area Komoi" - Village Tatsuta ,in Okayama prefecture	10.282	96	2004



Reference list Japan

34	"Area Terachi"- Village Seto ,in Okayama prefecture	1.613	52	1998
35	"Area Yuge" - Village Seto ,in Okayama prefecture	2.505	90	1998
36	"Area Sakutaoka" - Village Kujukuri ,in Chiba prefecture	12.161	184	2001
37	"Area Ohama" - Village Takuma ,in Kagawa prefecture	2.220	459	2001
38	"Daiwa hause Mie factory"	1.195	5	1998
39	"CANON Ami Factory" Camera factory in Ibaragi prefecture	190	21	1997
40	"CANON Ueno Factory" - Printer factory in Mie prefecture	600	6	1997
41	"Tokyo Power Station Shinagawa" - power station , in Tokyo prefecture	935	7	1998
42	"Factory Takaoka" - factory ,in Aichi prefecture	698	19	1998
43	"Area Katamata" - Village Mutsumi ,in Yamaguchi prefecture	8.863	50	1999
44	"Factory Nihon Denkigarasu Notogawa" - factory ,in Shiga prefecture	2.462	13	1998
45	"Area Yotsue" - Village Tatsuta ,in Aichi prefecture	6.033	52	1998
46	"Area Ushiyanihibun" - Village Ariake ,in Saga prefecture	9.200	310	2001
47	"Factory Yasunaga Ueno" - factory ,in Mie prefecture	541	11	1998
49	"Seibubunri University" - university ,in Saitama prefecture	472	2	1999
50	"CANON Material Oita" - factory in Oita prefecture	1.314	16	
51	"Area Morikawa" - Village Tatsuta ,in Aichi prefecture	10.401.100,00	91	2007
52	"CI Kasei Okayama" - factory in Okayama prefecture	553	6	1999
53	"Area Yokotayasutomi" - Masuda city ,in Shimane prefecture	13.900	300	2003
54	"YKK Kurobe" - factory ,in Toyama prefecture	456	7	2000
55	"Area Kiridoshi" - Village Kamimine , in Saga prefecture	931	27	2001
56	A Part of Sakae-cho Tokoname, Aichi prefecture	2.129	136	2001
57	"Fujitsu Aizuwakamatsu" - factory in Fukushima prefecture	1.020	5	2001
58	"Area Iwata Oka" - Kamitonda town, in Wakayama prefecture	5.987	94	2003
59	"Area Takuma" - Kamitonda town, in Wakayama prefecture	5.594	115	2004
60	"Area Totsui" - Yura town, in Wakayama prefecture	652	36	2004
61	"Area Higashitoyama" - Motosu town, in Gifu prefecture	6.508	85	2004
62	A Part of Kumayama-cho in Okayama prefecture	1.544	65	2002
63	"Daiwa hause Sakai factory" - in Osaka prefecture	506	7	2001
64	"Area Takegashima" - Shishikui town, in Tokushima prefecture	960	48	2002
65	"Area Hashishita" - Kitakata town, in Saga prefecture	15.250	290	2003
66	"Area Yukiura" - Oseto town, in Nagasaki prefecture	2700	260	2003
67	"Area Nouse" - Taku city,in Saga prefecture	6.822	112	2005
68	"Sumitormokoukan Kajima factory" - in Ibaragi prefecture	1.476	11	2002



Reference list Japan

69	"JR Toukai Komaki Laboratory" - in Aichi prefecture	1.270	11	2002
70	"Sankeigiken Kogyo Anou factory" - in Mie prefecture	1.200	9	2002
71	"Chubu International Airport" - in Aichi prefecture	3.500	33	2005
72	"Area Uchiharahigashi" - Hidaka town, in Wakayama prefecture	3.240	115	2006
73	"Area Ta" - Yuasa town, in Wakayama prefecture	4.450	146	2005
74	"Area Udohigashihattanwari" - Village Tatsuta, in Aichi prefecture	8.425	81	2007
75	"Area Tanono" - Onohara town, in Kagawa prefecture	3.823	43	2004
76	"Area Shinryo Maenosho" Yumesaki town, in Hyogo prefecture	9.025	162	2004
77	"Area Konokusa Maenosho" - Yumesaki town, in Hyogo prefecture	9.632	103	2004
78	"Recycle Plaza" - incineration plant in Aichi prefecture	399	10	2001
79	"Seico Epson Apartment house" - in Nagano prefecture	420	34	2002
80	"Miyata Primary School" - in Aichi prefecture	308	3	2002
81	"YKK Makino Factory" - in Toyama prefecture	1.380	20	2003
82	"CI Kasei Shiga factory" - in Shiga prefecture	1.211	27	2003
83	"Area Sugino" - Kinomoto town in Shiga prefecture	922	29	2008
84	"Area Segi" - Tokoname city in Aichi prefecture	1.810	83	2003
85	"Area Ei" - Ichinomiya town in Hyogo prefecture	5.380	227	2005
86	"Area Hayao" - Aisai city in Aichi prefecture	14.887	86	2006
87	"Area Sigan" - Hirata city in Shimane prefecture	10.100	142	2005
88	"Area Fukuchi-toubu" - Nishio city in Aichi prefecture	16.700	119	2007
89	"Area Narahara" - Hachioji city in Tokyo	390	15	2004
90	"Area Kamibuchi - Manba, Kaminakagin" - Hichisou town in Gifu prefecture	2.900	72	2007
91	"Area Kamibuchi - Shimo-Youkaichi" - Hichisou town in Gifu prefecture	2.100	26	2008
92	TOSTEM Corp. Maebashi factory in Gunma prefecture	450	6	2004
93	BRIGESTONE EVER LIGHT in Mie prefecture	600	6	2004
94	"Area Tabuteura" - Nansei town in Mie prefecture	2.420	80	2007
95	"Area Tatsuta" - Aisai city in Aichi prefecture	10.600	73	2008
96	"Area Kayahara" - Taga town in Shiga prefecture	3.500	73	2007
97	"Area Nakahaya" - Tanabe city in Wakayama prefecture	1.320	72	2002
98	"Area Same" Taga town in Shiga prefecture	5.000	78	2008
99	ALISIN SEIKI CO., LTD. Kise-site in Aichi prefecture	115	1	2005
100	Murata Machinery, Ltd. Inuyama-site in Aichi prefecture	2.100	34	2006
101	"Area Minamigata" Seto town in Okayama prefecture	3.000	54	2008
102	"Area Haya" - Tanabe city in Wakayama prefecture	5.400	187	2007



Reference list Japan

103	"Area Uchihara-Nishi" - Hidaka town in Wakayama prefecture	2.300	36	2007
104	Gifu Prefectural General Medical Center - in Gifu prefecture	640	13	2007
105	"Area Ichiba" - Tokoname city in Aichi prefecture	1.100	75	2007
106	"Area Imamachi" - Higashiyoga town in Saga prefecture	4.412	235	2004
107	"Area Inuimichi" - Kawazoe town in Saga prefecture	-	-	2005
108	"Area Inoue-Nanbu" - Miki town in Kagawa prefecture	-	38	2007
109	"Area Kokubu" - Hamada city in Shimane prefecture	2.708	154	2006
110	"Area Tojima" - Shinjo village in Okayama prefecture	1.110	24	2006
111	"Area miama" - Maniwa city in Okayama prefecture	510	12	2006
112	"Area Shikagawa" Edajima city in Hiroshima prefecture	1.370	26	2007
113	"Area Kirihata" - Saiki city in Oita prefecture	13100	237	2008
114	"Area Katsuyama" Maniwa city in Okayama prefecture	196	21	2007
115	"Area Nakagawacho" Maniwa city in Okayama prefecture	196	21	2007
116	"Area Ushiya Nishibun" Shiroishi town in Saga prefecture	-	-	2009
117	"Area Iiooka Kitahara" Kyotanabe city in Kyoto prefecture	1.434	13	2009
118	"Area Shimoarai" Katsuyama city in Hukui prefecture	700	24	2009
119	"Area Izichi Bantohshima" Katsuyama city in Hukui prefecture	-	-	2009
120	"Area Shimobe" Minobu town in Yamanashi prefecture	2.126	87	2009
121	"Area Hukuchi Chubu" Nishio city in Aichi prefecture	12.460	102	2010
122	"Toyota Industries corp. Kariya Factory" in Aichi prefecture	2.117	22	2009
123	"Area Amishiro" Yura town in Wakayama prefecture	1.682	25	2008
124	"Area Ohbiki Kamiya" Yura town in Wakayama prefecture	10.058	217	2009
125	"Area Kawachi" Ikata town in Ehime prefecture	2.315	36	2009
126	"Area Uryu" Izumo town in Shimane prefecture	1.967	76	2009
127	"Akizuki Ammunition Depot" Etajima city in Hiroshima prefecture	2.963	21	2007
128	"Miyagi Jail" in Miyagi prefecture	54	12	2007
129	"Kiryu University" Midori city in Gunma prefecture	460	3	2008
130	"YKK corp. Hurumido Factory" in Toyama prefecture	2.656	28	2008
131	"Area Oku" Setouchi city in Okayama prefecture	-	-	2009
132	"Area Ohtsu" Izumo city in Shimane prefecture	-	-	2009
133	"Area Saizu" Amakusa city in Kumamoto prefecture	-	-	2010
134	"Area Gochoda Tadokoro" Ureshino city in Saga prefecture	-	-	2009
135	"Fuji Film Techno Products corp. Takematsu Factory" in Kanagawa prefecture	1.156	31	2009
136	"Tokyo Electric Power Company corp. Power Plant" in Niigata prefecture	448	12	2009

Reference list [Japan](#)

137	"Area Ooyabu" Tamano cityin Okayama prefecture	-	-	2010
138	"Mitsubishi Mortors corp. Okazaki Factory" in Aichi prefecture	780	6	2010

Reference list [Kingdom of Bahrain](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
	population of 15500 persons			
1	Amwaj Islands A	2500	77	2005
2	Amwaj Islands B	2200	90	2005
3	Amwaj Islands C	2100	60	2005
4	Amwaj Islands D	2150	36	2005
5	Amwaj Islands E	3400	103	2006
6	Amwaj Islands M	2500	90	2006

Reference list [Korea](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Haeyang Plant I - Large flow cap. systems	3500	12	2006
2	Haeyang Plant II - Large flow cap. Systems	3500	12	2006
3	Hyunda Shipyard I - Large flow cap. Systems	4850	18	2007
4	Hyunda Shipyard II - Large flow cap. Systems	5850	20	2007
5	Samsung Factory Gumi	2574	36	2008
6	Song Gye Village	1469	40	2008
7	Chu-Pung Ryung Village	3575	63	2009
8	Ai-Ui Village	1450	42	2011
9	Cho Kang Village	1200	30	2011
10	Hyundai MIPO Dockyard	4175	24	2013

Reference list [Latvia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Marupe	1.000	19	2016
2	Jaunolaine	2.095	48	2019
3	Balthezers (Rebuild Roevac)		11	2017-U.C.

Reference list [Lithuania](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Vieksniai Village	4500	215	2011
2	Kietaviskes	2500	64	2013

Reference list [Malaysia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Vintage Height 1	5000	250	2001
2	Vintage Height 2	3000	200	2001
3	Miri University Miri	1520	24	2005
4	Miri University Miri 2 nd .	850	24	2006
5	Kuching Police Station Centre	1.855	80	2007
6	Shell MIRI	2.850	180	2009
7	Miri Police Station Centre	2.855	74	2010
8	Kuching Campus	2.190	46	2011

Reference list [Maldives](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Meedhoo Island	2250	55	2008
2	Nilandhoo Island	4800	95	2008
3	Manadhoo Island	4460	100	2009
4	Ungoofaru Island	4060	85	2009
5	Hithadhoo Island I	11300	251	2018
6	Hithadhoo Island II	11250	229	2019
7	fuvamulah (Rebuild Roovac)		610	U.C
8	Holiday Resort		50	U.C

Reference list [Mexico](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Holbox CAPA (Rebuild Airvac)	-	117	2017-2019
2	Chetumal CAPA (Rebuild Airvac)	-	16	2017-2018
3	Mahahual (Rebuild Airvac)	-	44	2019
4	Chiquila (Rebuild Airvac)	-	54	2017-2020

Reference list [Montenegro](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Porto Novi (Marina boat-vacuum toilets)	-	25	2019

Reference list [Nigeria](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Melrose Estate	2.750	45	2013
2	Cowrie Creek Estate		106	2019

Reference list [Oman](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Shirajja	1078	65	2010
2	Seeq	1946	54	2010
4	Buraidha (rebuild Airvac)	-	50	2013

Reference list [Poland](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Zakrzew/Milejowice	9600	144	1998
2	Kabojoszow I	7600	100	1999
4	Jaworzno	2600	53	2020

Reference list [Portugal](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Resgatados	-	116	2019
2	Bebedouro		99	2019

Reference list [Qatar](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Barwa Al Khor	3225	49	2016
2	MizherHotel		15	2017
3	Ras Abo Aboud boulevard World Cup 2022	1935	20	2021

Reference list [Romania](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Dragomiresti Vale II	3800	86	2014
2	Maneciu	4000	110	2016
3	Dragos Voda	24542	259	2019
5	Smeeni		300	2019
6	Cartojani	6351	335	2020

Reference list [Russia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Forrest Village	4.500	126	2019

Reference list [Saudi Arabia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	King Abdulaziz Airport	5380	97	U.C.

Reference list [Slovenia](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Logatec	9200	245	2015
2	Borovnica	7200	133	2015
3	Bis	5420	76	2015
4	Apace	3450	80	2015
5	Cmci	3100	79	2015
6	Segovci	1450	71	2015



Reference list Spain

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Community Marxuquera:	20.540	158	2007
2	Montesol - Ejector station	460 Inhabitants	35	2007
3	Carnit Pinet	200 Inhabitants	15	2007
4	Ermitage - Vacuum tank station	195 Inhabitants	14	2007
5	Xauxa - Ejector station	275 Inhabitants	22	2009
6	Barranco Blanco - Ejector station 2 x	240 Inhabitants	18	2009
7	Mollo section I,II and III - Vacuum tank station	700 Inhabitants	54	2009
8	Puerto de Valencio			
	Vacuum system 1	4.550	40	2011
	Vacuum system 2	5230	42	2011
9	Port Barcelona	—	—	U.C.
10	Empuria Brava (Rebuild Flovac)	—	25	2017-U.C.
11	El Saler	1206	10	U.C.
12	Santa Pola (Rebuild Flovac)		25	2019-U.C.
13	Castellar	2850	33	U.C.



Reference list Sweden

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Säljemar	4000	10	1981
2	Sjöbo	2200	30	1983
3	Simrishamn	1700	26	1984
4	Täby fase I	4600	90	1984
5	Täby fase II	2200	30	1985
6	Markaryd	1700	27	1985
7	Köping	3200	70	1985
8	Vellinge Kommun Falsterbo	2100	41	1979
9	Lockarp Malmö Kommun	1700	39	1983
10	Smygehuk Trelleborg Kommun	9500	140	1985



Reference list Switzerland

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Wädenswil	400	6	1975
2	Bonstetten	150	4	1976
3	Yvonand	400	2	1977
4	Nierderried	1200	26	1978
5	Oberhofen	590	17	1979
6	Egnach	850	20	1979
7	Bonstetten	500	6	1979
8	Mörigen	325	10	1979
9	Steckhorn	325	1	1979
10	Schenkon	2400	26	1979
11	Unterseen	800	11	1979
12	Vinzel	2100	27	1980
13	Dübendorf	540	2	1980
14	Rheineck	610	12	1980
15	Stäfa	480	6	1981
16	Forschach	140	5	1981
17	Benken	700	4	1981
18	Iseltwald	140	5	1982
19	Altendorf	960	5	1980
20	Eich	860	11	1981
21	Thal	150	5	1981
22	Iseltwald	260	12	1981
23	Grenchen	2800	18	1982
24	Basel	835	13	1982
25	Celigny	1200	18	1982
26	Celigny	900	13	1982
27	Nottwil	700	8	1982
28	Nottwil	600	6	1982
29	Nottwil	480	7	1982
30	Zug	840	11	1982
31	Laupen	270	3	1982
32	Altdorf	570	8	1982
33	Gampelen	460	4	1983
34	Busskirch	630	3	1983
35	Basel	660	6	1983
36	Büren	810	8	1985
37	Perroy	750	11	1986
38	Crans	790	7	1987
39	Bellechasse	1000	6	1987
40	Winterthur	740	8	1988
41	Greng	1075	15	1988
42	Meyriez	1200	19	1988
43	Unterbach	1250	12	1989
44	Hünenberg	3120	18	1989
45	Ebikon	700	8	1990
46	Neuenstadt	800	16	1991



Reference list The Netherlands

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Bussloo - Wilp Recreation area	9200	22	1975
2	Beekse Bergen Hilvarenbeek Recreation area	5300	15	1977
3	De Byland - Tolkamer Recreation area	1600	5	1975
4	De flaaibloem Recreation center	2800	13	1974
5	Camping Loodsmanduin, Texel Camping	3500	18	1975
6	Community Heeswijk/Dinter	3650	19	1978
7	Domein-Kessel	200	2	1980
8	Community Waspik	1250	13	1975
9	Community Reusel I	2170	9	1978
10	Community Gasselte	6200	165	1978
11	Community Rijnsburg I	750	30	1978
12	Community Nes A/D Amstel	2200	39	1978
13	Community Reusel II	2150	15	1979
14	Community Oostburg	400	2	1979
15	Community Diever	2800	26	1979
16	Community Finsterwolde	1500	20	1980
17	Community Nes/Buren I	5100	65	1980
18	Community Nes/Buren II	1750	27	1980
19	Community Nes/Buren III	1350	19	1980
20	Community Oud Alblas	3100	66	1980
21	Community Rijnsburg II	4150	60	1980
22	Community Arkel-Kedichem	1800	28	1981
23	Community Opsterland	1750	19	1981
24	Community 's-Gravenzande I	5800	62	1982
25	Community Polsbroek I	4600	85	1982
26	Community Polsbroek II	4800	70	1983
27	Community Beilen-Spier	3200	24	1982
28	Community Emmen-Klazinaveen	8400	65	1981
29	Community Stadskanaal	5850	69	1982
30	Community Emmen	5 system	225	1979-1983
31	Community Emmen	2100	13	1982
32	Community Emmen	3500	27	1982
33	Community Rotterdam I	5900	122	1982
34	Community Rotterdam II	3020	74	1983
35	Community Almkerk	3400	72	1982
36	Community Leiden	1600	17	1982
37	Community Bellingwedde	5200	68	1982
38	Community Bellingwedde	2900	38	1982
39	Community Wateringen	3570	70	1982
40	Community Akersloot	2240	31	1982
41	Community Axel -I	3100	45	1982
42	Community Axel -II	5400	54	1983
43	Gors Kruiningen, Recreation Centre	2440	37	1983
44	Community Almkerk	1850	50	1983
45	Community Hardinxveld- Giessendam	920	25	1983
46	Community Winschoten	6250	63	1983
47	Community Nieuwkoop	4110	128	1984
49	Community Het Bildt	5000	57	1984
50	Community Hardinxveld- Giessendam	750	20	1984
51	Community Brandwijk	4140	72	1984
52	Community Molenaarsgraaf	5670	106	1984
53	Community Ottoland	1730	30	1984
54	Community Benschop I	7210	87	1984
55	Community Benschop II	5520	82	1984



Reference list The Netherlands

56	Community Benschop III	6050	81	1984
57	Community Hardinxveld- Giessendam "Buitendams I"	2820	51	1984
58	Community Hardinxveld- Giessendam "Buitendams II"	3650	65	1984
59	Community Zoeterwoude	4680	88	1985
60	Community Lopik Phase I	1920	34	1985
61	Community Hardinxveld- Giessendam	3500	60	1985
62	Community Arkel-Kedichem	5260	50	1985
63	Community Bedum, House Boats	400	18	1985
64	Company Ahold BV, Supermarket	250	25	1985
65	Company Ahold BV, Supermarket	400	30	1985
66	Community Oud Alblass	5200	56	1985
67	Community Lopik Phase II	3020	34	1986
68	Community Lopik Phase III	2400	46	1986
69	Community Lopik Phase IV	5230	64	1986
70	Community 's-Gravenzande II	7500	87	1982
71	Community 's-Gravenzande III	3320	61	1983
72	Community 's-Gravenzande IV	7250	67	1985
73	Community Ottoland	980	13	1986
74	Recreation Heerderstrand	900	5	1980
75	Community Lopik-Lekdijk	7610	63	1988
76	Company Ahold BV, Supermarket	650	44	1988
77	Community Middelhamis Vacuumstation for Polluted Area	450	8 filters	1988
78	Community Strijen Vacuumstation for Polluted Area	800	12 filters	1989
79	Pelican Resort & Casino	2800	100 VT	1989
80	Community Rotterdam	2200	58	1990
81	Community Dirksland Vacuumstation for Polluted Area	500	8 filters	1993
82	Community Piershil Vacuumstation for Polluted Area	600	6 filters	1994
83	Community Dordrecht Vacuumstation for polluted Area	400	5 filters	1995
84	Community Emmen Pilot project for connection of proceswater from Agriculture	300	2	1996
85	Airport Schiphol Amsterdam Vacuumstation for Polluted Area	1000	10 filters	1996
86	Police Building Vacuum toilet system	60	3 GWT, 2 VT	1998
87	Community Lopik-Lekdijk Mini-Ejector station	800	10	1999
88	Bonaire Beach Club 10 Control Units	-	10	2006
89	Marina "De Ronde" Sewage suction unit boats	Type unit	1 AVR	2006
90	Marina Ter Apel	-	2	2006
91	Marina Volendam 400 Berths Ejector Station with 14 VT / 4 GWT	300	14+4	2007
92	Community Hoogeveen (Zuid-Wolde)	Retrofit	55	1999-2004
93	MOB COMPLEX - Lopik	500	8	2010
94	Community Lopik - Lekdijk	1200	25	2010
95	Community Lopik Subgermaal	1000	1 Vacuum station	2010
96	Community Noorderhoek		550(vacuum toilets)	2011
97	Community Gors Kruiningen		1 Ombouw station	2011
98	Community Sluiskil/Koewacht (extension)	349	2	2011
99	Community Zederik	Retrofit	10	2011
100	Community Aalburg	Retrofit	1	2011
101	Community Landerd	Retrofit	10	2011
102	Community Katwijk	-	1	2011
103	Community Stigtsevecht	Retrofit	3	2012
104	Community Midden Drenthe	Retrofit	5	2012

Reference list [The Netherlands](#)

105	Community Hardenberg	Retrofit	4	2012
106	Community Soest	Retrofit	20	2011
107	Community Zevenaar	Retrofit	13	2012
108	Community Drechterland	Retrofit	120	2014
109	Community Almere		20	2015
110	Community Groningen	2168	250 (vacuum toilets)	2017
111	Community Zeewolde	10580	100	2017
112	Community Amsterdam (schoonschip)		120 (vacuum toilets)	2018
113	Community Almere (Duin)	2100	60	2020
114	Community Almere (Floriade 1)	2500	21	U.C.
115	Community Almere (Floriade 2)	4500	38	U.C.
116	Community Almere (Stichtse Kant)		120	U.C.
117	Community Almere (Muidersand)			U.C.
118	Community Zevenaar (rebuild)		53	U.C.
119	VVE Oosterwold Almere	555	10	U.C.

Reference list [United Arab Emirates](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Jumeirah Island project 1	7000	22	2003
2	Jumeirah Island project 2	6500	25	2003
3	Jumeirah Island project 3	5800	23	2003
4	Jumeirah Islands Extention 15 + 16 Villas	250	2	2007
5	Clubhouse + Children Playground	150	2	2007
6	HQ Coastguard Abu-Dhabi	2240	31	2008
7	One & Only Hotel The Palm	12 (vacuum toilets)	2 (interface units)	2010
8	Jumeirah Height	2000	12	U.C.
9	Zayed University	3600	75	2011
10	Qseewrah Palace 1	2500	21	2010
11	Retrofit Sharjah University	-	100	2010
12	Al Badea Rulers palace	-	-	U.C.
13	Al Marjan Island Vac.sytem 1	9875	175	2010
14	Al Marjan Island Vac.sytem 2	5900	150	2011
15	Qseewrah Palace 2	2300	3	2015
16	Zayed University extension		4	2020

Reference list [United Kingdom](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Floatels (UK) Ltd.- Floatel Northwich - Hotel	250	42	1989
2	Leak Commonsides. Suburb	2200	41	1991
3	Sibsey. Suburb	1160	21	1991
4	Peterborough. Suburb	3870	33	1991
5	Tydd St. Mary. Suburb	3360	61	1991
6	Stickford. Suburb	4977	72	1992
7	Woodhurst. Suburb	1870	29	1993
8	Friskney. Suburb	5200	104	1994
9	Pidley. Suburb	1600	38	1994
10	ST. John's. Building	1880	7	1996
11	Yarwell. Suburb	1725	46	1996
12	Beeston	800	25	1996
13	Theddlethorpe	1800	42	1996
14	Bicker	3550	77	1996
15	Yarwell	1460	45	1996
16	Astwood	1470	36	1999
17	Whisby	420	18	2000
18	Markham Moor	-	35	2001
19	Osgodby/Kirkby	2100	56	2002
20	Anderby	2500	42	2002
21	Louth (3 villages)	7800	115	2003
22	Fosdyke	3600	63	2003
23	Toynen St. Peter	2400	42	2004
24	Tansor / Cotterstock	3750	42	2005/2006
25	Wigsley	-	50	2005
26	South Somercotes	1450	30	2006
27	Crossways	Rebuild ISEKI	22	2008
28	Crossways	new extension	16	2008
29	Hubbert's bridge	4750	34	2009
30	Saltfleetby St. Peter	6525	100	2009
31	Crossways	Rebuild ISEKI	17	2011
32	Crossways	Rebuild ISEKI	17	2011
33	Leamington	-	1	2011
34	Tansor / Cotterstock	3750	42	2011
35	Floatels UK / Throp Arnold	Rebuild ISEKI	13	2014
36	Thames Water	Rebuild ISEKI	212	2014
37	Bromley Green	Rebuild ISEKI	40	2016
38	Bosham Hoe	Rebuild Roovac	35	2016
39	Salford Priors			U.C.

Reference list [Venezuela](#)

SL No	Name and type of the project	Vacuum sewers in meter	Number of valves	Start-up Year
1	Merida Village	5682	156	2011

Myers Rebuttal Exhibit D

Q. & A QUAVAC CEO

Myers Exhibit D

Q 1 A Q 19 A 1 C 0

Michael Myers

To: Ivar Quatfoss
Subject: RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - QUAVAC Vacuum sewer system

From: Ivar Quatfoss <Ivar.quatfoss@QuaVac.com>
Sent: Thursday, February 3, 2022 10:03 AM
To: Michael Myers <mmyers@envirolinkinc.com>; Tracy Miller <tmiller@envirolinkinc.com>
Cc: Charles Donnell <cdonnell@envirolinkinc.com>; mark <mark@bissellprofessionalgroup.com>; Arjan Krebs <arjan.krebs@quavac.com>; Jan Drost <jan.drost@quavac.com>
Subject: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - QUAVAC Vacuum sewer system

EXTERNAL EMAIL: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Mike,

Please find some answers. Independent source is hard to find as many issues will not be published at least not in those details. Like Eagle Creek we got the article alert, also here it is not explicit mentioned the issues like failure of controllers etc. but obvious we as vacuum supplier knew the issues.

We enclose some information as close as possible to US, in this case Mexico, with some independent article from CAPA Water body. Unfortunate in Spanish but we did a Google Translate document with it also. Project was done through our agent VIAVAC

1. Life span of the controllers Airvac, we do not have any information on this. We searched our files but it is not mentioned.
2. It is hard to find this information published. We have numerous of projects rebuild from several suppliers, and so also Airvac. In all projects done the broken controllers were spreading around the vacuum stations in parts. As such we assume that failure rate is high. We can only show our experience like enclosed CAPA document.
3.
 - a) globally we can only provide Quavac information, as such please find enclosed reference list.
 - b) Airvac dominate the US market. Airvac is also nowadays mainly only active in US and Mexico as their Parent company Aqseptence will provide in all other countries the vacuum sewer system with their brand Roevac. Enclosed an Airvac reference list unfortunate from 2012
 - c) Vacuum sewer suppliers in the market are very limited as such market share vary huge from country by country, global market share is hard to mention. E.g. Quavac 100% market share Netherlands, 90% Denmark, UK -80% etc. but 0% in US
 - d) Airvac/Flovac or Roevac systems in total around 25 projects has been converted in the last 10 years. Latest project was Roevac on the Maldives with more than 600 pits
<https://twitter.com/teamfenaka/status/1318096698015535105> Video made by the water body Fenaka Corporation Ltd
4. we market Vacuum station and prepare complete designs for it with hydraulic calculations. This is our core business for any new project. Eagle Creek is for us a Retrofit project, and from experience we see that the installed vacuum stations from other suppliers function normal. After complete change of the pits the vacuum station will even perform better is our experience without changing anything. Hope you can clarify more what is required, and we can assist you on this.

Hopefully this information is helpful but if you guide us in which direction you want to go with the testimony, we might even provide more details.

Best regards,
Ivar

Van: Michael Myers <mmyers@envirolinkinc.com>

Verzonden: donderdag 3 februari 2022 14:17

Aan: Ivar Quatfass <ivar.quatfass@QuaVac.com>; Tracy Miller <tmiller@envirolinkinc.com>

CC: Charles Donnell <cdonnell@envirolinkinc.com>; mark <mark@bissellprofessionalgroup.com>; Arjan Krebs <arjan.krebs@quavac.com>; Jan Drost <jan.drost@quavac.com>

Onderwerp: RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - QUA VAC Vacuum sewer system

Thanks all for jumping on things. I am preparing testimony as we proceed through the approval process. A couple of issues have come up where we could really use some additional insight from a more independent source.

If you can just point me in the right direction on where to find the information I am trying to get, I would be very much appreciated your guidance. The issues are:

1. Information on the life of a Airvac and Flovac controller. We have information that suggest a 10-12 year life. I remember reviewing information on the life of Airvac controller and valves from one of Airvac's older design manuals but in reviewing their current design manual, I do not see information on the life of their controller and valve. We also have a Airvac presentation that claims a 10-15 year life but we are looking for a more definitive reference for the life of Airvac controllers.
2. Information on the failure rate of Airvac and Flovac controllers. We have one reference from Warsaw University that discusses failure rates of vacuum systems generally and provides some information that suggest most of the failures are related to the controllers but you made the statement that Qua Vac valve require 80% less maintenance. I assume that is largely related to the elimination of the controller in Qua Vacs valve assembly. If you could guide us to where we can find information on the controller failure rate, I would appreciate it.
3. Do you have any information on the total number of vacuum collection systems there are in the market place? It would be great if we could present information as follows:
 - a. Total number of vacuum system globally
 - b. Total number of vacuum systems in US
 - c. Market Presence % Airvac, % Flovac, % Qua Vac
 - d. How many Air Vac and Flo Vac systems have been converted to Qua Vac?
4. I know you don't market a vacuum station, but any information you could provide on the life of a vacuum station and the current best design standards would also be very helpful. The information you provided from Florida was useful but I believe that Europe is ahead of the US on design practices for vacuum, so I am looking for best design practices for vacuum stations.

Thanks and any help or if you can point me in the right direction, we can take it from there.

Best,
Mike

From: Ivar Quatfass <ivar.quatfass@QuaVac.com>

Sent: Thursday, February 3, 2022 7:38 AM

To: Tracy Miller <tmiller@envirolinkinc.com>; Michael Myers <mmyers@envirolinkinc.com>

Cc: Charles Donnell <cdonnell@envirolinkinc.com>; mark <mark@bissellprofessionalgroup.com>; Arjan Krebs <arjan.krebs@quavac.com>; Jan Drost <jan.drost@quavac.com>

Subject: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - QUAVAC Vacuum sewer system

EXTERNAL EMAIL: Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Goodmorning Tracy,

Thank you very much for your email.

The attachment you have send shows the present Airvac pits installed in Eagle Creek, thank you for this.

As agreed Quavac will send one Demo pit, to send the proper pit (easy to exchange for your team) we assume the Model VP3042H – 6'deep (± 1.83 meter height) is the most common installed in the project. Our previous drawing send was a 2 meter height ($\pm 6'6"$) pit so would perfectly match

Following we need, hopefully you can provide to prepare the demo pit:

1. Identify in the Eagle Creek project an Airvac pit (model type VP3042H) to be exchanged by a Quavac pit
2. Send us the layout drawing of the project (or google earth picture) showing the location of this pit
3. Vacuum outlet 3" service connection to vacuum mainline. Please inform about material of the vacuum sewer main PVC or PE ?
4. Gravity stub-out 4" or 6", we will provide a single pit made from HDPE 20mm wall thickness, we assume you will cut and weld a 4" or 6" gravity stub-out to our pit at the correct location ? If not than we need the as built drawing of the identified pit showing the gravity stub-out location(s) and size. But we assume the first option is also the preferable option as many contractors do.

For your information:

The Demo pit will arrive as a single pit from HDPE with all the equipment pre-assembled. (vacuum valve, controller, piping, ball valves, hoses)

When the identified Airvac pit has been removed the Quavac pit can be installed and connected to the gravity and vacuum line and ready to receive the sewage. We anticipate that it will be done in $\pm 2-3$ hours for this first demo pit.

Thank you sending the information so we can prepare the demo pit asap,

Best regards,

Ivar Quatfass

Van: Tracy Miller <tmiller@envirolinkinc.com>

Verzonden: donderdag 3 februari 2022 00:55

Aan: Ivar Quatfass <ivar.quatfass@QuaVac.com>; Michael Myers <mmyers@envirolinkinc.com>

CC: Charles Donnell <cdonnell@envirolinkinc.com>; mark <mark@bissellprofessionalgroup.com>; Arjan Krebs <arjan.krebs@quavac.com>; Jan Drost <jan.drost@quavac.com>

Onderwerp: RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - RE: [External] - QUAVAC Vacuum sewer system

Ivar,

Please see the attached specs for the current pits utilized in this system. If you need anything please let me know and I will do what I can to help you.

Thanks,

TRACY MILLER
REGIONAL MANAGER
ENVIROLINK INC.
4700 HOMEWOOD COURT
SUITE 108
RALEIGH, NC 27609
OFFICE (252) 235-4900
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Care, Character, Excellence, Professionalism



ENVIROLINK

"We are what we repeatedly do. Excellence, then, is not an act, but a habit."

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Myers Rebuttal Exhibit E

CAPA REPORT

Supports Quavac CEO regarding failed Airvac Systems

Myers Exhibit F E



**GOVERNMENT OF THE STATE OF QUINTANA ROO
DRINKING WATER AND SEWAGE COMMISSION
LAZARO CARDENAS OPERATING ORGANISM**

INFORMATION CARD

**VIAVAC/Vacuflow HOLBOX COLLECTION TANK
INSTALLATION AND OPERATION REPORT**

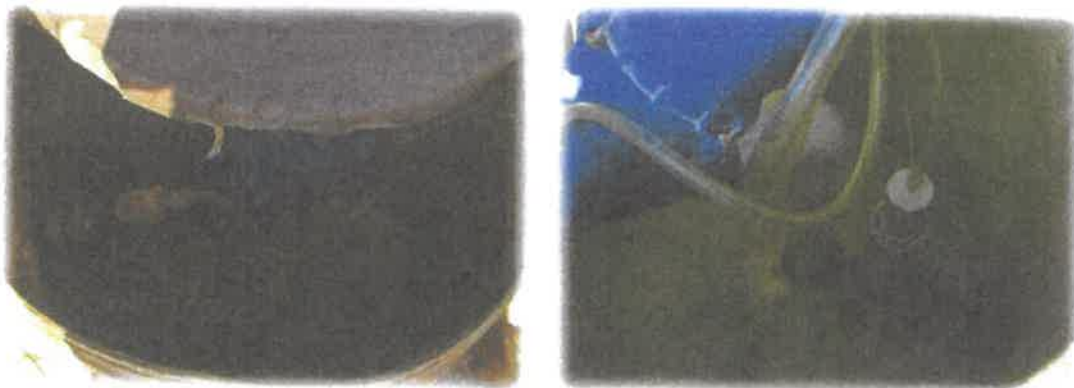
BACKGROUND:

The Holbox Island Sanitary Drainage System was built in 2004; Given the topographic conditions of the island, the High Vacuum System was chosen, with a patent from the company Airvac, which at that time was a leader in the development of this process.

In 2005, during its first year in operation, the island was hit by the passage of Hurricane Wilma, which caused a lot of damage to the infrastructure and in turn showed many technical construction aspects that were not taken into account at the time of its construction. One of them, basic in the system, is the correct collection of wastewater in the collection tanks and its subsequent channeling to the Vacuum Plant.

Among the main anomalies that have been observed in 11 years of operation, we can mention the following:

- The Airvac Valve System and its sensors DO NOT work under water, as the company offered at the time. The high presence of humidity during the rainy season enters the sensors, blocking their operation and the operation of the vacuum valve. in turn affecting the



View of a new Airvac Collection Tank during the construction of the System, optimal state of the upper chamber.



View of an Airvac Collector Tank in operation, general condition of the upper chambers.

ý The collecting tanks, their rims and covers presented structural damage from the beginning, by not considering the damage caused by the high salinity in the environment and soil.

As mentioned at the beginning, the topographical characteristics of the island defined the system to be used, but in this case it is also a point against; since it presents many movements (settlements) and that normally the water table is barely 60 cm.



04.03.2013

65 of the 85 collector tanks presented failures in the 12 years of operation, most of them have already been repaired with their own resources, it was started by the most critical ones such as those observed.

Machine Translated by Google

**CURRENT SITUATION:**

y The cost of operation and maintenance of Airvac valves and vacuum sensors is very high. Currently there are 20 collecting tanks working manually, there are no spare parts necessary for automation. They must be activated 2 to 5 times a day, a number that increases in vacation or rainy seasons.

This number of Collecting Tanks that are losing automation due to lack of spare parts is increasing annually, in 2013 there were 10 tanks, in 2014 it increased to 14 of them, this 2015 as indicated before it rose to 20. This also increases operating expenses and number of incidents with service users.



In addition to this lack of spare parts, we must consider the two complementary elements that make these tanks work properly, which are the vents of the Airvac valves and the gravity lines that frequently suffer damage that affects their correct operation.



In February of this year, a collection tank from the company **Viatek** was received as a test donation, which was installed to replace an Airvac fiberglass tank that had critical damage to its structure, as it had large cracks that allowed the passage of sewage to the top and were already contaminating the water table.



Airvac collector tank in poor condition, with serious leaks of sewage into the subsoil and water table.



VIAVAC/ Vacuflow collection tank supplied; its characteristics and operation were explained to the operating personnel. Immediately highlighting that they work without a vacuum sensor and external vents.

The replacement process was long, 9 hours of continuous work, for which the following technical resources were used:

- 8 Workers.
- 1 Backhoe.
- 1 Vactor-type truck.
- 1 pick-up truck. • Minor tool.
- Special pieces of sanitary and hydraulic PVC.



Excavation process, to reach the adequate depth of connection of the gravity lines, it was necessary to open a circumference of approximately 4.00 mt due to the landslides of the sand.



Installation and interconnection process, due to the water table it was difficult to leave the tank in place, it was necessary to use sacks with gravel.



Interconnection process, of gravity and vacuum lines.



First activation, the VIAVAC/Vacuflow system worked satisfactorily immediately after installation. It was observed to work on three occasions, raising and lowering the float without any problem.



The Viatek company, in turn, supplied the PAD cover for the collecting tank, a 24" PVC coupling to raise the curb level to the desired height above street level, and paid for the construction of the corresponding curb; This curb has not been developed because a self-service store is under construction on the adjoining land and whose main access is just in front of the location of the collection tank, where a sidewalk will be built; The legal representation of that company requested a permit from SEMARNAT to fill the street with sand and raise its level, since it floods to a great extent during the rainy season. The authorization and the final levels have already been obtained, and this week the aforementioned curbstone must be built.



CONCLUSIONS:

Below is a comparison between these two vacuum systems, based on the years of operation of the Airvac System and the 4-month trial period of the VIAVAC/Vacuflow System.

AIRVAC:

- Airvac, the system of valves and vacuum sensors have been very expensive economically and operationally they present many faults with the passage of time or in the presence of humidity.
- The collecting tanks were originally at ground level, so even with good concrete curbs they have infiltration of rainwater through the joints in the rainy season, cracks in their walls are not ruled out as well, since they are always observed with water inside, even in dry season
- The vents of the vacuum valves and the gravity lines present constant breaks that affect its proper functioning, in addition to the costs of its repair.

VIAVAC/Vacuflow:

- We do not have information on the cost of the product, but operationally it has worked correctly since its installation; Starter reduces risk points by not requiring a breather or vacuum sensor to operate.
- The collecting tank has a large storage capacity in case of momentary loss of empty.
- Having the vacuum outlets and discharges integrated (thermofused) to the body of the collecting tank guarantees its total hermeticity and the filtration of water towards the interior or exterior of the tank is ruled out.
- Since its installation there has been no problem at this collection point.

In talks with the operators of the sanitary drainage system, they inform us that they are comfortable with this new method and have not observed any failure in the 4 months that it has been in operation.

For extensions of the sanitary drainage network, this VIAVAC system is suitable. But the difficulty of changing an existing collection tank for this other is very complex, due to possible structural damage to the surrounding buildings at the time of excavation.

It would be appropriate if float and valve system could be adapted to the tanks this existing collectors.

ELABORATED

ARCH. ABEL DARIO OXTE MEDINA
TECHNICAL DEPUTY MANAGER

7 of 7

Myers Rebuttal Exhibit F

News Article, Town of Forest
Supports Q&A with Quavac CEO regarding failed Airvac Systems

Myers Rebuttal Exhibit G

A3-USA Evaluation

Myers Exhibit E § 6

A3 - USB Evidence

Summary of Key Findings and Recommendations.

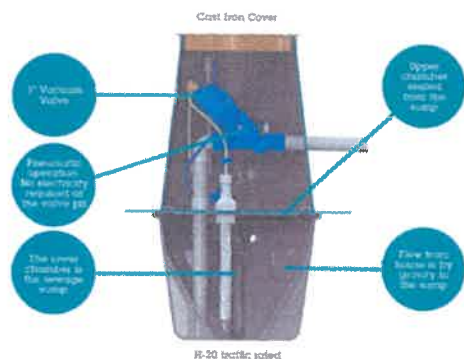
1. Absent a major investment into redesign and rebuild of the existing vacuum system, service levels of the existing system will not significantly improve.
2. Labor is not the solution. Regardless of the labor resources, service levels will not significantly improve. Additional drawbacks include the cost of labor and masks the root issue.
3. Service levels are impacted by:
 - a. Design limitations
 - b. Maintenance history
 - c. Investment history
 - d. History of owner engagement
4. Education of regulatory officials and lawmakers on vacuum system technology is needed.
5. Immediate recommended actions:
 - a. Recommendation (Immediate): Install air admittance at four locations;
 - b. Recommendation (Immediate): Provide 24/7/365 on-site system monitoring;
 - c. Recommendation (Immediate): Move controller outside of pits for the most problematic services;
6. Long Term Recommendation Actions:
 - a. Recommendation (Long Term): replacement of vacuum station, including:
 - i. Install sufficient vacuum capacity. Higher capacity vacuum pumps.
 - ii. Install variable frequency drives on all vacuum pumps.
 - iii. Install VFDs on sewage pumps to permit ramping up and down.
 - iv. Improved instrumentation to include air flow, vacuum sensor, pressure sensor, and level sensors.
 - v. Oil-sealed rotary screw vacuum pumps.
 - vi. New stainless steel vacuum station tank including new instrumentation.
 - vii. Install three (3) vacuum pumps.
 - viii.
 - b. Recommendation (Long Term): Pit Replacement.
 - i. Monolithic construction
 - ii. Spring-operated valve versus diaphragm-operated valves;
 - iii. Move controllers outside of pit. Use of water resistant controllers;
 - iv. Installation of alarm light;
 - v. Increase storage volume;
 - vi. Secure pits;
 - c. Recommendation (Long Term): Install monitoring system to include:
 - i. Pit instrumentation & alarms
 - ii. Vacuum station instrumentations & alarms
 - iii. Alarm & paging system
 - d. Recommendation (Long Term): Maintain 24/7/365 on-site monitoring.

Background

The Eagle Creek Community is located in Currituck County, North Carolina, the most northeastern county in State of North Carolina and in close proximity to the Norfolk/Virginia Beach metro area, approximately 20 miles south of Chesapeake, Virginia. Currituck County includes the commonly known Outerbanks and mainland areas and is separated by the Currituck Sound. There are four wastewater treatment facilities located in the Moyock area: Carolina Village MHP (60,000 gpd), Eagle Creek (350,000 gpd), Moyock Commons (40,000 gpd) and the Moyock Regional facility (100,000 gpd). Carolina Village, Eagle Creek and Moyock Regional are non-compliant with state regulations with Eagle Creek and Carolina Village being in poor physical condition.

The Eagle Creek wastewater system includes the Eagle Creek community [440 single family homes], a golf course and the Moyock Middle School. The wastewater system has come under scrutiny due to poor service from the vacuum collection system. The vacuum sewer collection system is the focus of the service issues and the purpose of this review.

Figure 1. Typical Airvac Pit [from Airvac website].



The current owner is Sandler Utility at Mill Run (Seller), who has entered into a Asset Purchase Agreement with Currituck Water and Sewer (Buyer) for the purchase of the sewer system. The sewer system includes a 175,000 gpd wastewater treatment facility, high rate infiltration pond, spray irrigation and the aforementioned vacuum sewer.

Sandler Utility's ownership and responsibility starts at the service valves ("pits") located at the edge of the right of way and includes the vacuum mains and vacuum station. Photos of each service pit are

provided as Appendix A and typical Airvac Pit is shown in Figure 1 below. The pit includes a top and bottom sump, an actuated vacuum valve, and controller. Pits are installed in the ground between the vacuum main and the home. As homes are constructed, each homeowner installs a vent between the home and the pit [Figure 2. Typical Vent]. This vent is referenced as a 'candy cane'.

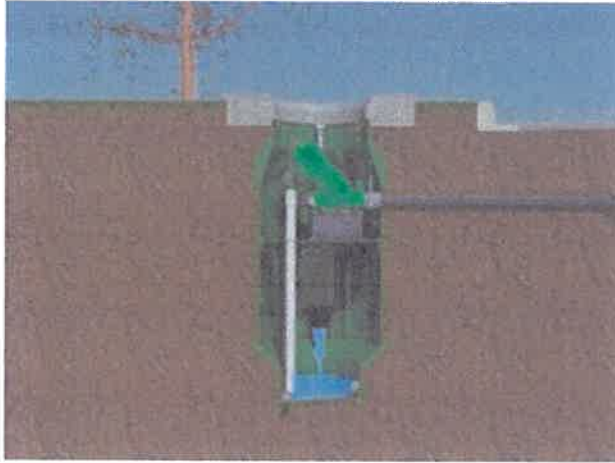
Figure 2. Typical Homeowner Vent.



Water from the home enters the pit in the lower sump causing the valve to open. The vacuum main is kept under 16 – 20 of negative pressure conveying the water from the home to the vacuum station located near the wastewater treatment facility. Major components of the vacuum station include the tank, vacuum pumps and sewage pumps. The vacuum pumps function to apply a vacuum (negative pressure) to the tank, with the sewage pumps functioning to convey water from the tank to the wastewater treatment plant. Thus, the sewage pumps are critical to maintaining a proper level in the tank.

Chamber "Pit" Design

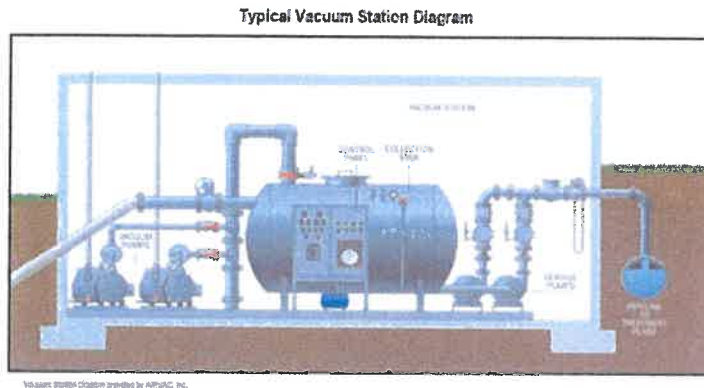
- I. Chamber - The Airvac and FloVac Chamber design both include lower chamber (sump) and upper chamber with a seam approximately midway up the tank [see diagram below from Flovac webpage and above Airvax webpage]. The pit has pipe penetrations between the lower and upper sumps that include a sensor pipe and a 3" vacuum line. Both vacuum lines include rubber grommets designed to make each sump water tight.



Simplified Pit Operation Description

Water from the customers flows from the home through a service line into the sump. As water fills the sump, pressure in the sensor pipe increases opening the diaphragm in the controller causing the controller to initiate the opening of the valve.

As the lower chamber is emptied atmospheric air enters the controller which removes the vacuum from the valve. The heavy valve spring then causing the valve to close.

Figure 3. Typical Vacuum Station.

Pit failures include:

1. Valve failing to close
2. Valve failing to open
3. Valve chattering very roughly at low vacuum
4. While uncommon other potential pit failures include:
 - a. Mechanical failure in valve
 - b. Failure of valve fittings
 - c. Clogging of breather tubes

The most common reasons for pit failures are:

- i. Controllers
- ii. Valves
- iii. Other issues

While the systems are designed to be able to operate underwater, the membrane within the controller is very sensitive to moisture and if moisture comes in contact with the membrane, the controller will not operate the valve.

Typically, the valve will open but fail to close. The consequence of pit failure include:

1. Valve failing to close – Commonly known as a “leak”. This will cause the main to lose vacuum creating an alarm condition. Both the repair of the “leak” and failure to repair the “leak” affect service to other customers. If not repaired, the “leak” will cause the entire system to lose vacuum impacting the entire community. Repairs require isolation of the leak (e.g. shutting of portions of the vacuum mains) to allow repair activities to proceed. Pit design does play a critical role in the ability to isolate “leaks”.
2. Valve failing to open – The limited storage in the lower pit means that in the event of a valve failing to open, there is very little capacity for water use prior to a sewer backup in the home. For comparison, a typical low pressure system includes sufficient tankage to permit normal water using for 12-24 hours [120 gallons for 1 home]. Conversely, the Eagle Creek pit design provides approximately 40-50 gallon for every two (2) homes or 20-25 gallons per home. The only way for technicians to identify valve issues when a valve fails to open is from a customer notification of a sewer backup.

Candy Cane (Vent) Operations

While the vent or candy cane is owned by the home owner it does play a role in the issues at Eagle Creek. During normal operation or a "leak" situation, the vent (candy cane) permits air to enter the pit allowing water movement through the main. In addition, when a "leak" occurs the vent (candy cane) will make noise similar to a whistle.

When a valve fails to open, the candy cane may discharge water resulting in the customer having a sanitary sewer overflow. Note, however, this is typically very site specific as the vent would not protect homes if the vent is higher than the basements or slab.

Improperly installed candy canes could impact the service and the performance of the pit, causing:

- a. Valve closing issues (if not properly vented)
- b. Dewatering of toilets
- c. Inflow and Infiltration
- d. Customer sanitary sewer overflow

Sanitary Sewer Overflows

" The owner or operator of any wastewater collection or treatment works for which a permit is issued under this Part shall report a discharge of 1,000 gallons or more of untreated wastewater to the surface waters of the State to the Department as soon as practicable, but no later than 24 hours after the owner or operator has determined that the discharge has reached the surface waters of the State. This reporting requirement shall be in addition to any other reporting requirements applicable to the owner or operator of the wastewater collection or treatment works." [underlined for emphasis]

While the cleanouts and candy cane SSO are not subject to NC DEQ reporting requirements, SSOs generated from pits do require reporting according to the criteria listed both in regulation and the system-wide collection system permit.

Goals

The vacuum system at Eagle Creek has had two vacuum station failures and a long history of routine service valve failures dating back to 2002. Service related issues were most severe in October 2020 with a catastrophic failure of the vacuum station, including vacuum and sewage pumps within a 1 week period. On February 2, 2021, at the request and funding of Envirolink, a review of the vacuum system at Eagle Creek was initiated. Envirolink established the following goals as the basis for our review:

1. Assess the existing vacuum station;
2. Assess the existing service valves;
3. Assess the service response and restoration procedures;
4. Offer opinion and cost for upgrades to improve the reliability of the vacuum station;
5. Offer opinion and cost for upgrades to improve the reliability of the service valves with a performance standard of one pit failure for every 6,000,000,000 valve opening operations. In essence, zero failure over the life of the valve;
6. Offer opinion and cost of upgrades to service valves and/or vacuum station that would permit continued operation of the vacuum system in the event of a service valve failures;
7. Offer opinion and cost of upgrades to the vacuum system that would improve the service restoration in the event of a service valve failure;

Reviewers

Mr. Jens Sonntag, President of A3-USA, along with Jim Docherty, A3-USA and Michael Myers, Envirolink, conducted a multi-day review of the system and conducted on site visits. Mr. Sonntag has over 15 years experience in vacuum sewer collection in both Germany and the United States as an engineer for Airvac. He currently oversees operations of A3-USA, a technology provider, specializing in water and wastewater treatment technology. Mr. Jim Docherty, offers over 25 years of experience with vacuum sewer collection in the United States having worked for Air Vac and other vacuum sewer system technology providers.

Site visit took place during a heavy rainfall, allowing a review of service response procedures. Site visits included inspection of the vacuum system and interviews with several homes owners to discuss service related issues. Emphasis was place of interviewing home owners in the Eagleton Circle and Green View Road area. This area is the lowest area of the community and is prone to flooding. As seen in the photos, several of the pits are located next to drainage channels or ditches that are prone to flooding.

Vacuum Station Operation and Maintenance Procedures

As part of the review, operators, maintenance technicians, and supervisors responsible for the day-to-day operation of the system were interviewed. Staff were helpful and knowledgeable of vacuum system operation and maintenance procedures, vacuum station and service valve operation. Supervisors were more knowledgeable of the range of technology available in the marketplace than the on-site technicians. It is very clear, staff are extremely stressed because of the operation of the vacuum system and the negative customer relations that persist as a result of the condition and performance of the vacuum system.

As part of the review, vacuum station operation and maintenance procedures, service valve and controller rebuilding procedures, emergency response procedures, service valve operation, troubleshooting procedures, and service restoration procedures were evaluated. Staff were knowledgeable on the operational and maintenance procedures for the Eagle Creek vacuum system.

As part of the report, the team was asked to provide an opinion on appropriate staffing levels. As part of this assessment, the team reviewed the size, complexity and condition of the Eagle Creek vacuum system to other vacuum systems. As such, two other vacuum systems were reviewed for comparison purposes.

Eagle Creek Assets and Resources

Eagle Creek Assets

- One (1) vacuum station
- 220 valves

The resources both dedicated and available to Eagle Creek. The team consist of:

- Three (3) technicians that are on-site daily;
- Five (5) local (within 45 minute drive) technicians;
- Local supervisor;
- Ten (10) trained personnel that provide support during emergency situations;

New staff members are teamed with an experienced staff member as they integrate into the operations of the Eagle Creek system.

York County, VA Assets and Resources

Comparison: York County, VA

- Eight (8) vacuum stations
- 5000 valves

York County employs Five (5) FTEs that are available for the operation of the vacuum system.

For context, a Eagle Creek sized vacuum system would typically require the support of one (1) part time operations technician with maintenance support for performing preventive maintenance activities as required. In addition, a typical vacuum system would not require additional dedicated resources during rainfall events in order to maintain proper operation of the vacuum system.

The poor condition of the Eagle Creek system from years of inadequate maintenance, years of inadequate investment, and years of inadequate owner engagement (up until recently) have resulted in the current service issues.

Decisions to allocate such a significant level of resources to Eagle Creek were necessary because of the condition of the Eagle Creek assets, coupled with perceptions and lack of vacuum system expertise by from regulatory officials. The main questions raised as part of this evaluation were:

1. Prudency
2. Funding

There is a concern regarding the prudency of allocating such a high level of resources. Certainly, if there had been a more robust maintenance program and investment, the condition of the system would be significantly better than what was witnessed. Additional capital investment would lessen the strain on human resources and were perplexed by the unwillingness to make these investments. For clarity, the team does not think a band-aid approach adds any value and that any investment into the collection system at Eagle Creek should be a complete overhaul and upgrade. There is no value a investment that does not result in a complete overhaul of the collection system. Any investment that does not completely upgrade the collection system will not produce the desired outcome. Further delays in moving to a long term solution will result in continued service issues and waste of human resources. In the opinion of the team, given the current condition of the vacuum system, there is no level of man power that will guarantee uninterrupted service for the Eagle Creek vacuum system.

Again for context, over the last 90 days, there have been in excess of 1800 field hours dedicated to the Eagle Creek system operation. This does not include efforts from management and customer service. The effort from field operations during this period, averages of 21 hours of coverage per day, with ramping up to 14 people on site in some instances with a minimum of three people on-site during the day.

Funding for these activities, the owner reports that they do not have the funds to support such a robust operation plan, so funding for these efforts has been provided by Envirolink.

While it is understandable that regulators and the community are frustrated, it is clear, that the staff and management are committed to providing exceeding typical response times and allocation of resources to meet the demands of the community but feel that system limitations, coupled with the overall age and condition of the system are impacting their ability to achieve the desired results and is the reason for customer perceptions and complaints.

Comparing response times for Eagle Creek to other types of systems, the service response model for Eagle Creek was found to be very responsive. In the event of a 'low vacuum' alarm, the on-site or on-call technician responds within 15-30 minutes when techs are on duty and 1 hour when tech are not on-duty [industry guidelines are 1.5 hours during business hours and 2 hours during non-business hours.

While there are perception issues and customer frustration, another source of frustration for customers is procedures for repairing "leaks". In this context, repairing a "leak" on a vacuum system is more analogous to a water distribution system than a sewer collection system. When responding to a "leak", priority is given to isolating and identifying the "leak" creating the alarm condition. Similar to water distribution system, section of the vacuum system must be taken out of service in order to isolate the "leak", so it can be located and repaired. Once the "leak" is located, vacuum mains remain shut down until the repair is completed. Upon completion of the repair, service to the vacuum mains that had been shut down is restored. It is our opinion that reports related to the "system being down" are due to the isolation activities during a service response procedure.

The big difference between a vacuum system and other sewer collection technology is the fact that one service leak impacts service for other customers. As described about the efforts to repair one service, impact other customers. This complicates restoration efforts and leads to additional service issues during restoration procedures. Once the initial "leak" is repaired, technicians begin opening valves and restoring vacuum. As vacuum is restored, full pits that could not actuate during restoration efforts begin to 'fire' creating additional "leaks". As such restoration efforts are an iterative process of search, identify, repair, restore. A typical restoration effort occurs according the following model:

1. Isolate system
2. Search and identify leak
3. Repair customer leak
4. Restore vacuum pressure
5. Isolate system
6. Search and identify leak
7. Repair customer leak
8. Restore vacuum pressure
9. Repeat steps 1 through 5 until all leaks have been restored

These efforts begin on the vacuum mains closest to the plant and continue through to the end of the line. As such customers on the end of the line have the longest periods of service interruption and are the most impacted by a customer leak.

Potential complications during restoration efforts include:

1. Customer leak on a previously restored section of line. This results in technicians "retreating" to restore the customer leak and then working to regain the lost progress.
2. Use of water – the limited storage in the customer pits. Heavy usage of water complicates restoration efforts as water backs up into controllers resulting in additional customer leaks.

It was noted that customers get frustrated during restoration efforts as technicians are focused on finding and isolating leaks and often fail to acknowledge receipt of the customer call. While the response model used is effective, we do recommend an acknowledgement or notification prior to isolating parts of the system.

Recommendation: The technicians acknowledge receipt of the service orders by communicating to the customers that they have received the service request and informing the customer that they will respond once the service leak is isolated and repaired.

It was also noted that a reverse 411 system is utilized to communicate service interruptions to the community. This system is effective in normal water and sewer utility operation in communicating service status information to customers. However, there are timing issues related with customer notifications. During service restoration efforts, customer notifications often lag real time conditions. While the timing between obtaining field information and initiating notification is typically 30 minutes. On the ground conditions change very rapidly so even a 30 minute difference between obtaining field data and issuance of customer notification creates situation where the customer notification represents 'old' information. As such, customer notifications should include a time stamp, in an attempt to get customers to understand the time the information was collected.

Recommendation: Simplify customer notifications. Note, Envirolink has worked with the HOA to develop communication protocols and those protocols are being followed.

In addition to reviewing the service response plan, an evaluation of the vacuum station and pit design was conducted.

Vacuum Station Evaluation

The vacuum station capacity is a critical issue and places a significant strain on the system. A more robust design of the vacuum station is necessary to maintain vacuum during service leaks and reduce the strain on response times.

Prior to summarizing specific observations, a fundamental understanding of vacuum technically and the Eagle Creek system is required. Key points are:

1. **Vacuum station design coupled with the age and condition of the pits, magnify the service limitations of vacuum technology.** In the event of a service leak or low vacuum alarm, technicians have minutes to find, isolate, repair and restore the service. There will always be the risk of additional pit failures regardless of speed for repair. In the case of Eagle Creek, time for repair of a service is critical because every minute it takes to identify and isolate a pit failure increases the risk that another pit will fail while responding. Additional labor resources will not solve this issue.
2. **There is not a solution for stuck closed valves.** There is no way for technicians to identify a stuck closed pit failure prior to backup. No level of manpower will solve this issue. Valves that stick closed will not result in a low vacuum alarm, so the only mechanism for identifying a stuck closed valve is through customer notification.

Key observations:

1. Significant investment in the vacuum and sewage pumps were made in Fall of 2020 as an emergency corrective maintenance action. There remains major components of the vacuum station that remain in a deteriorated state. In particular, the condition of the tank and controls are considered poor.
2. The vacuum pumps are being operated between 16 and 20 pounds of vacuum. The capacity of the vacuum pumps does not include a safety factor.

3. Restoring service after repairing a valve is complicated because of a lack of air admittance. The air admittance stations introduce additional air to move the water towards the vacuum station, allowing the vacuum to recover, greatly improving system performance.
4. Higher capacity vacuum pumps would provide a safety factor and enhance service levels.
5. The current vacuum pumps were not sized to account for inflow and infiltration without significant operator intervention. The addition of air admittance valves and higher vacuum pump capacity will allow the system to handle significantly more flow associated with I&I. The vacuum capacity is a critical issue.
6. The existing rotary vane pumps operate at a single speed with stop/start controls not variable frequency drives. Rotary screw, with variable frequency drives will be required.
7. The existing system does not provide alarms to alert homeowners and technicians of valve pit issues.
8. The existing sewage pumps are not continuous duty and include start/stop controls. Installation of variable frequency drives with the use of continuous duty sewage pumps are required.
9. The existing system includes two vacuum pumps. Additional redundancy is required.
10. The existing vacuum pumps are not recommended for vacuum systems. Oil-sealed rotary screw vacuum pumps are the current standard for use in vacuum systems.

Inflow and Infiltration - I&I is a consideration in high groundwater table areas. Installation of cycle counters at each pit allows the identification and quantity of infiltration at each pit. Sources of infiltration include:

1. Leaking through the top (the top of the pit if full of water) and then slow leaking through the pipe penetrations (around the grommets) in the membrane that separates the upper part of the pit from the sump.
2. Aging of grommets that attempt to seal the homeowners' gravity lines at the penetration to the sump – These should be replaced every 10 years and have never been replaced. This is a significant source of I&I.
3. The homeowner's gravity lines are leaking. This is difficult and costly to find without counters and monitoring.

Findings & Recommendations

Immediate Actions

1. Install air admittance – install air admittance at dead ends. There are four dead ends on the Eagle Creek system at
 - a. Eagleton Circle (2)
 - b. Eagle Creek Drive (1)
 - c. St. Andrews (1)
2. Continuous on-site system monitoring. For stated reasons, repairs must be identified and repaired within minutes. Vacuum system technology is unique as industry standard response times are not adequate. This is evident by vacuum system manufacturers promotion of pit monitoring systems. Vacuum technology manufacturers recognized the inherent nature of vacuum systems and the strain this placed on response times. The vacuum industry responded by developing pit monitoring, which is meant to shorten the time required to identify pit issues. This is magnified at Eagle Creek because of design short comings, maintenance history, and lack of historical investment.

3. Move controllers on most problematic pits. **Anything short of a complete redesign and rebuild of the vacuum system will only marginally improve service and is not a prudent expenditure of funds.** However, moving the controllers outside of the pit for the most troublesome services will help those customers experiencing the majority of the issues.

Long Term Initiatives (assumes continuing with vacuum sewer collection)

1. Recommendation (Long Term): Replace Pits. The pits on the Eagle Creek vacuum system are not recommended for this application and beyond their expected life. The increased issues in recent months is attributed to the age the pits. Pit failures have become part of daily maintenance activities.
 - a. Monolithic construction – This solution eliminates the seam by using monolithic manufacturing techniques. Requires specialty molds. Not effective against water entry through the top of the vessel.
2. Recommendation (Long Term): Redesign and Replacement of Vacuum Station
 - a. Install variable Frequency Drives on vacuum pumps. The installation of VFDs will smooth out the performance curves and improve energy efficiency. [e.g. distribution curve versus a step function].
 - b. Higher capacity vacuum pumps – The system was designed without consideration of inflow and infiltration. Pits and pit components have a design life of 10 years. As pits age, components within the pit deteriorate and become sources of inflow and infiltration. The Eagle Creek is additionally impacted by sea level rise and experiences significant sources of inflow and infiltration. The capacity of the existing vacuum pumps do not include a safety factor for inflow and infiltration, thus vacuum pumps need to be sized to permit one vacuum pump to carry the system with an appropriate safety factor.
 - c.
 - d. Install VFDs on sewage pumps to permit ramping up and down.
 - e. Instrumentation to include air flow, vacuum sensor, pressure sensor, and level sensors.
 - f. Oil-sealed rotary screw vacuum pumps. The existing rotary vane vacuum pumps are not recommended for vacuum systems due their sensitivity to moisture. The current best available technology for vacuum pumps are rotary screw vacuum pumps with variable frequency speed controls. The 'vanes' deteriorate when in contact with water. This increases the risk of failure. Water penetrating the vacuum pumps will cause a vacuum pump failure. The use of oil-sealed screw vacuums will both increase energy efficiency and provide for lower risk of failure.
 - g. New stainless steel vacuum station tank outfitted with upgraded instrumentation, including level transmitters, pressure (vacuum) transmitter.
3. Recommendation (Long Term): Change and move controllers. Until controllers are developed that do not fail upon contact with moisture, the controllers should be located above flood levels and outside of pits.
 - a. Move controllers outside of pits
 - b. Use of water resistant controllers
4. Recommendation (Long Term): Maintain 24/7/365 on-site monitoring. Until pit valve design addresses limited storage volume and the potential to impact overall system performance, response times will remain vital to maintaining service. While monitoring is effective in reducing the time to identify pit problems, it does not solve the underlying problem. Until vacuum technology addresses the underlying problem, the time to identify and repair a pit issue will remain critical.

Myers Rebuttal Exhibit H
DEQ Inspection Reports

Myers Exhibit G

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6

ATTACHMENT 1

Compliance Inspection Report**Permit:** WQ0014306 **Effective:** 11/13/09 **Expiration:** 09/30/15 **Owner :** Sandler Utilities at Mill Run L L C**SOC:** **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd**County:** Currituck**Region:** Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb**Title:****Phone:** 757-463-5000 Ext.388**Directions to Facility:**

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,**Primary ORC:** William Galen Freed**Certification:** 14856**Phone:** 252-491-5277**Secondary ORC(s):****On-Site Representative(s):****Related Permits:****Inspection Date:** 09/25/2012**Entry Time** 10:30AM**Exit Time:** 12:00PM**Primary Inspector:** Robert B Tankard**Phone:** 252-946-6481 Ext.233**Secondary Inspector(s):**

David L May

Phone :252-946-6481 Ext.35**Reason for Inspection:** Routine**Inspection Type:** Compliance Evaluation**Permit Inspection Type:** Reclaimed Water**Facility Status:** ☐ Compliant ☒ Not Compliant**Question Areas:**

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Effluent | <input checked="" type="checkbox"/> Treatment Flow Measurement-Influent | <input checked="" type="checkbox"/> Miscellaneous Questions |
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Water Use Records | <input checked="" type="checkbox"/> Treatment Barscreen | <input checked="" type="checkbox"/> Treatment Filters |
| <input checked="" type="checkbox"/> Record Keeping | <input checked="" type="checkbox"/> Treatment Activated Sludge | <input checked="" type="checkbox"/> Treatment Clarifiers |
| <input checked="" type="checkbox"/> Treatment Disinfection | <input checked="" type="checkbox"/> End Use-Infiltration | <input checked="" type="checkbox"/> Treatment Flow Measurement |
| <input checked="" type="checkbox"/> Treatment Return pumps | <input checked="" type="checkbox"/> End Use-Reuse | <input checked="" type="checkbox"/> Standby Power |

(See attachment summary)

Permit: WQ0014306
Inspection Date: 09/25/2012

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Inspection Summary:

The effluent at the wwtp appears to meet the effluent limits during the time of the inspection. Areas of concern with the wwtp are as follows:

- *Algae is growing on the weirs of the clarifier.

- *Solids and plant growth is stored in the digester. The digester needs to be cleaned (solids and plants need to be removed).

- *Only one bank of UV bulbs are operational. ORC has stated that he had to rewire the ones in use. The second bank is non-operational.

- *Woody vegetation is growing on the dikes of the infiltration basin.

- *The golf course is no longer operational. The ORC has stated that the property is for sale.

These concerns need to be addressed and a follow-up inspection will take place in the future to verify compliance. The facility is non-compliant at this time.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 09/25/2012

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Type

	Yes	No	NA	NE
Lagoon Spray, LR	<input type="checkbox"/>			
Infiltration System	<input type="checkbox"/>			
Single Family Spray, LR	<input type="checkbox"/>			
Activated Sludge Spray, LR	<input type="checkbox"/>			
Activated Sludge Drip, LR	<input type="checkbox"/>			
Activated Sludge Spray, HR	<input type="checkbox"/>			
Single Family Drip	<input type="checkbox"/>			
Recycle/Reuse	<input type="checkbox"/>			
Reuse (Quality)	<input checked="" type="checkbox"/>			

Treatment Flow Measurement-Influent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Flow Measurement-Water Use Records

	Yes	No	NA	NE
Is water use metered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the daily average values properly calculated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Flow Measurement-Effluent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Standby Power

	Yes	No	NA	NE
Is automatically activated standby power available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is generator tested weekly by interrupting primary power source?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is generator operable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does generator have adequate fuel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Permit: WQ0014306
 Inspection Date: 09/25/2012

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Treatment Barscreen

	Yes	No	NA	NE
Is it free of excessive debris?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is disposal of screenings in compliance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the bars spaced properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the unit in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Activated Sludge

	Yes	No	NA	NE
Is the aeration mechanism operable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration basin thoroughly mixed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration equipment easily accessed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is Dissolved Oxygen adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are Settleometer results acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is activated sludge an acceptable color?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment: <u>Operator is using large aeration basin as digester. The digester for the system being used is full of solids and plants. This digester should be pumped and cleaned out.</u>				

Treatment Clarifiers

	Yes	No	NA	NE
Are the weirs level?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the weirs free of solids and algae?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scum removal system operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scum removal system accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the sludge blanket at an acceptable level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the effluent from the clarifier free of excessive solids?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment: <u>The clarifier weirs are full of algae.</u>				

Treatment Return pumps

	Yes	No	NA	NE
Are they in place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are they operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Filters

	Yes	No	NA	NE
Is the filter media present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the filter media the correct size and type?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the air scour operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scouring acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the clear well free of excessive solids?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the mud well free of excessive solids and filter media?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does backwashing frequency appear adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 09/25/2012

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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JUN 22 2022

Treatment Disinfection

Yes No NA NE

Is the system working?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the fecal coliform results indicate proper disinfection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there adequate detention time (≥ 30 minutes)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the system properly maintained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If gas, does the cylinder storage appear safe?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the fan in the chlorine feed room and storage area operable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the chlorinator accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If tablets, are tablets present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the tablets the proper size and type?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is contact chamber free of sludge, solids, and growth?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If UV, are extra UV bulbs available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If UV, is the UV intensity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
# Is it a dual feed system?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does the Stationary Source have more than 2500 lbs of Chlorine (CAS No. 7782-50-5)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, then is there a Risk Management Plan on site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, then what is the EPA twelve digit ID Number? (1000-____-____)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, then when was the RMP last updated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment: The UV system is having problems. There has been several occasions that the UV system has failed to give an adequate kill of the fecal. Also, the second UV system is non operational (power cords are gone to the lamp fixtures). ORC has stated that the manufacturer has gone out of business and finding parts for these units are scarce. The Owner needs to actively look for a replacement system for disinfection.

Record Keeping

Yes No NA NE

Is a copy of current permit available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are monitoring reports present: NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NDAR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are application rates adhered to?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW monitoring being conducted, if required (GW-59s submitted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all samples analyzed for all required parameters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any 2L GW quality violations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW-59A certification form completed for facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is effluent sampled for same parameters as GW?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do effluent concentrations exceed GW standards?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are annual soil reports available?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 09/25/2012

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

# Are PAN records required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
# Did last soil report indicate a need for lime?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If so, has it been applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are operational logs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are lab sheets available for review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on GW-59s?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are Operational and Maintenance records present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Operational and Maintenance records complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has permittee been free of public complaints in last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a copy of the SOC readily available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No treatment units bypassed since last inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment:

End Use-Infiltration

Yes No NA NE

High Rate

# Is the application High Rate or Low Rate?				
Are buffers maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a usable green area maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the distribution equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of ponding?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of breakout?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of solids, algae, etc.?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the records show that the fields are properly maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of vegetation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do any surface water features appear to be adversely impacted by GW discharge?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No chemicals or rototiller used to eliminate vegetation, solids, algae, etc.?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: The only issue with the infiltration pond is that woody vegetation is growing on inside and outside of the dike walls. The dikes were mowed approximately two years ago. The infiltration system appeared to not function as well as pre mowing. This is due to the mulch and solids washing into the pond and clogging the bottom of the pond. The owner needs to remove the vegetation from the dikes without causing future problems with the infiltration of the pond.

Permit: WQ0014306
 Inspection Date: 09/25/2012

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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End Use-Reuse

	Yes	No	NA	NE
Is the acreage in the permit being utilized?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the acreage specified in the permit correspond to the measured acreage at the site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all essential units provided in duplicate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is an automatically activated standby power source available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the equalization capacity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is aerated flow equalization present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the turbidity meter been calibrated in the last 12 months?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the turbidity meter have recording capabilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all flow diverted at the appropriate times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater diverted from reuse storage unit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater treated, retreated, or disposed of acceptably?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is upset wastewater treated prior to discharge to irrigation storage?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is public access restricted from irrigation area during active site use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If golf course, is a sign posted in plain sight on the club house?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the cover crop acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of ponding/runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage in the permit being utilized?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application area free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment: The golf course is no longer operating and is up for Sale. Therefore, no irrigation is taking place on the golf course.

Compliance Inspection Report**Permit:** WQ0014306 **Effective:** 11/13/09 **Expiration:** 09/30/15 **Owner :** Sandler Utilities at Mill Run L L C**SOC:** **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP**County:** Currituck

287 Saint Andrews Rd

Region: Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb**Title:****Phone:** 757-463-5000 Ext.388**Directions to Facility:**

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,**Primary ORC:** William Galen Freed**Certification:** 14856**Phone:** 252-491-5277**Secondary ORC(s):****On-Site Representative(s):****Related Permits:****Inspection Date:** 11/20/2013**Entry Time** 11:00AM**Exit Time:** 12:30PM**Primary Inspector:** Robert B Tankard**Phone:** 252-946-6481 Ext.233**Secondary Inspector(s):**

Ronnie T Smith

Reason for Inspection: Routine**Inspection Type:** Compliance Evaluation**Permit Inspection Type:** Reclaimed Water**Facility Status:** ☒ Compliant ☐ Not Compliant**Question Areas:**

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Effluent | <input checked="" type="checkbox"/> Treatment Flow Measurement-Influent | <input checked="" type="checkbox"/> Miscellaneous Questions |
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Water Use Records | <input checked="" type="checkbox"/> Treatment Barscreen | <input checked="" type="checkbox"/> Treatment Filters |
| <input checked="" type="checkbox"/> Record Keeping | <input checked="" type="checkbox"/> Treatment Activated Sludge | <input checked="" type="checkbox"/> Treatment Sludge Storage/Treatment |
| <input checked="" type="checkbox"/> Treatment Clarifiers | <input checked="" type="checkbox"/> Treatment Disinfection | <input checked="" type="checkbox"/> End Use-Infiltration |
| <input checked="" type="checkbox"/> Treatment Flow Measurement | <input checked="" type="checkbox"/> Treatment Return pumps | <input checked="" type="checkbox"/> End Use-Reuse |
| <input checked="" type="checkbox"/> Standby Power | | |

(See attachment summary)

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 11/20/2013

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Inspection Summary:

The facility was found to be in compliance. Thanks to Mr. Bill Free with his help in the inspection.

Permit: WQ0014306

Owner - Facility: Sandier Utilities at Mill Run L L C

Inspection Date: 11/20/2013

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Type

	Yes	No	NA	NE
Lagoon Spray, LR	<input type="checkbox"/>			
Infiltration System	<input type="checkbox"/>			
Activated Sludge Spray, HR	<input type="checkbox"/>			
Activated Sludge Spray, LR	<input type="checkbox"/>			
Single Family Spray, LR	<input type="checkbox"/>			
Activated Sludge Drip, LR	<input type="checkbox"/>			
Single Family Drip	<input type="checkbox"/>			
Recycle/Reuse	<input type="checkbox"/>			
Reuse (Quality)	<input checked="" type="checkbox"/>			

Treatment Flow Measurement-Influent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Flow Measurement-Water Use Records

	Yes	No	NA	NE
Is water use metered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the daily average values properly calculated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Flow Measurement-Effluent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Standby Power

	Yes	No	NA	NE
Is automatically activated standby power available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is generator tested weekly by interrupting primary power source?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is generator operable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does generator have adequate fuel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment: <u>Generator was started while on-site while assimilating a power loss.</u>				

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 11/20/2013

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Treatment Barscreen

	Yes	No	NA	NE
Is it free of excessive debris?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is disposal of screenings in compliance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the bars spaced properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the unit in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Activated Sludge

	Yes	No	NA	NE
Is the aeration mechanism operable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration basin thoroughly mixed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration equipment easily accessed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is Dissolved Oxygen adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are Settleometer results acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is activated sludge an acceptable color?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Clarifiers

	Yes	No	NA	NE
Are the weirs level?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the weirs free of solids and algae?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scum removal system operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scum removal system accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the sludge blanket at an acceptable level?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the effluent from the clarifier free of excessive solids?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Return pumps

	Yes	No	NA	NE
Are they in place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are they operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Filters

	Yes	No	NA	NE
Is the filter media present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the filter media the correct size and type?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the air scour operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scouring acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the clear well free of excessive solids?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the mud well free of excessive solids and filter media?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does backwashing frequency appear adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Comment:				

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 11/20/2013

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Treatment Sludge Storage/Treatment

Yes No NA NE

Is the aeration operational?

☒ ☐ ☐ ☐

Is the aeration pattern even?

☐ ☐ ☐ ☒

If required, are Sanitary "Ts" present in tankage?

☐ ☐ ☒ ☐

Comment:

Treatment Disinfection

Yes No NA NE

Is the system working?

☒ ☐ ☐ ☐

Do the fecal coliform results indicate proper disinfection?

☒ ☐ ☐ ☐

Is there adequate detention time (>=30 minutes)?

☐ ☐ ☒ ☐

Is the system properly maintained?

☒ ☐ ☐ ☐

If gas, does the cylinder storage appear safe?

☐ ☐ ☒ ☐

Is the fan in the chlorine feed room and storage area operable?

☐ ☐ ☒ ☐

Is the chlorinator accessible?

☐ ☐ ☒ ☐

If tablets, are tablets present?

☐ ☐ ☒ ☐

Are the tablets the proper size and type?

☐ ☐ ☒ ☐

Is contact chamber free of sludge, solids, and growth?

☐ ☐ ☒ ☐

If UV, are extra UV bulbs available?

☒ ☐ ☐ ☐

If UV, is the UV intensity adequate?

☒ ☐ ☐ ☐

Is it a dual feed system?

☐ ☐ ☒ ☐

Does the Stationary Source have more than 2500 lbs of Chlorine (CAS No. 7782-50-5)?

☐ ☐ ☒ ☐

If yes, then is there a Risk Management Plan on site?

☐ ☐ ☒ ☐

If yes, then what is the EPA twelve digit ID Number? (1000-____ - ____)

If yes, then when was the RMP last updated?

Comment:

Record Keeping

Yes No NA NE

Is a copy of current permit available?

☒ ☐ ☐ ☐

Are monitoring reports present: NDMR?

☒ ☐ ☐ ☐

NDAR?

☒ ☐ ☐ ☐

Are flow rates less than of permitted flow?

☒ ☐ ☐ ☐

Are flow rates less than of permitted flow?

☒ ☐ ☐ ☐

Are application rates adhered to?

☒ ☐ ☐ ☐

Is GW monitoring being conducted, if required (GW-59s submitted)?

☒ ☐ ☐ ☐

Are all samples analyzed for all required parameters?

☒ ☐ ☐ ☐

Are there any 2L GW quality violations?

☐ ☒ ☐ ☐

Is GW-59A certification form completed for facility?

☒ ☐ ☐ ☐

Is effluent sampled for same parameters as GW?

☒ ☐ ☐ ☐

Permit: WQ0014306 Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Date: 11/20/2013 Inspection Type : Compliance Evaluation Reason for Visit: Routine

Do effluent concentrations exceed GW standards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are annual soil reports available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Are PAN records required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Did last soil report indicate a need for lime?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If so, has it been applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are operational logs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are lab sheets available for review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on GW-59s?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are Operational and Maintenance records present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Operational and Maintenance records complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has permittee been free of public complaints in last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a copy of the SOC readily available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No treatment units bypassed since last inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: Please be aware that a groundwater standard for ammonia nitrogen of 1.5 micrograms/liter is now applicable.

End Use-Infiltration

Yes No NA NE

# Is the application High Rate or Low Rate?				
Are buffers maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a usable green area maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the distribution equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of ponding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of breakout?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of solids, algae, etc.?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the records show that the fields are properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of vegetation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do any surface water features appear to be adversely impacted by GW discharge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No chemicals or rototiller used to eliminate vegetation, solids, algae, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: Please be aware that a groundwater standard for Ammonia Nitrogen of 1.5 microgram/liter is now applicable.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 11/20/2013

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

End Use-Reuse

Yes No NA NE

Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the acreage specified in the permit correspond to the measured acreage at the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all essential units provided in duplicate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is an automatically activated standby power source available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the equalization capacity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is aerated flow equalization present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the turbidity meter been calibrated in the last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the turbidity meter have recording capabilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all flow diverted at the appropriate times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater diverted from reuse storage unit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater treated, retreated, or disposed of acceptably?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is upset wastewater treated prior to discharge to irrigation storage?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is public access restricted from irrigation area during active site use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If golf course, is a sign posted in plain sight on the club house?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of ponding/runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application area free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment:

Compliance Inspection Report**Permit:** WQ0014306 **Effective:** 11/13/09 **Expiration:** 09/30/15 **Owner :** Sandler Utilities at Mill Run L L C**SOC:** **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd**County:** Currituck**Region:** Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb**Title:****Phone:** 757-463-5000 Ext.388**Directions to Facility:**

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,**Primary ORC:****Certification:****Phone:****Secondary ORC(s):****On-Site Representative(s):****Related Permits:****Inspection Date:** 04/22/2015**Entry Time** 09:45AM**Exit Time:** 12:00PM**Primary Inspector:** Scott A Vinson**Phone:** 919-791-4252**Secondary Inspector(s):****Reason for Inspection:** Routine**Inspection Type:** Compliance Evaluation**Permit Inspection Type:** Reclaimed Water**Facility Status:** ☐ Compliant ☒ Not Compliant**Question Areas:**

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Effluent | <input checked="" type="checkbox"/> Treatment Flow Measurement-Influent | <input checked="" type="checkbox"/> Miscellaneous Questions |
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Water Use Records | <input checked="" type="checkbox"/> Treatment | <input checked="" type="checkbox"/> Treatment Barscreen |
| <input checked="" type="checkbox"/> Treatment Filters | <input checked="" type="checkbox"/> Record Keeping | <input checked="" type="checkbox"/> Treatment Activated Sludge |
| <input checked="" type="checkbox"/> Treatment Sludge Storage/Treatment | <input checked="" type="checkbox"/> End Use-Irrigation | <input checked="" type="checkbox"/> Treatment Clarifiers |
| <input checked="" type="checkbox"/> Treatment Disinfection | <input checked="" type="checkbox"/> End Use-Infiltration | <input checked="" type="checkbox"/> Treatment Flow Measurement |
| <input checked="" type="checkbox"/> Treatment Return pumps | <input checked="" type="checkbox"/> End Use-Reuse | <input checked="" type="checkbox"/> Standby Power |

(See attachment summary)

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 04/22/2015

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Inspection Summary:

Overall the site looked clean and maintained.

Please complete the required maintenance on the inoperable second bank of UV bulbs as soon as possible and please let me know when it is complete.

There have been multiple fecal, total suspended solids and ammonia limit violations from January through March of 2015 that need to be addressed and kept from reoccurring.

The GW-59 forms for March, July & November of 2014 have not been submitted to the Division. Please determine if these well samples were taken and analyzed and let Scott Vinson with the Division know if they were not taken. If they have been taken, let Scott know and submit the appropriate forms to Raleigh as required by the permit.

I spot checked NDMRs and for March 2014 and November 2014 analysis matched lab result sheets and discovered that the missing tri-annuals (Total Organic Carbon, TDS & Chloride) were actually taken but merely missed being recorded on the submitted NDMR forms. Please review forms for March, July & November of 2014 and March 2015 and revise as needed to include the missing data and re-submit revised forms to the Division's central office for processing. Please also send a copy of these revised forms to my attention at the address below:

NCDENR - DWR
c/o Scott Vinson
943 Washington Square Mall
Washington, NC 27889

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 04/22/2015

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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JUN 22 2022

Type

	Yes	No	NA	NE
Infiltration System	<input type="checkbox"/>			
Single Family Spray, LR	<input type="checkbox"/>			
Lagoon Spray, LR	<input type="checkbox"/>			
Activated Sludge Spray, HR	<input type="checkbox"/>			
Activated Sludge Spray, LR	<input type="checkbox"/>			
Recycle/Reuse	<input type="checkbox"/>			
Activated Sludge Drip, LR	<input type="checkbox"/>			
Single Family Drip	<input type="checkbox"/>			
Reuse (Quality)	<input checked="" type="checkbox"/>			

Treatment

	Yes	No	NA	NE
Are Treatment facilities consistent with those outlined in the current permit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do all treatment units appear to be operational? (if no, note below.)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment:

Treatment Flow Measurement-Influent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment:

Treatment Flow Measurement-Water Use Records

	Yes	No	NA	NE
Is water use metered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the daily average values properly calculated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment:

Treatment Flow Measurement-Effluent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: Flow meter calibrated May 2014 and has scheduled next calibration to be performed on May 27, 2015.
Turbidity meter was newly installed this past year (2014) and is planned to be calibrated also on May 27, 2015.

Permit: WQ0014306
 Inspection Date: 04/22/2015

Owner - Facility: Sandler Utilities at Mill Run L L C
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Standby Power

	Yes	No	NA	NE
Is automatically activated standby power available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is generator tested weekly by interrupting primary power source?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is generator operable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does generator have adequate fuel?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment: <u>The generator was started while on-site while assimilating a power loss.</u>				

Treatment Barscreen

	Yes	No	NA	NE
Is it free of excessive debris?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is disposal of screenings in compliance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the bars spaced properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the unit in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Activated Sludge

	Yes	No	NA	NE
Is the aeration mechanism operable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration basin thoroughly mixed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration equipment easily accessed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is Dissolved Oxygen adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are Settleometer results acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is activated sludge an acceptable color?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Clarifiers

	Yes	No	NA	NE
Are the weirs level?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the weirs free of solids and algae?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scum removal system operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scum removal system accessible?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the sludge blanket at an acceptable level?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the effluent from the clarifier free of excessive solids?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Return pumps

	Yes	No	NA	NE
Are they in place?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are they operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comment:				

Treatment Filters

	Yes	No	NA	NE
Is the filter media present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the filter media the correct size and type?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 04/22/2015

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Is the air scour operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scouring acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the clear well free of excessive solids?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the mud well free of excessive solids and filter media?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does backwashing frequency appear adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comment:

Treatment Sludge Storage/Treatment

Yes No NA NE

Is the aeration operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration pattern even?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
If required, are Sanitary "Ts" present in tankage?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment: Need to remove small amount of weeds/woody vegetation off top of sludge holding tank and to continue to remove sludge as needed.

Treatment Disinfection

Yes No NA NE

Is the system working?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the fecal coliform results indicate proper disinfection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there adequate detention time (>=30 minutes)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the system properly maintained?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If gas, does the cylinder storage appear safe?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the fan in the chlorine feed room and storage area operable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the chlorinator accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If tablets, are tablets present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the tablets the proper size and type?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is contact chamber free of sludge, solids, and growth?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If UV, are extra UV bulbs available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If UV, is the UV intensity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
# Is it a dual feed system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the Stationary Source have more than 2500 lbs of Chlorine (CAS No. 7782-50-5)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, then is there a Risk Management Plan on site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If yes, then what is the EPA twelve digit ID Number? (1000-____-____)

If yes, then when was the RMP last updated?

Comment: There have been excessive fecal limit violations in February and March of 2015 reported on the NDMRs.

There are twin sets/banks of UV bulbs, with one set currently down and needing to be maintained. Please repair as soon as possible.

Record Keeping

Yes No NA NE

Is a copy of current permit available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 04/22/2015

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Are monitoring reports present: NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NDAR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are application rates adhered to?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW monitoring being conducted, if required (GW-59s submitted)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all samples analyzed for all required parameters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any 2L GW quality violations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is GW-59A certification form completed for facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is effluent sampled for same parameters as GW?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do effluent concentrations exceed GW standards?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are annual soil reports available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Are PAN records required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Did last soil report indicate a need for lime?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If so, has it been applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are operational logs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are lab sheets available for review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on GW-59s?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are Operational and Maintenance records present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Operational and Maintenance records complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has permittee been free of public complaints in last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a copy of the SOC readily available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No treatment units bypassed since last inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: GW-59 forms for March, July and November of 2014 have not been submitted to the Division.

End Use-Irrigation

Yes No NA NE

Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop type specified in permit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the crop cover acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site condition adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of runoff / ponding?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage specified in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal field free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is access restricted and/or signs posted during active site use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306
 Inspection Date: 04/22/2015

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
# Info only: Does the permit call for monitoring wells?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are monitoring wells damaged?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comment: A reuse spray irrigation sign was not present at the golf club house. The club house manager believes the previous sign may have been removed along with multiple older posts on the bulletin board and mentioned that he would post a new sign once the ORC creates and gives it to him. He will place signage behind locked glass door on bulletin board so that it can not be accidentally removed again.

End Use-Infiltration

Yes No NA NE

# Is the application High Rate or Low Rate?				
Are buffers maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is a usable green area maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the distribution equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of ponding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of breakout?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of solids, algae, etc.?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the records show that the fields are properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of vegetation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Do any surface water features appear to be adversely impacted by GW discharge?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No chemicals or rototiller used to eliminate vegetation, solids, algae, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment: Please be aware that a groundwater standard for Ammonia Nitrogen of 1.5 microgram/liter is now applicable.

End Use-Reuse

Yes No NA NE

Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the acreage specified in the permit correspond to the measured acreage at the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all essential units provided in duplicate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 04/22/2015

Inspection Type : Compliance Evaluation

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Is an automatically activated standby power source available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the equalization capacity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is aerated flow equalization present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the turbidity meter been calibrated in the last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the turbidity meter have recording capabilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all flow diverted at the appropriate times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater diverted from reuse storage unit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater treated, retreated, or disposed of acceptably?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is upset wastewater treated prior to discharge to irrigation storage?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is public access restricted from irrigation area during active site use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If golf course, is a sign posted in plain sight on the club house?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of ponding/runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application area free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: A reuse spray irrigation sign was not present at the golf club house. The club house manager believes the previous sign may have been removed along with multiple older posts on the bulletin board and mentioned that he would post a new sign once the ORC creates and gives it to him. He will place signage behind locked glass door on bulletin board so that it can not be accidentally removed again.

Compliance Inspection Report**Permit:** WQ0014306 **Effective:** 10/08/15 **Expiration:** 09/30/20 **Owner :** Sandler Utilities at Mill Run L L C**SOC:** **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd**County:** Currituck**Region:** Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb**Title:****Phone:** 757-463-5000 Ext.388**Directions to Facility:**

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,**Primary ORC:****Certification:****Phone:****Secondary ORC(s):****On-Site Representative(s):****Related Permits:****Inspection Date:** 01/31/2018**Entry Time** 10:35AM**Exit Time:** 01:15PM**Primary Inspector:** Scott A Vinson**Phone:** 919-791-4252**Secondary Inspector(s):****Reason for Inspection:** Routine**Inspection Type:** Compliance Sampling**Permit Inspection Type:** Reclaimed Water**Facility Status:** ☐ Compliant ☒ Not Compliant**Question Areas:**
☒ Treatment Flow Measurement-Effluent
☒ Treatment Flow Measurement-Water
 Use Records
☒ Treatment Filters
☒ Treatment Sludge Storage/Treatment
☒ Treatment Disinfection
☒ Treatment Return pumps
☒ Wells

☒ Treatment Flow Measurement-Influent
☒ Treatment
☒ Record Keeping
☒ End Use-Irrigation
☒ End Use-Infiltration
☒ End Use-Reuse

☒ Miscellaneous Questions
☒ Treatment Barscreen

☒ Treatment Activated Sludge
☒ Treatment Clarifiers
☒ Treatment Flow Measurement
☒ Standby Power
(See attachment summary)

Permit: WQ0014306
 Inspection Date: 01/31/2018

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Sampling

Reason for Visit: Routine

Inspection Summary:

On January 31, 2018, Washington Regional Office Staff members Scott Vinson and Randy Sipe visited the Eagle Creek Wastewater Treatment Plant to conduct a Compliance Sampling Evaluation. This inspection was conducted to both spot check and review records as well as to sample the effluent and the two ground water monitoring wells. The facility was found to be Non-Compliant with the permit for the reasons listed below (marked with asteriks).

I reviewed records for NDMRs for Januray 2016, October 2016, June 2017 and October 2017 and the reported analysis matched lab result sheets.

The facility had Delta Systems Environmental calibrate their turbidity and flow meters on June 6, 2017, and had their thermometer last calibrated on April 10, 2017 and had a new meter bought in Janauary 2018.

The facility contracts with Atlantic Sewage for their sludge/solids removal. They remove solids approximately every month as needed.

The required maintenance on the inoperable second bank of UV bulbs has been completed and is operable. The missing GW-59s from 2014 were submitted in June of 2015. The ground water monitoring results show signs of high Total Ammonia Nitrogen in both monitoring wells.

The facility's bench sheets need to have a place where the ORC/Backup ORC can sign daily as the calibrations and analyzed data points are taken and recorded.

**The reclaim wastewater reuse sign was not properly posted at the Golf Club House and DWR staff had to request that the Club Manager repost the sign and was put on notice that they are required to leave the sign posted at all times. The sign was reposted prior to staff leaving the club house.

***The excessive cold weather that occurred this winter (first week in January 2018) had caused the clarifier water to flip which caused excessive solids to drain down and partially clog the filters. After discussing with the operator, the sand media needs to be replaced as needed to continue proper filtering as soon as possible.

***There is again an excessive amount of woody vegetation growing around the high rate infiltration pond that needs to be removed as soon as possible. The removal should not be by grinding the tree trunks in place which could allow for solids to enter the infiltration basin as did last time. The removal should be such that no solids should fall or enter in the basin, nor should there be any excessive erosion of the side walls allowed to occur during and after the removal process. Grassed revegetation of the side walls should be established around the entire basin after all the woody vegetation is properly removed from the site. This grassed vegetation should be mowed regularly to remain healthy and to keep woody vegetation from re-establishing.

Permit: WQ0014306
 Inspection Date: 01/31/2018

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Sampling

Reason for Visit: Routine

***The two groundwater monitoring wells located adjacent to the high rate infiltration pond have been exceeding their Total Ammonia Nitrogen limits (1.5 mg/L) with MW-1 having approximately 6.3mg/L and MW-2 having approximately 10.8 mg/L regularly. It is noted that the wastewater effluent leaving the plant for the past 10-15 years has regularly been reported as being below allowable limits (4mg/L) for what was discharged into the infiltration pond with very few exceptions(see January-March of 2015).

It is important that the source of the high levels of ammonia in the groundwater are determined and eliminated if possible.

Sampling Results

	Effluent	MW-1	MW-2	
BOD, 5-Day	2.0 mg/L			
Fecal Coliform	1 CFU/100ml (Q1)			
Turbidity	5.3			
Suspended Solids	12 mg/L			
NH3 as N	0.13 mg/L	5.7 mg/L	9.8 mg/L	***
NO2+NO3 as N	17 mg/L	0.02 mg/L	0.02 mg/L	
TKN as N	1.8 mg/L	6.4 mg/L	10 mg/L	
TP	3.6 mg/L	1.4 mg/L	2.0 mg/L	

If you have any questions please call or write, Scott.Vinson@ncdenr.gov or (252)948-3844.

Please provide a written response to these permit and limit condition violations listed above to:

NCDEQ-DWR, WQROS
 c/o Scott Vinson
 943 Washington Square Mall
 Washington, NC 27889

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 01/31/2018

Inspection Type : Compliance Sampling

Reason for Visit: Routine

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Type

Yes No NA NE

Activated Sludge Spray, HR

☐

Activated Sludge Drip, LR

☐

Recycle/Reuse

☐

Single Family Drip

☐

Lagoon Spray, LR

☐

Single Family Spray, LR

☐

Activated Sludge Spray, LR

☐

Infiltration System

☒

Reuse (Quality)

☒**Treatment**

Yes No NA NE

Are Treatment facilities consistent with those outlined in the current permit?

☒ ☐ ☐ ☐

Do all treatment units appear to be operational? (if no, note below.)

☒ ☐ ☐ ☐

Comment:

Treatment Flow Measurement-Influent

Yes No NA NE

Is flowmeter calibrated annually?

☐ ☐ ☒ ☐

Is flowmeter operating properly?

☐ ☐ ☒ ☐

Does flowmeter monitor continuously?

☐ ☐ ☒ ☐

Does flowmeter record flow?

☐ ☐ ☒ ☐

Does flowmeter appear to monitor accurately?

☐ ☐ ☒ ☐

Comment:

Treatment Flow Measurement-Water Use Records

Yes No NA NE

Is water use metered?

☐ ☐ ☒ ☐

Are the daily average values properly calculated?

☐ ☐ ☒ ☐

Comment:

Treatment Flow Measurement-Effluent

Yes No NA NE

Is flowmeter calibrated annually?

☒ ☐ ☐ ☐

Is flowmeter operating properly?

☒ ☐ ☐ ☐

Does flowmeter monitor continuously?

☒ ☐ ☐ ☐

Does flowmeter record flow?

☒ ☐ ☐ ☐

Does flowmeter appear to monitor accurately?

☒ ☐ ☐ ☐Comment: Flow meter calibrated on 6/6/2017 by Delta Systems Environmental**Standby Power**

Yes No NA NE

Is automatically activated standby power available?

☒ ☐ ☐ ☐

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 01/31/2018

Inspection Type : Compliance Sampling

Reason for Visit: Routine

Is generator tested weekly by interrupting primary power source?

☒ ☐ ☐ ☐

Is generator operable?

☒ ☐ ☐ ☐

Does generator have adequate fuel?

☒ ☐ ☐ ☐

Comment:

Treatment Barscreen**Yes No NA NE**

Is it free of excessive debris?

☒ ☐ ☐ ☐

Is disposal of screenings in compliance?

☒ ☐ ☐ ☐

Are the bars spaced properly?

☒ ☐ ☐ ☐

Is the unit in good condition?

☒ ☐ ☐ ☐

Comment:

Treatment Activated Sludge**Yes No NA NE**

Is the aeration mechanism operable?

☒ ☐ ☐ ☐

Is the aeration basin thoroughly mixed?

☒ ☐ ☐ ☐

Is the aeration equipment easily accessed?

☒ ☐ ☐ ☐

Is Dissolved Oxygen adequate?

☐ ☐ ☐ ☒

Are Settleometer results acceptable?

☐ ☐ ☐ ☒

Is activated sludge an acceptable color?

☒ ☐ ☐ ☐

Comment:

Treatment Clarifiers**Yes No NA NE**

Are the weirs level?

☒ ☐ ☐ ☐

Are the weirs free of solids and algae?

☒ ☐ ☐ ☐

Is the scum removal system operational?

☒ ☐ ☐ ☐

Is the scum removal system accessible?

☒ ☐ ☐ ☐

Is the sludge blanket at an acceptable level?

☒ ☐ ☐ ☐

Is the effluent from the clarifier free of excessive solids?

☒ ☐ ☐ ☐

Comment:

Treatment Return pumps**Yes No NA NE**

Are they in place?

☒ ☐ ☐ ☐

Are they operational?

☒ ☐ ☐ ☐

Comment:

Treatment Filters**Yes No NA NE**

Is the filter media present?

☒ ☐ ☐ ☐

Is the filter media the correct size and type?

☒ ☐ ☐ ☐

Is the air scour operational?

☒ ☐ ☐ ☐

Is the scouring acceptable?

☒ ☐ ☐ ☐

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 01/31/2018

Inspection Type : Compliance Sampling

Reason for Visit: Routine

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Is the clear well free of excessive solids? ☐ ☒ ☐ ☐

Is the mud well free of excessive solids and filter media? ☐ ☒ ☐ ☐

Does backwashing frequency appear adequate? ☐ ☒ ☐ ☐

Comment: The excessive cold weather that occurred this winter (first week in January 2018) had caused the clarifier water to flip which caused excessive solids to drain down and partially clog the filters. The sand media needs to be evaluated and replaced as needed to continue proper filtering.

Treatment Sludge Storage/Treatment

Yes No NA NE

Is the aeration operational? ☒ ☐ ☐ ☐

Is the aeration pattern even? ☐ ☐ ☐ ☒

If required, are Sanitary "Ts" present in tankage? ☐ ☐ ☒ ☐

Comment:

Treatment Disinfection

Yes No NA NE

Is the system working? ☒ ☐ ☐ ☐

Do the fecal coliform results indicate proper disinfection? ☒ ☐ ☐ ☐

Is there adequate detention time (≥ 30 minutes)? ☐ ☐ ☒ ☐

Is the system properly maintained? ☒ ☐ ☐ ☐

If gas, does the cylinder storage appear safe? ☐ ☐ ☒ ☐

Is the fan in the chlorine feed room and storage area operable? ☐ ☐ ☒ ☐

Is the chlorinator accessible? ☐ ☐ ☒ ☐

If tablets, are tablets present? ☐ ☐ ☒ ☐

Are the tablets the proper size and type? ☐ ☐ ☒ ☐

Is contact chamber free of sludge, solids, and growth? ☐ ☐ ☒ ☐

If UV, are extra UV bulbs available? ☒ ☐ ☐ ☐

If UV, is the UV intensity adequate? ☒ ☐ ☐ ☐

Is it a dual feed system? ☒ ☐ ☐ ☐

Does the Stationary Source have more than 2500 lbs of Chlorine (CAS No. 7782-50-5)? ☐ ☐ ☒ ☐

If yes, then is there a Risk Management Plan on site? ☐ ☐ ☒ ☐

If yes, then what is the EPA twelve digit ID Number? (1000-____-____)

If yes, then when was the RMP last updated?

Comment: The UV system has been repaired since last inspection and now both UV banks are fully operational.

Record Keeping

Yes No NA NE

Is a copy of current permit available? ☒ ☐ ☐ ☐

Are monitoring reports present: NDMR? ☒ ☐ ☐ ☐

NDAR? ☒ ☐ ☐ ☐

Are flow rates less than of permitted flow? ☒ ☐ ☐ ☐

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 01/31/2018

Inspection Type : Compliance Sampling

Reason for Visit: Routine

Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are application rates adhered to?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW monitoring being conducted, if required (GW-59s submitted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all samples analyzed for all required parameters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any 2L GW quality violations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW-59A certification form completed for facility?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is effluent sampled for same parameters as GW?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do effluent concentrations exceed GW standards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are annual soil reports available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Are PAN records required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Did last soil report indicate a need for lime?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If so, has it been applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are operational logs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are lab sheets available for review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on GW-59s?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are Operational and Maintenance records present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Operational and Maintenance records complete?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has permittee been free of public complaints in last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a copy of the SOC readily available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No treatment units bypassed since last inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: The two groundwater monitoring wells located adjacent to the high rate infiltration pond have been exceeding their Total Ammonia Nitrogen limits (1.5 mg/L) with MW-1 having approximately 6.3mg/L and MW-2 having approximately 10.8 mg/L regularly, while the wastewater effluent leaving the plant has regularly been below the 4mg/L limit being discharged into the infiltration pond.

The GW-59A certification form needs to be completed and submitted regularly along with the Groundwater Monitoring GW-59 forms.

The ORC keeps Operation and Maintenance records with him and are not regularly left at the plant. The records were accidentally left at home the day of this inspection. These records need to be provided during future inspections.

End Use-Irrigation

	Yes	No	NA	NE
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop type specified in permit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the crop cover acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site condition adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of runoff / ponding?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage specified in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306
 Inspection Date: 01/31/2018

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Sampling

Reason for Visit: Routine

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Is the application equipment present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal field free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is access restricted and/or signs posted during active site use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
# Info only: Does the permit call for monitoring wells?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are monitoring wells damaged?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: The reclaim wastewater reuse sign was not properly posted at the Golf Club House and DWR staff had to request that the Club Manager repost the sign and was put on notice that it is required to leave the sign posted at all times. The sign was reposted prior to staff leaving the club house.

End Use-Infiltration

Yes No NA NE

High Rate

# Is the application High Rate or Low Rate?				
Are buffers maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is a usable green area maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the distribution equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of ponding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of breakout?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of solids, algae, etc.?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the records show that the fields are properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do any surface water features appear to be adversely impacted by GW discharge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No chemicals or rototiller used to eliminate vegetation, solids, algae, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306
Inspection Date: 01/31/2018

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Compliance Sampling

Reason for Visit: Routine

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Comment: There is again an excessive amount of woody vegetation growing around the high rate infiltration pond that needs to be removed as soon as possible. The removal should not be by grinding the tree trunks in place which allows for solids to enter the infiltration basin. The removal should be such that no solids should fall or enter in the basin, nor should there be any excessive erosion of the side walls allowed to occur during and after the removal process. Grassed revegetation of the side walls should be implemented as needed around the entire basin after all the woody vegetation is properly removed from the site.

End Use-Reuse

Yes No NA NE

Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the acreage specified in the permit correspond to the measured acreage at the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all essential units provided in duplicate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is an automatically activated standby power source available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the equalization capacity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is aerated flow equalization present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has the turbidity meter been calibrated in the last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the turbidity meter have recording capabilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all flow diverted at the appropriate times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater diverted from reuse storage unit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater treated, retreated, or disposed of acceptably?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is upset wastewater treated prior to discharge to irrigation storage?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is public access restricted from irrigation area during active site use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If golf course, is a sign posted in plain sight on the club house?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of ponding/runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application area free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comment: The reclaim wastewater reuse sign was not properly posted at the Golf Club House and DWR staff had to request that the Club Manager repost the sign and was put on notice that it is required to leave the sign posted at all times. The sign was reposted prior to staff leaving the club house.

Compliance Inspection Report

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JUN 22 2022

Permit: WQ0014306 **Effective:** 10/08/15 **Expiration:** 09/30/20 **Owner :** Sandler Utilities at Mill Run L L C

SOC: **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd

County: Currituck

Region: Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb

Title:

Phone: 757-463-5000 Ext.388

Directions to Facility:

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,

Primary ORC:

Certification:

Phone:

Secondary ORC(s):

On-Site Representative(s):

Related Permits:

Inspection Date: 04/18/2018

Entry Time 11:10AM

Exit Time: 12:30PM

Primary Inspector: Scott A Vinson

Phone: 919-791-4252

Secondary Inspector(s):

Reason for Inspection: Complaint

Inspection Type: Compliance Evaluation

Permit Inspection Type: Reclaimed Water

Facility Status: ☐ Compliant ☒ Not Compliant

Question Areas:

☒ Miscellaneous Questions

☒ Treatment

(See attachment summary)

Permit: WQ0014306
 Inspection Date: 04/18/2018

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Evaluation

Reason for Visit: Complaint

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June 22 2022

Inspection Summary:

On April 18, 2018, Washington Regional Office staff member Scott Vinson, met onsite with HOA representatives, and ORC Randall Mars in response to a complaint regarding the no longer functioning 6,000 GPM stormwater pump that helps the movement of groundwater off site from the golf course. It was noted that the stormwater pump was no longer working and it was noted during the discussion that it had been inoperable for several months at the time of inspection. Please note that this is a violation of permit WQ0014306 condition III. Operation and Maintenance Requirements, no. 27, which states "The Permittee shall be responsible for the operation and maintenance of the 6,000 GPM stormwater pump to allow the movement of groundwater off site from the golf course. Until such time that the County has established a drainage district, the Permittee shall be responsible for maintaining the canals for positive drainage. [15A NCAC 02T .0180(b)(1)]". This pump shall be repaired as soon as possible.

There is an excessive amount of woody vegetation growing around the high rate infiltration pond that needs to be removed as soon as possible. Please note that this is a violation of permit WQ0014306 condition III. Operation and Maintenance Requirements, no. 18, which states "A protective vegetative cover shall be established and maintained on all earthen embankments (i.e. outside toe of embankment to maximum allowable temporary storage elevation on the inside of the embankment), berms, pipe runs, erosion control areas, and surface water diversions. Trees, shrubs, and other woody vegetation shall not be allowed to grow on the earthen dikes or embankments. Earthen embankment areas shall be kept mowed or otherwise controlled and accessible. [15A NCAC 02T .0108(b)(1)]". The removal should not be by grinding the tree trunks in place which would allow for solids to enter the infiltration basin as was done the last time these trees were improperly removed several years ago. The removal should be such that no solids should fall or enter in the basin, nor should there be any excessive erosion of the side walls allowed to occur during and after the removal process. Grassed revegetation of the side walls should be established around the entire basin after all the woody vegetation is properly removed from the site. This grassed vegetation should be mowed regularly to remain healthy and to keep woody vegetation from re-establishing.

Please properly remove the woody vegetation around the perimeter of the high rate infiltration pond and repair this stormwater pump as soon as possible. Provide this Office with a written plan of action with proposed dates, schedules, timelines, etc. which address these items of repair work.

Please provide a written response to the permit condition violations listed above to:
 NCDEQ-DWR, WQROS
 c/o Scott Vinson
 943 Washington Square Mall
 Washington, NC 27889

It was noted during this visit that the reclaim wastewater use sign was properly posted at the Golf Club House as directed to do during the last site visit. Please remember to keep this sign posted here at all times.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 04/18/2018

Inspection Type : Compliance Evaluation

Reason for Visit: Complaint

OFFICIAL COPY

JUN 22 2022

Type

Yes No NA NE

Single Family Spray, LR

☐

Lagoon Spray, LR

☐

Activated Sludge Spray, LR

☐

Activated Sludge Spray, HR

☐

Recycle/Reuse

☐

Activated Sludge Drip, LR

☐

Single Family Drip

☐

Reuse (Quality)

☒

Infiltration System

☒**Treatment**

Yes No NA NE

Are Treatment facilities consistent with those outlined in the current permit?

☒ ☐ ☐ ☐

Do all treatment units appear to be operational? (if no, note below.)

☐ ☒ ☐ ☐

Comment: The permitted 6,000 GPM stormwater pump that allows the movement of groundwater off site from the golf course is no longer operational.
There is an excessive amount of woody vegetation growing around the high rate infiltration pond that needs to be removed as soon as possible.

Compliance Inspection Report

Permit: WQ0014306 **Effective:** 10/08/15 **Expiration:** 09/30/20 **Owner :** Sandler Utilities at Mill Run L L C
SOC: **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP

County: Currituck

287 Saint Andrews Rd

Region: Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb

Title:

Phone: 757-463-5000 Ext.388

Directions to Facility:

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,

Primary ORC:

Certification:

Phone:

Secondary ORC(s):

On-Site Representative(s):

Related Permits:

Inspection Date: 08/19/2020

Entry Time 11:00AM

Exit Time: 01:00PM

Primary Inspector: Paul M Mays

Phone: 252-948-3940

Secondary Inspector(s):

Reason for Inspection: Routine

Inspection Type: Compliance Evaluation

Permit Inspection Type: Reclaimed Water

Facility Status: ☐ Compliant ☒ Not Compliant

Question Areas:

☒ Treatment Flow Measurement-Effluent
☒ Treatment Flow Measurement-Water
☒ Use Records
☒ Treatment Filters
☒ Treatment Sludge Storage/Treatment
☒ Treatment Disinfection
☒ Treatment Return pumps
☒ Wells

☒ Treatment Flow Measurement-Influent
☒ Treatment
☒ Record Keeping
☒ End Use-Irrigation
☒ End Use-Infiltration
☒ End Use-Reuse

☒ Miscellaneous Questions
☒ Treatment Barscreen
☒ Treatment Activated Sludge
☒ Treatment Clarifiers
☒ Treatment Flow Measurement
☒ Standby Power

(See attachment summary)

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Inspection Summary:

On 8/19/2020 from 11:00 am to 1:00 pm an inspection of Eagle Creek WWTP permitted under permit #WQ0014306 was completed by Paul Mays and Randy Sipe from WARO. The facility was found to be non-compliant with permit #WQ0014306. Below are the findings during the inspection.

Tertiary filter has been down and bypassed for 2 years according to staff during inspection. The unit was not operational during the inspection and must be fixed as soon as possible. This a violation of permit conditions II.1, III.1, III.15 and IV.13.

Effluent flow meter calibrated on 5/21/2020 by Delta Systems Environmental.

Turbidity meter calibrated on 5/21/2020 by Delta Systems Environmental

The generator was operational and halfway full during inspection.

One of the two 225,000-gallon aeration basins was closed and had vegetation growth in it. Please reference condition III.1. The facility is supposed to be properly maintained and operated at all times. The vegetation should be removed as soon as possible in a safe manner. The other aeration basin in operation looked acceptable.

The 148,250-gallon clarifier was fully operational, and the 28,220-gallon clarifier was not in operation at the time of inspection.

Operational logs were requested and were not present during inspection. It was requested from this inspection forward that they be present during future inspections. This is a violation of permit condition IV.10.

Spot checked 07/2020 GW-59 report with corresponding lab data and found no discrepancies.

Spot checked 09/2020 NDMR report with corresponding lab data and found no discrepancies.

There is an excessive amount of woody vegetation growing around the high rate infiltration pond that must be removed as soon as possible. It should be noted that much of this wooded vegetation has grown over 10ft. The removal of vegetation should not be done by grinding the tree trunks in place which allows solids to enter the infiltration basin. The removal should occur such that no solids should enter the basin, nor should there be any excessive erosion of the side walls be allowed to occur during and after removal. Grassed revegetation of the side walls should be implemented as needed around the entire basin after all the woody vegetation is properly removed from the site. This is a violation of permit condition II.1, III.1 and III.18.

Both monitoring wells for the facility were unlocked and should always be locked except for sampling.

Overall, the fields at the golf course where the "reuse" waster is being utilized looked good. The primary concern is that the fields are being irrigated with water that bypassed the tertiary filter for over two years. As this water has been pumped to the reuse pond and irrigated.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Jun 22 2022

Type

	Yes	No	NA	NE
Activated Sludge Drip, LR	<input type="checkbox"/>			
Single Family Spray, LR	<input type="checkbox"/>			
Lagoon Spray, LR	<input type="checkbox"/>			
Activated Sludge Spray, LR	<input type="checkbox"/>			
Recycle/Reuse	<input type="checkbox"/>			
Single Family Drip	<input type="checkbox"/>			
Activated Sludge Spray, HR	<input type="checkbox"/>			
Infiltration System	<input checked="" type="checkbox"/>			
Reuse (Quality)	<input checked="" type="checkbox"/>			

Treatment

	Yes	No	NA	NE
Are Treatment facilities consistent with those outlined in the current permit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do all treatment units appear to be operational? (if no, note below.)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: The tertiary filter has been down and bypassed for 2 years according to staff during inspection. The unit was not operational during the inspection and must be fixed as soon as possible. This is a violation of permit conditions II.1, III.1, III.15 and IV.13.

Treatment Flow Measurement-Influent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment:

Treatment Flow Measurement-Water Use Records

	Yes	No	NA	NE
Is water use metered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the daily average values properly calculated?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment:

Treatment Flow Measurement-Effluent

	Yes	No	NA	NE
Is flowmeter calibrated annually?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is flowmeter operating properly?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter monitor continuously?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter record flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does flowmeter appear to monitor accurately?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: Effluent flow meter calibrated on 5/21/2020 by Delta Systems Environmental.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

OFFICIAL COPY

Jun 22 2022

Type

Activated Sludge Drip, LR
 Single Family Spray, LR
 Lagoon Spray, LR
 Activated Sludge Spray, LR
 Recycle/Reuse
 Single Family Drip
 Activated Sludge Spray, HR
 Infiltration System
 Reuse (Quality)

Yes No NA NE

☐☐☐☐☐☐☐☒☒**Treatment**

Yes No NA NE

Are Treatment facilities consistent with those outlined in the current permit?

☒☐☐☐

Do all treatment units appear to be operational? (if no, note below.)

☐☒☐☐

Comment: The tertiary filter has been down and bypassed for 2 years according to staff during inspection. The unit was not operational during the inspection and must be fixed as soon as possible. This is a violation of permit conditions II.1, III.1, III.15 and IV.13.

Treatment Flow Measurement-Influent

Yes No NA NE

Is flowmeter calibrated annually?

☐☐☒☐

Is flowmeter operating properly?

☐☐☒☐

Does flowmeter monitor continuously?

☐☐☒☐

Does flowmeter record flow?

☐☐☒☐

Does flowmeter appear to monitor accurately?

☐☐☒☐

Comment:

Treatment Flow Measurement-Water Use Records

Yes No NA NE

Is water use metered?

☐☐☒☐

Are the daily average values properly calculated?

☐☐☒☐

Comment:

Treatment Flow Measurement-Effluent

Yes No NA NE

Is flowmeter calibrated annually?

☒☐☐☐

Is flowmeter operating properly?

☒☐☐☐

Does flowmeter monitor continuously?

☒☐☐☐

Does flowmeter record flow?

☒☐☐☐

Does flowmeter appear to monitor accurately?

☒☐☐☐Comment: Effluent flow meter calibrated on 5/21/2020 by Delta Systems Environmental.

Permit: WQ0014306
Inspection Date: 08/19/2020

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Standby Power

Yes No NA NE

Is automatically activated standby power available?

☒ ☐ ☐ ☐

Is generator tested weekly by interrupting primary power source?

☒ ☐ ☐ ☐

Is generator operable?

☒ ☐ ☐ ☐

Does generator have adequate fuel?

☒ ☐ ☐ ☐

Comment: The generator was operational and halfway full during inspection.

Treatment Barscreen

Yes No NA NE

Is it free of excessive debris?

☒ ☐ ☐ ☐

Is disposal of screenings in compliance?

☒ ☐ ☐ ☐

Are the bars spaced properly?

☒ ☐ ☐ ☐

Is the unit in good condition?

☒ ☐ ☐ ☐

Comment:

Treatment Activated Sludge

Yes No NA NE

Is the aeration mechanism operable?

☒ ☐ ☐ ☐

Is the aeration basin thoroughly mixed?

☒ ☐ ☐ ☐

Is the aeration equipment easily accessed?

☒ ☐ ☐ ☐

Is Dissolved Oxygen adequate?

☐ ☐ ☐ ☒

Are Settleometer results acceptable?

☐ ☐ ☐ ☒

Is activated sludge an acceptable color?

☒ ☐ ☐ ☐

Comment: One of the two 225,000-gallon aeration basins was closed and had vegetation growth in it. Please reference condition III.1. The facility should be properly maintained and operated at all times. The vegetation should be removed as soon as possible in a safe manner. The other aeration basin in operation looked acceptable at the time of inspection.

Treatment Clarifiers

Yes No NA NE

Are the weirs level?

☒ ☐ ☐ ☐

Are the weirs free of solids and algae?

☒ ☐ ☐ ☐

Is the scum removal system operational?

☒ ☐ ☐ ☐

Is the scum removal system accessible?

☒ ☐ ☐ ☐

Is the sludge blanket at an acceptable level?

☒ ☐ ☐ ☐

Is the effluent from the clarifier free of excessive solids?

☒ ☐ ☐ ☐

Comment: The 148,250-gallon clarifier was fully operational and the 28,220-gallon clarifier was not in operation at the time of inspection.

Treatment Return pumps

Yes No NA NE

Are they in place?

☒ ☐ ☐ ☐

Are they operational?

☒ ☐ ☐ ☐

Comment:

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Treatment Filters

	Yes	No	NA	NE
Is the filter media present?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the filter media the correct size and type?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the air scour operational?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the scouring acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the clear well free of excessive solids?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the mud well free of excessive solids and filter media?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does backwashing frequency appear adequate?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: The tertiary filter has been down and bypassed for 2 years according to staff during inspection. The unit was not operational during the inspection and must be fixed as soon as possible. This is a violation of permit conditions II.1, III.1, III.15 and IV.13.

Treatment Sludge Storage/Treatment

	Yes	No	NA	NE
Is the aeration operational?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the aeration pattern even?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If required, are Sanitary "Ts" present in tankage?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment: There was growth of vegetation in sludge storage. Please reference condition III.1. The facility is supposed to be properly maintained and operated at all times. The vegetation should be removed as soon as possible in a safe manner.

Treatment Disinfection

	Yes	No	NA	NE
Is the system working?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the fecal coliform results indicate proper disinfection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is there adequate detention time (>=30 minutes)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the system properly maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If gas, does the cylinder storage appear safe?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the fan in the chlorine feed room and storage area operable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the chlorinator accessible?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If tablets, are tablets present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the tablets the proper size and type?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is contact chamber free of sludge, solids, and growth?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If UV, are extra UV bulbs available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If UV, is the UV intensity adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
# Is it a dual feed system?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the Stationary Source have more than 2500 lbs of Chlorine (CAS No. 7782-50-5)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, then is there a Risk Management Plan on site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, then what is the EPA twelve digit ID Number? (1000-____-____)				
If yes, then when was the RMP last updated?				

Comment: Turbidity meter calibrated on 5/21/2020 by delta environmental.

Permit: WQ0014306
 Inspection Date: 08/19/2020

Owner - Facility: Sandler Utilities at Mill Run L L C
 Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Record Keeping

	Yes	No	NA	NE
Is a copy of current permit available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are monitoring reports present: NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NDAR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are application rates adhered to?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW monitoring being conducted, if required (GW-59s submitted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all samples analyzed for all required parameters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any 2L GW quality violations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW-59A certification form completed for facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is effluent sampled for same parameters as GW?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do effluent concentrations exceed GW standards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are annual soil reports available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Are PAN records required?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Did last soil report indicate a need for lime?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If so, has it been applied?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are operational logs present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are lab sheets available for review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on GW-59s?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are Operational and Maintenance records present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Operational and Maintenance records complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has permittee been free of public complaints in last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a copy of the SOC readily available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No treatment units bypassed since last inspection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: Operational logs were requested and were not present during inspection. It was requested from this inspection forward that they be present during future inspections. This is a violation of permit condition IV.10.

Spot checked 07/2020 GW-59 (MW-2) with corresponding lab data and found no discrepancies.

Spot checked 09/2020 NDMR (3rd and 12th) with corresponding lab data and found no discrepancies.

End Use-Irrigation

	Yes	No	NA	NE
Are buffers adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the cover crop type specified in permit?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the crop cover acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Is the site condition adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the site free of runoff / ponding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the acreage specified in the permit being utilized?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the application equipment present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the application equipment operational?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal field free of limiting slopes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is access restricted and/or signs posted during active site use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
# Info only: Does the permit call for monitoring wells?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are monitoring wells damaged?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Comment:				

End Use-Infiltration**Yes No NA NE**

# Is the application High Rate or Low Rate?				
Are buffers maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is a usable green area maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the distribution equipment acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of ponding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of breakout?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of solids, algae, etc.?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the records show that the fields are properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do any surface water features appear to be adversely impacted by GW discharge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
No chemicals or rototiller used to eliminate vegetation, solids, algae, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

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Comment: There is an excessive amount of woody vegetation growing around the high rate infiltration pond that must be removed as soon as possible. It should be noted that much of this wooded vegetation has grown well over 10ft. The removal of vegetation should not be done by grinding the tree trunks in place which allows solids to enter the infiltration basin. The removal should occur such that no solids should enter the basin, nor should there be any excessive erosion of the side walls be allowed to occur during and after removal. Grassed revegetation of the side walls should be implemented as needed around the entire basin after all the woody vegetation is properly removed from the site. This is a violation of permit condition II.1, III.1 and III.18.

Both monitoring wells for the facility were unlocked and should always be locked except for sampling.

End Use-Reuse

Yes No NA NE

Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the acreage specified in the permit correspond to the measured acreage at the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all essential units provided in duplicate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is an automatically activated standby power source available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the equalization capacity adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is aerated flow equalization present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the turbidity meter been calibrated in the last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the turbidity meter have recording capabilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all flow diverted at the appropriate times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater diverted from reuse storage unit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is all upset wastewater treated, retreated, or disposed of acceptably?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is upset wastewater treated prior to discharge to irrigation storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is public access restricted from irrigation area during active site use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If golf course, is a sign posted in plain sight on the club house?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of ponding/runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application area free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are any supply wells within the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 08/19/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Routine

Comment: Overall, the fields at the golf course where the "reuse" waster is being utilized looked good. The primary concern is that the fields are being irrigated with water that bypassed the tertiary filter for over two years. As this water has been pumped to the reuse pond and irrigated.

Compliance Inspection Report**Permit:** WQ0014306 **Effective:** 10/08/15 **Expiration:** 09/30/20 **Owner :** Sandler Utilities at Mill Run L L C**SOC:** **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd**County:** Currituck**Region:** Washington

Moyock NC 27958

Contact Person: Raymond Gottlieb**Title:****Phone:** 757-463-5000 Ext.388**Directions to Facility:**

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenview Rd. At the t

System Classifications: SI, WW2,**Primary ORC:****Certification:****Phone:****Secondary ORC(s):****On-Site Representative(s):****Related Permits:****Inspection Date:** 10/21/2020**Entry Time** 10:00AM**Exit Time:** 11:45AM**Primary Inspector:** Paul M Mays**Phone:** 252-948-3940**Secondary Inspector(s):****Reason for Inspection:** Follow-up**Inspection Type:** Compliance Evaluation**Permit Inspection Type:** Reclaimed Water**Facility Status:** ☒ Compliant ☐ Not Compliant**Question Areas:**

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Effluent | <input checked="" type="checkbox"/> Treatment Flow Measurement-Influent | <input checked="" type="checkbox"/> Miscellaneous Questions |
| <input checked="" type="checkbox"/> Treatment Flow Measurement-Water Use Records | <input checked="" type="checkbox"/> Treatment | <input checked="" type="checkbox"/> Treatment Barscreen |
| <input checked="" type="checkbox"/> Treatment Filters | <input checked="" type="checkbox"/> Record Keeping | <input checked="" type="checkbox"/> Treatment Activated Sludge |
| <input checked="" type="checkbox"/> Treatment Clarifiers | <input checked="" type="checkbox"/> Treatment Disinfection | <input checked="" type="checkbox"/> End Use-Infiltration |
| <input checked="" type="checkbox"/> Treatment Flow Measurement | <input checked="" type="checkbox"/> Treatment Return pumps | <input checked="" type="checkbox"/> End Use-Reuse |
| <input checked="" type="checkbox"/> Standby Power | <input checked="" type="checkbox"/> Wells | |

(See attachment summary)

Permit: WQ0014306	Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Date: 10/21/2020	Inspection Type : Compliance Evaluation
Reason for Visit: Follow-up	

Inspection Summary:

On 10/21/2020 at 10:00 am Randy Sipe and Paul Mays from the Division of Water Resources from the Washington Regional Office conducted a compliance evaluation of Eagle Creek WWTP. The Facility was found to be compliant with permit WQ0014306. Below are the findings of the compliance evaluation:

The 148,250-gallon clarifier was fully operational at the time of inspection and the 28,200-gallon clarifier was not in operation at the time of inspection.

01/2020 NDMR and 03/2020 GW-59 was spot checked with lab data. No discrepancies were found between the lab data and the monitoring reports. All other required records were available and ready for review. Operational logs were started as requested on last inspection and were present.

Facility was not free from complaints in the last 12 months at the time of inspection. A complete failure of the collection system in days prior to the inspection was the source of a multitude of complaints against the facility.

Excessive woody vegetation is still present around the high rate infiltration basin and the staff gauge for the high rate infiltration basin has been damaged. The facility is taking steps to remove the vegetation and repair or replace the staff gauge.

On 07/2020 DMR the facility did not reroute upset wastewater from the reuse pond to the high rate infiltration pond for 6 days. A Notice of Violation with Intent to Enforce was sent to address this and enforcement may be pursued.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 10/21/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Follow-up

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Type**Yes No NA NE**

Activated Sludge Spray, LR

☐

Single Family Spray, LR

☐

Activated Sludge Drip, LR

☐

Activated Sludge Spray, HR

☐

Lagoon Spray, LR

☐

Single Family Drip

☐

Recycle/Reuse

☐

Infiltration System

☒

Reuse (Quality)

☒**Treatment****Yes No NA NE**

Are Treatment facilities consistent with those outlined in the current permit?

☒ ☐ ☐ ☐

Do all treatment units appear to be operational? (if no, note below.)

☒ ☐ ☐ ☐

Comment:

Treatment Flow Measurement-Influent**Yes No NA NE**

Is flowmeter calibrated annually?

☐ ☐ ☒ ☐

Is flowmeter operating properly?

☐ ☐ ☒ ☐

Does flowmeter monitor continuously?

☐ ☐ ☒ ☐

Does flowmeter record flow?

☐ ☐ ☒ ☐

Does flowmeter appear to monitor accurately?

☐ ☐ ☒ ☐

Comment:

Treatment Flow Measurement-Water Use Records**Yes No NA NE**

Is water use metered?

☐ ☐ ☒ ☐

Are the daily average values properly calculated?

☐ ☐ ☒ ☐

Comment:

Treatment Flow Measurement-Effluent**Yes No NA NE**

Is flowmeter calibrated annually?

☒ ☐ ☐ ☐

Is flowmeter operating properly?

☒ ☐ ☐ ☐

Does flowmeter monitor continuously?

☒ ☐ ☐ ☐

Does flowmeter record flow?

☒ ☐ ☐ ☐

Does flowmeter appear to monitor accurately?

☒ ☐ ☐ ☐

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 10/21/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Follow-up

Comment: Effluent Meter calibrated on 5/21/2020 by Delta Systems Environmental and appears to be fully functioning.

Turbidity Meter calibrated on 5/21/2020 by Delta Systems Environmental and appears to be fully functioning. During inspection it read 5.75 NTU.

Standby Power

Yes No NA NE

Is automatically activated standby power available?

☒ ☐ ☐ ☐

Is generator tested weekly by interrupting primary power source?

☒ ☐ ☐ ☐

Is generator operable?

☒ ☐ ☐ ☐

Does generator have adequate fuel?

☒ ☐ ☐ ☐

Comment: The generator was fully operational and ORC said it was roughly 3/4 full during inspection.

Treatment Barscreen

Yes No NA NE

Is it free of excessive debris?

☒ ☐ ☐ ☐

Is disposal of screenings in compliance?

☒ ☐ ☐ ☐

Are the bars spaced properly?

☒ ☐ ☐ ☐

Is the unit in good condition?

☒ ☐ ☐ ☐

Comment:

Treatment Activated Sludge

Yes No NA NE

Is the aeration mechanism operable?

☒ ☐ ☐ ☐

Is the aeration basin thoroughly mixed?

☒ ☐ ☐ ☐

Is the aeration equipment easily accessed?

☒ ☐ ☐ ☐

Is Dissolved Oxygen adequate?

☐ ☐ ☐ ☒

Are Settleometer results acceptable?

☐ ☐ ☐ ☒

Is activated sludge an acceptable color?

☒ ☐ ☐ ☐

Comment: Both aeration basins appeared to be in good shape this inspection. No excessive vegetation was present or growing in the basin.

Treatment Clarifiers

Yes No NA NE

Are the weirs level?

☒ ☐ ☐ ☐

Are the weirs free of solids and algae?

☒ ☐ ☐ ☐

Is the scum removal system operational?

☒ ☐ ☐ ☐

Is the scum removal system accessible?

☒ ☐ ☐ ☐

Is the sludge blanket at an acceptable level?

☒ ☐ ☐ ☐

Is the effluent from the clarifier free of excessive solids?

☒ ☐ ☐ ☐

Comment: The 148,250-gallon clarifier was fully operational at the time of inspection and the 28,200-gallon clarifier was not in operation at the time of inspection.

Treatment Return pumps

Yes No NA NE

Are they in place?

☒ ☐ ☐ ☐

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 10/21/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Follow-up

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Are they operational?

☒ ☐ ☐ ☐

Comment:

Treatment Filters

Yes No NA NE

Is the filter media present?

☐ ☐ ☐ ☒

Is the filter media the correct size and type?

☐ ☐ ☐ ☒

Is the air scour operational?

☒ ☐ ☐ ☐

Is the scouring acceptable?

☒ ☐ ☐ ☐

Is the clear well free of excessive solids?

☒ ☐ ☐ ☐

Is the mud well free of excessive solids and filter media?

☒ ☐ ☐ ☐

Does backwashing frequency appear adequate?

☒ ☐ ☐ ☐Comment: The tertiary filter appeared completely operational at the time of the inspection.**Treatment Disinfection**

Yes No NA NE

Is the system working?

☒ ☐ ☐ ☐

Do the fecal coliform results indicate proper disinfection?

☐ ☒ ☐ ☐

Is there adequate detention time (>=30 minutes)?

☐ ☐ ☒ ☐

Is the system properly maintained?

☒ ☐ ☐ ☐

If gas, does the cylinder storage appear safe?

☐ ☐ ☒ ☐

Is the fan in the chlorine feed room and storage area operable?

☐ ☐ ☒ ☐

Is the chlorinator accessible?

☐ ☐ ☒ ☐

If tablets, are tablets present?

☐ ☐ ☒ ☐

Are the tablets the proper size and type?

☐ ☐ ☒ ☐

Is contact chamber free of sludge, solids, and growth?

☐ ☐ ☒ ☐

If UV, are extra UV bulbs available?

☒ ☐ ☐ ☐

If UV, is the UV intensity adequate?

☒ ☐ ☐ ☐

Is it a dual feed system?

☒ ☐ ☐ ☐

Does the Stationary Source have more than 2500 lbs of Chlorine (CAS No. 7782-50-5)?

☐ ☐ ☒ ☐

If yes, then is there a Risk Management Plan on site?

☐ ☐ ☒ ☐

If yes, then what is the EPA twelve digit ID Number? (1000-____-____)

If yes, then when was the RMP last updated?

Comment: On 07/2020 NDMR there was a fecal violation and effluent was not diverted to the high rate infiltration pond as required by the permit for 6 days. A Notice of Violation with Intent to enforce has been issued for the fecal violation and permit violation. This was discussed with ORC and staff onsite during the inspection.

Record Keeping

Yes No NA NE

Is a copy of current permit available?

☒ ☐ ☐ ☐

Are monitoring reports present: NDMR?

☒ ☐ ☐ ☐

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 10/21/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Follow-up

NDAR?

Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are flow rates less than of permitted flow?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are application rates adhered to?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW monitoring being conducted, if required (GW-59s submitted)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all samples analyzed for all required parameters?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are there any 2L GW quality violations?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is GW-59A certification form completed for facility?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is effluent sampled for same parameters as GW?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do effluent concentrations exceed GW standards?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are annual soil reports available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
# Are PAN records required?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
# Did last soil report indicate a need for lime?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If so, has it been applied?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are operational logs present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are lab sheets available for review?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on NDMR?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do lab sheets support data reported on GW-59s?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are Operational and Maintenance records present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were Operational and Maintenance records complete?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has permittee been free of public complaints in last 12 months?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is a copy of the SOC readily available?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
No treatment units bypassed since last inspection?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Comment: 01/2020 NDMR and 03/2020 GW-59 was spot checked with lab data. No discrepancies were found between the lab data and the monitoring reports. All other required records were available and ready for review. Operational logs were started as requested on last inspection and were present.

Facility was not free from complaints in the last 12 months at the time of inspection. A complete failure of the collection system in days prior to the inspection was the source of a multitude of complaints against the facility.

End Use-Infiltration**Yes No NA NE**

# Is the application High Rate or Low Rate?				
Are buffers maintained?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within the CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 10/21/2020

Inspection Type : Compliance Evaluation

Reason for Visit: Follow-up

Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed, including screened interval?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is a usable green area maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the distribution equipment acceptable?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of ponding?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is the disposal site free of breakout?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of solids, algae, etc.?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do the records show that the fields are properly maintained?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Are the disposal sites free of vegetation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Do any surface water features appear to be adversely impacted by GW discharge?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
No chemicals or rototiller used to eliminate vegetation, solids, algae, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Comment: Excessive woody vegetation is still present around the high rate infiltration basin and the staff gauge for the high rate infiltration basin has been damaged. The facility is taking steps to remove the vegetation and repair or replace the staff gauge.

End Use-Reuse

Yes No NA NE

Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the acreage specified in the permit correspond to the measured acreage at the site?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are all essential units provided in duplicate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is an automatically activated standby power source available?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the equalization capacity adequate?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Is aerated flow equalization present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Has the turbidity meter been calibrated in the last 12 months?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does the turbidity meter have recording capabilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all flow diverted at the appropriate times?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater diverted from reuse storage unit?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is all upset wastewater treated, retreated, or disposed of acceptably?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is upset wastewater treated prior to discharge to irrigation storage?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is public access restricted from irrigation area during active site use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If golf course, is a sign posted in plain sight on the club house?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the cover crop acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are buffers adequate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the site free of ponding/runoff?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the acreage in the permit being utilized?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application equipment acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the application area free of limiting slopes?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
How close is the closest water supply well?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Permit: WQ0014306
 Inspection Date: 10/21/2020

Owner - Facility: Sandler Utilities at Mill Run LLC
 Inspection Type : Compliance Evaluation

Reason for Visit: Follow-up

Are any supply wells within the CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are any supply wells within 250' of the CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is municipal water available in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells located properly w/ respect to RB and CB?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Are GW monitoring wells properly constructed including screening?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Comment: On 07/2020 DMR the facility did not reroute upset wastewater from the reuse pond to the high rate infiltration pond for 6 days. A Notice of Violation with Intent to Enforce was sent to address this and enforcement may be pursued.

Compliance Inspection Report

Permit: WQ0014306 **Effective:** 08/04/21 **Expiration:** 06/30/27 **Owner :** Sandler Utilities at Mill Run L L C

SOC: **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd

County: Currituck

Region: Washington

Moyock NC 27958

Contact Person: Debbie A Dietz

Title:

Phone: 757-463-5000

Directions to Facility:

Beginning at the intersection of Hwy 168 and NCSR 1215 (Survey Rd) 2 miles south of the Moyock on the Currituck County Mainland, proceed to the terminus of 1215 (1215 will change to Eagle Creek Rd). At the terminus, turn left onto Greenvew Rd. At the t

System Classifications: SI, WW2,

Primary ORC:

Certification:

Phone:

Secondary ORC(s):

On-Site Representative(s):

Related Permits:

Inspection Date: 10/04/2021

Entry Time 03:00PM

Exit Time: 04:30PM

Primary Inspector: Paul M Mays

Phone: 252-948-3940

Secondary Inspector(s):

Fred W Oelrich

Reason for Inspection: Follow-up

Inspection Type: Reconnaissance

Permit Inspection Type: Reclaimed Water

Facility Status: ☐ Compliant ☐ Not Compliant

Question Areas:

☒ Miscellaneous Questions

(See attachment summary)

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 10/04/2021

Inspection Type : Reconnaissance

Reason for Visit: Follow-up

Inspection Summary:

On 10/04/2021 Paul Mays and Fred Oelrich with the Division of Water Resources from the Washington Regional Office visited Eagle Creek WWTP to respond to complaints. The collection system for the facility went down on 10/2/2021. Residents at the time of the visit were still advised to conserve water and pits were pumped out via vacuum truck as needed. Staff at the facility were working at the time to repair the collection system to a fully functional state for all residents served by Eagle Creek WWTP.

I/A

Permit: WQ0014306
Inspection Date: 10/04/2021

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Reconnaissance

Reason for Visit: Follow-up

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JUN 22 2022

Compliance Inspection Report

Permit: WQ0014306 **Effective:** 08/04/21 **Expiration:** 06/30/27 **Owner :** Sandler Utilities at Mill Run L L C

SOC: **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd

County: Currituck

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System Classifications: SI, WW2,

Primary ORC:

Certification:

Phone:

Secondary ORC(s):

On-Site Representative(s):

Related Permits:

Inspection Date: 11/29/2021

Entry Time 12:00PM

Exit Time: 01:30PM

Primary Inspector: Paul M Mays

Phone: 252-948-3940

Secondary Inspector(s):

Dwight R Sipe

Phone :

Reason for Inspection: Follow-up

Inspection Type: Reconnaissance

Permit Inspection Type: Reclaimed Water

Facility Status: ☐ Compliant ☐ Not Compliant

Question Areas:

☒ Miscellaneous Questions

(See attachment summary)

Permit: WQ0014306
Inspection Date: 11/29/2021

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Reconnaissance

Reason for Visit: Follow-up

Inspection Summary:

On 11/29/2021 Paul Mays and Randy Sipe with the Division of Water Resources visited Eagle Creek WWTP. The initial purpose of the visit was to review the staked locations where new monitoring wells were to be installed at the facility. However, during the visit the area around the plant was found to be saturated with water. Upon investigation of this issue, it was found that water was bypassing the Tertiary filter via the mud well. When Paul Mays walked towards the area of the unauthorized bypass the ground was so saturated that quicksand like conditions prevented any closer investigation from the back of the plant. A small pond-like body of water was also observed in the back of the plant and seemed to have been fed by the bypass. The new ORC Noah Deckard later followed up and informed WARO that he estimated the bypass was 800 gallons and occurred from 08:00am to 01:00pm that day. The incident was observed at 01:00pm and was still ongoing when WARO staff left the area at 01:30pm.

It was also noted by ORC Noah Deckard that the Tertiary Filter has not been functioning correctly.

Permit: WQ0014306

Owner - Facility: Sandler Utilities at Mill Run L L C

Inspection Date: 11/29/2021

Inspection Type : Reconnaissance

Reason for Visit: Follow-up

Type**Yes No NA NE**

Reuse (Quality)

☐

Lagoon Spray, LR

☐

Infiltration System

☐

Single Family Spray, LR

☐

Activated Sludge Spray, HR

☐

Activated Sludge Spray, LR

☐

Activated Sludge Drip, LR

☐

Recycle/Reuse

☐

Single Family Drip

☐

Compliance Inspection Report**Permit:** WQ0014306 **Effective:** 08/04/21 **Expiration:** 06/30/27 **Owner :** Sandler Utilities at Mill Run L L C**SOC:** **Effective:** **Expiration:** **Facility:** Eagle Creek WWTP
287 Saint Andrews Rd**County:** Currituck**Region:** Washington

Moyock NC 27958

Contact Person: Debbie A Dietz**Title:****Phone:** 757-463-5000**Directions to Facility:**

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System Classifications: SI, WW2,**Primary ORC:****Certification:****Phone:****Secondary ORC(s):****On-Site Representative(s):****Related Permits:****Inspection Date:** 12/10/2021**Entry Time** 11:45AM**Exit Time:** 12:30PM**Primary Inspector:** Paul M Mays**Phone:** 252-948-3940**Secondary Inspector(s):**

Dwight R Sipe

Phone :**Reason for Inspection:** Routine**Inspection Type:** Reconnaissance**Permit Inspection Type:** Reclaimed Water**Facility Status:** ☐ Compliant ☐ Not Compliant**Question Areas:**☒ Miscellaneous Questions**(See attachment summary)**

Permit: WQ0014306
Inspection Date: 12/10/2021

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Reconnaissance

Reason for Visit: Routine

Inspection Summary:

On 12/10/2021 Paul Mays and Randy Sipe with the Division of Water Resources visited Eagle Creek WWTP in response to complaints regarding the collection system. After responding to the complaint a visit to the wastewater system itself revealed the plant was still saturated with water. Upon investigation of this issue, it was found that water was bypassing the Tertiary filter again via the mud well. The area of the nearby the unauthorized bypass the ground still was so saturated that quicksand like conditions prevented any closer investigation from the back of the plant. A small pond-like body of water was also observed again in the back of the plant and seemed to have been fed by the bypass. The new ORC Noah Deckard later followed up and informed WARO that he estimated the bypass was 500 gallons and the bypass occurred for 3 hours.

It was also noted by ORC Noah Deckard that the Tertiary Filter has not been functioning correctly.

I/A

Permit: WQ0014306
Inspection Date: 12/10/2021

Owner - Facility: Sandler Utilities at Mill Run L L C
Inspection Type : Reconnaissance

Reason for Visit: Routine

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Myers Rebuttal Exhibit I

August 4, 2020 Photos Eagle Creek WWTP

Myers Exhibit H

I

Photos: from August 4, 2020— Eagle Creek WWTP



Photos: from August 4, 2020— Eagle Creek WWTP



Photos: from August 4, 2020— Eagle Creek WWTP



Photos: from August 4, 2020— Eagle Creek WWTP

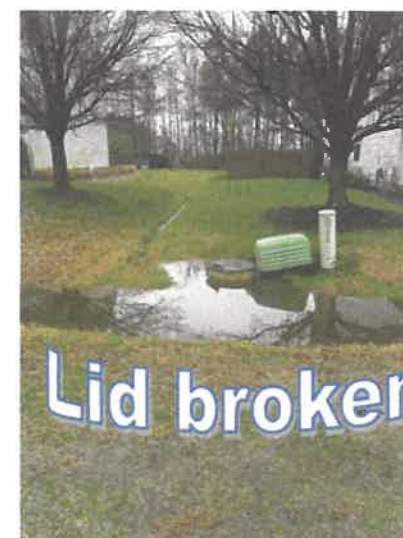
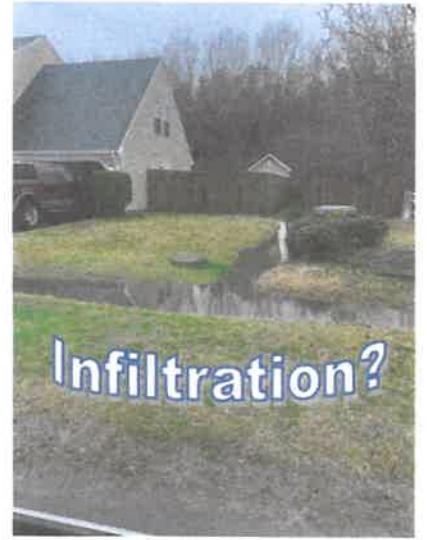


Photos: from August 4, 2020— Eagle Creek WWTP



Photos: from August 4, 2020— Eagle Creek WWTP

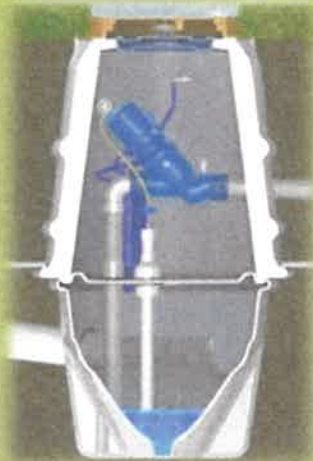




Myers Rebuttal Exhibit J
Vacuum System Brochure

Service Valve Operation

It is important that you know how your home sewer system operates and that you notify EnviroLink's emergency dispatcher if a problem occurs. The utility system, including the service valve ("pit") unit service your home, is owned by Sandler Utility and operated by EnviroLink, Inc. Please take a few moments to read the following information to insure the proper functioning of your valve.



A few more important notes:

- * If there is a valve failure at a home within the community, technicians must shut down the pipes in the street in order to locate and repair the pit with a valve failure. This will impact service to your home while technicians work to find and repair the problem. Once technicians identify the pit experiencing a failure, they will repair the pit and restore service to your area.
- * The vacuum line is buried under the ground between the home and the pit. Before digging in the area, call 811 to have a technician locate the lines.
- * The pit has a breather vent located adjacent to your home. It is important to keep this vent open and free of debris.
- * In the event Sandler has to complete the repair due to lot owner tampering, Sandler will not be responsible for any damage to landscaping or items placed adjacent to the pit while performing any maintenance function.
- * If you are going to be away from home for more than thirty (30) days, please contact EnviroLink for some tips on how to manage your pit's operation while you are away and upon your return.
- * Never connect enter the pit or tamper with the pit. It jeopardizes the operation of the entire sewer system and is a violation of state and federal law.
- * Non-emergency contact number:
[888-754-9878](tel:888-754-9878); 8:00 am – 5:00 pm
- * Non-emergencies include situations similar to damage to vents or general questions.



ENVIROLINK

EnviroLink, Inc.

4700 Homewood Ct., Suite 108
Raleigh, North Carolina 27609

Phone: 888.754.9878

Fax: 252-235-1632

Email: customerservice@envirolinkinc.com

Homeowners Guide to

Vacuum Sewer Service Valves



Emergency Phone: 888-754-9878

What are some special situations that may arise?

If the vent (candy cane) sounds:

A whistling sound indicates the valve is open. The whistling should stop within 5—20 seconds when operating normally. If the whistling does not stop after 1 minute, this could indicate a “leak” or valve that has not closed. There are many reasons this could happen but one of the more frequent reasons is a faulty controller. Other reasons include debris getting lodged in the valve seat or the valve experiencing mechanical failure. This “leak” will cause the pipes in the street to lose vacuum. You should:

- ⇒ Discontinue water use until the pit is safe for use.
- ⇒ If the whistle continues for longer than 1 minute, call our 24-hour emergency dispatcher at 888.754.9878. Inform the representative that you are in the Eagle Creek Community.
- ⇒ Never attempt to open the tank cover or disconnect any portion of the valve.
- ⇒ There is no trip charge. EnviroLink, Inc. will assess the valve and inform the lot owner of situation.
- ⇒ If there is evidence that a lot owner has tampered with the valve, a tampering fee will be assessed.

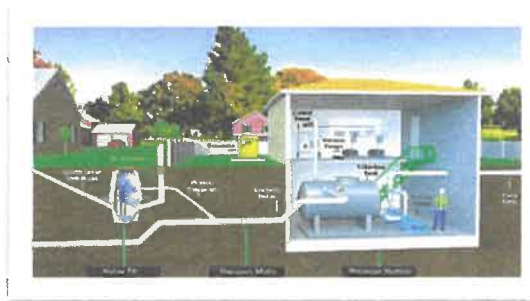
If the candy cane overflows or there is a sewage backup in your home:

There are many reasons this could happen but it may indicate that the valve has failed to open.

- ⇒ Discontinue water use until the pit is safe for use.
- ⇒ Call our 24-hour emergency dispatcher at 888.754.9878. Inform the representative that you are in the Eagle Creek Community.
- ⇒ In the event a valve fails to open, installation of a backflow device on the pipe between the candy cane and the home will prevent sewage from backing up into your home.

What is a service valve or pit and why do I have one?

The pit serving your home is an important part of the larger community sewer collection system. The pit not only serves your home but your neighbors home and can have a dramatic impact on the performance of the entire sewer system. The pit stores a small amount of in the bottom chamber and the valve opens and shuts allowing sewage to be sucked through small plastic pipes to the larger pipes in the street. A vacuum system is an alternative sewer collection technology that is sometimes used in the transport of sewage to a treatment plant.



A small holding tank has been installed underground on your property and a valve is housed in the upper chamber of the tank. The tank cover is round and is the only part that shows above the ground. All of the wastewater from your home flows into the buried tank. When the tank fills to a certain level, the valve opens automatically. The valve is normally open for 5—20 seconds and will automatically close when the tank has been emptied. The valve is programmed to operate in cycles, rather than continuously. Cycles are determined by the amount of water in the tank. During a usual day, the valve will open and shut about 8 or 10 times. While the valve is open you may hear a high pitched whistling noise. Excessive noise or noise lasting longer than 1 minute may indicate a problem and you should call the emergency number listed.

How can I help to maintain my pit?

The pit can handle any wastewater that is normally discharged to the sewer from the kitchen, bathroom, or laundry. Some chemicals and materials may cause operating problems or safety hazards.

Never put any of the following materials into sinks, toilets or drains:

- ◆ Non-biodegradable paper products (Baby Wipes)
- ◆ Cooking fat (lard, oil, grease)
- ◆ Glass, metal, wood, seafood shells
- ◆ Diapers, socks, rags or cloth of any kind
- ◆ Plastic objects (toys, eating utensils, etc.)
- ◆ Any strong chemical, toxic, caustic, or poisonous substance
- ◆ Degreasing solvents
- ◆ Any explosive or flammable material
- ◆ Gasoline, kerosene, fuel oil, paint thinner, antifreeze
- ◆ Lubricating oil or grease
- ◆ Hair clippings or kitty litter

These materials are harmful to the pits and could cause backup in your home or create unsafe conditions in your lines and tank!

Note: Sandler is not responsible for any expenses incurred due to negligence by the lot owner in maintaining the pit.

What other maintenance is suggested for the pit?

The lot owner is responsible for maintenance of the vent or “candy cane”. We recommend frequent inspection of each candy cane. Specifically, listen for a prolonged whistling from the candy cane. In the event, the whistling noise does not cease within 1 minute, please contact our emergency service number.

EnviroLink, Inc.
4700 Homewood Ct., Suite 108
Raleigh, North Carolina
Phone: 888.754.9878
Fax: 252-235-1632
Email: customerservice@envirolinkinc.com

Myers Rebuttal Exhibit K

News Letter

Myers Exhibit K

The Link



ENVIROLINK

Acquisition of Eagle Creek Sewer

Since the announcement last Spring of Sandler Utility's sale of the sewer system to Currituck Water & Sewer there has been a lot of activity. We have been working with the North Carolina Department of Environmental Quality and officials of the North Carolina Utilities Commission to obtain the required permits and approvals needed to complete the sale and upgrade the Eagle Creek sewer system. Here we update you on the status of this sale, important issues, and the process moving forward.

In the Spring of 2021, Sandler Utility and Currituck Water & Sewer entered into an agreement related to the sale and transfer of the Eagle Creek wastewater system. Currituck Water & Sewer and Sandler Utility filed a joint application to the North Carolina Utilities Commission requesting approval to transfer the system. About that same time, the North Carolina Department of Environmental Quality filed a petition for injunctive relief against Sandler Utility related to the on-going sewer service issues within the Eagle Creek community.

While the lawsuit added complications and delayed the approval, there has been recent progress that is discussed in this Newsletter, along with the current status in obtaining approval. Inside you will also find information on what to expect in the coming months.

October 18th, is an important date, as officials from the North Carolina Utilities Commission will be conducting a Town hall style meeting to explain their process and answer questions.

Currituck Water & Sewer reveals plan for Eagle Creek Sewer Improvements

In the spring of 2021, Sandler Utility (Sandler) entered into an agreement to sell the Eagle Creek sewer system to Currituck Water & Sewer (CWS). Sandler and CWS filed a joint application to the North Carolina Utilities Commission requesting approval to transfer ownership of the Eagle Creek sewer system.

In the application, CWS presented a sewer system improvement plan that included over \$9 million dollars of upgrades to the Eagle Creek wastewater system.

In the application, CWS made public its plan for improvements. The plan included conversion of the vacuum system to a gravity sewer system, upgrades to the irrigation system, upgrades to the treatment plant and extension of service to neighboring communities.

Inside this issue

Vacuum Upgrade [Yes or No?]	2
Gravity Sewer [Yes or No?]	2
Cost Comparison	3
What's Next	4
CWS's Commitment	4
Currituck County	5
Impact During Construction	5

Special points of interest

- Gravity Sewer Reliability
- Sewer Rate Increases?
- State Approval Requirements
- Water Conservation—What does that mean?

Vacuum Upgrades [Yes or No?]

The Townhall style meeting is an important step in the process of making the sewer improvements a reality.

While residents will learn a lot about the process during the meeting, they will also get to voice their opinion on Currituck Water & Sewer's (CWS) plan to upgrade the Eagle Creek Sewer System.

Residents will have an opportunity to voice their opinion on whether they would prefer an upgrade of the existing vacuum system or conversion to gravity sewer collection.

In deciding to recommend, conversion to gravity, CWS prepared and evaluated both options.

CWS interviewed two vacuum system manu-

facturers and concluded that there is no "guarantee" that improvements to the vacuum system would improve the reliability of sewer service. CWS did evaluate vacuum system improvements required to provide the most reliable, long term service possible with vacuum technology. The vacuum system requires the following improvements:

- Improvements to the vacuum mains including, looping of dead end lines, additional valving and air admittance.
- Replacement of the central vacuum plant, including replacement & upgrade to vacuum pumps, sewage pumps, vacuum tank and controls
- Replacement of the pits, including additional tank storage, isolation valves, and monitoring system.



"Imagine operating a car with 400,000 miles that has never had the oil changed and then wondering why is it breaking down all the time. Do you replace the car or install a sensor?"

Gravity Sewer Reliability

Water flows from the home to pipes located in streets or easements.

As water is received by the pump stations, water is pumped under pressure to the treatment plant.

Key points:

- Homeowners maintain the line from the home to the cleanout located close the edge of the street right of way.
- No mechanical equipment
- Each home has its own service [service is not tied into neighbor's service].
- Issues with a service are automatically isolated to only the home experiencing an issue.
- Service reliability is the highest in the industry (> 99.9%). Most homeowners will never experience a service issue.

Gravity Sewer [Yes or No?]

Residents will be able to provide their comments on CWS's plan to convert the existing sewer system to gravity.

Gravity is the most common type of sewer collection technology utilized in sewer collection today and has been around for over 100 years because of its service, reliability and cost of operations. While any sewer can experience service issues, gravity sewer service provides the highest level of reliability in the industry [See insert for more information].

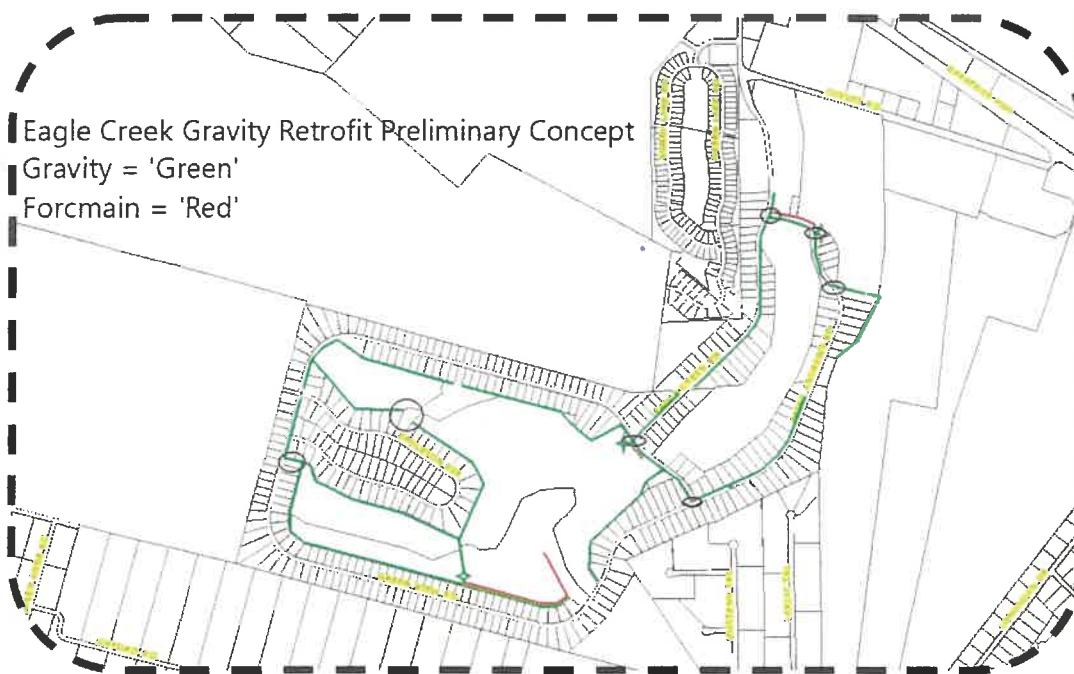
Concerns expressed by residents to CWS include impact on sewer rates, cost of providing service, and disruption during construction. Here we discuss the impact on sewer rates for conversion to gravity.

The current sewer rate for Eagle Creek residents is \$52.60 per month. Currituck Water & Sewer estimates that rates may increase by less than \$25.00 per month. For comparison, the neighboring Lakeside community customers pay Currituck County around \$97.24 per month [Based on \$40 per month + \$14.31 for every 1,000 gallons consumed with a typical home using around 4,000 gallons per month].

Currituck Water & Sewer began construction of the force main needed to transmit water from the Fost community to the treatment plant. This community will bring 479 new customers. The force main is connected directly to the treatment plant without connection to the existing Eagle Creek vacuum system. This work will benefit Eagle Creek customers in a few ways.

- The Fost community will add 479 customers to Eagle Creek's existing 444 customers. These additional customers coupled with an additional 277 customers from the planned Flora development will increase the customer base and lessen individual rate impacts now and in the future.
- The force main will reduce cost for converting to gravity. The plan to convert to gravity will utilize this force main to reduce the amount of new pipe required to convert.
- Gravity sewer has a significantly lower cost of operation than vacuum sewer. Most of the savings comes from reduced labor and maintenance cost.

Eagle Creek Gravity Retrofit Preliminary Concept
Gravity = 'Green'
Forcmain = 'Red'



Conceptual Plan for Conversion to Gravity

Cost Comparison of Gravity vs Vacuum

"Expert" opinions differ on the extent of upgrades required for the Eagle Creek vacuum system. Currituck Water & Sewer has incorporated the recommendations from Airvac and Flovac, other expert opinions and our own service requirements to develop the necessary vacuum system upgrades required for the Eagle Creek vacuum system.

Major considerations when evaluating the vacuum system were:

1. Residents at the end of lines are the most impacted by service issues. Eagleton Circle residents are the first to experience service issues and the last restored. This is because of the existing system design that results because Eagleton Circle resident's service is interrupted whenever there are service issues at other locations within the community.
2. The central vacuum station is outdated and lacks several design features that are prudent when designing a vacuum system.
3. The service valves or pits do not meet state regulation and require replacement. To meet state standards, 720 gallons per service pit is required versus the existing 40 gallons.
4. There is no ability to monitor the existing pits in the event of a failure. Technicians must go home to home and inspect each home in order to determine where the problem is located.
5. One pit connects two homes and can impacts service to the entire community.
6. Inflow from groundwater

To address these concerns, several upgrades are required. These include:

- Replacement of pits to include a monitoring system, 720 gallons of storage, new valves, leak detection, isolation valves, monolithic tank construction.
- Looping of dead end lines at Eagleton Circle and Eagle Creek/St Andrews and the installation of air admittance stations.
- Replacement of the central vacuum station to include variable frequency drive pumps, stainless steel construction, new controls, new tank, upgraded vacuum pumps, and upgraded sewage pumps.

The total estimate for vacuum system upgrades is \$3.65 million.

Higher Rate Increases?

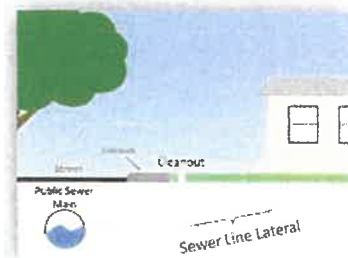
Some residents have expressed concerns over 300-400% rate increases related to the conversion to gravity. This is simply not accurate information.

How did this information get conveyed?

Social media is a powerful communication tool for quickly distributing information. However, sometimes this information gets distributed before it can be fully verified or validated. It is unfortunate, but information related to 300-400% increases was conveyed without being validated and failed to consider several important factors.

There are three main factors that dramatically affect the rate impact.

1. The additional customers from the planned developments increases the customer base from 444 to over 1200.
2. Most of the other cost associated with the irrigation system and treatment plant are being deferred to customers from the planned Fost and Flora projects.
3. When comparing the cost of the two options, many of the required upgrades to the vacuum system were not included factored into the rate comparison. Specifically, an important factor not considered was cost to upgrade the vacuum system is greater than the cost to convert to gravity..



Outstanding State approvals

1. North Carolina Utilities commission approval
2. North Carolina Department of Environmental Quality permit transfer [after NCUC approval].
3. North Carolina Department of Environmental Quality Construction Permit [prior to construction].
4. North Carolina Department of Environmental Quality Sedimentation and Erosion Permit
5. North Carolina Department of Transportation Encroachment Agreement
6. North Carolina Department of Environmental Quality Approval to Operate [after construction]

Water Conservation

There are 220 valves on the Eagle Creek vacuum system. Each is considered a weakness with the Eagle Creek vacuum system. In the event of a "leak", a water conservation notice may be required.

Here we answer two questions: What to do when a conservation notice is issued and would this happen with gravity sewer.

Would a gravity sewer result in water conservation? In a word, No. Gravity sewer works differently than vacuum and would not require water conservation.

What to do when a conservation notice is issued:

- Restrict washing dishes and doing laundry until the conservation is lifted.
- Shorten showers and do not take baths until the restrictions are lifted

What are permitted uses of water?:

- Continue use of water for cooking, lavatory and other essentials uses but we do ask that you think before you use.
- Use of water for irrigation is also permitted.

Please call customer service and request pumping of the tank. Techs will periodically inspect & pump your tank.

What's next

While the October 18th meeting is an important step forward, there are other major challenges that must be completed before construction can begin.

At the conclusion of the meeting, State officials will evaluate the desire of the community in determining their opinion prior to scheduling the public hearing. This hearing will be located in Currituck County.

After the public hearing, each issue presented during the hearing will require investigation by the state officials and Currituck Water & Sewer. Upon completion of the investigation and submittal of additional information, the final order will be issued.

The time require for these additional investigations depends on the number and complexity of each issue presented during the hearing.

The NCUC order is a key requirement before CWS can complete the acquisition of the sewer system and submit application for construction permits to convert to gravity.

Once NC DEQ approves construction plans, Currituck Water & Sewer's contractors can begin construction.



Typical excavation on golf course

Currituck Water & Sewer's Commitment

Currituck Water & Sewer's commitment is to provide solutions that resolve problems for the long term, has beneficial impact on the environment and results in sustainable infrastructure that represent the most prudent use of our customers' monthly service fee.

Many of the recommendations, presented by others, only consider a small portion of the upgrades required on the vacuum system. Currituck Water & Sewer considered and incorporated this information in determining the extent of the upgrades required on the vacuum system. CWS concluded that upgrading of the vacuum system did not meet our reliability or service criteria and is not a prudent investment or use of resources. Specifically, the major concerns with this approach are the following:

- Vendors are unwilling to warrant & guarantee reliable service levels to all Eagle Creek residents beyond standard 1 year equipment warranties.
- Vendors are unwilling to warrant and guarantee the upgrades would maintain acceptable service reliability to all Eagle Creek residents for the next 30 years.
- Vendors are unwilling to provide assurances that in the event of service issues, that the impacts to service could be minimized and localized to only areas experiencing issues

Currituck Water & Sewer fully agrees that the recommendations provided by vendors are warranted but that they represent only a portion of the required improvements and fail to address CWS's concerns ^{100%} ~~or~~ provide the assurances demanded by Eagle Creek residents. CWS's criteria for these improvements is that upon completion the upgrades will prove the most reliable, cost efficient, least disruptive solution and resolve the service issues at Eagle Creek for the next 50 years.

In CWS's opinion, any plan that does not fully address both response time and the material weakness of Eagle Creek vacuum system represents a short sighted approach that will risk future service issues in the community. For information on required vacuum system upgrades, see the Vacuum System Upgrades [Yes or No?] section.

Currituck Water & Sewer's commitment to fully resolve the service issues at Eagle Creek ultimately resulted in the recommendation to convert to gravity.

1000

- Approving the Special Use Permit for a Major Utility to include additional developments in the service area.
- Approved amendments to the Fost Master Plan and preliminary play/special use permit to allow connection to Eagle Creek treatment plant.
- Approved the Master Plan for the Flora development that will allow Flora to connect to the Eagle Creek treatment plant.
- Allowed the first phase of the Fost development to be reviewed for final approval while the force main is under construction.



How long would it take and how will you be impacted during construction

The force main currently under construction is an important component of the project. Two of the planned lift stations will

The diagram illustrates the layout of a wastewater treatment plant. It features several key components labeled with text and connected to the corresponding parts of the plant by lines. On the left, there is a building labeled 'Pump Station'. In the center, there is a large rectangular structure labeled 'Pump Station'. To the right of this, there is another rectangular structure labeled 'Pump Station'. Further right, there is a smaller structure labeled 'Pump Station'. At the bottom right, there is a structure labeled 'Pump Station'. The diagram also shows various pipes and channels connecting these structures, representing the flow of wastewater through the treatment process.

The time to completion for either option is practically the same.

Envirolink, Inc



ENVIROLINK

Representative Hanig and Senator Steinburg lend assistance to Eagle Creek residents

Currituck Water & Sewer thank Representative Hanig and Senator Steinburg for their assistance and leadership in helping to navigate through the approval process with regulatory officials.

Recognizing the urgency and challenges of obtaining state approvals and permits, Representative Hanig and Senator Steinburg graciously responded and organized a multi-agency meeting between Sandler Utility, Currituck Water and Sewer/Envirolink, Currituck County, NC DEQ, and NCUC officials.

The meeting was a productive meeting and helped to focus the agencies and remove log jams that were delaying progress.

We are greatly appreciative of their assistance.

"Replacing the existing vacuum sewer with gravity sewer is the most reliable, cost efficient, least disruptive solution, making it a clear choice for resolving the sewer issues for Eagle Creek residents."

Envirolink, Inc

4700 Homewood Ct., Suite 108
Raleigh, North Carolina 27609

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PLEASE
PLACE
STAMP
HERE



ENVIROLINK

Myers Rebuttal Exhibit L

Envirolink FAQ

Currituck Water & Sewer, LLC

To: Eagle Creek Residents,

Thank you to all the residents that provided feedback on the newsletter! The comments were insightful and productive. We were able to make a few key observations:

1. The community is unified in their desire to resolve the sewer issues. Everyone at Envirolink has the same desire and motives.
2. The community has three perspectives on sewer:
 - a. Convert to gravity sewer
 - b. Repair the vacuum system
 - c. Need more information
3. There is some inaccurate information being conveyed that is confusing some residents.

Our suggestion is to gather information from credible sources & verify its accuracy (that includes information provided by Envirolink or Currituck Water & Sewer. While the community is fortunate to have a couple of experts who earn a living in the water industry and can be valuable resources for you, please ensure they are experienced in water and sewer matters specifically. Other reliable resources available to you include the: **North Carolina Department of Environmental Quality, North Carolina Public Staff, North Carolina Rural Water, American Water Works Association, Water Environment Federation, National Association of Regulated Utility Companies**, and local civil engineers experienced in water & sewer.

We appreciate the questions and comments that were received. We thought the answers to those questions would benefit the entire community. The following are some of the prevalent questions and additional information to help keep you informed on your sewer service.

1. What happened with the power interruption and what is being done to avoid additional issues?

Like you, we are very concerned about this as it not only represents a major inconvenience, but it also presents a significant safety hazard to our crews.

As background information, the NC 811 organization exists to notify facility owners of proposed excavation and send positive response information. They provide an easy communication link between excavators and utility owners. NC General statute requires notification to NC 811 at least three full days prior to excavation.

NC 811 will notify utilities in the area, and it is the utility's responsibility to properly "locate" or mark their line(s). E.g. Dominion Power is responsible for locating power; Currituck County is responsible for locating water; Sandler Utility is responsible for locating the vacuum lines; etc. This is because the owner of the lines is the only entity that has the records on the location of underground lines and pipes.

Prior to construction, each utility owner was requested to mark the location of their utility lines (locates). Once the locates were completed, our contractor started the work to install the line.

Unfortunately, the marked locations provided by the electrical owner's did not accurately identify the location of the lines and power lines were impacted.

A meeting was held Tuesday afternoon with Dominion Power's locator to determine what happened and provide us assurances that the remaining locations are accurate and can be relied upon. Proper locating of these lines is very important so we, or other utility crews, know where it is safe to dig, or conversely where hazards exist.

Dominion Power has accepted responsibility for the incident yesterday.

As a further precaution, we have asked that the electric company have technicians on-site while crews are working.

2. Why not just fix the vacuum system?

Fixing the vacuum system **may** work, but it is not guaranteed to resolve the service issues.

3. What happens if upgrades to the vacuum system do not resolve the issue(s) and the system continues to break?

In our opinion, this is one of the most important factors to consider when forming your position. There are a few things to consider.

- a. Every expert agrees that gravity system will resolve the service issues.
- b. Everyone is NOT in agreement that upgrades to the vacuum system will solve the problem. However, **no recommending repairs to the vacuum system is willing to stand behind their recommendation with any sort of guarantee or warranty beyond equipment warranties.**
- c. One of the questions that needs to be answered is: **What are the options if upgrades to the vacuum do not work?**

4. How are we intending to connect to the existing services at the homes?

- a. **Are you connecting at the pits or the candy canes?**

The typical service line comes from the home to a point just outside of the service valve pit. Our plan is to tie into the line just outside of the pit and extend the service line to a manhole. Once the service is connected into the manhole, the pit can either be removed or cut below ground surface and filled with sand.

Using this method of connecting the vacuum system there will not be excavations within your yards and we will not be connecting to the candy cane.

5. How can gravity work in Eagle Creek?

- a. **Eagle Creek is flat.**
- b. **How will water get to the plant from low lying areas.**
- c. **How many and where are the lift stations going?**

It is true that the Eagle Creek Community has little slope or grade to it. It is very similar to both the neighboring Lakeside Community and to the planned Fost Community. Both of those communities are served by gravity sewer systems.

Prior to making the decision to install a vacuum sewer, the Eagle Creek community was originally designed for a gravity sewer system, but the decision was made by Sandler Utility to move forward with the current vacuum system.

Our plan does not include pumps at each home, rather the plan is to install three (3) lift stations at various locations within the community and have the gravity mains flow to these lift stations. The lift stations will be used to pump the water to the treatment plant.

6. What are the real cost figures for the different options?

Prior to answering this question, there are a few things that are important to understand regardless of your perspective or opinion.

a) Permits are required for both options.

b) Construction is required both options.

Permits: The state has an expedited permitting program for gravity sewer, but there is not an expedited permitting program for vacuum system upgrades. Permitting vacuum will take longer than gravity. Given the high degree of visibility and frustration expressed by the community related to this vacuum system, the state is likely to scrutinize any application for vacuum system upgrades thoroughly.

Construction: In order to meet regulatory standards and provide a vacuum solution with the greatest opportunity for success, the following improvements were included in our estimate:

- A. The valve and pits need to be replaced and upgraded to include additional storage.
- B. The central vacuum station needs replaced and upgraded.
 - a. Upgrades include:
 - i. Higher capacity vacuum pumps with VFD to increase the safety factor on the current design.
 - ii. Higher capacity sewage pumps with VFD to increase the safety factor on the current design
 - iii. More robust instrumentation and controls system to permit predictive analysis.
 - iv. Larger capacity sewage tank
 - v. Minimum three vacuum pumps
 - vi. Minimum three sewage pumps
- C. Service Pit monitoring system to include provisions to identify and page technicians when a valve fails to include an analytics package that permits predictive analysis.

Currituck Water & Sewer (CWS) estimates for both vacuum upgrades and conversion to gravity are provided below. We have also provided our original estimate for your review. Our estimate for the Gravity conversion increased by less than 6%, while our estimate for Vacuum system upgrades decreased by greater than 32%.

Currituck Water & Sewer, LLC

	Vacuum Upgrades	Conversion to gravity
CWS Initial Estimate	\$5.4 MM	\$1.76 MM
CWS Current Estimate	\$3.65 MM	\$1.77 MM

7. How does CWS make money?

CWS's rates are subject to North Carolina Utilities Commission regulation and approval. CWS does intend to request rate base treatment, which permits CWS to earn a rate of return on its investment. It is not accurate that larger investments generate greater returns. The return is the same regardless of the size of the investment. What is accurate is that a larger investment generates larger amount of money generated from the return. However, it is important to understand that the North Carolina Utilities Commission audits our investments to make sure they are prudent and useful. As you can deduce from the table above, if Currituck Water & Sewer's motives were to generate a larger amount of return, it would be in our best interest to recommend repairs to the vacuum system, since our estimates are that it cost more to repair and upgrade the vacuum system than to switch to gravity.

All the experts agrees that gravity sewer will resolve the service issues, including the vacuum sewer technology providers. We believe the most cost effective solution is to invest in conversion to a gravity system, and therefore, is our recommendation.

Our perspective is different from other stakeholders in that if a vacuum system upgrade is the selected solution, then our expectation is that a complete upgrade to bring this system into compliance with NC DEQ current standards is prudent and the system requires additional upgrades to the vacuum station and vacuum lines to minimize disruption during service issues.

8. Who owns Currituck Water & Sewer?

Currituck Water & Sewer is owned by three private investments entities that invest in infrastructure across the United States. The investors include US based pensions, unions, and medical associations who prefer long term, lower yield investments.

EnviroLink Inc. is owned by private investment entities that include large construction contractors, and engineering consultants.

The leadership team of EnviroLink and Currituck Water & Sewer do include individuals that support both entities but Currituck Water & Sewer and EnviroLink have different owners.

9. What has EnviroLink done to improve communications?

We understand that the Eagle Creek community has demanded a higher level of communication. During the past year, since we have been working in the community, EnviroLink has worked with the community leaders to modify and develop communications protocols that support the desires of the community. Our current protocols have streamlined communication messages and methods of delivery. The newsletter is another recommendation we have received from the community and we intend to continue sending the newsletter while

Currituck Water & Sewer, LLC

construction activities continue and look forward to continue feedback on how we can meet the communities needs for information.

Myers Rebuttal Exhibit M
Eagle Creek Virtual Town Hall

Myers Exhibit M



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Eagle Creek | Virtual Townhall

January TBD, 2022

Operations Update | System Options Review | NC Regulatory Hearings



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Eagle Creek | Operations Update

Eagle Creek | Problems from the Outset

- System installed when community was built in 1997.
 - Sandler was the property developer and still owns the system.
- Problems started with the system from the outset.
- No records of system maintenance from 1997 until 2020.
 - No documented maintenance records.
 - Rate increase granted to address increased maintenance requirements, but no evidence to indicate the rate increase was channeled to maintenance needs.
- Envirolink takes over operations in late summer 2020
 - Began researching maintenance records and evaluating condition of system;
 - Significant, systemic problems identified with the system;
 - Better maintenance and better records, but significant problems continue
 - Major vacuum station failure, Fall 2020 result of lack of maintenance
 - Duration of outage compounded by:
 - Lack of redundancy, spare parts and supply chain issues;
 - Lack of experience on Eagle Creek's vacuum system;
- March 2021 – technicians on-site 20 hours per day
- July 2021 – technicians on site 24/7/364
- December 2021 – system upgrades installed.
 - Detailed on next page.

Operations | System Short-Term Band-Aids

- Envirolink has personnel onsite 24/7
- Envirolink requested and Sandler authorized significant short-term fixes for the failing system since the December townhall meeting:
 - New monitoring system fully online;
 - Pedestal mounted controllers installed (110 installed);
 - Additional upgrades ongoing:
 - More pedestal mounted controllers;
 - Expand the monitoring system capabilities;

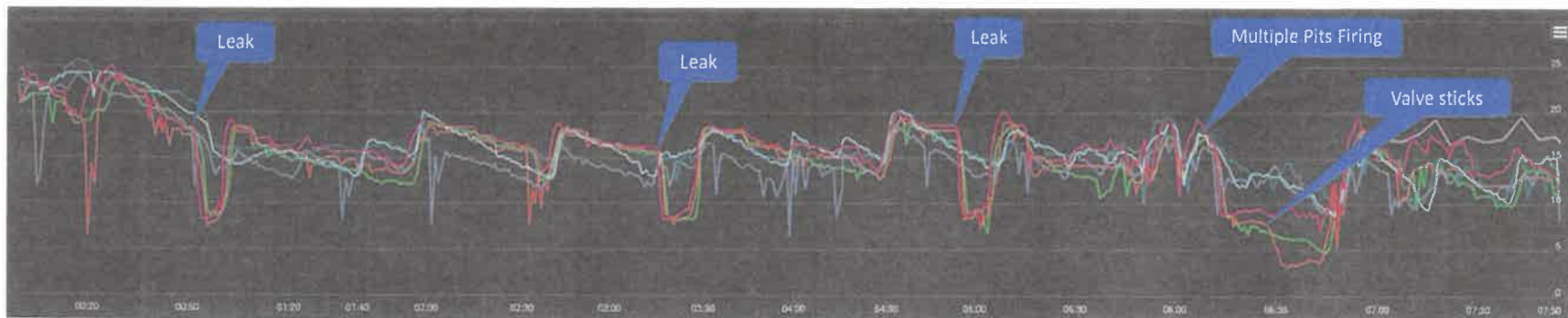
Operations | How is this helping?

- It's not perfect, but we are catching the majority of problems before they impact a household.
- Due to age and long-term lack of maintenance, there are valve failures 1-3 leaks per shift. The graphic below illustrates how quickly a leak can diminish the pressure and emphasizes the need to respond in minutes not industry standard 2 hours.

- Time elapsed: 2 minutes
- Vacuum loss: 56.8%

- Time elapsed: 2 minutes
- Vacuum loss: 50%

- Time elapsed: 3 minutes
- Vacuum loss: 52.7%



- Time elapsed: 4 minutes
- Vacuum loss: 52.2%
- Stage 2
 - Time Elapse: 20 min
 - Vacuum Loss: 81.5%



Operations | How is this helping?

- We have already had two major weather events this year.
 - The monitoring system and on-site personnel resulted in
 - Identifying the issues faster
 - Responding faster
 - Restoring service faster
- Because we were able to now see the status of the lines we are able to respond before most customer notice a issue. These weather events would have been disasters without the monitoring systems.
- But...there were still problems. And Eagle Creek deserves better.

Operations | What's the Long-Term Fix?

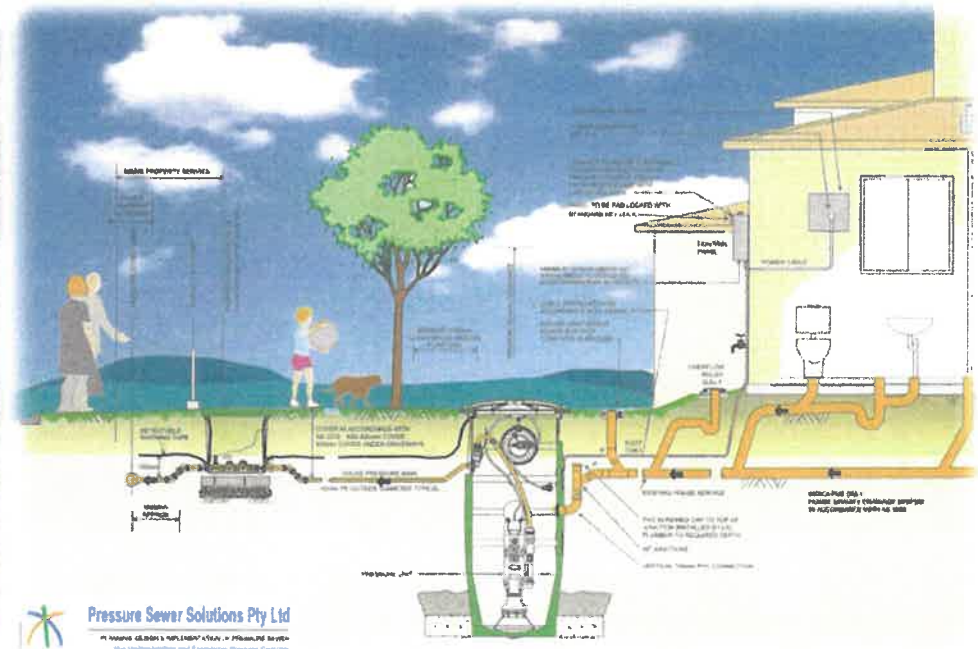
- Operations of the current system is comparable to playing whack-a-mole at the county fair; except no one wins.
- A system with a failure rate of 1-3 times per shift is not acceptable. With that many failures, some are guaranteed to be a problem for households.
- The entire system is beyond its shelf life.
- Eagle Creek needs a new system. There is no fixing the current system where you will not be in the same position in 2-3 years.
- Currituck Water & Sewer with the help of Envirolink, wants to put a new system in place.



Eagle Creek | System Options Review

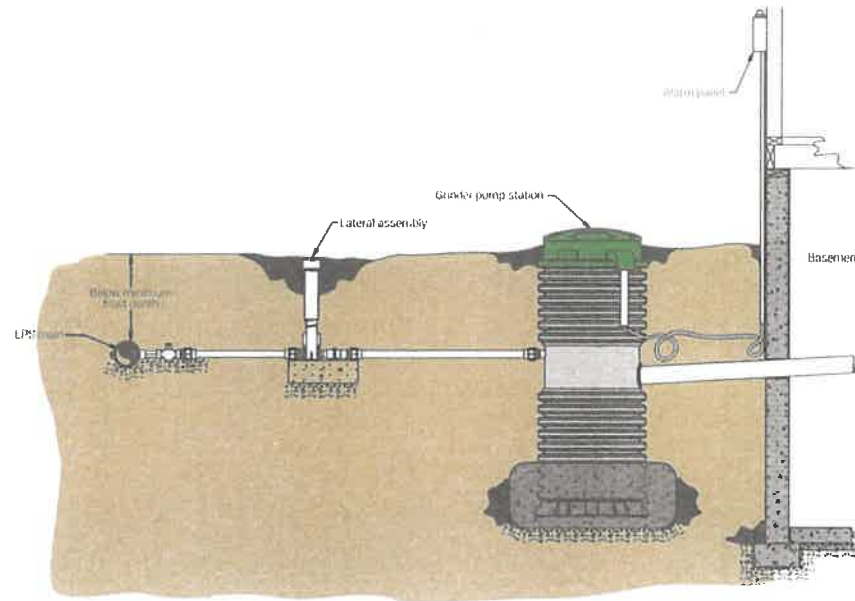
What is a Sewer Collection System (SCS)?

- The SCS transports used water from your home to a water treatment facility.



Sewer Collection System Options

- SCS Technology Options (alphabetical order):
 - Gravity
 - Low-Pressure
 - STEP
 - Vacuum



SCS Options | Low-Pressure/STEP

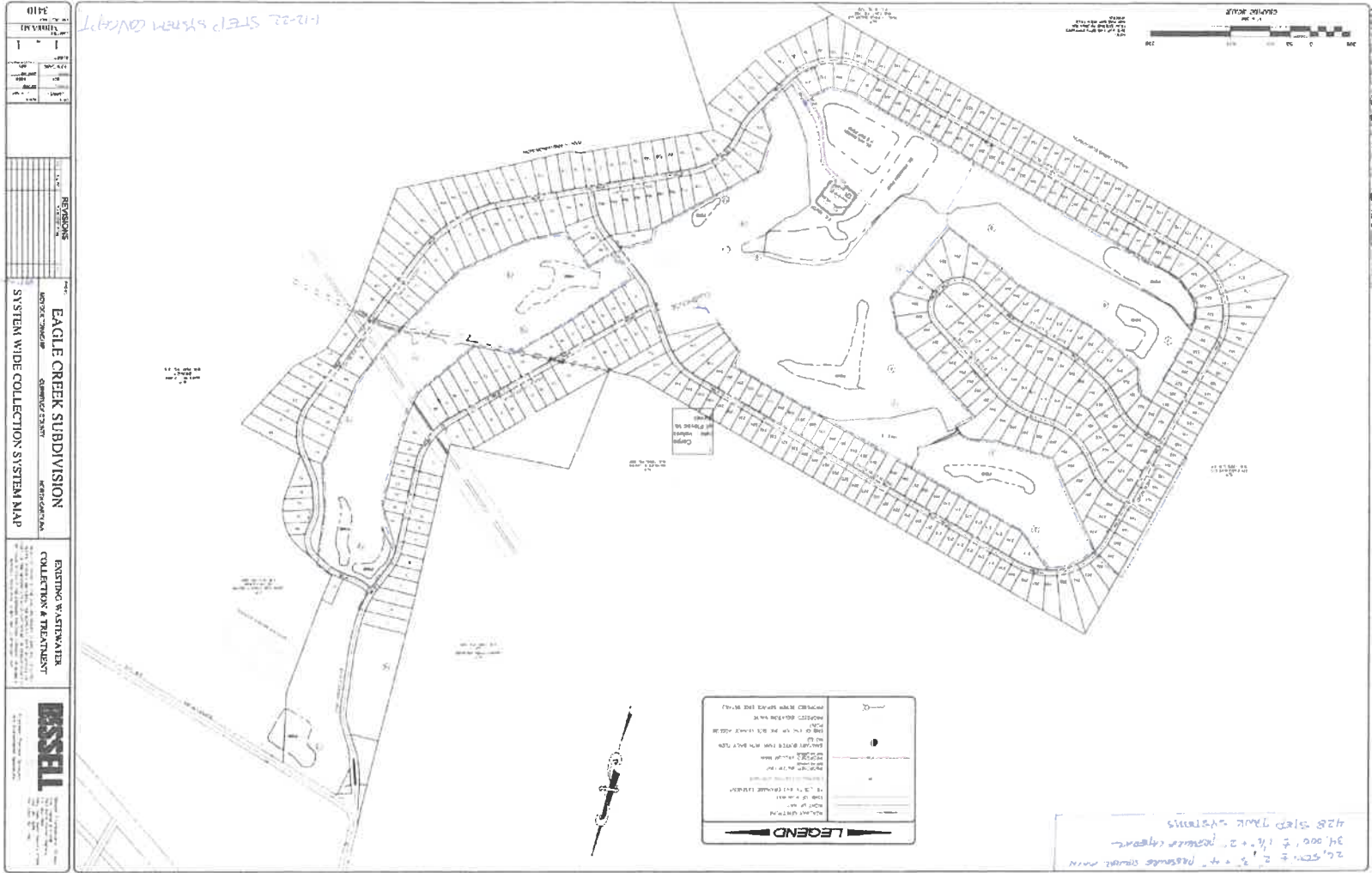


- Reliability comparable to vacuum system.
- Requirements:
 - installation of a tank and pump in proximity to home foundation;
 - installation of one tank and pump per home [e.g. 440 units];
 - each homeowner must grant an easement for installation, operation, and maintenance;
 - installation of low-pressure line from tank to property line;
 - installation of low-pressure mains to WWTP.
- Life of System = 10-15 years
- Regulatory agencies possess knowledge and experience to regulate and have long standing design standards.
 - Minimum storage requirements (one day storage)

Low Pressure/STEP Impacts



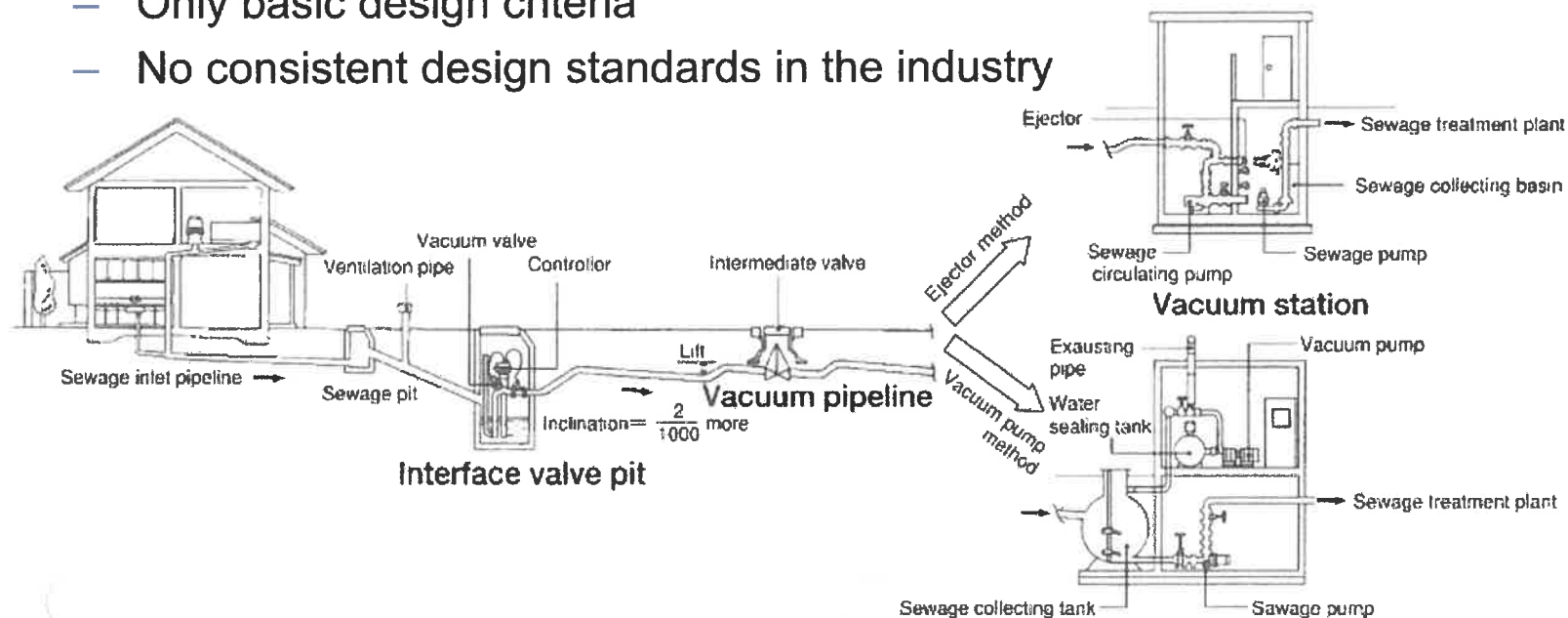
Image courtesy of Environment One Corporation. Used with permission.



Low-Pressure/STEP System Conceptual Layout

SCS Options | Vacuum System

- Operates via negative pressure
- Components:
 - Collection Chamber
 - Conduits (saw-toothed profile)
 - Vacuum Station
- Life of system = 10-12 years
- Regulatory agencies lack experience and are still learning how vacuum systems operate
 - Only basic design criteria
 - No consistent design standards in the industry



Vacuum System | Positives & Negatives

■ Positives:

- Lower initial construction cost (good for developers' budgets building new communities).
- Promotes water conservation;
- Minimizes risk of sanitary sewer overflows;

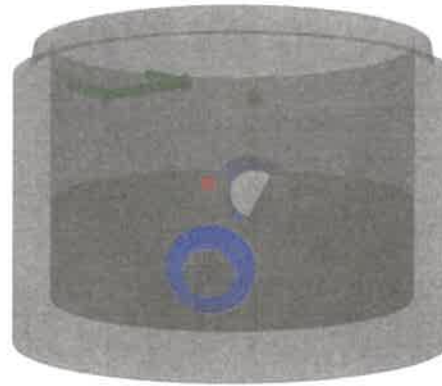
■ Negatives:

- Higher costs to maintain in good working order due to more precision machine parts required for operations;
- TBD
- Bigger impact on personal property due to requirement to remove and replace existing pits.

Vacuum System | Pit Replacement Impacts



200 gallons



4'x3' BASE
(SHOWN WITH PRECAST INVERT)

4' x 7' precast manhole

Valve Pit



The Valve Pit

- Pit /Sump & Cone
- Vacuum Valve
- Sump Breather Unit
- Anti-flotation Collar

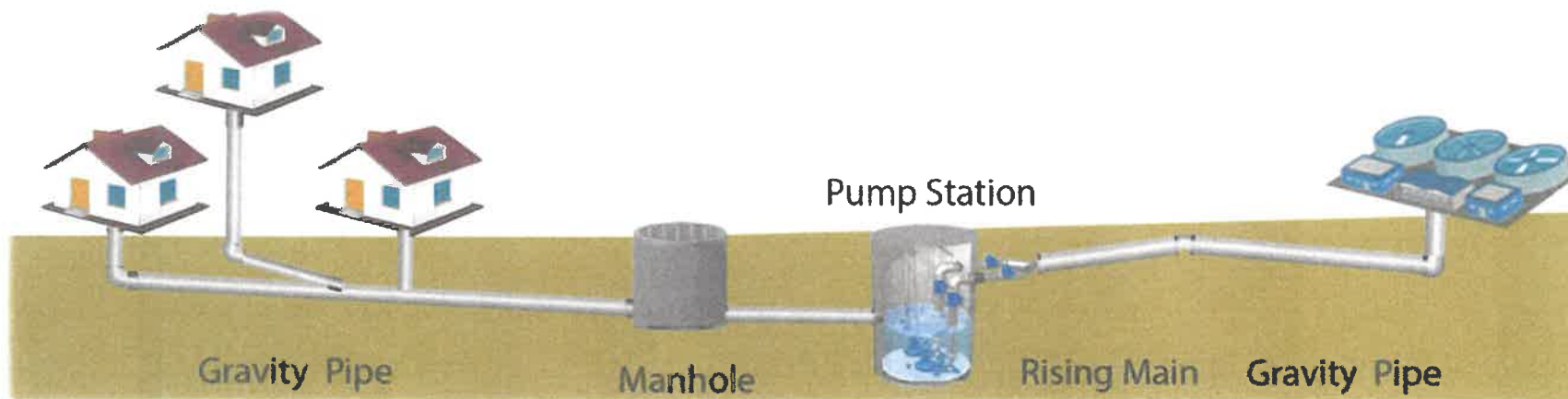


700 gallons

SCS Options | Gravity System

From the beginning of civilization, the most common type of sewerage collection systems are gravity and pressure systems. (Read 2004a)

- Lift Station (6)
 - Inspect 52/year
 - Clean 2/year
 - Pumps two per station
 - Two spare pumps in inventory
 - Replace pumps 1/10 year
- Manholes - inspect 1/year
- Lines - clean 1/10 years (10%/year)
- Labor – 200 hr/year



Gravity System | Positives & Negatives

■ Positives:

- It uses gravity. There's no shortage of gravity.
- Reliability - 1 call/30 years
- Standards are well established
- Less precision mechanical parts to break down.
- Lower cost of operation
- Longer life expectancy of 40-50 years

■ Negatives:

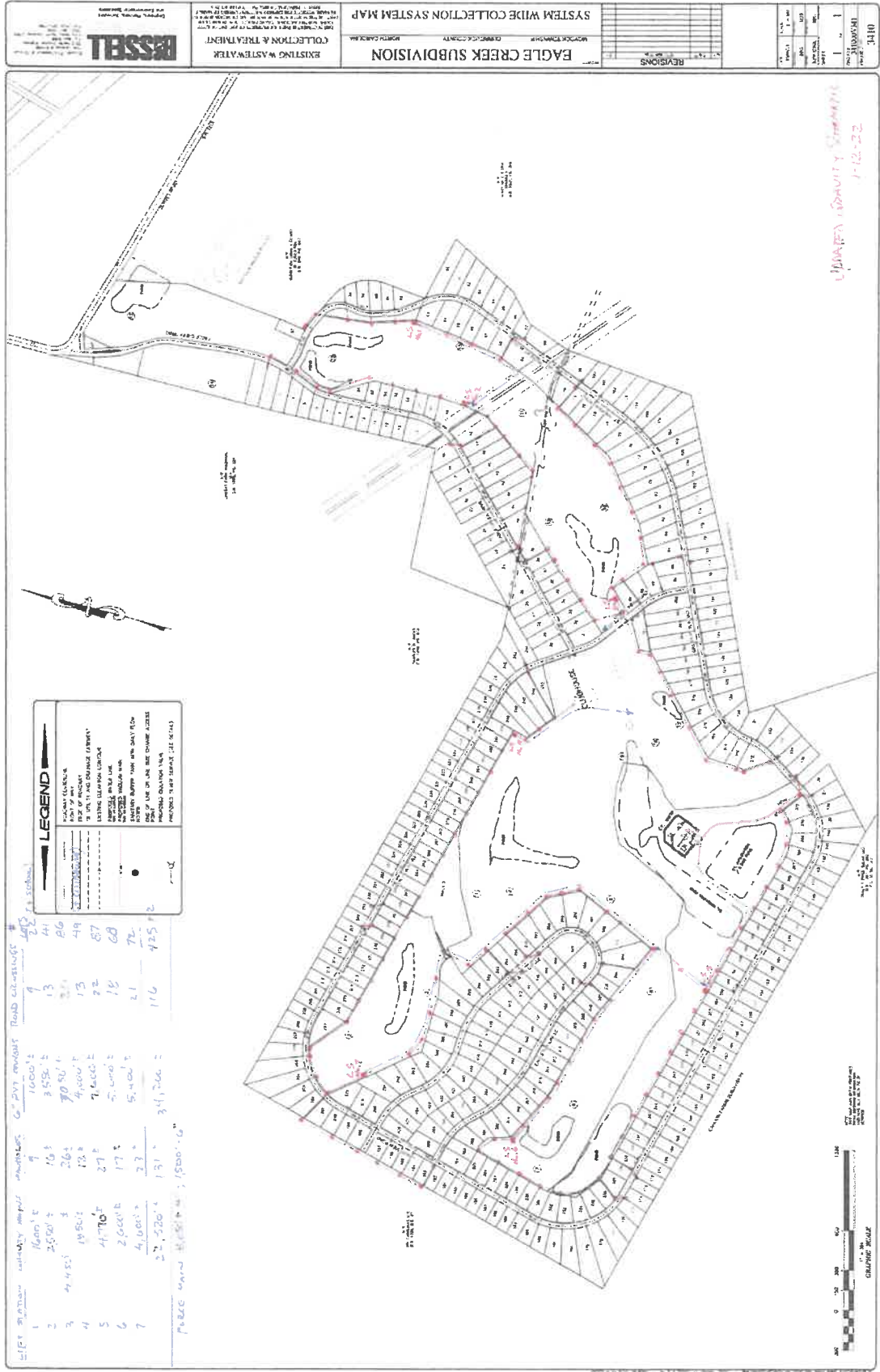
- Lift stations necessary (NEED TO EXPLAIN MORE)
- Odor potential (HOW BAD)
- Sanitary Sewer Overflow Potential
- Potential for deeper excavations (15 feet) on portions of the golf course.

Gravity System | Replacement Impacts/Requirements

- 1 manhole for approximately every 4-5 homes (105 manholes)
- Installation of cleanout to each home
- Installation of gravity lines to carry water to lift station.
- Installation of lift station (not on personal property)
 - Seven (7) lift stations, if depth less than 15 feet
 - Three (3) lift stations if depth increased to 20 feet.



Gravity System Conceptual Layout



Sewer Collection Systems | Failure Causes^{I/A}

[international industry literature review]

OFFICIAL COPY

Jun 22 2022

■ Low Pressure/STEP

- 90% of failure is from grinder pump
 - 67% of pump failures is from control unit (electrical).
- 70% of failures due to improper use of sewer system by customers.

■ Gravity

- 95% of failures from clogged pipes due to roots; fats/oils/grease; or equipment defects.

■ Vacuum Systems

- 80% of failures is from valve pits
- 14% of failures from vacuum station



I/A

Sewer Collection Systems | Failure Rates Comparison

[international industry literature review]

Failures (per household per year)

- Low Pressure 100/208 HHs (48% failure rate)
- Vacuum 100/162 HHs (62% failure rate)
- Gravity 100/380,800 HHs (0.02% failure rate)

SCS Replacement Option Common Factors

- Every effort will be made to minimize disruption to the Eagle Creek Community. But, trying to be as transparent as we can, no matter which SCS replacement option is selected, the following factors will apply:
 - Some disruption during construction;
 - Dewatering during construction;
 - Some trenching required;
 - Installation of state-of-the-art monitoring system.

SCS Impact Comparison | Vacuum vs. Gravity

Vacuum

- Installation of TBD gallon pit (1 pit per 2 homes)
- Replace vacuum station
- Remove & replace existing pit at each home (in basically same location)
- Tank size = 360-720 gallons

Gravity

- Installation of a manhole (1 manhole per 4 homes)
- Install lift stations
- Manhole installed in basically same location as existing pit
- Manhole size = 4 feet diameter and 7 feet deep

SCS Impact Comparison | Vacuum vs. Low-Pressure

Vacuum

- Installation of TBD gallon pit (1 pit per 2 homes)
- Replace vacuum station
- Remove & replace existing pit at each home (in basically same location)
- Tank size = 360-720 gallons

Low-Pressure

- Installation of a 360-gallon grinder pump station (1 per home)
- No lift OR vacuum station
- Pump installed within 5-10 feet of home foundation
- Tank size = 360 gallons
 - Note: STEP would require 1 tank with 2 completely isolated compartments = 720-gallon total tank size

SCS Impact Comparison | Gravity vs. Low-Pressure

Gravity

- Installation of a manhole (1 manhole per 4 homes)
- Install lift stations
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- No lift OR vacuum station
- Pump installed within 5-10 feet of home foundation
- Tank size = 360 gallons
 - Note: STEP would require 1 tank with 2 completely isolated compartments = 720-gallon total tank size

Currituck Water & Sewer Design Goals for a Better Eagle Creek Future

Once CW&S obtains ownership of the Eagle Creek Sewer Collection System, we will replace the existing system with a brand-new system. This new construction will impact your community. Our goals in this effort are to give you a better future:

- No service interruption more than 4 hours during switch over;
- Replace all components that have exhausted expected life or are within 3 years of expected life;
- Upgrade system to meet modern design standards;
 - NC DEQ
 - Currituck Water & Sewer
- Minimize excavation < 15 feet
- Minimize disruption during construction
- Minimize construction in roads
- Minimize construction on residents' property
- No construction outside of 10 feet from property line
- Minimize open trench excavations on residents' property
- Contingency plan for potential issues:
 - **Electric** – Standby Crew
 - **Water** – Contractor equipped with repair parts
 - **Telecommunications** – Supply critical residents with redundant wifi during construction
 - **Sewer** – Contractor equipped with repair parts



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Currituck Water & Sewer Design Goals for a Better Eagle Creek Future^{I/A}

But this is a construction project. We all know that plans never work out perfectly. When things don't go perfect, we are going to strive to have contingencies in place.

- **Electric** – Standby Crew
- **Water** – Contractor equipped with repair parts
- **Telecommunications** – For any work from home customers, supply customer with redundant wifi during construction.
- **Sewer** – Contractor equipped with repair parts
- **Landscaping** – Contractor will come in after construction to restore private properties to pre-construction condition.
 - Engineers have videoed and photographed each lot.

Questions

SCS Design Criteria | Vacuum System

- Sufficient vacuum capacity to provide a minimum safety factor 30%.
- Variable Frequency Drives (VFDs) on all vacuum pumps.
- VFDs on sewage pumps to permit ramping up and down.
- Instrumentation to permit sewage and vacuum pump runtimes, start/stops, rainfall, water flow, amp draw, power, sewage pump discharge pressure, air flow, vacuum sensor, pressure sensor, and level sensors.
- Oil-sealed rotary screw vacuum pumps.
- Stainless steel vacuum station tank(s) minimum two (as per European recommendations)
- Three (3) vacuum pumps with one in inventory
- Two sewage pumps with one complete in inventory
- Monolithic pit design
- Minimum storage to meet NC DEQ regulation
- Spring operated valve
- Pit alarm light (level and open valve)
- Sealed & Locking pit lid
- Pit monitoring (level, vacuum, operating cycle time)
- Isolation valve actuated through monitoring system

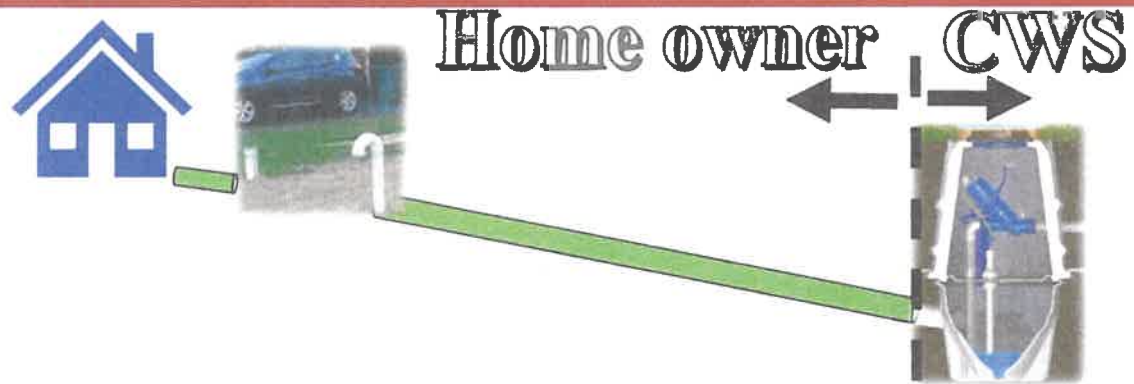
Recommended Phase ^{I/A}1 - Vacuum System Upgrades

- Upgrade and replace central vacuum station
 - Estimated Budget = \$600,000
- Install monitoring system-all valve pits
 - Estimated Budget = \$430,000
- Replace all valve bodies
 - Estimated budget =\$450,000
- Install 500 gallon tank between pit and home
 - 4x4x5 concrete or polymer
 - Modify and move candy cane to between pit and tank
 - Discharge from candy cane into tank
 - Home owner owns
 - Amend restrictive convenient to require cleaning (pumping) 1/3 years
 - Estimated budget = \$3,000 - \$5,000 per tank (installed)
 - 221 pits x \$4,000 = \$844,000
- **Total Phase 1 budget = \$2.365 M**

Recommended Phase 2^{IA} - Vacuum System Upgrades

- After Year 1 identify pits subject to inflow and infiltration
 - Replace pits subject to inflow and infiltration
 - Required features
 - Monolithic construction
 - Additional storage capacity [minimum 300 gallons]
 - Home owner and utility valve failure notification
 - Anti-floatation measures
 - Estimated Budget = \$7,550 per pit
 - $220 \text{ pits} \times 30\% \times \$6,000 = \$0.5 \text{ MM}$
- **Estimated Phase 2 Budget = \$0.5 MM**
- **Total Estimated Budget = \$2.865 MM [Ph 1 & 2]**

Vacuum Service Modification



Gravity System Design Criteria

- Manholes = 40 years
- Mains = 40 years
- Pumps = 10 years
- Controls = 10 years
- Maximum Depth
 - For along property lines: 6' – 8'
 - For gravity mains on golf course: 15'
- Install manhole on short side
- Install cleanout and 6" main on long side

Gravity System Design

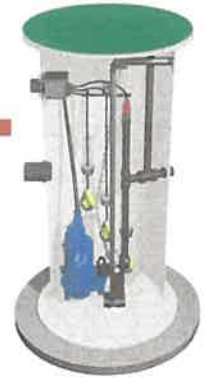
- Six lift stations
 - Dual pumps with multiple spares (Required per NC DEQ)
 - Diesel backup pump
 - Storage above normal operating level (24 hour)
 - Audio-Visual alarms
 - SCADA with paging capability
- Manhole installation
 - ____ On property lines to homeowner
 - ____ On golf course
- Linear footage of mains
 - ____ On golf course
 - ____ Along property lines (directional drill)

Vacuum System Failures [From literature review]

■ Vacuum Systems

- 80% of failures is from valve pits
 - 92% of pit failures are valve not opening, valve not closing, defective valve closing mechanism, and flooding of controller
 - 40% valve not closing (leak)
 - 20% valve not opening (backup)
 - 7.5% damage to valve closing mechanism
 - 7.5% clogging of suction pipe conduit
 - 3% wrong proportion of air/water
 - 3% closing of vent pipes
 - 25% due to improper use of sewer system by customers
- 14% of failures from vacuum station
 - Most common cause – prolonged operation of vacuum pumps resulting from leakages in the system

Low Pressure Evaluation



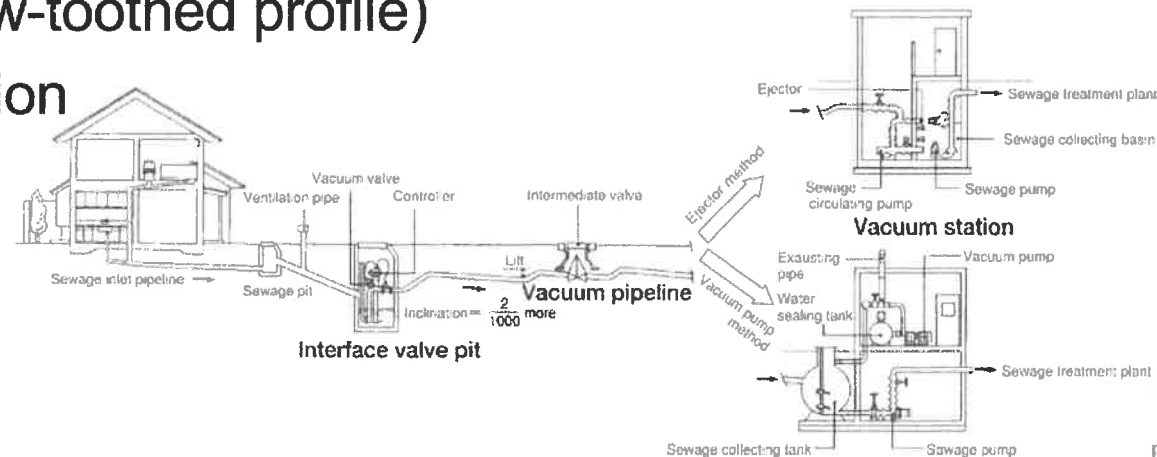
- First pressure systems installed in 1800s.
- Requires installation of a tank and pump in proximity to home foundation
- Reliability comparable to vacuum sewer
- Requires installation of one tank and pump per home [e.g. 440 units]
 - Cost estimate for tank and pump installation only:
 - \$5,000 x 440 units = \$2.2 MM
 - Does not include cost of main to property line
 - Does not include cost of main from property line to WWTP
- Require CWS obtain easements from each home owner for installation, operation and maintenance
- Requires installation of low pressure line from tank to property line
- Requires installation of low pressure mains to WWTP
- No further evaluation warranted.
 - Option found to be both economically and technically unfeasible



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Vacuum Sewer Overview

- 1960 – Earliest commercial application of vacuum sewer
 - Note: Several publications were reviewed and their does not appear to be a consistent date established for the first application of vacuum sewer.
- 1990 - Earliest functioning vacuum system installed
 - 1997 – Eagle Creek vacuum system installed
- Operates under negative pressure
- Components
 - Collection Chamber
 - Conduits (saw-toothed profile)
 - Vacuum Station



Vacuum System Overview [per US EPA Fact Sheet]

- Approximately 50 vacuum systems in across US
- Applicable:
 - Cost effective where construction cost high
 - Population density low
 - Topography flat
- Advantages
 - Promotes water conservation
 - Minimizes risk of sanitary sewer overflows
 - Lower Construction Cost
- Disadvantages
 - No universally adopted design standards
 - Requires responsive operation and maintenance
 - Higher energy cost
 - Reliability – Historically poor reliability but recent advances have improved reliability
 - High operational cost
 - High life cycle cost
 - High probably of service calls - One service call every 6.9 years [14.5% probability of service issue]



Vacuum Sewer Operation & Maintenance ^{I/A} [from Airvac Vacuum Sewage 1990 Design Manual]

- Vacuum pump – Recommend replacement every 7.5 years per manufacturer and US EPA.
 - Recommended maintenance per US EPA and Air Vac Sewage Design Manual
 - Controller (221)– Replace 1/5years
 - Valve (221) – Replace 1/10 year
 - Sewage Pumps (2)- Replace 1/10 year
 - Vacuum Pumps (2) – Replace 1/15 years
 - Other Maintenance
 - Vacuum Station – Inspect daily [360/year]
 - Vacuum pumps – Oil change monthly [12/year]
 - Vacuum filters – Change once every two years [1/2 year]
 - Sewage Pumps – Change seals twice every 10 years
 - Valves – Check timing once per year
 - Reliability
 - One service call every 6.9 years [from US EPA telephone survey]
 - Labor = 11,400 hr/year



Vacuum System North Carolina Regulation

- **"Vacuum sewer system"** means a mechanized system of wastewater collection using differential air pressure to move the wastewater. Centralized stations provide the vacuum with valve pits providing the collection point from the source and also the inlet air required to move the wastewater. In conjunction with the vacuum pumps, a standard non-vacuum pump station and force main is used to transport the wastewater from the vacuum tanks to a gravity sewer or ultimate point of treatment and disposal. [15A NCAC 2T .302]
- (c) For pressure sewers, **vacuum sewers**, STEP systems, and other alternative sewer systems discharging into a sewer system, **the Permittee**, by certifying the permit application and receiving an issued permit, **shall maintain in operable condition all pumps, tanks, service laterals, and main lines as permitted, excluding the line from a building to the septic or pump tank.** [15A NCAC 2T .304]

Vacuum Station NC DEQ Design Criteria

- 15A NCAC 2T .305...
 - (h) The following criteria shall be met for all pumping stations and force mains:
 - (1) Pump Station Reliability:
 - (A) Pump **stations shall be designed with multiple pumps** such that peak flow can be pumped with the largest pump out of service. ...
 - (B) A standby power source or pump shall be required at all pump stations...
 - (C) As an alternative to Part (B) ...
 - (D) Simplex pump or **vacuum stations** connecting a single building to a sewer system **shall provide 24-hours worth of wastewater storage** or shall provide storage in excess of that needed during the greatest power outage over the last three years or the documented response time to replace a failed pump, whichever is greater. Documentation of wastewater storage shall be provided with the permit application. **In no case shall less than 6 hours worth of wastewater storage be provided above the pump-on level.**
 - (E) All pump stations designed for two pumps or more shall have a telemetry system to provide remote notification of a problem condition...
 - (F) All pump stations shall have a high water audio and visual alarm.

Vacuum System Design Considerations

- Literature [International Journal of System Assurance Management, 2017]
 - One or more vacuum vessels (recommend two)
 - Several vacuum pumps
 - Several non-clog sewage pumps
 - Standby generator
 - Vacuum reservoir tank, spare
 - Rotary vane vacuum pumps
 - Separate flows greater than 15 gpm (e.g. schools)
 - Buffer tank sized to control at least 25% of design flow
 - $120 \text{ gpd per bedroom} \times 25\% = 30 \text{ gallons per bedroom}$ [See table next slide]



North Carolina Regulatory Design Standards

- Current NC Minimum Design Standards
 - 15A NCAC 2T rules
 - Design flow based on # of bedrooms
 - [120 gallons per bedroom per day] [15A NCAC 2T
 - Eagle Creek community 421 homes range from three to six bedroom
 - Vacuum classified as ‘alternative’ means anything other than gravity.

Bedrooms	Gallons per day	6 hr(25%) storage	% Homes
3	360	90	21.1% [89]
4	480	120	49.2% [207]
5	600	150	15.4% [65]
6	720	180	14.3% [60]

Currituck Water & Sewer Design Goals

- Replace all components that have exhausted expected life
- Replace all components that are within 3 years of expected life
- Upgrade system to meet current design standards
 - NC DEQ
 - Flovac & A3-USA
 - Envirolink operational criteria
 - Safety factor for vacuum pump design
 - Safety factor for sewage pump design
 - Redundancy at vacuum station
 - Impact of individual service on system operation
 - Monitoring of station and services



Myers Rebuttal Exhibit N

Robersonville Photos

Town of Robersonville [2012]



Jun 22 2022



ENVIROLINK

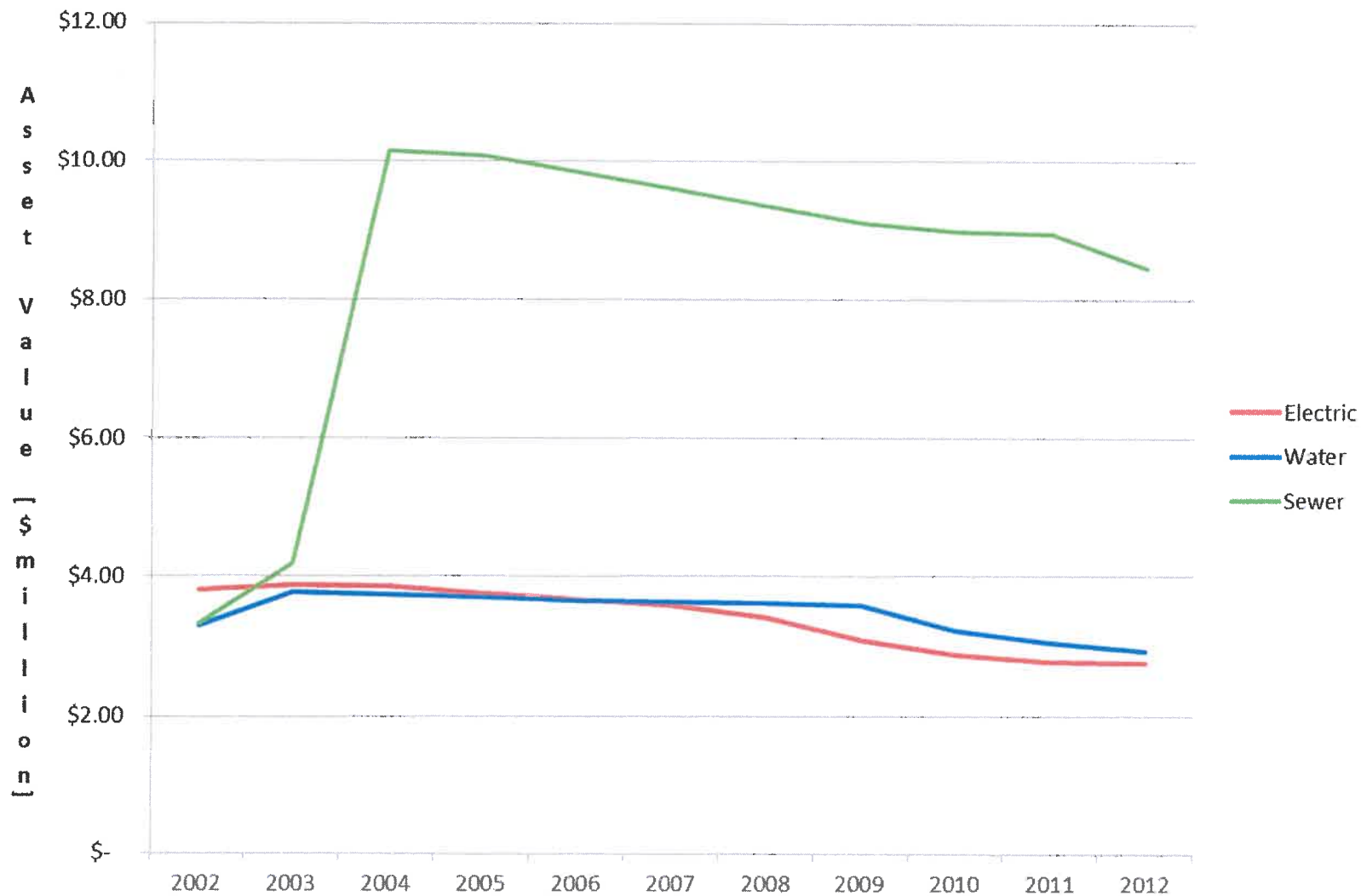
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Robersonville Lift Stations [2012]



Town of Robersonville Asset Value

Net Asset Value for the Town of Robersonville's Utilities



Myers Exhibit O

K



NEWS

VAC SEWER ISSUES CONTINUE IN FOREST

WRITTEN BY ON FEBRUARY 21, 2022



The Village of Forest is still experiencing vacuum sewer issues in the area from South Gormley to Mad River Streets and South Patterson to Daisy Streets.

The crew was out all weekend working to get the problem addressed and repaired.



Zensah Fresh Legs Stethoscope Compression Leg Sleeve - L/XL - N.

The Zensah 6356 415 Fresh Legs Stethoscope Compression Leg Sleeve increases circulation to promote better blood flow and alleviates pain, soreness, and cramping. It features a graduated compression of 15-20 mmHg. It is made with a seamless design for comfort and includes 3-zone ribbing for massage-like relief. The fabric content is 95% Nylon and 5% Spandex.

They will also be out today with the vac truck working at each pit to prevent overflow.

Village officials realize this is an inconvenience to Forest residents, but the crew is working to resolve the issue.

They ask residents in that area of town to continue to use the system sparingly.

AUTHOR

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**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. W-1130, SUB 11
DOCKET NO. W-1333, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:

Application by Currituck Water and)	
Sewer, LLC, 4700 Homewood Court,)	
Suite 108, Raleigh, North Carolina)	
27609, and Sandler Utilities at Mill)	
Run, LLC, 448 Viking Drive, Suite 220,)	REPORT ON CUSTOMER COMMENTS
Virginia Beach, Virginia 23452, for)	FROM PUBLIC HEARING HELD ON
Authority to Transfer the Sandler)	FEBRUARY 2, 2022
Utilities at Mill Run Wastewater)	
System and Public Utility Franchise in)	
Currituck County, North Carolina, and)	
for Approval of Rates)	

NOW COMES Currituck Water & Sewer, LLC, ("CWS") and files this report in response to the public hearing held by means of the North Carolina Utilities Commission's ("Commission") on February 2, 2022. This report is required by ordering paragraph 4 of the Commission's November 18, 2021 *Order Establishing Discovery Guidelines, Scheduling Hearings, and Requiring Customer Notice*.

Overview of the testimony the eight Eagle Creek customers who testified

Only eight of the 422 customers testified. Not all who indicated a wish to testify did so. As a preliminary matter, the testimony of several of the eight customers of the 422 who testified focused on the major failures of the system beginning in September 2020. This is quite understandable in that it occurred so recently, its impact are substantial, and efforts to rectify

have proven difficult. Nevertheless, events began in September 2020, and continue, but must be placed in an appropriate context.

First and foremost, there is documented evidence dating back to 2010, from third party wastewater professionals, that the Eagle Creek vacuum and wastewater system was not being properly operated, maintained or managed. By Sandler Utility's own admittance, they were an absentee owner and were not actively engage in the operation, maintenance or capital planning of the wastewater system until Envirolink staff began operating the system on September 7, 2020. They have openly admitted to being unaware of the failing condition of the wastewater system.

As evidence from the references below, since that time, there is additional evidence that both the Commission, the Public Staff and the North Carolina Department of Environmental Quality knew or should have known of the condition of the Eagle Creek wastewater system.

- 2012 Envirotech Emergency Action Plan – submitted to the Washington Regional Office of the now Department of Environmental Quality.
- 2015 Proposed Order Granting Rate Increase to Sandler Utilities at Mill Run, LLC. Issued by the North Carolina Utilities Commission.
- 2016 Letter from Envirotech to the North Carolina Utilities Commission
- August 2020 NC DEQ Inspection Report

The record and evidence, along with customer testimony contradicts some information related from memory of several witnesses, some of whom have only resided in the community since in or around 2020. From the Commission's and NC DEQ files, disruptions have occurred with some frequency prior to September 2020. Accounting records obtained from the former operator and partially submitted as part of this filing indicate that the frequency of service interruptions were more frequent than that described by some of the memory of some of the witnesses.

Over the 20 year period prior to September 2020, NC DEQ conducted three on-site inspections of the Eagle Creek facility and reported only minor maintenance issues despite repeated system failures as documented from the Commission's own files. Envirolink acquired Envirotech in the spring of 2020, with the former Envirotech staff operating the facility until September 2020. The photo evidence (provided to Public Staff) of the condition of the wastewater system taken on August 4, 2020, show a wastewater system in a state of serious deterioration and contradict testimony that the system was being properly operated, maintained and managed prior to Envirolink's operations. In addition, the August 2020 inspection by NC DEQ indicates that they had been fully aware of the deteriorated system for 2 years noting the filter were being by-passed for over 2 years.

Over the two year period since September of 2020, NC DEQ has conducted four site inspections and has issued a consent judgement against Sandler Utility. The evidence shows that the Division has been aware of the failing condition of the wastewater system for many years but has failed to require Sandler to upgrade the facilities.

In addition, to the increased involvement by the North Carolina Department of Environmental Quality, there have been seven third party evaluations of the Eagle Creek wastewater system by professionals. While each evaluation has identified areas for operational improvements, each report concludes that the facility suffers from numerous years of poor operation, maintenance, management and inadequate resources. Recognizing that prior to the catastrophic failure of September 2020, Envirolink staff had assumed operation for less than 25 days, Envirolink does not agree that it is responsible for a lack of maintenance or the deteriorated condition of the wastewater treatment plant, vacuum station or service pits in the community. The only rational conclusion is that the system was in a deteriorated state prior to Envirolink's staff assuming operations of the facility. Every qualified professional, including vacuum technology manufacturers that have reviewed the Eagle Creek facility conclude that the system requires major capital upgrades. The only differences of opinion are on the most

appropriate solution to upgrade the facilities. The following are referenced as specific evidence from these reports:

1. Photos of the wastewater system taken August 2020 prior to transitioning to Envirolink staff
2. September 30, 2020 [**23 days** after Envirolink staff assumed operation] Airvac Site Survey:
 - a. The current operators have no experience with vacuum technology systems.
 - b. One vacuum pump was locked up and the other could only pull 5 inches of vacuum.
 - c. Only one of the two sewage pumps would run but would not pump.
 - d. Vacuum from the tank was leaking through the pump seals and when the pump ran sewage leaked onto the floor.
 - e. The motor windings were faulty on the other sewage pump.
 - f. The conical screens on the vacuum pumps were plugged with grease.
 - g. When the vacuum pump was finally started, it would not produce the required vacuum pressure.
 - h. No backup vacuum valves or controllers were on site.
 - i. During the site visit the power to the main vacuum panel board went down and the standby generator wasn't working.
 - j. No spare fuses were on site.
 - k. In all pits inspected by the Airvac technician, there were no clamps on the vacuum control hoses and breather hoses had been disconnected.
3. October 7, 2020 Flovac Survey [**30 days** after Envirolink assumed operations].
 - a. The 10" main vacuum plug valve at the vacuum station was inoperable.
 - b. After working most of the day to identify leaking valves in the collection system, vacuum returned to the system only to fail again before the end of the day.

- c. A review of the vacuum station discovered that the only previously believed functioning sewage pump was actually not working due to rotating unit bearing failure.
 - d. It appeared the second sewage pump that was not working also had failed bearings.
 - e. The dedicated vacuum pump truck that was supposed to be on-site was not there, and the system had to be shut down to protect the vacuum pumps from flooding from sewage.
 - f. The water level probes in the vacuum tank were not functioning properly if at all.
 - g. The operators claimed the internal condition of the vacuum tank was poor.
 - h. The vacuum tank was cleaned and placed back in service.
 - i. With the system down for so long many of the valve pits were flooded.
 - j. There were almost no spare parts on hand.
4. October 30, 2020 Airvac Site Survey [**53 days** after Envirolink assumed operations].
- a. Workers were on site with a pump truck trying to pump out water and sewage from the upper pit chambers.
 - b. After working all day to locate leaks the system was running with good vacuum.
 - c. There are still a lot of hoses without clamps.
 - d. At least one and as many as four water level probes in the vacuum tank were missing wires and therefore were malfunctioning.
 - e. At least two of the solenoid valves were not working.
 - f. Missing parts included test hoses, 6 vacuum pit valves, 20 controllers, 3 probes and 3/8" and 5/8" hose clamps.
5. November 20, 2020 Flovac Site Survey [**74 days** after Envirolink assumed operations]
- a. The starter contacts for vacuum pump number 1 were melted/welded shut and the pump would not turn off.
 - b. There were insufficient spare parts to rebuild the system.
 - c. The operator was so busy searching for leaking valves that he had no time to rebuild the valve pit controllers.

- d. The assistant operators lacked technical experience with vacuum sewer systems and wastewater collection in general.
- e. There were multiple houses where raw sewage was overflowing from the candy cane air vents.
- f. Raw sewage was found backing up into the upper valve pit chambers.

6. July 2021 A3-USA report

- a. The poor condition of the system and the current service issues are the result of years of neglect due to inadequate maintenance and inadequate investment.
- b. The frequency of pit valve failures coupled with design limitations have resulted in the need to increase the number of operators assigned to the collection system.
- c. Often operators are too busy to acknowledge calls of problems from home owners.
- d. The vacuum tank and controls are in poor condition.
- e. The capacity of the vacuum pumps does not provide for a safety factor.
- f. The system lacks alarms to alert both operators and home owners.

7. Testimony of Mr. Gary Lickfield

- a. Mr. Lickfeld testified that he moved into the Eagle Creek subdivision in 2002. He testified, "I've experienced outages not even a year after I moved into my house." The first experience he had was with Hurricane Isabel when he had raw sewage back up into his house. He learned at that time that the sewer plant did not have a working generator at state code. There are not a lot of vacuum systems in the state, and regulators don't know or are not familiar with how to enforce it. It should not take 25 years of enforcement to go through this to figure out how to enforce it."
- b. He testified that "when Envirolink took over, the plant was nonoperational, and that is due to Sandler's negligence of the plant, along with Envirotech that managed the plant at that time because there was no maintenance records for what they did. Mr. Lickfeld had problems in 2010 or 2011 when his pit collapsed.

The response from Sandler and Envirotech was "we don't have any money to fix it. "

- c. In 2015 at the time of the rate increase for Sandler the state came in, inspected the plants, and had a laundry list of items that need to be fixed, repaired or replaced. Mr. Lickfeld testified that "I found out from another state official that no one ever went back, after that rate increase was approved to see what if anything was done so it's used and neglect by Sandler and Envirotech, and Envirolink was given a huge task of bringing the plant and the system back online.
- d. Mr. Lickfeld testified that one common theme has been that technicians kept coming up with ideas and things that they wanted to do and were saying that Sandler would not find the money to do it, and it wasn't until recent court proceedings that that was being done.

8. Testimony of Ms. Susan Powers

- a. In response to the constant refrain from the Public Staff lawyers who seemed to believe that this case is about Envirolink, she testified that since 2020 the service has gone downhill. She testified "now they also inherited a used car, too, basically, and- but also I don't feel they did what it needed to do to keep it in tiptop shape. I think somebody else gave the example, you know, if you get a used car you're going to make sure to change the oil every so often and check all the fluids and keep it running no it didn't do that period." She testified that she is a board member and a month ago she sent out an email to Deborah Massey , the contact for Envirolink, and she thinks that email communication has gotten better.

9. Testimony of Mr. David Shepherd

- a. Since about 2006, Mr. Shepherd has been the drainage committee chairman for the neighborhood. The drainage and the sewerage collection obviously connects pretty considerably, because if the subdivision does not drain, it pretty much doesn't matter what kind of sewer system there is. It's going to have a problem.

- b. He testified that the man who initially put the system in and who lives in the neighborhood maintains that when Envirotech first bid to run the system, it significantly underbid the operations expense. And from that point on, once those expenses were put in place and the rates were set, Sandler was running behind the power curve from the beginning. He doesn't think they collected enough money to truly do what they needed to do on the system. That's not an excuse for them. I think that's just a fact.
- c. This vacuum system depends on a technician. If there is a low vacuum alarm at the plant, it depends on a technician to be available and get there within a set period of time. It takes less than an hour if the technician finds where the leak is, a leak in a pit where a valve will be stuck open and air is being sucked into the vacuum main, reducing pressure on the whole system.
- d. Mr. Shepherd has read the field reports, so he knows the system was old, it had old valves and old controllers. Instead of being rebuilt to maintain on a regular basis, they were waiting until they failed, and then they were replacing them. So that was working. It's not the way to do it but that was working. All of a sudden we had a situation where we had people that didn't know how to rebuild those controllers. They didn't know how to rebuild those valves. They didn't know what to do when they went to the failed pit. They didn't know how to time the controllers or didn't seem to. With respect to the failure of 2020, the field reports told what happened. It was one thing after another. Oil and pumps hadn't been changed, filter screens and the vacuum pumps were totally clogged up where it was only a pinhole.

The only plausible explanation is that the condition of the wastewater system was allowed degrade as a result of years of poor operation, maintenance and oversight by the owners and regulatory officials. While customers are understandably frustrated, Envirolink staff only had 23 days of operation prior to the major outage and it is not logical that the facility could deteriorate in 23 days to the condition noted in these reports. The reality is that the condition

of the system documented in these reports is the result of years of poor operation, maintenance, management and oversight by Envirotech, Sandler, NC DEQ and NC Public Staff.

Envirolink admits that while its technicians have extensive experience in wastewater operations and maintenance, their experience with vacuum system operation, at the time of transition was limited to classroom training with only limited field experience. However, Envirolink did and continues to devote significant resources to operating the system until a more reliable and sustainable solution can be implemented. Envirolink has a staff of over 10 local technicians that are backed up by a staff in excess of 70 technicians in other locations that have assisted in periodically in restoration efforts. In addition, Envirolink was the first to solicit the assistance of Airvac on September 30th, Bill Freed with Envirotech on September 30th and Flovac on October 6th, solicited and continues to work closely with Flovac and A3-USA in evaluating operations, and the condition of the system. As Mr. Shepherd states..." This is fact."

The solution suggested by some that the operators stand by ready to repair or replace many moving system parts of a vacuum system when they fail is Envirolink's current practice but this is not good operating practice and relies on response times to address failures after they occur but prior to system failure. According to Airvac and Flovac competitors, this is the reason that a monitoring system was developed.

Admittedly, there are vacuum systems that function properly, but there are equal numbers of vacuum system that experience problems similar to Eagle Creek. According to both Flovac and Qua-Vac, there are numerous examples where both companies have had to retrofit their product to solve vacuum system reliability issues with other vacuum systems. Reportedly, a significant portion of their marketing strategy is retrofit of failed or failing vacuum systems. Valve failures and the impact on the system operation, is an inherent risk with vacuum systems.

All vacuum system require operators to respond and repair leaks in minutes or risk service issues for multiple residents. This is highlighted in the testimony of Mr. Shepherd. In addition

to examining vacuum systems recommendations provided by Airvac, CWS has reviewed literature, professional publications and wastewater engineering professionals to evaluate the effectiveness and reliability of vacuum systems.

As stated in the recent third party engineering report required by NC DEQ and conducted by Century Engineering and the additional information provided to Public Staff from professional publications, vacuum system suffer from the following:

- High energy consumption
- Additional cost for vacuum valves and vacuum stations
- Expert design is required
- Energy needed to maintain vacuum
- Skilled operators are required – training necessary
- Very few operator with vacuum experience
- Very few vacuum systems
- System components are not quickly available
- Faults of individual valves affect the entire system
- Problems cited in the 1978 EPA Demonstration project include:
 - Problems with the operation of the sliding-vane vacuum pumps occurred repeatedly.
 - An excessive amount of water condensed in the lubrication system of the pumps.
 - Manometer-type condensate drains installed on the vacuum pumps required manual draining of condensate every day which resulted in the pumps losing their oil.
 - Bearing surfaces on one pump had to be rebuilt.
 - Failure of the vacuum valves resulted from malfunctions in the valve controller.
 - One valve failed in the open position due to a small particle of debris in the pneumatic circuit of the valve controller.

- Another valve failed because of freezing moisture in the control circuit check valve.

To address these issues, CWS is proposing to rebuild the collection system serving the Eagle Creek in order to upgrade the system to provide adequate service to all Eagle Creek residents. CWS has demonstrated that it has the resources available and that it is fully prepared to address the service issues experienced by the Eagle Creek residents.

The system is and has been owned by a real estate developer. Real estate developers, as the Commission is well aware from many similar examples, are not in the sewage collection and treatment business and are not motivated to own and operate utility systems with their long term viability in mind.

As detailed in the CWS prefiled testimony as owner CWS has the financing and access to capital to operate the Eagle Creek system on a long term basis without a desire to sell lots. CWS plans to own and operate nearby systems, Fost and Flora, that will enhance service to the Eagle Creek customers and permit a spreading of costs over a wider customer base. This will permit the presence of more operators on hand for greater periods of time. Presently the choice is Sandler or CWS.

The witnesses have drawn a distinction between operations under Envirotech and under Envirolink. The two contract operators are not completely distinguishable one from the other, and neither has been the owner of the system, responsible for providing the funding to operate, repair and maintain it.

Envirolink bought Envirotech and transitioned their operators to their own staff. Some have remained. Some have not. Those who have left did so due to unwillingness to abide by the appropriate operating practices Envirolink sought to impose. Bill Freed, who was the former

operator and owner of Envirotech, can be made available to the Commission as a witness to testify that many of the concerns aimed at Envirolink are misplaced.

While the participation by DEQ and the North Carolina Attorney General is understandable, their efforts to provide immediate solutions to the numerous outages and enhance instantaneous communications have precipitated many of the issues of which the customers complain. Their current actions are a clear reflection of the community demanding they take action, but is also a reflection of years of lack of oversight.

While Envirolink has voluntarily increased staffing since assuming operations to provide 24/7 on-site coverage, this is not a sustainable practice for a wastewater system serving 422 connections. It is unreasonable to require the customers to pay for 24/7 coverage, as the Consent Judgement now requires, when a more cost effective and reliable solution is readily available.

Envirolink has quickly responded by hiring and funding new operators to comply with these requirements. Envirolink receives compensation of approximately \$23,000 per year to provide this level of staffing.

The pool of operators from which Envirolink had to choose to comply with these requirements are not trained in vacuum systems because there are very few wastewater operators with vacuum experience or in resolving the many system deficiencies that they confronted. Still, they had hit the ground running. Envirolink provided training in the vacuum system to staff prior to and immediately after taking over the Eagle Creek wastewater system.

As substantiated in customer testimony, prior to Envirolink assuming operations, residents of Eagle Creek were unaware of issues because they were not receiving any communications or information about the on-going repairs or condition of the wastewater system. That changed when Envirolink assumed operations. While we have experienced challenges in communicating

and reaching the community, as stated in the testimony of Mr. Lickfield and Mr. Shephard, Envirolink was working with the HOA to facilitate communications. Both the HOA and Envirolink learned that this resulted in untimely communications leading to residents interpreting the communications as inaccurate. In response, Envirolink modified its procedure and continues to modify procedures based on feedback from the community. Presently, Envirolink produces daily communication on its activities.

The owners and operators of a sewer system serving 422 connections, except in the unusual circumstances confronting the Eagle Creek system, have no ability to communicate with its customers on a 24 hour seven day a week basis. Envirolink instituted this procedure quickly to comply with concerns of residents. These requirements presented many obstacles.

Further, Envirolink has met with the HOA and community via Townhall style meetings over four times in the last year communicating initiatives and soliciting feedback from the community in addition to meeting with several of residents one on one. The only other organization that can has met with the community is the Public Staff. Neither NC DEQ, the Attorney General, or Sandler Utility have organized meetings to update community.

As documented by every report related to the Eagle Creek vacuum system, the condition of the Eagle Creek sewage collection and treatment system is such that replacement of major portions of the system will be required irrespective of whether the vacuum system remains in place or is replaced by another system for collection such as gravity.

Disruption during the improvements should be expected. However, CWS is taking measures to minimize the disruptions. Ultimately, management must make this decision based on a careful and cost effective analysis. Nevertheless, Currituck Water and Sewer will seek to respond to customer input and continue to provide information to assist customers in drawing accurate conclusions. CWS already has held customer meetings to answer questions and provide information. Long term as well as short term costs must be taken into account. Only those costs

deemed by this Commission to be reasonable and prudent in the context of rate requests can be recoverable from customers. Already, substantial costs are being incurred to comply with the consent decree.

The manner in which the Eagle Creek vacuum system has been installed and operates means that an outage in one location can cause disruption of service to a wide range of the entire system. Locating the outage, rectifying it, and restoring the system back to operation is more complicated and time consuming for the Eagle Creek vacuum system than would be the case for a system that did not rely upon the vacuum concept. Many of the hours of outage identified by customers at the hearing must be traced to the way the vacuum system is configured and operates.

Summary of customer testimony and individual responses

Rhonda Klusmann

Ms. Klusmann purchased her home in August 2020. She has not experienced any sewage backups into her home so far. However, she has encountered sewage overflows at her pit and candy cane at least five times. She is concerned that dewatering that might be required to install the gravity system in the peat soil will cause ground to be unstable, and that foundations and swimming pools could shift or sink.

Ms. Klusmann sponsored the petition that she and others had circulated on or before January 21, 2022. Ms. Klusssmann represented that the petition represents the overall preference of homeowners in Kinnakee Shores. She holds no position on the homeowners board of directors. Signatures were obtained through door-to-door solicitations, gathering for community meetings and at the Eagle Creek Golf Club during dinner hours. 247 signatures from the 423 homes in Eagle Creek signed the petitions. Most of those who signed support upgrading the existing vacuum system. Customers are frustrated with repeated outages and expressed a

desire for reliable service. According to Ms. Klussmann many of the homeowners who chose an upgrade to the existing system expressed distrust in Envirolink and in Envirolink's ability to limit disruptions of other utilities such as electricity, Internet and water and landscaping hardscapes and roads to be restored with a replacement. She expressed concern that Envirolink would not provide timely and accurate progress updates and schedule changes. She complained of intentional understaffing of maintenance technicians, lack of timely and accurate system status communications to customers and an inability to provide reliable sewer service. She said those signing the petition were motivated by the view that Currituck Water and Sewer is motivated by a purchase of the Eagle Creek system at a discount only to profit greatly from the gravity system due to significant rate hikes. She stated that some homeowners are in favor of upgrading the current system due to costs alone.

She testified that projected rates for vacuum upgrades are lower than estimates provided for the gravity system.

For homeowners who prefer gravity replacement, this option was chosen because the homeowners are not confident that the upgrading of existing system will become long term reliable service.

Response:

As CWS has represented in its direct prefiled testimony of Michael Myers and at a meeting with Eagle Creek residents, which Ms. Klussmann did not attend, CWS is willing to base its ultimate determination on whether to upgrade the existing vacuum system or to replace it with an alternative system such as a gravity system in part on input from the Eagle Creek consumers. The cost comparison between an upgrade of the vacuum system and a replacement with an alternative system must be based on a careful analysis and not on unverified representations upon which customers might be relying. Even if the ultimate decision is to upgrade the vacuum

system, substantial replacements will be necessary. Existing pits malfunction and have exceeded their useful lives and must be replaced. These pits are located on lots of consumers.

Customers base their concern about disruptions from replacement in part on factors rising from the installation of the force main from the Foss development through the Country Club property. The owner of the Country Club has been far from cooperative in fulfilling its contractual and legal responsibilities and has disputed which party is responsible for costs for the spray irrigation system. The Public Staff is fully aware that without financial inducements, he has been unwilling to agree to permit modifications necessary for system improvements.

Specifically, regarding the disruptions experience from the installation of the force main serving the Foss development were the results of mismarked utility lines and the locator for which Dominion Energy has taken responsibility. Dominion freely has admitted this error.

In addition, to the disruption of electrical service, the irrigation system was damaged during construction. This was a result of mismarked lines by the Golf Course owner. Regardless, the contractor had repair parts available and attempted to immediately repair the line but was prohibited because the Golf Course owner intentionally energized the irrigation pumps causing water to fill the trench and creating a safety issue. When approached to shut the pumps off, so the repair could be made, the Golf Course owner refused and demanded payment in order to shut down the pumps. The owner of the Golf Club unlawfully and inappropriately attempted to restrict access and place the blame on the contractor for CWS and impeded efforts of the contractor to restore service.

While CWS absolutely endeavors to engage and incorporate the community's concerns in the final solution, it is obvious from the testimony of those who sponsored and circulated the poll that they very much favored upgrade of the existing system. The wording of the poll is far from neutral. Gathering of signatures at the Country Club over the dinner hour does not suggest a scientifically conducted poll.

Any accurate cost comparisons must take into account not only the cost of upgrade or replacement but the ongoing costs of operation. The concern is that those who signed the petition, although well intended, were doing so without the type of information that the owner and operator of the system must take into account in its investment and operating decisions.

No factual support was provided for the allegation that CWS intends to buy the system at a reduced price with the intention of making inappropriate future profits. CWS stresses that the Commission at any future rate proceeding will have ample opportunity to assess the investment and operating cost decisions for a determination of reasonableness and prudence. CWS stresses that its overall plan is to acquire the Foss and Flora systems in an effort to spread fixed costs as well as ongoing operation costs over a larger customer base in order to reduce rates, not to increase them.

EnviroLink has experienced difficulties beyond its own control in communicating with consumers in the Eagle Creek community. It is not customary practice for the owner and operator of a wastewater system of 423 connections to have instantaneous communication with consumers. Even Duke Energy has only in recent years instituted the infrastructure and processes to provide such communication. Nevertheless, EnviroLink in part through its own unrecovered costs has instituted such a communication process that customers at the public hearing affirm has improved the communication process. Some even complained that they now receive too many messages under the existing system.

Gertrude Elder

Ms. Elder has lived in Eagle Creek for 16 years. She participated in circulating the poll of customers. She testified "And up until roughly two years ago, when EnviroLink took over the maintenance of our system, we never really had any major issues." She finds "Mr. Myers, EnviroLink, CWS completely untrustworthy." She has had backups in her home. She complains

that “her calls to Envirolink were met with a response that they had no idea there were issues or that the techs were on the site when they really weren't.” She testified “since they're trying to purchase this system from Sandler, that they've started communicating on a regular basis with the community.” She complains that “their workmanship is no better.” She testified “this place is crawling with Envirolink employees every day, but there are still failures every single day. She complains with CWS’ solution to replace the existing vacuum system with the gravity system. She testified they would have it essentially digging up most of the entire neighborhood, although they said they'll mitigate any problems that would occur. Again we really don't trust them. Their word means nothing to us.” She testified that “this would be two years of our neighborhood being ripped apart; them running pipes through the backyards, to the golf course, having to remove fences, possibly damaging existing patios due to the dewatering required, and I really don't believe they would fix any of the damage that occurs. They didn't for the golf course, and I heard this from the owner personally. The damage they did when they ran the pipes for the Fost development and how they said they would restore his course, they never did, and they told him that's as much as they were doing.” She wants the Commission and to add safeguards so that the neighborhood will not be completely destroyed.

Response:

The record before the Commission and testimony that can be provided in response to Ms. Elder’s allegations show that there were major issues with Eagle Creek system substantially before two years ago.

Based on the deficiencies and operational history of the Eagle Creek system in recent years it is understandable that Ms. Elder expresses the frustration that she does and her belief that conditions will not improve should the sale go through. A reasonable assumption is that Ms. Elder expressed these frustrations to those from whom she sought responses to the customer survey. CWS’ evidence will show that her recitation of the activity on the golf course which she received second hand from the golf course owner, is inaccurate.

Ms. Elder, as a consumer within Eagle Creek faces two choices, continued ownership and operation under Sandler or new ownership and operation under CWS, who is well positioned to make the necessary improvements and provide reliable service. The Commission must make this determination and say for itself which of the two alternatives is most likely to provide solutions to issues of which Ms. Elder complains.

As set forth in the response above it will not be possible simply to continue to repair all elements of the existing vacuum system. Some replacement will be required. CWS is prepared to undertake these steps in a systematic, safe and minimally disruptive manner.

Gary Lickfeld

Mr. Lickfeld Has been a resident in the subdivision for 20 years. He was one of the original owners. He is in favor of the gravity based system. He testified that gravity is more expensive upfront, but he believes that it is a longer, better term solution than upgrading the vacuum system. He is of the opinion that people who favor vacuum are not taking into consideration the cost that will be necessary to maintain that system and the potential for more costs when the system expires in 10 years. He is of the opinion that gravity will last much longer. He testified that there are over 200 pits in the neighborhood, which is like a mini-lift station. With gravity it would be reduced to 7 lift stations, which is a lot better than the 200 pits.

Mr. Lickfeld testified that he moved into the Eagle Creek subdivision in 2002. He testified, "I've experienced outages not even a year after I moved into my house." The first experience he had was with Hurricane Isabel when he had raw sewage back up into his house. He learned at that time that the sewer plant did not have a working generator at state code. There are not a lot of vacuum systems in the state, and regulators don't know or are not familiar with how to enforce it. It should not take 25 years of enforcement to go through this to figure out how to enforce it.

He testified that when Envirolink took over, the plant was nonoperational, and that is due to Sandler's negligence of the plant, along with Envirotech that managed the plant at that time because there was no maintenance records for what they did. Mr. Lickfeld had problems in 2010 or 2011 when his pit collapsed. The response from Sandler and Envirotech was "we don't have any money to fix it. "

Mr. Lickfeld testified that the consumers recently had been presented with other options such as a step system, a low pressure system which would involve grinder pumps, some of which would be attached to our electric at our house. Mr. Lickfeld testified that "I'm not in favor of that because both of those options have more moving parts and you know things break, things get expensive to fix. Low pressure system and step systems and vacuum systems do not have a long lifespan."

In 2015 at the time of the rate increase for Sandler the state came in, inspected the plants, and had a laundry list of items that need to be fixed, repaired or replaced. Mr. Lickfeld testified that "I found out from another state official that no one ever went back, after that rate increase was approved to see what if anything was done so it's used and neglect by Sandler and Envirotech, and Envirolink was given a huge task of bringing the plant and the system back online.

Mr. Lickfeld testified that one common theme has been that technicians kept coming up with ideas and things that they wanted to do and were saying that Sandler would not find the money to do it, and it wasn't until recent court proceedings that that was being done.

Mr. Lickfeld testified that he learned from his county commissioner that Sandler owes a huge amount of money to Envirolink, over \$500,000.

With respect to the petition, Mr. Lickfeld spoke to numerous residents around him and he never received a chance to sign the petition. No one came to his door. He also thinks that it was skewed to intentionally show a more ponderous toward vacuum system upgrades versus gravity , because in their own statement, they said they don't have any confidence in Mike

Myers, which I do, and it doesn't make sense but if you don't have confidence in him to put the gravity system in, why would you have confidence in him to upgrade the vacuum system? That doesn't make any sense, it doesn't hold any water.

Mr. Lickfeld testified that he would request that whatever system is installed, that Currituck Water and Sewer be willing to clean out the lines from every resident to the main connection point of their service to do all the backups. They Currituck Water and Sewer "have stated that they would be willing to wait three years for a rate increase to give time to Fost and Flour developers to grow at potentially lower the rate increases."

A reason Mr. Lickfeld has confidence in Mike Myers is because, "he gave people the opportunity to go meet with him, and I was one of them. And I asked a lot of questions and he was able to put my mind at ease. The whole community had an opportunity to meet with him and not many people chose to, so that's on them. "

Mr. Lickfeld testified "I think everybody needs to step back and look at the mission statement of the Attorney General's office and, and even the only Utilities Commission's mission statement, because it's all there to protect us, the customers. And from the time of this mass failure until now, I haven't felt very well protected by any entities, and I have doubts in those entities."

In response to what was a repeated theme in the questions of the Public Staff attorneys as to the existence of problems prior to Envirolink's taking over as the contract operator, Mr. Lickfeld testified, "Yes, the first one was in 2003 when Hurricane Isabel because I learned we had raw sewage back up into our master bathtub downstairs. Because I learned the plant, at that time, did not have an operational backup generator because we were without power from on a Thursday. And I believe power came back on either late Monday or early Tuesday the following week, so we were without power several days and have had several large rain events over the time. Now, I didn't track over that period of time how many outages we've had. Like I said, the

next major issue I had was in year 2010 or 2011 when I couldn't flush the toilet. And when I went outside, the pit in the yard had collapsed into the ground. It sunk down three or four feet. And like I said, I called Envirotech and Sandler, at that time, and they told me they didn't have the money to fix it. And I said well, that's crazy. I pay my bills on time, and they ended up hanging up the phone on me.

Mr. Lickfeld testified, "that you know I have brought up issues with Envirolink, and they had responded to all the issues that I brought up and to try to make things better. You know, you can ask, but you know, he approached the board, our board, to establish communication for the neighborhood. And the communication broke down from the board, not from him, so that was a board issue that caused that problem. With respect to the November 2021 outages he testified I do not blame Envirolink for this. I blame Sandler and Envirotech for not maintaining that system since its inception because even the state generated reports in 2015 state that the plant and the system are subpar at best, which means that should have been on their radar and more due diligence from the state.

Again after the oft repeated questions from the Public Staff implying that the problems rest with Envirolink the following dialogue occurred.

Q. Did service quality improve in your opinion after Envirolink took over?

A. Yes, and they had the utmost ultimate task of bringing a system back online that was not maintained since its inception, so I think yes I think they are way better than Envirotech ever was. I know it's a huge feat to overcome, especially when you, talking with various technicians, they would come up with ideas and flip them up the chain. And, you know, we're being told that Sandler wasn't going to pay for anything, and it didn't- you know, it didn't come to fruition as more stuff is being added because of the recent court proceedings forcing them to do so."

With respect to communication Mr. Lickfeld testified initially they were the homeowners association was putting out emails and when the big failure went out, and then the emails just abruptly stopped. And when I questioned the board about it, our president, he said that they could not get involved with a private sewer company, and that he was sending the emails as a resident. It was told to me that Mr. Myers had a communication, was initially established via the board, and the communication just broke down from the board. They just stopped sending out things and I don't know why.

When asked if he received communications directly from Envirolink Mr. Lickfeld responded, "Yes, I've received numerous communications, I highly depend on those emails, especially when I know it's going to rain because of when the system get inundated with water due to pit failures and water intrusion, so I definitely keep an eye on the emails and check them on a regular basis throughout the day. And in the beginning, it's kind of funny because people complained that they weren't receiving information from Envirolink. And at the meeting in December, that was one of the big complaints. And then somebody brought up the fact that now we're receiving sometimes three or four emails a day with updates and what's been occurring, and they're complaining about getting too much. So I think you know they've done an outstanding job communicating to us directly and not going through the board.

Again, in response to the continuous questions by the Public Staff the following occurred:

Q. Let me back track a moment did you experience similar outage duration when before Envirolink became the operator?

A. Yes I did not track them and it was largely you know heavy impact rains and storms or Nor'easter type events. But I did not track them myself, you know specifically dates because at that time I didn't think it was necessary because a big failure hadn't happened yet. And you know, I was assuming that people were doing their jobs, regulators and the states or keeping an eye on these things.

He testified, "because I had testified at the 2015 hearing and I know my house did not have a backflow valve. And one of the owners of Envirotech testified that he was there, present when every single house had a backflow valve installed, when it was under construction, which I know was not true because mine did not have one.

He testified that if Currituck Water and Sewer decided to do a vacuum upgrade or a step system or a low pressure system, I do not want to share a tank with another resident, and I think the tank should be a maximum size per state code, per resident, so if the system does go down, we have storage, because right now, we have 40 to 45 gallons between two houses, and the average load of laundry is like 30 gallons.

Response:

Of the four customers who testified at the 1:30 session of the hearing Mr. Leckfeld was the only customer that was not one who circulated the petition. In fact, he stated that he was not given an opportunity to sign the petition and felt it was not objectively presented. Even a cursory review of the petition supports Mr. Leckfeld's conclusion. CWS stresses that Mr. Leckfeld's extensive testimony was substantially at odds with those of other witnesses who suggested that all the problems with the system only originated more recently. In response to questions repeated over and over again suggesting that the problems with the Eagle Creek sewer system originated in the 2020 timeframe when Envirolink took over as system operator, Mr. Leckfeld, who has been a resident since the inception of the subdivision and who testified from firsthand experience as to the operation of the system prior to 2020, repeatedly, repeatedly responded to these Public Staff questions that there have been many prior disruptions dating back to when the system was first installed. Unlike most of the other witnesses, he has lived in Eagle Creek for 20 years and was an original resident, and his memory of past occurrences is based on firsthand knowledge. His testimony is corroborated by the record from the 2015 rate case.

Tammy Green

Ms. Green moved into Eagle Creek in April 2014. She counted 69 days that they were out of service from September 2020 to November 2021. She testified that the mere fact that she had to check an email or Facebook daily, sometimes multiple times a day to ensure that we can use our system is actually quite ridiculous. She testified that the trust between the community, Sandler, Envirolink and Mike Myers is broken. She testified that there have been times we've been told that we really don't have a choice and that they are going to put in whatever system they see to be fit.

She testified that she did not know how long the system will take to be installed. She repeated the claim that the force main installed outside of Eagle Creek from the Fost development with minimal obstacles the community lost Internet service several times as well as power, not to mention the water pipe that flooded the ditch that they had.

She complained that there has been no transparency as to what a new system would cost. She said it is well understood that our system requires repair; however to say that a multi-million dollar replacement with gravity that it has probability of impacting our daily lives during installation. She favors simply replacing and upgrading the current system.

She provided hearsay statement from representatives of Flovac, the manufacturer of the vacuum system, who insinuated that the system hadn't failed and can be brought up to a functioning level with minimum impact to our monthly bills or our daily lives.

She testified that she along with Rhonda created the petitions. She testified we did attempt to remain unbiased and nonjudgmental and made ourselves readily available when we obtained the 247 signatures.

Response

Ms. Green, one of the three sponsors of the petition to testify, basically repeated the testimony of the other two petition sponsors. Again, she ignores the fact that CWS stated in community meetings and in its prefiled testimony that it is willing to cooperate with the Eagle Creek residents in determining whether to repair or replace the sewer system. Any repair will require replacement of pits and some of the disruption she fears. Her reference to installing the force main from the Fost development is based on insufficient and inaccurate information and ignores the fact that combining the sewer collection system from the Fost development with that of Eagle Creek should work at the long term benefit of the Eagle Creek customers.

Ms. Green's testimony admits and conflicts with other testimony that purports that Envirolink was not communicating.

CWS fully agrees and understands Ms. Green's frustration as it relates to getting reliable cost information for the different options. Unfortunately, Ms. Green is receiving conflicting and sometimes confusing information from sales people, Public Staff and others. For its part, CWS has been consistent with the cost information it has provided. While CWS has been consistent with its estimates, CWS does have concerns about cost given the current supply chain and labor shortages being experienced across the US.

CWS agrees and can substantiate Ms. Green's statement regarding Flovac's position that the existing vacuum system can be brought up to standard; however, information CWS has obtained from Flovac does not allow it to draw the conclusion that this can be done with minimal impact to rates or daily lives.

Greg Ewan

Mr. Ewan has been a sewer customer since 2005. He testified that “prior to September 2020 we were completely unaware of any issues with the sewer system outside of some major flooding events that had affected certain parts of the neighborhood during storms and such. In the last two years it has been a challenge to live here. We've only experienced one actual backup at our home that was reported, but almost daily there's a need to go on to social media to find out whether or not we can flush the toilet, or do laundry, or use any sort of water in the house.

He testified that “we had only one backup at our home which we reported and it was fixed within two days . That's the only thing that I reported directly to the operator.”

Mr. Ewen’s experience with Envirolink with one backup was not good. He testified that communication with the neighborhood has been very poor until very recently in December when we started to get daily updates. He says that many of the technicians have told him that they were inexperienced , were recently hired, and were unable to answer a question for me about whether or not I needed to conserve water.

Mr. Ewen has concerns about CWS's ability to replace the entire system. He thinks that the level of disruption that is going to cause as a neighborhood is not something that can be comprehend at the moment. He referenced the petition where the residents erred on the side of repair with some stipulations that maintenance be carried out by another party, at least for the first five years. He asked that if the petition be approved that the Commission impose a condition that the maintenance contract be held by another party who understands the system and knows how to go about taking care of it as had, by the way, the prior company that performed the maintenance. He said remember we had no clue there was ever any issue with the sewer system prior to September 2020.

Response

The fact that Mr. Ewan did not know that there were issues with the system prior to the more recent disruptions is understandable, but there is no evidence that the problems due to lack of

maintenance and repair did not exist. Ultimately, to the extent that the system continues to be owned and operated by a public utility, that owner and operator will be responsible for the difficult decisions that must be made. The issue before the Commission is whether or not to approved the proposed transfer. As has been the case since this system was initially certificated, it will be the responsibility of the Commission to regulate the service and rates of the public utility. Wishes and sentiments of consumers and their communications with regulators are important. Nevertheless, the owner and operator of systems such as those at Eagle Creek are responsible to provide the capital and operational knowledge in the first instance, and sometimes hard decisions are necessary in the short term in order to ensure that long term service and rates comply with the public interest.

Based on information obtained from several residents, Envirotech (the former operator) and substantiated in Mr. Lickfield's testimony, it is not surprising that Mr. Ewan was unaware of problems prior to Envirolink. It has been communicated to Envirolink through numerous sources and through Mr. Lickfield's testimony that neither Sandler or Envirolink provided any communication to the residents regarding system outages or service issues.

In addition, it is worth considering and highlighting that over the past 30 days, Flovac technicians have been on-site providing training and oversight of Envirolink's technicians and that during this time the frequency of service issues has remained steady and constant.

Susan Powers

Ms. Powers testified that Currituck Water and Sewer has spent a lot of time trying to convince us that the gravity system is the best route to go. I don't really dispute that. I think if the neighborhood had been built originally with the gravity system, we may not have the issue we

have now. I think the concern for most people is the installation of the gravity system at this point.

With respect to distrust of Mike Myers expressed by other witnesses, Ms. Powers related and repeated claims having to do with the installation of the force main from the Fost development and the disruption installation of that line caused. She maintains that attempt to convince the residents to go with the gravity system is glossing over any kind of installation issues, and, depending on who you talk to, there could be major and catastrophic.

She testified that she had not had a water overflow at her house. She complained of a lack of communication from Envirolink. She testified that there are people in the front of the neighborhood which she believes have never had a sewer backup and had no clue that anything was going on.

She created a spreadsheet , based on official emails from Deborah Massey. She counted a total of 98 days with outages. The longest outage was in September of 2020 or 31 days. She prefers that if the sale is approved that CWS keep the vacuum system updated and that they will continue to maintain it.

In response to the constant refrain from the Public Staff lawyers who seemed to believe that this case is about Envirolink, she testified that since 2020 the service has gone downhill. She testified "now they also inherited a used car, too, basically, and- but also I don't feel they did what it needed to do to keep it in tiptop shape. I think somebody else gave the example, you know, if you get a used car you're going to make sure to change the oil every so often and check all the fluids and keep it running no it didn't do that period." She testified that she is a board member and 1 month ago she sent out an email to Deborah Massey , the contact for Envirolink, and she thinks that email communication has gotten better.

Response

See responses set forth above. Ms. Powers repeats for the most part the positions of other witnesses.

As described previously, Ms. Power's concerns related to the Fost force main were the result of the mislocates by Dominion Power and the actions of the Golf Course owner.

Ms. Power's has not experience issues and was not aware of any issues prior to Envirolink. This is likely because neither Sandler Utility nor Envirotech made any efforts to communicate with the community. Envirolink does not dispute that initial communication procedures proved ineffective but has since modified and increased communication efforts.

CWS does not dispute and agrees with Ms. Power's claims of 98 days of service interruptions and contends that these service interruptions are a direct result of years of poor operation, maintenance and management and that the conditions of the system necessitates the need for upgrades.

CWS agrees with Ms. Power's statement that Envirolink inherited a used car but disagrees with the statement that Envirolink has not done what is needed to keep in tip top shape. Envirolink has taken numerous actions (many without funding from the owners) to keep the system operational until a permanent fix can be constructed.

David Shepheard

Mr. Shepheard maintains that the life of a vacuum system is actually 50 to 100 years. CWS misrepresents the fact that the life is 10 or 12 years.

Since about 2006, Mr. Shepherd has been the drainage committee chairman for the neighborhood. The drainage and the sewerage collection obviously connects pretty considerably, because if the subdivision does not drain, it pretty much doesn't matter what kind of sewer system there is. It's going to have a problem.

Mr. Shepherd has had no backups at his house on Eagle Creek Rd. His daughter Elizabeth has had no backups. His son Matthew has had plenty of backups and has received money from Sandler's insurance company. He testified that during the past year Envirolink has probably visited Matthew's pit a dozen to 15 times. He testified there's been a lot of discussion about the fact that Envirolink inherited a system that was very used and very worn. There's truth in that. Sandler Utilities did not put in the money they needed to for proper maintenance based on the manufacturer's recommendations. That's very clear.

He testified that the man who initially put the system in and who lives in the neighborhood maintains that when Envirotech first bid to run the system, it significantly underbid the operations expense. And from that point on, once those expenses were put in place and the rates were set, Sandler was running behind the power curve from the beginning. He doesn't think they collected enough money to truly do what they needed to do on the system. That's not an excuse for them. I think that's just a fact.

When Envirotech first began, Mr. Shepherd didn't even know there was a problem in the neighborhood for a long time. The only reason he found out early in 2015 was because he was involved in drainage and involved in the community. The only failures, as mentioned previously, was when there would have a major rainfall. You've heard that numerous times. Now I'm talking about major storms.

With respect to Ms. Powers calculation of the 989 days without sewer, Mr. Shepherd testified that there are a number of lines that go to the plant; he thinks five. And if one line goes down the whole neighborhood tries to conserve water. We've asked, Gee, we've got a vacuum

problem. We've got a line shut down. If the problem is on that particular line it serves, that's maybe 50 houses. The whole neighborhood is not really down , one line is down, but the rest of the neighborhood is having to conserve water to help that particular line.

This vacuum system depends on a technician. If there is a low vacuum alarm at the plant, it depends on a technician to be available and get there within a set period of time. It takes less than an hour if the technician finds where the leak is, a leak in a pit where a valve will be stuck open and air is being sucked into the vacuum main, reducing pressure on the whole system.

The subdivision went through a significant period of time where the issues come up particularly on the weekends. If the technicians got a trouble call from Friday night, we were in trouble. The whole weekend, the system was in distress because they weren't responding or if they got a call during the night, they weren't responding and by the time they responded, we had multiple pits down. Now, they began to shut down entire lines on the system to try to start getting it back up and if they didn't, the entire neighborhood goes down.

Envirolink took over from Envirotech in 2020. Up until that time when Bill Freed owned Envirotech he had, as far back as memory serves me, qualified and trained people who knew how to address an issue whether it be a single pit or bigger, and they knew what to do logically as a troubleshooting operation to find the problem and fix it. They would come to the problem pit and if the controller, which is the one that fires the valve to empty the pit, wasn't working, they'd put in a new controller and they would time it properly, and they'd connect all the tubes properly and they would go away from that pit and that was it. You didn't see another problem in that pit until maybe something else went down, maybe the valve or something reached its useful life and they hadn't been doing the proper maintenance.

When Envirolink took over first quarter of 2020 he still had several of the Envirotech technicians employed by him. In August 2020 there was a hostile work environment with these employees leaving in August of 2020. We started having the significant issues in September-

October 2020. There was no one currently employed by Envirolink at that time. in Mr. Shepherd's opinion only that technician knew what to do when the system started to cascade into failure.

And when it totally went down and all these lines filled with water, that was the catastrophic failure. And it took many weeks and the assistance from in Envirotech and from FlowVac and Airvac, the major manufacturers of the system, to help bring that system back up again.

Mr. Shepherd has read the field reports, so he knows the system was old, it had old valves and old controllers. Instead of being rebuilt to maintain on a regular basis, they were waiting until they failed, and then they were replacing them. So that was working. It's not the way to do it but that was working. All of a sudden we had a situation where we had people that didn't know how to rebuild those controllers. They didn't know how to rebuild those valves. They didn't know what to do when they went to the failed pit. They didn't know how to time the controllers or didn't seem to. With respect to the failure of 2015, the field reports told what happened. It was one thing after another. Oil and pumps hadn't been changed, filter screens and the vacuum pumps were totally clogged up where it was only a pinhole.

With respect to communication, initially the HOA did try to help because the HOA wasn't getting any communication. Mr. Shepherd is the vice president of the HOA board and has been on the board since 2015. And when the board determined that the communications were so horrible, the board tried to step in with its own email system and Facebook and tried to get information from Envirolink which they often did provide, and the HOA tried to disseminate that. The HOA has a 5 member board, but all the members have jobs and families so when a line would go down, they would finally let us let the board know, and it might be an hour after the fact. And if one of the board wasn't in the station at the time to be able to send the email, it couldn't be sent it right away. Even if it was sent did, often times by the time the board had communicated that, the problem had passed, and another line was shut down. So the HOA

basically told Envirolink - you need to handle this communication yourself. We are not able to do it in proper fashion for our neighborhood. We could not do it in an accurate fashion, and we were telling Envirolink, this is your job, not ours. We will do everything we can to help but we can't communicate the failures. You have to do that in timely fashion.

With respect to the allegation that the vacuum system has exceeded its useful life, it was installed around 2000, and the pipes are designed to last 100 years. The main moving parts are in the pits. There is a controller with a cost in the range of \$500. But these things can be rebuilt over and over again. That's the proper maintenance we're talking about, not waiting for the controller to fail but going in after the 10 year mark and doing a general just typical maintenance of every controller. The other movable part that fails in the pit is the valve that releases the sewage into the actual line itself. The parts on that are about \$40 to rebuild. They don't have to be rebuilt until about 15 years. In far less than 30 minutes, a technician can rebuild them. The system has many years to go; however, they have to catch up on it. These parts on these pits have to be gone through; parts have to be replaced one at a time, and they all need to be looked at, and then you can move on to the next pit. Once they're done they have literally a new system.

Mr. Shepherd mentioned the pedestals which are being put behind a number of the pits. Those pedestals are going to house the controller that fires the whole pit up so that the water doesn't flood when we do get rain.

Mr. Shepherd testified that the vacuum system is not functioning properly because of lack of maintenance and now lack of operators who know how to fix up it when they go down. It is not dead; it is not past its useful life; it simply needs rehabilitation.

Mr. Shepherd opposes they sale right now. He supported the connection of the force main, but he opposes the sale at this point. He is familiar with the consent order, and he would like to

see the terms of the consent order carried out by Sandler at Mill Run before the sale is completed.

Response

Hopefully, those reviewing Mr. Shephard's testimony can appreciate the difficulties that are posed by attempting at this point to continue to provide service through the existing vacuum system. Mr. Shephard's testimony drives home the point that the system has many moving parts that require far more attention than other less complicated and more commonly operated systems. Mr. Shephard's testimony likewise sheds light on difficulties that have been presented as far as communicating in real time with customers with regard to a system that is highly interconnected and where failures on one part of the system have widespread complications elsewhere on the system.

Mr. Shephard's testimony presents valuable testimony, but unfortunately it appears that the references and resources provided to Mr. Shephard, are incomplete. For instance:

- The pipes do have a 50-100 year life [if designed and constructed properly]; however, the valves, controllers and vacuum station have much shorter lives.

CWS agrees and can substantiate Mr. Shephard's concern that the operations of the sewer system has been under funded for many years and that the system has been behind the curve for many years.

CWS understands and agrees that the Mr. Shephard was unaware of problems because of the lack of communication prior to Envirolink. Mr. Shephard testified that he only became aware because of his position on the drainage committee.

CWS agrees and can substantiate Mr. Shephard's statement that a vacuum system is highly reliant on technician response times and that an issue with one service can impact the whole system.

CWS does not agree with Mr. Shephard that Envirotech employees were qualified and trained. CWS's research indicates that only Mr. Freed had training on vacuum systems and that his staff was not trained on proper operation and maintenance of vacuum systems.

Envirolink does not agree with Mr. Shephard's statement that the former Envirotech employees did not decide to stay with Envirolink because of hostile work place. Based on conversations with these employees, their preference was complete autonomy, and they did not feel comfortable working within a team atmosphere.

CWS acknowledges Mr. Shephard's statement that restoration efforts included Envirotech, Flovac, Airvac and others but would highlight their assistance was at the request of Envirolink and Envirolink's efforts to find the necessary equipment and parts in order to restore service as quickly as possible and these efforts were not the result of not having qualified personnel.

CWS acknowledges and agrees that prior to Envirolink, Sandler Utility and Envirotech were completely reactive to problems but would highlight that Mr. Sheppard's statement substantiate CWS's position that the problem with Eagle Creek system predate Envirolink and CWS's position that the system has been in poor condition for many years.

CWS is also aware through conversations with Mr. Shephard that Mr. Shephard is particularly concerned about disruptions during construction and would suggest that CWS endeavors to include Mr. Sheppard in on-going discussions regarding the final solution.

James Hutson

Mr. Hutson began experiencing problems in 2016 in the wake of Hurricane Matthew. He hasn't experienced a backup per se; however, he has experienced sewage in the pit, limited water hours, etc., due to outages.

His concern is a deep and grave worry of whether or not a gravity system is adequate to replace what they have. He testified that "if the existing system were properly maintained, we will not be in the situation we're in."

The strata that the neighborhood is built in is a combination of fill and solid layers with a high water table. This lends itself to a vacuum system for sewage management for a number of reasons. We also experience seasonal flooding in the back of the neighborhood. Some home do experience water in their garages exacerbating existing issues with the sewer.

He believes that gravity is not ideal. The neighborhood is at sea level. When the water does come in, there can be serious flooding. It has nowhere to go. So if the system were maintained as it should have been he has no doubt that it would not be in a situation it is in.

Response

CWS has engaged the services of a local North Carolina licensed Professional Engineer that is familiar with the Eagle Creek community and the soil conditions.

CWS is aware of the challenges surrounding any construction in the area surrounding and including Eagle Creek. Further, CWS is aware that neighboring communities (Fost and Lakeview) utilize gravity sewer collection as opposed to vacuum.

Given Mr. Hutson's experience with construction, CWS endeavors to include Mr. Hutson in the on-going discussion regarding a final solution.

Mr. Hutson's testimony reinforces many of the points made above with respect to the elevation of the Eagle Creek subdivision and the susceptibility to water intrusion from heavy rains. CWS has carefully investigated the issues with respect to installing alternative piping in the type of soil in Eagle Creek and the challenges with alternative installation there. Reliance on the vacuum system has been far from immune to difficulties with the terrain and elevation.

STATE OF NORTH CAROLINA

COUNTY OF WAKE

VERIFICATION

I, MICHAEL MYERS, being first duly sworn, depose and say that I am duly authorized to act on behalf of CURRITUCK WATER AND SEWER LLC AS VICE-PRESIDENT; that I have read the foregoing Report on Customer Comments From Public Hearing Held on February 2, 2022, and that the same is true and accurate to my personal knowledge and belief.

This 4th day of March 2022.

A handwritten signature in black ink, appearing to read 'Michael Myers', written over a horizontal line.

Michael Myers
Vice President
Currituck Water and Sewer LLC

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Report on Customer Comments From Public Hearing Held on February 2, 2022 filed in Dockets W-1130, Sub 11 and W-1333, Sub 0, has been served on parties of record as shown on the Commission's Service List for these dockets, either by electronic mail or by depositing same in the U. S. Mail, first class delivery, postage prepaid.

This the 4th day of March 2022.

Edward S. Finley, Jr., PLLC

/s/ Edward S. Finley, Jr..

Edward S. Finley Jr.

N.C. State Bar No. 6149
2024 White Oak Rd.
Raleigh NC. 27608
919-418 4516
edfinley98@aol.com

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. W-1130, SUB 11
DOCKET NO. W-1333, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:

Application by Currituck Water and)
Sewer, LLC, 4700 Homewood Court,)
Suite 108, Raleigh, North Carolina)
27609, and Sandler Utilities at Mill)
Run, LLC, 448 Viking Drive, Suite)
220, Virginia Beach, Virginia 23452,)
for Authority to Transfer the Sandler)
Utilities at Mill Run Wastewater)
System and Public Utility Franchise in)
Currituck County, North Carolina, and)
for Approval of Rates)

REPORT ON CUSTOMER
COMMENTS FROM PUBLIC
HEARING HELD ON
FEBRUARY 2, 2022

NOW COMES Sandler Utilities at Mill Run, LLC (“Sandler Utilities”) and files this report in response to the public hearing held by means of the North Carolina Utilities Commission’s (“Commission”) on-line Webex platform, on February 2, 2022. This report is required by ordering paragraph 4 of the Commission’s November 18, 2021 *Order Establishing Discovery Guidelines, Scheduling Hearings, and Requiring Customer Notice*.

The purpose of this report is to summarize customer testimony about service and service quality concerns expressed at the public hearing, and to provide Sandler Utilities’ specific responses to those concerns. Of the approximately 420 residential and two non-residential 12 customers in the Eagle Creek service area, eight customers testified at the public hearing. The customers who testified at the public hearing were Rhonda

Klussmann, Trudy Edler, Gary Lickfeld, Tammy Green, Greg Ewan, Susan Powers, David Shepherd, and James Hutson. Their concerns are addressed below.

Concerns of all testifying customers. Rhonda Klussmann, Trudy Edler, Gary Lickfeld, Tammy Green, Greg Ewan, Susan Powers, David Shepherd, and James Hutson testified about the numerous outages of the Eagle Creek Wastewater Vacuum Collection System (“Vacuum Collection System” or “System”) beginning in September of 2020 that resulted in sewage backups in some residents’ homes and yards. The customers stated that Sandler Utilities had not made necessary capital investment improvements and repairs to the System to ensure that there would not be substantial—and catastrophic—failures of the System.

Sandler Utilities’ response. Sandler Utilities sincerely regrets that the Eagle Creek Vacuum Collection System has experienced a number of outages and sanitary sewer overflows, the vast majority of which occurred beginning in September of 2020. Sandler Utilities has made substantial investment in repairs and capital improvements in the Wastewater System—in particular in the Vacuum Collection System—to remedy the Vacuum Collection System’s problems and to ensure that the Wastewater System will function properly and reliably and in compliance with all regulatory and environmental regulations.

As part of its initial response to the unprecedented outages that began in the fall of 2020, Sandler Utilities arranged for FloVac to come to the Eagle Creek Subdivision on November 20, 2020 to provide training to Envirolink’s technicians and operators about remedial measures, such as how to remove water from the valves before installing new controllers, proper controller rebuild, review and understanding of chart data, and proper vacuum pit configuration. In addition, and pursuant to Sandler

Utilities' Operator Training Plan in place with the Department of Environmental Quality, Division of Water Resources ("DWR"), Sandler Utilities arranged for Flovac to provide a 3-day training course of Envirolink, Inc.'s ("Envirolink") technicians and operators in September of 2021 and a second 3-day training course to Envirolink from October 5 through 8, 2021. Flovac's training of Envirolink's employees was focused on best practices in locating leaks in the Vacuum Collection System and how to properly operate, maintain, and repair the System.

Sandler Utilities has obtained recommendations from Flovac about necessary repairs and upgrades to the Vacuum Collection System to ensure that the System would operate properly and reliably, and Sandler Utilities made upgrades to the System based upon Flovac's recommendations.

Sandler Utilities has substantially invested in upgrades to the Vacuum Collection System—in the amount of about \$673,834 since 2020—and continues to invest in the Vacuum Collection System to ensure that the System will operate properly and reliably.

The following are some of the repairs and upgrades that Sandler Utilities made to the Eagle Creek Wastewater Treatment Plant and the Vacuum Collection System beginning in 2020:

- Sandler replaced the pump in the wastewater treatment plant in December of 2020.
- For the period of August of 2020 through January 24, 2022, Sandler Utilities had Envirolink rebuild or replace 2,163 valves and 3,081 controllers. (The new controllers are capable of processing small amounts

of water and can be submerged in water up to 5 feet with no impact to performance.) This work equates to rebuilding or replacing 4 valves per day and 5.7 controllers per day.

- For the period from October 1, 2021 through January 24, 2022, Sandler Utilities had Envirolink rebuild or replace 118 pedestal-mounted controllers and 21 valves. This work equates to repairing or replacing 0.2 valves per day and 1 controller per day.
- As of January 24, 2022, Sandler Utilities had Envirolink install 110 elevated (pedestal-mounted) controllers. As of March 2, 2022, pedestal-mounted controllers have been installed on the entire 8-inch vacuum line and on the 10-inch vacuum line from the wastewater treatment plant to St. Andrews Road. Sandler Utilities will continue to install elevated controllers throughout the Eagle Creek Subdivision until each vacuum pit has been equipped with one. The purpose of the pedestal mounts is to elevate them in order to reduce rainwater intrusion of the controllers and thus minimize any flooding of the valve pits, prevent sewage intrusion into the controller in the event a valve pit fill up, and secure the controllers from tampering by unauthorized individuals.
- Sandler Utilities installed alarms at the vacuum station and the valve pits.
- On November 30, 2021, Flovac installed a remote monitoring system that was placed in service on December 1, 2021. The monitoring system was installed on the vacuum station, six pits on dead-end lines, and one additional pit located on St. Andrews Road. The monitoring system

provides the following input and output information for the vacuum station and six pits located on dead end lines and one pit located on St. Andrews, respectively:

- Vacuum Station Inputs and Outputs: tank vacuum; tank level; sewage pump run-times and start and stop times; vacuum pump run-times and start and stop times; rainfall monitor; and alarm status.
 - Vacuum station alarms: tank vacuum; vacuum pump run-time alarm; high level alarm; and communication.
 - Pit Inputs and Outputs at Dead Ends: vacuum; level activations; activation duration; and alarm status.
 - Pit Alarms at Dead Ends: level vacuum and communication.
 - Pit Inputs and Outputs at St. Andrews Road: level vacuum; activations; activation duration; and alarm status.
 - Pit Alarms at St. Andrews Road: level vacuum and communications.
- After installation of the remote monitoring system, Flovac conducted training for Envirolink personnel to demonstrate the features of the system and explain how to interpret the information displayed on the graphs created by the monitoring system.
 - On January 31, 2022, Flovac began installing a remote monitoring system on the valve pits (each pit on the 8-inch main and additional sensors on the 10-inch main), along with two additional monitors on the collection lines.

The remote monitoring system with the additional monitors will help to ensure that the Vacuum Collection System operates reliably and that any leaks to the system are detected quickly. The monitoring system allows multiple people to remotely monitor the vacuum flow status of the lines so that any possible leaks that might occur on the lines will be identified quickly. This expedient identification of any possible leaks on the collection lines will ensure that the contract operators may address the leaks quickly and before any homeowners might be affected. Installation of the remote monitoring system on the valve pits began on February 2, 2022 and will be completed on March 10, 2022. As part of this monitoring effort, and in conjunction with compliance with the Amended Consent Judgment, Flovac is monitoring the Vacuum Collection System and is providing reports to Sandler Utilities on observations and recommendations for the system.

- In addition to the capital improvements to the Wastewater System, Sandler Utilities has directed Envirolink to provide necessary maintenance and preventative maintenance to the system.

Additional concerns of Rhonda Klussmann, Trudy Edler, Tammy Green, Greg Ewan, Susan Powers, and David Shephard. Ms. Klussmann testified that Envirolink lacks the experience and competence to properly operate the Vacuum Collection System and that Envirolink has not been responsive to customer complaints and concerns.

Sandler Utilities' response. Sandler Utilities has worked with Envirolink—and continues to work with Envirolink—to ensure that Envirolink has the necessary experience and

knowledge to properly operate, maintain, and repair the Vacuum Collection System. For example, Sandler Utilities arranged for Flovac to come to Eagle Creek on November 20, 2020 to provide training to Envirolink's technicians and operators about remedial measures, such as how to remove water from the valves before installing new controllers. In addition, and pursuant to Sandler Utilities' Operator Training Plan in place with the DWR, Sandler Utilities arranged for Flovac to provide a 3-day training course of Envirolink's technicians and operators in September of 2021 and a second 3-day training course to Envirolink from October 5 through 8, 2021. Flovac's training of Envirolink's employees was focused on best practices in locating leaks in the Vacuum Collection System and how to properly operate, maintain, and repair the system. Also, after Flovac installed the remote monitoring system, Flovac conducted training for Envirolink personnel to demonstrate the features of the system and explain how to interpret the information displayed on the graphs created by the monitoring system. Per the request of Sandler Utilities, Envirolink is currently coordinating timing with Flovac for additional formal on-site and classroom training in the very near future.

Sandler Utilities notes that some of the customers testified that Envirolink's customer service improved beginning in the winter of 2021 and that Envirolink has been provided more frequent and timely communications to the Eagle Creek residents.

Sandler Utilities and Envirolink entered into a Utility Management Service Agreement dated January 6, 2021 for Envirolink to operate the Eagle Creek Wastewater System, including the Vacuum Collection System. Sandler Utilities will take any appropriate measures to ensure that Envirolink continues to provide appropriate customer service to the Eagle Creek residents.

Additional concerns of Gary Lickfeld. Mr. Lickfeld testified that the Eagle Creek Wastewater System experienced operational problems during extreme weather events when Enviro-Tech operated the system. He stated that Sandler Utilities and Enviro-Tech said that there were insufficient funds to perform upgrades to the system. Mr. Lickfeld testified that Envirolink inherited a troubled System and that he has confidence in Envirolink's operations of the System.

Sandler Utilities' response. There were isolated compliance and environmental issues with the Eagle Creek Wastewater System when Enviro-Tech operated the system (prior to February 2020). The isolated problems occurred when pits that are part of the Vacuum Collection System filled with rainwater during extremely heavy rain events, like hurricanes, which resulted in a loss of vacuum of the Vacuum Collection System. For example, during an extreme rain event in 2015, sewage backed up in homes when the sewage was not able to drain into the system. The Vacuum Collection System also malfunctioned during Hurricane Matthew in October of 2016. Another compliance issue occurred in 2015 when the second bank of UV disinfection for the wastewater treatment plant was not operational.

As noted previously, Sandler Utilities has substantially invested in upgrades to the Vacuum Collection System since 2020 and continues to invest in the Vacuum Collection system to ensure that the system will operate properly and reliably.

Additional concern of Greg Ewan. Mr. Ewan testified that he wants Envirolink replaced with a different operator of the Eagle Creek Wastewater System.

Sandler Utilities' response. As previously stated, some of the customers testified that Envirolink's customer service has improved and that Envirolink has been providing more frequent and timely communications. Numerous options for communication

methodology have been proposed and implemented, and due to varying degrees of communication preferences by individuals, reaching the entire community has proven to be challenging. Currently, daily reports are being provided to Eagle Creek residents via e-mail to let them know the current exact status of the System. The residents' response to the greater extent of communication has been favorable. Sandler Utilities will take any appropriate measures to ensure that Envirolink continues to provide appropriate customer service to the Eagle Creek residents.

Additional concerns of David Shepherd. Mr. Shepherd testified that when Envirolink took over operations from Enviro-Tech, Envirolink did not have any employees who knew how to operate and repair the Vacuum Collection System.

Sandler Utilities' response. As noted previously, Sandler Utilities enlisted Flovac to train Envirolink's personnel about how to operate, maintain, and repair the Vacuum Collection System. Flovac was also recently on-site at the Eagle Creek Subdivision to perform consultation on operations of the system. In regard to the recently installed remote monitoring system, Flovac has conducted training for Envirolink personnel to demonstrate the features of the remote monitoring system and explain how to interpret the information displayed on the graphs created by the monitoring system. Additionally, Flovac is monitoring the Vacuum Collection System and is providing reports to Sandler Utilities and Envirolink on observations and recommendations for the system.

STATE OF VIRGINIA

CITY OF VIRGINIA BEACH

VERIFICATION

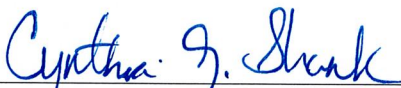
I, Brittney Willis, being first duly sworn, depose and say that I am duly authorized to act on behalf of Sandler Utilities at Mill Run, L.L.C. as a Senior Project Manager; that I have read the foregoing Report on Customer Comments From Public Hearing Held on February 2, 2022, and that the same is true and accurate to my personal knowledge and belief.

This 4th day of March, 2022.



Brittney Willis, Senior Project Manager
Sandler Utilities at Mill Run, L.L.C.

Sworn to and subscribed to before me this 4 day of March 2022.



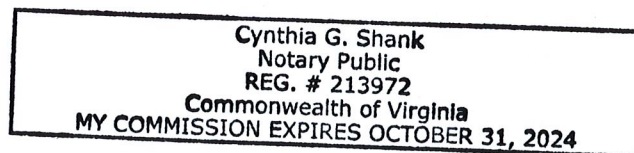
Notary Public (Signature)

(Seal)



Notary Public (Printed)

My Commission Expires: 10/31/2024



CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Report on Customer Comments From Public Hearing Held on February 2, 2022 filed in Dockets W-1130, Sub 11 and W-1333, Sub 0, has been served on parties of record as shown on the Commission's Service List for these dockets, either by electronic mail or by depositing same in the U. S. Mail, first class delivery, postage prepaid.

This the 4th day of March, 2022.

FOX ROTHSCHILD LLP



Karen M. Kemerait
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LLC*

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. W-1130, SUB 11
DOCKET NO. W-1333, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:

Application by Currituck Water and)
Sewer, LLC, 4700 Homewood Court,)
Suite 108, Raleigh, North Carolina)
27609, and Sandler Utilities at Mill)
Run, LLC, 448 Viking Drive, Suite)
220, Virginia Beach, Virginia 23452,)
for Authority to Transfer the Sandler)
Utilities at Mill Run Wastewater)
System and Public Utility Franchise in)
Currituck County, North Carolina, and)
for Approval of Rates)

SUPPLEMENT TO REPORT ON
CUSTOMER COMMENTS FROM
PUBLIC HEARING HELD ON
FEBRUARY 2, 2022

NOW COMES Sandler Utilities at Mill Run, LLC (“Sandler Utilities” or “Sandler”) and files this Supplement to Report in response to the customer complaints provided in the public hearing held by means of the North Carolina Utilities Commission’s (“Commission”) on-line Webex platform on February 2, 2022.

I. Background

On November 18, 2021 the Commission issued its *Order Scheduling Hearings, Establishing Discovery Guidelines, and Requiring Customer Notice* (“Procedural Order”). Ordering paragraph 4 of the Commission’s Procedural Order states that Sandler Utilities and Currituck Water and Sewer, LLC (“Currituck”) are required to file, separately, verified reports addressing all customer service and service quality complaints expressed during the public witness hearing held on February 2, 2022, within fifteen days of the conclusion of the public witness hearing. Ordering paragraph

4 also states that the Public Staff shall, and other intervenors may, file verified responses and any comments to Sandler Utilities' and Currituck's reports on or before February 24, 2022.

On February 17, 2022, the Commission issued an *Order Granting Extension of Time to File Report*, extending the deadline for Sandler Utilities and Currituck to file their reports to and including March 4, 2022. The Order also provided that the Public Staff shall, and other intervenors may, file verified responses and any comments to Sandler Utilities' and Currituck's reports on or before March 11, 2022.

On March 4, 2022, Sandler Utilities filed its Report on Customer Comments from the February 2, 2022 public hearing.

On March 4, 2022, Currituck filed its Report on Customer Comments from the February 2, 2022 public hearing.

On March 11, 2022, the Public Staff filed Responses to the Reports on Customer Comments filed by Sandler Utilities and Currituck. In the response to Sandler Utilities' Report on Customer Comments, the Public Staff stated that Sandler Utilities' Report was incomplete because it did not note that several of the improvements made to the Eagle Creek wastewater utility system ("Eagle Creek Wastewater System" or "Wastewater System") were required by the Consent Judgment and Amended Consent Judgment, and that the Report did not address customer comments about Sandler Utilities' neglect of the Eagle Creek Wastewater System since Sandler's last rate case in 2015. The Public Staff recommended that the Commission

require Sandler Utilities and Currituck to file supplements to their Reports on Customer Comments, on or before March 22, 2022.

II. Supplemental Responses

Sandler Utilities provides these supplemental responses to address the items and deficiencies noted by the Public Staff in its March 11, 2022 Response.

A. Customer statement that improvements made to the Eagle Creek Wastewater System were only made to comply with the Consent Judgment and Amended Consent Judgement.

The Public Staff stated that Sander Utilities' Report on Customer Comments identified improvements made by Sandler to the Eagle Creek Wastewater System since approximately August, 2020. The Public Staff also stated that Sander Utilities' Report on Customer Comments was silent on identifying that several of the improvements were required by the *State of North Carolina, ex rel., North Carolina Department of Environmental Quality (Plaintiff) v. Sandler Utilities at Mill Run, LLC (Defendant)* Consent Judgment ("Consent Judgment"), filed with Currituck County Superior Court on July 1, 2021, and the Amended Consent Judgment filed with Currituck County Superior Court on December 28, 2021 ("Amended Consent Judgment").

Sandler Utilities' Response: Prior to July 1, 2021 when the Consent Judgment was filed, Sandler Utilities had been funding necessary capital improvements and repairs to the Vacuum Collection System as repair and upgrade needs were brought to Sandler's attention by the contract operator or third-party vendors. Most of the

requests for capital improvement items came in response to the first outage of the Eagle Creek Wastewater System that occurred in September, 2020 and the subsequent outages of the Wastewater System. Sandler Utilities expeditiously approved all requests for capital improvements and repairs items during this period.

The following improvements made to the Eagle Creek Wastewater System were required by the Consent Judgment and the Amended Consent Judgment:

- Securing all pits to ensure that only the operators have access to the pits. This requirement was accomplished with the pedestal mounted controller system since the pedestal mounts allowed the controllers to be elevated from the pits to prevent any flooding or wastewater intake issues.
- Regular review of the Vacuum Collection System through daily, weekly, and monthly checks on the system.
- Installation of a new control panel.
- Installation of air admittance at system dead ends.

B. Customer statement that the Eagle Creek Wastewater System was non-operational due to Sandler Utilities' neglect when Envirolink Inc. ("Envirolink") became the utility system operator.

Sandler Utilities' Response: Sandler Utilities denies that the Eagle Creek Wastewater System was "non-operational" when Envirolink began operating the system. In fact, Sandler Utilities was not aware of any significant issues with the Wastewater System, and Sandler had not received any reports of system outages,

sanitary sewer overflows (“SSO”), or other significant notices of violation from the North Carolina Department of environmental Quality (“NCDEQ”) until the first major outage of the Wastewater System occurred in September, 2020. The only issues of significance that were brought to Sandler Utilities’ attention prior to September, 2020 were issues with the Vacuum Collection System that occurred during two extreme weather events.

C. Customer statement that Envirolink’s technicians had identified “ideas and things they wanted to do,” but Sandler would not provide the funding to implement the Envirolink recommendations.

Sandler Utilities’ Response: Sandler Utilities has no information of any requests from Envirolink for improvements to the Eagle Creek Wastewater System that were denied. Sandler has contacted Envirolink to determine if any of Envirolink’s recommendations for system improvements were not approved. To date, Sandler Utilities has not received any information about requests for system improvements that it did not approve.

D. Customer statement that Sandler Utilities had neglected the Eagle Creek Wastewater System because it had insufficient revenues from the rate increase granted in 2015 for improvements to the system.

Sandler Utilities’ Response: Initially, it is important to note that the 2015 rate increase was granted in regard to Sandler Utilities’ expenditures for the Eagle Creek Wastewater System that were made prior to 2015, which totaled about \$2.2 million.

Additionally, in close collaboration with Sandler Utilities' Operator at that time (Enviro-Tech), Sandler Utilities prioritized capital improvements that were necessary for upgrades and replacements after the issuance of the rate increase.

In 2015, Sandler Utilities was receiving sufficient revenues to cover its operating costs, but that is no longer the case. Currently, Sandler Utilities is not receiving sufficient revenues to cover the capital investment that it is making in the Wastewater System.

Sandler Utilities' investment in Wastewater System additions after 2015 and before the outage in September, 2020 include:

- Isolation valves on the vacuum main at Eagleton Circle and Green View Road in the amount of \$9,000.00.
- Replacement of the start and contactors on the vacuum pumps in the amount of \$1,678.79.
- Repair of the wastewater treatment plant's UV system in the amount of \$6,391.62.
- Replacement of the bearings in the wastewater treatment plant's aeration blowers in the amount of \$1,234.86.
- Pit replacements as needed in the amount of \$6,000.
- Replacement of the equalizer pump at the wastewater treatment plant in the amount of \$2,060.52.

- Purchase of a back-up motor for the vacuum pumps in the amount of \$1,240.72.
- Repair of the stormwater ditch pump and replacement of parts in the amount of \$9,669.26.
- Purchase of a new vacuum sewer pump in the amount of \$16,532.44.
- Purchase of multiple upgraded controllers with greater water resistance for use in pits in the low-lying areas of the Eagle Creek subdivision.

E. Customer statement that Sandler failed to provide funding for the Eagle Creek Wastewater System to allow the vendor-recommended maintenance to be performed.

Sandler Utilities' Response: Sandler Utilities has endeavored to make all necessary improvements to the Eagle Creek Wastewater System, while ensuring that the rates are reasonable and affordable for the customers. Sandler Utilities relied upon its contract operator—who was knowledgeable about the Eagle Creek Wastewater System—to ensure that the Wastewater System was operating properly and to provide recommendations for any necessary capital improvements and repairs. In the absence of problems with the Wastewater System and any recommendations for system improvements from the contract operator, it would not have been prudent for Sandler Utilities to fund system improvements that had not been identified as being necessary since those costs would ultimately been paid for by the customers in their rates.

F. Customer statement that preventative maintenance to rebuild controllers and vacuum valves prior to failure was not performed and that the

components were only rebuilt or replaced when they failed.

Sandler Utilities' Response: Sandler Utilities depends on its contract operators to maintain the Wastewater System in accordance with the manufacturer's specifications. To the best of Sandler Utilities' knowledge, controller and valve replacement is handled during pit inspections. Since a monitoring system was installed in 2022, the process for identifying issues with controllers and vacuum valves will be simplified and expedited. Through the monitoring system technology, operators will be directed to the specific areas of the Vacuum Collection System where an issue has occurred so that any problems with the controllers and valves will be addressed prior to total failure.

G. Customer statement that Airvac and Flovac site survey reports in late 2020 indicated that oil had not been changed in the Vacuum Collection System pumps and that the vacuum pump filter screens were totally clogged.

Sandler Utilities' Response: This statement is correct. Brittney Willis with Sandler Utilities addressed this issue with the Envirolink operator that was on-site during the failures of the Vacuum Collection System in September and October, 2020, and was informed by the operator that he did not know that he needed to provide such maintenance. Thereafter, with the assistance of Sandler Utilities' vendors, Sandler Utilities immediately provided standard maintenance items to the contract operator that detailed the necessary operations and maintenance processes. Sandler Utilities' understanding had been that information about operations and maintenance of the Wastewater System had been provided by the previous operator (Enviro-Tech) to

Envirolink when Envirolink took over operations of the Wastewater System.

H. Request for a list of all recommendations from Envirolink for improvements to the Eagle Creek Wastewater System, along with Sandler Utilities' responses to the recommendations.

Sandler Utilities' Response: It is my understanding that Envirolink requested repair items associated with controllers, valves, driveways, EQ pumps, and UV filters, and that Sandler Utilities indicated that funds were not currently available or timing had to be shifted while other priorities were addressed. I specifically recall Envirolink's request for repair to the gravel road, and I requested that this repair be deferred until more critical maintenance items were completed. However, Envirolink, ultimately made the repair to the driveway and then submitted an invoice to Sandler Utilities for the repair. (Sandler Utilities paid the invoice.) I have requested that Envirolink advise if there are any additional items that Sandler Utilities did not approve, and am waiting to receive that information from Envirolink

I. Customer statement that Sandler Utilities did not comply with recommendations made by Airvac and Flovac.

Sandler Utilities' Response: When Airvac and Flovac provided recommendations for improvements to the Vacuum Collection System to Sandler Utilities, Sandler Utilities worked with its operators to determine the costs and priority for each recommended improvement and a schedule for implementing the improvement. Based on reports from Airvac and Flovac, the following items were

recommended in November 2021 and were addressed with Envirolink on a case-by-case basis:

- Immediately upgrade and improve vacuum pump monitoring practices: This item is being accomplished with the installation of the monitoring system which began December 2021.
- Ensure that the compressor on the high-level valve is turned on and operational at all times: This item is part in the standard practice and inspection of the Vacuum Collection System.
- Work to get both sewage pumps operational as soon as possible: Efforts to address this item are ongoing
- Request for ongoing reports as to the training that each operator has received to ensure that the necessary training has been provided: Monthly reports are submitted to NCDEQ outlining the Operator Training Plan per the Consent Judgment.
- Turn on the alarm panel and make any necessary repairs or replacements: A new control panel has been ordered.
- Repair and calibrate the chart recorder to get it in working order: This item was completed in November, 2021.
- Ensure that the vacuum and sewer pump run time chart recordings are up to date: This item was completed in November, 2021.

- Check oil levels daily in the vacuum pumps and repair any oil leaks so oil levels can be maintained for a reasonable duration of time: This item is now part of the daily inspection and maintenance process.
- Repair the 8-inch vacuum main shut off valve so that it will close completely: This item was completed in November, 2021.
- Repair the 10-inch vacuum main shut off valve so that it will be fully functional: This item was completed in November, 2021.
- Confirm that the sewer pump coupling that failed previously is now properly aligned so that another failure is not imminent, and secure the pump at the mounting base with the proper bolts that are currently missing: This item was completed in November, 2021.
- Open the recirculation lines to avoid sewer pump cavitation: This item was completed in November, 2021.
- Clean probes at the tank and check against the design levels: This item was completed in February, 2022.
- Keep the station clean and tidy: Ongoing efforts are made to comply with this recommendation.
- Fix the oil leak on the vacuum pump's recirculation line float box: This item has been completed.
- Keep appropriate tools and spare parts on site: Weekly requests are made by

the Operator for additional supplies as needed.

- Make sure every technician involved in the controller and valve rebuild process fully understands how to properly rebuild the controllers and valves with correct and functioning parts and install correctly: Efforts to comply with this recommendation are ongoing. It should be noted that certain operators specialize in this task.
- Install conical screens in the vacuum pumps: This item was completed in November, 2021.
- Connect all hoses and replace all in-sump breathers within the vacuum pits: Efforts to comply with this recommendation are ongoing, but are mostly completed and are being checked with the monitoring installation.
- Modify the approach to finding leaks: The previous approach to finding leaks has been modified with the installation of the monitoring system.
- Remove all HP Controllers from the valve pits and replace them with the standard approved controllers: This item was completed, as numerous controllers were ordered and/or rebuilt for this purpose.
- Clean inlet screens on the wastewater treatment plant blower pumps: This item was completed in November, 2021.
- Address all remaining valve pits that have been “clipped”: This item has been completed and is part of the process during repairs (*i.e.*, the clips are removed immediately when the valve pit is reopened).

STATE OF VIRGINIA

CITY OF VIRGINIA BEACH

VERIFICATION

I, Brittney Willis, being first duly sworn, depose and say that I am duly authorized to act on behalf of Sandler Utilities at Mill Run, L.L.C. as a Senior Project Manager; that I have read the foregoing Supplemental Report on Customer Comments From Public Hearing Held on February 2, 2022, and that the same is true and accurate to my personal knowledge and belief.

This 22nd day of March, 2022.

Brittney M. Willis

Brittney Willis, Senior Project Manager
Sandler Utilities at Mill Run, L.L.C.

STATE OF Virginia, CITY OF Virginia Beach, TO WIT:
I, Cynthia G. Shank, A NOTARY PUBLIC IN AND FOR THE CITY AND
STATE AFORESAID, DO HEREBY CERTIFY THAT Brittney Willis WHOSE
NAME IS SIGNED TO THE FOREGOING WRITING HAS ACKNOWLEDGED THE SAME BEFORE
ME IN MY CITY AND STATE AFORESAID.

GIVEN UNTO MY HAND THIS 22 DAY OF March, 2022.

MY COMMISSION EXPIRES: 10/31, 2024.

REGISTRATION NO. 213972

Cynthia G. Shank
NOTARY PUBLIC

Cynthia G. Shank
Notary Public
REG. # 213972
Commonwealth of Virginia
MY COMMISSION EXPIRES OCTOBER 31, 2024

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Supplement to Report on Customer Comments From Public Hearing Held on February 2, 2022 filed in Dockets W-1130, Sub 11 and W-1333, Sub 0, has been served on parties of record as shown on the Commission's Service List for these dockets, either by electronic mail or by depositing same in the U. S. Mail, first class delivery, postage prepaid.

This the 22nd day of March, 2022.

FOX ROTHSCHILD LLP



Karen M. Kemerait
N.C. State Bar No. 18270
FOX ROTHSCHILD, LLP
434 Fayetteville Street Suite 2800
Raleigh, NC 27601
Telephone: 919-755-8700
E-mail: kkemerait@foxrothschild.com
Attorneys for Sandler Utilities at Mill Run, LLC

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. W-1130, SUB 11
DOCKET NO. W-1333, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:


Application by Currituck Water and)	
Sewer, LLC, 4700 Homewood Court,)	
Suite 108, Raleigh, North Carolina)	
27609, and Sandler Utilities at Mill)	
Run, LLC, 448 Viking Drive, Suite)	RESPONSE TO ORDER REQUIRING
220, Virginia Beach, Virginia 23452,)	ADDITIONAL INFORMATION
for Authority to Transfer the Sandler)	
Utilities at Mill Run Wastewater)	
System and Public Utility Franchise in)	
Currituck County, North Carolina, and)	
for Approval of Rates)	

NOW COMES Sandler Utilities at Mill Run, LLC (“Sandler Utilities”), by and through the undersigned attorney, and hereby provides the documents requested by the North Carolina Utilities Commission (“Commission”) in its *Order Requiring Additional Information* issued on February 8, 2022. In Appendix A of the Order, the Commission requested the following documents from Sandler Utilities:

1. Provide a copy of the Consent Judgment entered into on July 1, 2021, by and between the North Carolina Attorney General and Sandler as filed in Currituck County Superior Court Docket Number 21-CVS-78 and a copy of the Amended Consent Judgment dated December 28, 2021, as filed in the same docket.

In accordance with the Commission’s Order, attached hereto are the Consent Judgment entered into on July 1, 2021, by and between the North Carolina Attorney General and Sandler Utilities, and the Amended Consent Judgment dated December 28, 2021.

This the 17th day of February, 2022.



Karen M. Kemerait
N.C. State Bar No. 18270
FOX ROTHSCHILD, LLP
434 Fayetteville Street Suite 2800
Raleigh, NC 27601
Telephone: 919-755-8700
E-mail: kkemerait@foxrothschild.com
*Attorney for Sandler Utilities at Mill Run,
LLC*

OFFICIAL COPY

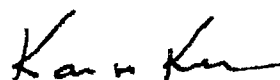
Feb 22 2022

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Response to Order Requiring Additional Information filed in Dockets W-1130, Sub 11 and W-1333, Sub 0, has been served on parties of record as shown on the Commission's Service List for these dockets, either by electronic mail or by depositing same in the U. S. Mail, first class delivery, postage prepaid.

This the 17th day of February, 2022.

FOX ROTHSCHILD LLP



Karen M. Kemerait
N.C. State Bar No. 18270
FOX ROTHSCHILD, LLP
434 Fayetteville Street Suite 2800
Raleigh, NC 27601
Telephone: 919-755-8700
E-mail: kkemerait@foxrothschild.com
Attorneys for Sandler Utilities at Mill Run, LLC

STATE OF VIRGINIA

~~CITY~~
~~COUNTY~~ OF VIRGINIA BEACH

VERIFICATION

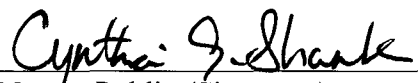
I, Brittney Willis, being first duly sworn, depose and say that I am duly authorized to act on behalf of Sandler Utilities at Mill Run, LLC as the Senior Project Manager; that I have read the foregoing Response to Order Requiring Additional Information, and that the same is true and accurate to my personal knowledge and belief.

This 17th day of February, 2022.



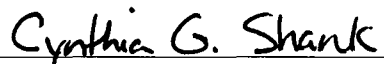
Brittney Willis, Senior Project Manager
Sandler Utilities at Mill Run, LLC

Sworn to and subscribed to before me this 17 day of February 2022.



Notary Public (Signature)

(Seal)



Notary Public (Printed)

My Commission Expires: 10/31/2024

Cynthia G. Shank
Notary Public
REG. # 213972
Commonwealth of Virginia
MY COMMISSION EXPIRES OCTOBER 31, 2024

STATE OF NORTH CAROLINA
COUNTY OF CURRITUCK

IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
21 CVS 78

STATE OF NORTH CAROLINA, *ex rel.*,)
NORTH CAROLINA DEPARTMENT OF)
ENVIRONMENTAL QUALITY,)
)
Plaintiff,)
)
v.)
)
SANDLER UTILITIES AT MILL RUN,)
LLC,)
)
Defendant.)
)
)
)

CONSENT JUDGMENT

FILED
2021 JUL -1 P 1:14
CURRITUCK CO., C.S.C.
JLT
BY

Plaintiff, the State of North Carolina, by and through the North Carolina Department of Environmental Quality (“Plaintiff” or “DEQ”), and Defendant Sandler Utilities at Mill Run, LLC (“Defendant”) hereby agree to the entry of this Consent Judgment in order to resolve the matters in controversy between Plaintiff and Defendant.

The Court makes, and Plaintiff and Defendant (collectively “the Parties”) hereby stipulate to, the following findings of fact and conclusions of law:

FINDINGS OF FACT

1. Plaintiff is the sovereign State of North Carolina. This action was brought on the relation of the North Carolina Department of Environmental Quality (“DEQ”), the State agency established pursuant to N.C. Gen. Stat. § 143B-279.1 *et seq.*, and vested with the statutory authority to enforce the State’s environmental pollution laws, including laws enacted to protect the water quality of the State. The Division of Water Resources (“DWR”) is a division within DEQ and all actions taken by DWR are necessarily actions of the Plaintiff.

2. Defendant is a limited liability corporation formed in North Carolina with its principal office in Virginia and doing business in North Carolina. Defendant is the owner and operator of the wastewater collection system serving the Eagle Creek Subdivision, Eagle Creek Golf Club, and Moyock Middle School in Moyock, Currituck County, North Carolina ("Collection System").

3. The Eagle Creek Subdivision is a development in Moyock, Currituck County, North Carolina. The development includes approximately 420 single-family homes and is generally situated between Roland Creek Canal to the north and Guinea Mill Run Canal to the south. Stormwater swales run beside the roadways in the development and between homes. Those swales drain to the Roland Creek Canal to the north and Guinea Mill Run Canal to the south of the development.

4. On May 2, 2013, DWR issued non-discharge permit number WQCS00290 ("Permit") to Defendant for operation of the Collection System.

5. The Collection System consists of 4.8 miles of vacuum sewer and utilizes vacuum pumps to maintain a constant negative pressure within the sewer pipes. Domestic waste from individual homes connected to the system collects in containment vessels, commonly referred to as "pits," with each pit serving two homes. When the level of waste within the pit reaches a determined level, pneumatic pressure triggers the opening of a valve to the piping connected to the sewer line. The vacuum withdraws waste and wastewater from the pit into the sewer line. When the waste level within the pit drops, the valve connecting the pit to the sewer line is closed, allowing waste to again collect within the pit and maintaining the vacuum in the sewer line.

6. Wastewater from the Collection System is conveyed to the Sandler Utilities Wastewater Treatment Plant for treatment and disposal as authorized by a separate permit,

WQ0014306.

7. A release of wastewater from a wastewater collection system such as Defendant's is referred to as a sanitary sewer overflow or "SSO."

8. Condition I.2 of the Permit requires that the Collection System "shall be effectively managed, maintained and operated at all times so that there is no SSO to land or surface waters, nor any contamination of groundwater." In the event of a system failure, the permittee is required to "take immediate corrective actions, including actions that may be required by [DWR] such as the construction of additional or replacement sewer lines and/or equipment."

9. Condition II.5 of the Permit provides that "for each pump station without pump reliability...at least one fully operational spare pump capable of pumping peak flow shall be maintained on hand."

10. Condition II.11 of the Permit provides that, if an SSO occurs, Defendant "shall restore the system operation, remove visible solids and paper, sanitize any ground area and restore the surroundings."

11. Condition IV.2 of the Permit provides that SSOs of over 1,000 gallons and any SSO that reaches surface waters, must be verbally reported to DWR as soon as possible, but no later than "24 hours following the occurrence or first knowledge of the occurrence."

12. On September 29, 2020, DWR's Washington Regional Office began receiving complaints from Eagle Creek residents indicating that the Collection System was not operating properly at homes throughout Eagle Creek.

13. On September 30, 2020, DWR inspectors Sarah Toppen and Victoria Herdt from the Washington Regional Office conducted a site inspection to investigate the complaints. DWR's investigation confirmed that the system had not been operating properly since September 27, 2020

due to failure of one of the two vacuum pumps. The vacuum pump failure caused SSOs that drained into stormwater swales in front of and between homes.

14. Upon learning of the incident, Defendant called in technical support from Airvac, the initial pump supplier, to assist in bringing the Collection System back on line. Due to insufficient replacement parts available on site, Defendant purchased replacement parts for the vacuum pumps and mechanical equipment located in the pits to address the reported issues.

15. Defendant provided cleanup and lime application at any location showing evidence of overflow and in all roadside ditches around October 9, 2021. Performance issues in the Collection System were resolved by October 11, 2020.

16. On October 26, 2020, the Washington Regional Office again began receiving complaints indicating that the Collection System was experiencing further performance issues resulting in SSOs.

17. On October 27, 2020, Ms. Toppen and another DWR inspector, Allen Stewart, conducted a site inspection to investigate the complaints and learned that a high water alarm within the Collection System had failed, causing the water to overflow and flood both of the system's vacuum pumps, taking them offline. The vacuum pumps' failure resulted in SSOs, and a water sample from the stormwater swale at 125 Eagleton Circle contained fecal coliform (bacteria from fecal matter) that were too numerous to count.

18. In response to this incident, Defendant requested assistance from technicians from Airvac and FloVac (another vacuum system supplier), and the vacuum pumps were restored and fully operational by October 29, 2020. Among other equipment and parts, Defendant ordered new parts for the malfunctioning high water alarm, which were installed on November 5, 2020.

19. On November 13, 2020, the Washington Regional Office began receiving new

complaints stating that, beginning on or around November 11, 2020, the Collection System was not operating properly causing SSOs.

20. On November 14, 2020, David May, DWR Regional Supervisor for the Washington Regional Office, conducted a site visit to investigate the complaints. DWR's investigation confirmed the Collection System was experiencing performance issues resulting in SSOs. A substantial number of houses and customers remained without functional sewer service through at least November 16, 2020.

21. Complaints to the Washington Regional Office recommenced on November 20, 2020. Residents indicated that the Collection System was not functioning properly, that residents were once again without sewer service due to vacuum leaks disrupting operation of the Collection System, and that some pits were overflowing. A number of houses remained without functional sewer service or sporadic sewer service through about November 25, 2020.

22. On December 16, 2020, the Washington Regional Office once again received complaints from Eagle Creek residents regarding disruption of sewer service and SSOs. DWR's investigation suggested that the problem was limited to one section of the Eagle Creek development due to a disconnected line in a pit and sustained rainfall. Residences affected by the disconnected line remained without functional sewer service or sporadic sewer service through approximately December 18, 2020.

23. Additional complaints to the Washington Regional Office were received on January 26, 2021, with residents complaining that they lacked sewer service and describing other performance issues including SSOs.

24. Defendant has been subject to various enforcement actions by the DWR related to the Permit as a result of the incidents described above.

25. On October 7, 2020, DWR issued a Notice of Violation and Notice of Intent to Enforce ("First NOV") to Defendant pertaining to SSOs and system failures occurring from September 27, 2020 and ongoing as of the date the NOV was issued. The First NOV alleged the following violations:

- a. Violation of Permit Condition I.2 for failure to effectively manage, maintain and operate the Collection System at all times so there are no SSOs to land or surface waters;
- b. Violation of Permit Condition II.11 for failure to restore the system operation, remove visible solids and paper, sanitize any ground area and restore surroundings after an SSO;
- c. Violation of Permit Condition IV.2 for failure to properly report SSOs.

26. In a letter dated October 27, 2020, Defendant responded to the First NOV. Defendant stated that replacement parts for the failed vacuum pumps were not readily available, causing a delay in fixing the Collection System. Once the vacuum pump was replaced, Defendant noted that two sewage pumps malfunctioned, forcing the entire system offline again for cleaning. Defendant acknowledged that its operator's personnel resources were stretched during the event limiting the ability to address the Collection System problems in a timely manner and that additional support from a vacuum sewer specialist was called in. Defendant stated that cleanup of any discharges was performed and the System was ultimately repaired.

27. DWR assessed a civil penalty of \$62,517.96 against Defendant arising out of the allegations in the First NOV on December 10, 2020 ("Civil Penalty") for fifteen violations of Permit Condition I.2 between September 27, 2020 and October 11, 2020.

28. On November 23, 2020, DWR issued a Second Notice of Violation and Notice of

Intent to Enforce (“Second NOV”) to Defendant pertaining to SSOs and system failures occurring during the period from October 26, 2020 through November 5, 2020. In addition to alleging violations of Permit Conditions I.2, II.11 and IV.2, the Second NOV alleged violations of Permit Condition II.5¹ for failure to maintain operational replacement pumps for stations without pump reliability and N.C. Gen. Stat. § 143-215.1(a)(1) for making an outlet into waters of the State without a permit.

29. In a letter dated December 15, 2020, Defendant responded to the Second NOV. Defendant stated that a “very large investment has been made into new equipment and parts” and that new equipment and parts were ordered. Defendant also stated that spills were addressed with lime application and solid waste overflow was physically removed. In response to the incident, Defendant installed a new vacuum pump and motor, acquired a spare vacuum pump and motor, purchased a new sewer pump, and replaced multiple controllers and valves within individual pits. Defendant further replaced parts needed to ensure functionality of the high-level alarm (which was the precipitating cause of this incident) to alleviate water intake into the vacuum sewer pumps causing failure.

30. On December 16, 2020, DWR issued a Third Notice of Violation and Notice of Intent to Enforce (“Third NOV”) to Defendant pertaining to SSOs and system failures occurring during the period from November 11, 2020 through November 16, 2020. The Third NOV alleged violations of Conditions I.2, II.11, and IV.2 as well as N.C. Gen. Stat. § 143-215.1(a)(1).

31. On January 14, 2021, DWR issued a Fourth Notice of Violation and Notice of Intent to Enforce (“Fourth NOV”) to Defendant pertaining to SSOs and system failures occurring during the period from November 20 through November 25, 2020. The Fourth NOV alleged violations

¹ A typographical error in the Second NOV identifies a violation of Permit Condition II.6, not II.5. The narrative description of the violation refers to Permit Condition II.5, however.

of Conditions I.2, II.11, and IV.2 as well as N.C. Gen. Stat. § 143-215.1(a)(1).

32. DEQ filed the instant action on March 4, 2021, seeking injunctive relief for existing or threatened violations of various laws and rules governing the protection of water quality pursuant to N.C. Gen. Stat. § 143-215.6C.

33. The Parties have reached a mutually agreeable and reasonable resolution of the injunctive relief sought by DEQ through this suit which they seek to memorialize in this Consent Judgment.

34. The Court has reviewed the pleadings and supporting materials in this matter. Counsel for the Parties have represented to the Court that their respective clients have reviewed and approved the substance of the proposed Consent Judgment and that the Parties supported a request that this Court approve a Consent Judgment embodying their agreement.

CONCLUSIONS OF LAW

1. This matter is properly before this Court, which has jurisdiction over the Parties and subject matter of this action pursuant to N.C. Gen. Stat. § 143-215.6C and other provisions of law.

2. Venue is proper pursuant to under N.C. Gen. Stat. §§ 1-79 and 143-215.6C.

3. Defendant is subject to non-discharge collection system permit number WQCS00290. Pursuant to that permit, as well as North Carolina laws and regulations, Defendant is expressly prohibited from discharging collected sewage and wastewater to land and waters of the State. *See* 15A NCAC subchapter 2T (“Waste Not Discharged to Surface Waters”); N.C. Gen. Stat. § 143-215.1(a)(1) (disallowing any person from making “any outlets into waters of the State” without receiving a permit to do so).

4. Whenever DEQ has reasonable cause to believe that any person has violated or is

threatening to violate any of the provisions of the State's environmental laws or administrative rules, including State water quality laws and rules, DEQ is authorized to "request the Attorney General to institute a civil action in the name of the State upon the relation of [DEQ] for injunctive relief to restrain the violation or threatened violation." N.C. Gen. Stat. § 143-215.6C. That section further provides that "[u]pon a determination by the court that the alleged violation of the provisions of this Part or the regulations of the Commission has occurred or is threatened, the court shall grant the relief necessary to prevent or abate the violation or threatened violation." N.C. Gen. Stat. § 143-215.6C.

5. As of the date of entry of this Consent Judgment, Defendant has repeatedly violated the conditions of its Permit and North Carolina's water quality laws, including, but not limited to, failing to properly manage, maintain and operate the Collection System to prevent SSOs, failing to maintain replacement equipment to prevent SSOs, and failure to restore consistent service to Eagle Creek residents.

6. The current state of the Collection System presents an ongoing threat that the Eagle Creek Development will continue to experience performance issues and SSOs into nearby surface water in violation of the Collection System Permit, and in violation of N.C. Gen. Stat. § 143-215.1(a)(1).

7. The State is entitled to permanent injunctive relief against Defendant to abate the repeated previous violations and prevent the threatened violations set forth in the Complaint pursuant to N.C. Gen. Stat. § 143-215.6C.

8. Based on the Court's review of the pleadings and materials submitted, the Court has concluded that the relief reflected in the Consent Judgment represents a lawful, fair, and reasonable resolution of this matter, consistent with the purposes of N.C. Gen. Stat. § 143-215.1,

and this Court further concludes that it is fully authorized and justified in entering this Consent Judgment.

9. The Parties expressly waive any argument that the recitation of the above Findings of Fact and Conclusions of Law is insufficient to support the injunctive relief ordered below.

Based upon the foregoing Findings of Fact and Conclusions of Law, **IT IS THEREFORE ORDERED, ADJUDGED, AND DECREED** as follows:

Defendant is ordered to do the following:

1. Fully comply with all terms and conditions of the Permit and State water quality laws, including by maintaining the Collection System in a manner that prevents the discharge of waste onto to land or into surface waters;
2. Report to a DWR staff member as soon as possible but in no case more than 24 hours following knowledge of the occurrence of any material equipment failure, any material system failure, and any SSO regardless of volume and file a written report within five days outlining actions taken or proposed to address the equipment failure, system failure, and SSO and prevent recurrence. An equipment or system failure shall be considered material if there is any SSO associated with the failure or the failure affects four or more residences in the Eagle Creek Development. The reports referenced in this subparagraph shall be submitted to the following email address:

David May, DWR
david.may@ncdenr.gov

3. Within 30 calendar days of entry of this Consent Judgment:
 - a. Secure all pits to ensure only Defendant and its operators have pit access;

- b. Submit to DWR for approval (which may include conditions) a plan for Defendant's operators to receive any necessary training in operating and maintaining the Collection System, including specialized training in vacuum system operation, or provide documentation that such training has been received ("Operator Training Plan");
 - c. Submit to DWR for review and approval (which may include conditions) a plan to prevent future SSOs, restore and sanitize areas impacted by prior SSOs, and expeditiously restore and maintain service to homeowners in the event of any system failures pending an engineering evaluation of the Collection System ("Interim Service and Restoration Plan");
 - d. Provide to DWR a complete engineering evaluation detailing actions necessary to prevent future SSOs and system failures, including but not limited to necessary upgrades to the design and physical infrastructure of the Collection System ("Engineering Evaluation").
4. Within 60 calendar days of entry of this Consent Judgment:
- a. Submit to DWR for review and approval (which may include conditions) a plan with actions to be taken to address necessary and proposed upgrades included in the Engineering Evaluation ("System Upgrade Plan"). The System Upgrade Plan must include a proposed schedule with dates by which each activity will be completed and, as appropriate, the frequency with which those activities will be repeated.
5. If DWR requires plan revisions in order for any of the plans listed above to be approved, Defendant shall resubmit the plan incorporating said revisions within 15 days of written

notification by DWR that such revisions are required. DWR's discretion to require plan revisions shall be limited to revisions necessary to ensure compliance with North Carolina's water quality laws and regulations including provisions applicable to wastewater collection systems.

6. Once each submission is approved (the Operator Training Plan, the Interim Service and Restoration Plan, and the System Upgrade Plan) including any conditions added by DWR to each, Defendant shall execute each plan in accordance with the dates included therein.
7. Once the work set forth in the approved System Upgrade Plan, including any conditions added by DWR, is completed, Defendant shall submit a final report documenting the results of the activities set forth in each respective plan. The final report shall include a certification from a licensed professional engineer.
8. Unless otherwise indicated, Defendant shall submit all plans and reports referenced above to:

David May, DWR
david.may@ncdenr.gov


9. It is further ordered that this Consent Judgment shall take effect immediately and shall remain in effect until the Permittee can adequately demonstrate that the collection system can operate in a reliable manner and maintain compliance with North Carolina water quality laws and regulations on a consistent basis. The Defendant may request termination of this Consent Judgment by the Court at no time sooner than one year following submittal of the final report described in Paragraph 7 above and subsequent approval by DWR. The Parties shall comply with all terms of this Consent Judgment.
10. This Consent Judgment shall be binding upon Defendant's successors and assigns.

Defendant shall not transfer any of the assets that are the subject of the Complaint, including the Permit or the Collection System, unless and until Defendant moves to join the transferee as a defendant in this case such that this Consent Judgment shall be binding upon the transferee and the Court issues an order granting such motion. DEQ agrees that it will not oppose dismissal of Defendant in the event the assets that are the subject of the Complaint have been transferred and the transferee has been added as a defendant in this case and is bound by this Consent Judgment. Nothing in this Consent Judgment relieves Defendant of its duty to abide by the terms of the Permit and State water quality law. DEQ retains its authority, in accordance with applicable law, to initiate any and all enforcement actions that would otherwise be available to it in the absence of this Consent Judgment.

11. The Court shall retain continuing jurisdiction in this case to enforce the terms and conditions of this Consent Order, to modify this Consent Order, and to resolve disputes arising under this Consent Order until all parties have complied with all provisions of this Consent Judgment.
12. The contempt provisions of Article 2, Chapter 5A of North Carolina General Statutes shall be available to enforce this Consent Judgment.
13. This Consent Judgment may be signed out-of-court, out-of-term, out-of-county, and may be signed in multiple counterpart originals, all of which, taken together, shall be considered one and the same document. Facsimile or scanned signatures will be sufficient to render this Consent Judgment effective. Original signatures will be substituted at a later date.
14. Each undersigned representative of a party to this Consent Judgment certifies that the

representative is authorized to enter into the terms and conditions of this Consent Judgment, and to execute and legally bind such party to this Consent Judgment.

This the 23rd day of June, 2021.



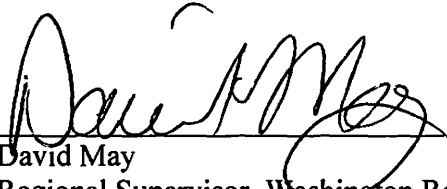
Superior Court Judge
Currituck County

[ADDITIONAL SIGNATURES ON FOLLOWING PAGES]

CONSENTED TO BY:

NORTH CAROLINA DEPARTMENT
OF ENVIRONMENTAL QUALITY

By:


David May

Regional Supervisor, Washington Regional Office, Division of Water Resources

CONSENTED TO BY:

SANDLER UTILITIES AT MILL RUN, LLC

By:



Raymond Gottlieb
Manager



STATE OF NORTH CAROLINA
COUNTY OF CURRITUCK

IN THE GENERAL COURT OF JUSTICE
SUPERIOR COURT DIVISION
21 CVS 78

STATE OF NORTH CAROLINA, *ex rel.*,
NORTH CAROLINA DEPARTMENT OF
ENVIRONMENTAL QUALITY,

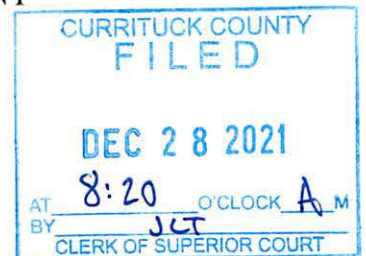
Plaintiff,

v.

SANDLER UTILITIES AT MILL RUN,
LLC,

Defendant.

**AMENDED CONSENT
JUDGMENT**



Plaintiff, the State of North Carolina, by and through the North Carolina Department of Environmental Quality ("Plaintiff" or "DEQ"), and Defendant Sandler Utilities at Mill Run, LLC ("Defendant") hereby agree to the entry of this Amended Consent Judgment in order to resolve the matters in controversy between Plaintiff and Defendant.

The Court makes, and Plaintiff and Defendant (collectively "the Parties") hereby stipulate to, the following findings of fact and conclusions of law:

FINDINGS OF FACT

1. Plaintiff is the sovereign State of North Carolina. This action was brought on the relation of the North Carolina Department of Environmental Quality ("DEQ"), the State agency established pursuant to N.C. Gen. Stat. § 143B-279.1 *et seq.*, and vested with the statutory authority to enforce the State's environmental pollution laws, including laws enacted to protect the water quality of the State. The Division of Water Resources ("DWR") is a division within DEQ and all actions taken by DWR are necessarily actions of the Plaintiff.

2. Defendant is a limited liability corporation formed in North Carolina with its principal office in Virginia and doing business in North Carolina. Defendant is the owner and operator of the wastewater collection system serving the Eagle Creek Subdivision, Eagle Creek Golf Club, and Moyock Middle School in Moyock, Currituck County, North Carolina (“Collection System”).

3. The Eagle Creek Subdivision is a development in Moyock, Currituck County, North Carolina. The development includes approximately 420 single-family homes and is generally situated between Roland Creek Canal to the north and Guinea Mill Run Canal to the south. Stormwater swales run beside the roadways in the development and between homes. Those swales drain to the Roland Creek Canal to the north and Guinea Mill Run Canal to the south of the development.

4. On May 2, 2013, DWR issued non-discharge permit number WQCS00290 (“Permit”) to Defendant for operation of the Collection System.

5. The Collection System consists of 4.8 miles of vacuum sewer and utilizes vacuum pumps to maintain a constant negative pressure within the sewer pipes. Domestic waste from individual homes connected to the system collects in containment vessels, commonly referred to as “pits,” with each pit serving two homes. When the level of waste within the pit reaches a determined level, pneumatic pressure triggers the opening of a valve to the piping connected to the sewer line. The vacuum withdraws waste and wastewater from the pit into the sewer line. When the waste level within the pit drops, the valve connecting the pit to the sewer line is closed, allowing waste to again collect within the pit and maintaining the vacuum in the sewer line.

6. Wastewater from the Collection System is conveyed to the Sandler Utilities Wastewater Treatment Plant for treatment and disposal as authorized by a separate permit,

WQ0014306.

7. A release of wastewater from a wastewater collection system such as Defendant's is referred to as a sanitary sewer overflow or "SSO."

8. Condition I.2 of the Permit requires that the Collection System "shall be effectively managed, maintained and operated at all times so that there is no SSO to land or surface waters, nor any contamination of groundwater." In the event of a system failure, the permittee is required to "take immediate corrective actions, including actions that may be required by [DWR] such as the construction of additional or replacement sewer lines and/or equipment."

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10. Condition II.11 of the Permit provides that, if an SSO occurs, Defendant "shall restore the system operation, remove visible solids and paper, sanitize any ground area and restore the surroundings."

11. Condition IV.2 of the Permit provides that SSOs of over 1,000 gallons and any SSO that reaches surface waters, must be verbally reported to DWR as soon as possible, but no later than "24 hours following the occurrence or first knowledge of the occurrence."

12. On September 29, 2020, DWR's Washington Regional Office began receiving complaints from Eagle Creek residents indicating that the Collection System was not operating properly at homes throughout Eagle Creek.

13. On September 30, 2020, DWR inspectors Sarah Toppen and Victoria Herdt from the Washington Regional Office conducted a site inspection to investigate the complaints. DWR's investigation confirmed that the system had not been operating properly since September 27, 2020

due to failure of one of the two vacuum pumps. The vacuum pump failure caused SSOs that drained into stormwater swales in front of and between homes.

14. Upon learning of the incident, Defendant called in technical support from Airvac, the initial pump supplier, to assist in bringing the Collection System back on line. Due to insufficient replacement parts available on site, Defendant purchased replacement parts for the vacuum pumps and mechanical equipment located in the pits to address the reported issues.

15. Defendant provided cleanup and lime application at any location showing evidence of overflow and in all roadside ditches around October 9, 2020. Performance issues in the Collection System were resolved by October 11, 2020.

16. On October 26, 2020, the Washington Regional Office again began receiving complaints indicating that the Collection System was experiencing further performance issues resulting in SSOs.

17. On October 27, 2020, Ms. Toppen and another DWR inspector, Allen Stewart, conducted a site inspection to investigate the complaints and learned that a high water alarm within the Collection System had failed, causing the water to overflow and flood both of the system's vacuum pumps, taking them offline. The vacuum pumps' failure resulted in SSOs, and a water sample from the stormwater swale at 125 Eagleton Circle contained fecal coliform (bacteria from fecal matter) that were too numerous to count.

18. In response to this incident, Defendant requested assistance from technicians from Airvac and FloVac (another vacuum system supplier), and the vacuum pumps were restored and fully operational by October 29, 2020. Among other equipment and parts, Defendant ordered new parts for the malfunctioning high water alarm, which were installed on November 5, 2020.

19. On November 13, 2020, the Washington Regional Office began receiving new

complaints stating that, beginning on or around November 11, 2020, the Collection System was not operating properly causing SSOs.

20. On November 14, 2020, David May, DWR Regional Supervisor for the Washington Regional Office, conducted a site visit to investigate the complaints. DWR's investigation confirmed the Collection System was experiencing performance issues resulting in SSOs. A substantial number of houses and customers remained without functional sewer service through at least November 16, 2020.

21. Complaints to the Washington Regional Office recommenced on November 20, 2020. Residents indicated that the Collection System was not functioning properly, that residents were once again without sewer service due to vacuum leaks disrupting operation of the Collection System, and that some pits were overflowing. A number of houses remained without functional sewer service or sporadic sewer service through about November 25, 2020.

22. On December 16, 2020, the Washington Regional Office once again received complaints from Eagle Creek residents regarding disruption of sewer service and SSOs. DWR's investigation suggested that the problem was limited to one section of the Eagle Creek development due to a disconnected line in a pit and sustained rainfall. Residences affected by the disconnected line remained without functional sewer service or sporadic sewer service through approximately December 18, 2020.

23. Additional complaints to the Washington Regional Office were received on January 26, 2021, with residents complaining that they lacked sewer service and describing other performance issues including SSOs.

24. Defendant has been subject to various enforcement actions by the DWR related to the Permit as a result of the incidents described above.

25. On October 7, 2020, DWR issued a Notice of Violation and Notice of Intent to Enforce ("First NOV") to Defendant pertaining to SSOs and system failures occurring from September 27, 2020 and ongoing as of the date the NOV was issued. The First NOV alleged the following violations:

- a. Violation of Permit Condition I.2 for failure to effectively manage, maintain and operate the Collection System at all times so there are no SSOs to land or surface waters;
- b. Violation of Permit Condition II.11 for failure to restore the system operation, remove visible solids and paper, sanitize any ground area and restore surroundings after an SSO;
- c. Violation of Permit Condition IV.2 for failure to properly report SSOs.

26. In a letter dated October 27, 2020, Defendant responded to the First NOV. Defendant stated that replacement parts for the failed vacuum pumps were not readily available, causing a delay in fixing the Collection System. Once the vacuum pump was replaced, Defendant noted that two sewage pumps malfunctioned, forcing the entire system offline again for cleaning. Defendant acknowledged that its operator's personnel resources were stretched during the event limiting the ability to address the Collection System problems in a timely manner and that additional support from a vacuum sewer specialist was called in. Defendant stated that cleanup of any discharges was performed and the System was ultimately repaired.

27. DWR assessed a civil penalty of \$62,517.96 against Defendant arising out of the allegations in the First NOV on December 10, 2020 ("Civil Penalty") for fifteen violations of Permit Condition I.2 between September 27, 2020 and October 11, 2020.

28. On November 23, 2020, DWR issued a Second Notice of Violation and Notice of

Intent to Enforce (“Second NOV”) to Defendant pertaining to SSOs and system failures occurring during the period from October 26, 2020 through November 5, 2020. In addition to alleging violations of Permit Conditions I.2, II.11 and IV.2, the Second NOV alleged violations of Permit Condition II.5¹ for failure to maintain operational replacement pumps for stations without pump reliability and N.C. Gen. Stat. § 143-215.1(a)(1) for making an outlet into waters of the State without a permit.

29. In a letter dated December 15, 2020, Defendant responded to the Second NOV. Defendant stated that a “very large investment has been made into new equipment and parts” and that new equipment and parts were ordered. Defendant also stated that spills were addressed with lime application and solid waste overflow was physically removed. In response to the incident, Defendant installed a new vacuum pump and motor, acquired a spare vacuum pump and motor, purchased a new sewer pump, and replaced multiple controllers and valves within individual pits. Defendant further replaced parts needed to ensure functionality of the high-level alarm (which was the precipitating cause of this incident) to alleviate water intake into the vacuum sewer pumps causing failure.

30. On December 16, 2020, DWR issued a Third Notice of Violation and Notice of Intent to Enforce (“Third NOV”) to Defendant pertaining to SSOs and system failures occurring during the period from November 11, 2020 through November 16, 2020. The Third NOV alleged violations of Conditions I.2, II.11, and IV.2 as well as N.C. Gen. Stat. § 143-215.1(a)(1).

31. On January 14, 2021, DWR issued a Fourth Notice of Violation and Notice of Intent to Enforce (“Fourth NOV”) to Defendant pertaining to SSOs and system failures occurring during the period from November 20 through November 25, 2020. The Fourth NOV alleged violations

¹ A typographical error in the Second NOV identifies a violation of Permit Condition II.6, not II.5. The narrative description of the violation refers to Permit Condition II.5, however.

of Conditions I.2, II.11, and IV.2 as well as N.C. Gen. Stat. § 143-215.1(a)(1).

32. DEQ filed the instant action on March 4, 2021, seeking injunctive relief for existing or threatened violations of various laws and rules governing the protection of water quality pursuant to N.C. Gen. Stat. § 143-215.6C.

33. The Parties initially reached a resolution of the injunctive relief sought by DEQ through this suit and memorialized that agreement in a Consent Judgment, which was entered by the court on July 1, 2021.

34. Subsequent to entry of the Consent Judgment, the Collection System experienced three instances of performance issues resulting in SSOs in the months of October and November 2021. On November 16, 2021,² DEQ filed a verified Motion to Show Cause Why Defendant Should Not Be Held in Criminal and/or Civil Contempt based on the system performance issues, as well as alleged violations of approved plans under the original Consent Judgment.

35. A Show Cause Hearing was held on December 6, 2021. The Court heard testimony from Eagle Creek resident Kevin Wetzel and Defendant's representative Brittney Willis. Mr. Wetzel testified that, among other things, since entry of the Consent Judgment in July 2021, on multiple occasions his family has gone several days without sewer service, waste has been discharged onto his property, Defendant has not been responsive to calls for service when there are system performance issues, and Defendant has not taken any steps to clean up waste spilled onto his property. Ms. Willis testified that Defendant has actively attempted to comply with the Consent Judgment, has taken certain actions concerning the operation and maintenance of the system beyond what DEQ required in the Consent Judgment, including recent installation of an electronic monitoring system, and has recently been more responsive to DEQ's requests

² A Notice of Corrected Filing to include attachments referenced in the November 16 Motion was filed on November 24, 2021.

concerning operation of the system. Defendant did not challenge the factual allegations contained in the verified Motion to Show Cause other than through testimony and exhibits offered by Ms. Willis. The Court reserved ruling on contempt.

36. After testimony at the hearing, the Court directed the parties to submit a modification to the Consent Judgment to provide for changes necessary to bring the Collection System into compliance with the Permit and State water quality laws and regulations.

37. The Parties have reached a mutually agreeable and reasonable resolution intended to bring the Collection System into compliance with the Permit and State water quality laws and regulations. They seek to memorialize that agreement in this Amended Consent Judgement.

38. The Court has reviewed the pleadings, motion, and supporting materials in this matter. Counsel for the Parties have represented to the Court that their respective clients have reviewed and approved the substance of the proposed Amended Consent Judgment and that the Parties supported a request that this Court approve an Amended Consent Judgment embodying their agreement.

CONCLUSIONS OF LAW

1. This matter is properly before this Court, which has jurisdiction over the Parties and subject matter of this action pursuant to N.C. Gen. Stat. § 143-215.6C and other provisions of law.

2. Venue is proper pursuant to under N.C. Gen. Stat. §§ 1-79 and 143-215.6C.

3. Defendant is subject to non-discharge collection system permit number WQCS00290. Pursuant to that permit, as well as North Carolina laws and regulations, Defendant is expressly prohibited from discharging collected sewage and wastewater to land and waters of the State. *See* 15A NCAC subchapter 2T (“Waste Not Discharged to Surface Waters”); N.C. Gen.

Stat. § 143-215.1(a)(1) (disallowing any person from making “any outlets into waters of the State” without receiving a permit to do so).

4. Whenever DEQ has reasonable cause to believe that any person has violated or is threatening to violate any of the provisions of the State’s environmental laws or administrative rules, including State water quality laws and rules, DEQ is authorized to “request the Attorney General to institute a civil action in the name of the State upon the relation of [DEQ] for injunctive relief to restrain the violation or threatened violation.” N.C. Gen. Stat. § 143-215.6C. That section further provides that “[u]pon a determination by the court that the alleged violation of the provisions of this Part or the regulations of the Commission has occurred or is threatened, the court shall grant the relief necessary to prevent or abate the violation or threatened violation.” N.C. Gen. Stat. § 143-215.6C.

5. As of the date of entry of this Consent Judgment, Defendant has repeatedly violated the conditions of its Permit and North Carolina’s water quality laws, including, but not limited to, failing to properly manage, maintain and operate the Collection System to prevent SSOs, failing to maintain replacement equipment to prevent SSOs, and failure to restore consistent service to Eagle Creek residents.

6. The current state of the Collection System presents an ongoing threat that the Eagle Creek Development will continue to experience performance issues and SSOs into nearby surface water in violation of the Collection System Permit, and in violation of N.C. Gen. Stat. § 143-215.1(a)(1).

7. The State is entitled to permanent injunctive relief against Defendant to abate the repeated previous violations and prevent the threatened violations set forth in the Complaint pursuant to N.C. Gen. Stat. § 143-215.6C.

8. Based on the Court's review of the pleadings and materials submitted, the Court has concluded that the relief reflected in the Amended Consent Judgment represents a lawful, fair, and reasonable resolution of this matter, consistent with the purposes of N.C. Gen. Stat. § 143-215.1, and this Court further concludes that it is fully authorized and justified in entering this Consent Judgment.

9. The Parties expressly waive any argument that the recitation of the above Findings of Fact and Conclusions of Law is insufficient to support the injunctive relief ordered below.

Based upon the foregoing Findings of Fact and Conclusions of Law, **IT IS THEREFORE ORDERED, ADJUDGED, AND DECREED** as follows:

Defendant is ordered to do the following:

1. **Prevention of SSOs.** Defendant shall fully comply with all terms and conditions of the Permit and State water quality laws, including by maintaining the Collection System in a manner that prevents the discharge of waste onto to land or into surface waters;
2. **Reporting to DWR.** Defendant shall report to a DWR staff member as soon as possible but in no case more than 24 hours following knowledge of the occurrence of any material equipment failure, any material system failure, or any SSO regardless of volume and file a written report within five days following Defendant's first knowledge of the occurrence. The report shall outline actions taken or proposed to address the equipment failure, system failure, and/or SSO and prevent recurrence. Defendant shall provide additional information as may be reasonably requested by DWR to evaluate the equipment failure, system failure, or SSO. An equipment or system failure shall be

considered material if there is any SSO associated with the failure or the failure affects four or more residences in the Eagle Creek Development.

3. **Responding to Resident Complaints.** Defendant shall provide timely and accurate responses to all resident complaints of equipment failures, system failures, or SSOs regardless of volume, including:

- a. Providing accurate notices to all residents when a material system failure occurs as soon as possible and no later than two hours after receiving notice of the system failure;
- b. Initiating response to resident complaints of equipment failures, system failures, or SSOs within three hours of receiving the complaint;
- c. Providing sanitation services within four hours of confirmation of a discharge of waste to land or surface water;
- d. Continuously performing sanitation surveys while providing incident response, with actions taken as necessary to address sanitation needs (it shall not be incumbent upon a resident to report sanitation issues to initiate a sanitation response); and
- e. Notifying residents within two hours of full system restoration and stating the operational status of individual pits.

To demonstrate compliance with this requirement, Defendant shall maintain an accurate log of resident complaints and actions taken in response to those complaints. Such log shall identify: (1) the complainant; (2) a summary of the substance of the complaint; (3) when the complaint was received; (4) a description of actions taken in response to the complaint, including but not limited to corrective action and sanitation

services; (5) when response action was initiated; and (6) when the complaint was resolved. Such log shall be made available to DWR upon request.

4. **Operator Training Plan.** Defendant shall continue to implement and be bound by the requirements of the Operator Training Plan attached hereto as Exhibit A, along with any subsequent updates as contemplated in paragraph 10.
5. **Independent Engineering Evaluation.** Within 30 calendar days of entry of this Amended Consent Judgment, Defendant shall provide to DWR a new engineering evaluation conducted by an independent firm approved by DWR with expertise in the operation of vacuum systems (“Independent Engineering Evaluation”). This deadline may be extended upon approval by DWR if Defendant demonstrates that additional time is necessary to identify or accommodate the scheduling needs of a qualified independent firm. This Independent Engineering Evaluation shall detail near-term and long-term actions necessary to prevent future SSOs and system performance issues, including but not limited to: (1) changes in staffing, (2) operation and maintenance procedures, (3) equipment replacement, (4) acquisition of additional backup equipment, and (5) upgrades to the design and physical infrastructure of the Collection System.
6. **Interim Service and Restoration Plan.** Defendant shall implement the requirements of the Interim Service and Restoration Plan attached hereto as Exhibit B, along with any subsequent updates as contemplated in paragraph 10. Within 14 calendar days of submission of the Independent Engineering Evaluation, Defendant shall submit for DWR review and approval (which may include conditions), revisions to the Interim Service and Restoration Plan to address recommendations of the Independent

Engineering Evaluation that can be implemented on a short-term basis. Such revisions must include a proposed schedule with dates by which each activity will be completed and, as appropriate, the frequency with which those activities will be repeated.

7. **New System Upgrade Plan.** Within 30 calendar days of submission of the Independent Engineering Evaluation, Defendant shall submit to DWR for review and approval (which may include conditions) a new plan with actions to be taken to address the long-term recommendations of the Independent Engineering Evaluation (“New System Upgrade Plan”). The New System Upgrade Plan must include a proposed schedule with dates by which each activity will be completed and, as appropriate, the frequency with which those activities will be repeated.
8. **Appointment of Independent Specialist.** Defendant shall appoint a qualified independent specialist in vacuum system operation to provide consulting services addressing operation of the Collection System for a minimum of 30 days (“Consultant Period”). The independent specialist shall be approved by DWR, and DWR must approve dismissal of the independent specialist and ending of the Consultant Period. During the Consultant Period, the independent specialist must be on site for a minimum of four hours daily, five days a week. The independent specialist shall provide a report to DWR within 45 days of commencement of the Consultant Period identifying (1) any deficiencies in the current operation and maintenance of the Collection System; and (2) any additional measures not included in the Independent Engineering Evaluation that are needed to ensure compliance with the Permit and State water quality laws. DWR may require that any measures recommended by the

independent specialist be incorporated into the Interim Service and Restoration Plan or the New System Upgrade Plan if reasonably necessary to ensure compliance with the Permit and State water quality laws. The Consultant Period shall commence as soon as possible and no later than 14 days following entry of the Amended Consent Judgment. This deadline may be extended upon approval by DWR if Defendant demonstrates that additional time is necessary to identify or accommodate the scheduling needs of a qualified independent specialist.

9. **Execution of Plans.** Once each submission is approved (the Operator Training Plan, the Interim Service and Restoration Plan, and the New System Upgrade Plan) including any conditions added by DWR or updates made after initial approval, Defendant shall execute each plan in accordance with the dates included therein.
10. **Plan and Report Revisions.** DWR may require and Defendant may request revisions to Operator Training Plan, Interim Service and Restoration Plan, and/or the System Upgrade Plan referenced herein as necessary to best serve the ends of effective and efficient compliance with the Permit and North Carolina's water quality laws and regulations including provisions applicable to wastewater collection systems. Any disputes as between DWR and Defendant regarding whether or not such updates are reasonably necessary may be brought before the Court for resolution. If DWR requires revisions in conjunction with mandatory plan submissions under this Amended Consent Judgment, Defendant shall resubmit the plan incorporating said revisions within 15 days of written notification by DWR that such revisions are required. DWR's discretion to require revisions for mandatory plan submissions shall be limited to revisions necessary to ensure compliance with

the Permit and North Carolina's water quality laws and regulations including provisions applicable to wastewater collection systems.

11. **Final Report.** Once the work set forth in the approved New System Upgrade Plan, including any conditions added by DWR, is completed, Defendant shall submit a final report documenting the results of the activities set forth in each respective plan. The final report shall include a certification from a licensed professional engineer.

12. **Submission of Plans and Reports.** Unless otherwise indicated, Defendant shall submit all plans and reports referenced above to:

David May, DWR
david.may@ncdenr.gov

13. **Duration.** It is further ordered that this Amended Consent Judgment shall take effect immediately and shall remain in effect until Defendant can adequately demonstrate that the collection system can operate in a reliable manner and maintain compliance with North Carolina water quality laws and regulations on a consistent basis. The Defendant may request termination of this Amended Consent Judgment by the Court at no time sooner than one year following submittal of the final report described in Paragraph 11 above and subsequent approval by DWR. The Parties shall comply with all terms of this Amended Consent Judgment.


14. **Successors, Assigns, and Transferees.** This Amended Consent Judgment shall be binding upon Defendant's successors and assigns. Defendant shall not transfer any of the assets that are the subject of the Complaint, including the Permit or the Collection System, unless and until Defendant moves to join the transferee as a defendant in this case such that this Amended Consent Judgment shall be binding upon the transferee and the Court issues an order granting such motion. DEQ agrees that it will not oppose

dismissal of Defendant in the event the assets that are the subject of the Complaint have been transferred and the transferee has been added as a defendant in this case and is bound by this Consent Judgment. Nothing in this Amended Consent Judgment relieves Defendant of its duty to abide by the terms of the Permit and State water quality law. DEQ retains its authority, in accordance with applicable law, to initiate any and all enforcement actions that would otherwise be available to it in the absence of this Amended Consent Judgment.

15. **Retention of Jurisdiction.** The Court shall retain continuing jurisdiction in this case to enforce the terms and conditions of this Amended Consent Judgment, to modify this Amended Consent Judgment, and to resolve disputes arising under this Amended Consent Judgment until all parties have complied with all provisions of this Amended Consent Judgment.
16. **Contempt.** The contempt provisions of Article 2, Chapter 5A of North Carolina General Statutes shall be available to enforce this Amended Consent Judgment, including any and all provisions of the plans referenced herein, including any revisions to such plans.
17. This Amended Consent Judgment may be signed out-of-court, out-of-term, out-of-county, and may be signed in multiple counterpart originals, all of which, taken together, shall be considered one and the same document. Facsimile or scanned signatures will be sufficient to render this Amended Consent Judgment effective. Original signatures will be substituted at a later date.
18. Each undersigned representative of a party to this Amended Consent Judgment certifies that the representative is authorized to enter into the terms and conditions of this

Amended Consent Judgment, and to execute and legally bind such party to this
Amended Consent Judgment.

This the 21st day of December, 2021.



Superior Court Judge

[ADDITIONAL SIGNATURES ON FOLLOWING PAGES]

CONSENTED TO BY:

NORTH CAROLINA DEPARTMENT
OF ENVIRONMENTAL QUALITY

By:

A handwritten signature in black ink, appearing to read "David May", written over a horizontal line.

David May
Regional Supervisor, Washington Regional Office, Division of Water Resources

CONSENTED TO BY:

SANDLER UTILITIES AT MILL RUN, LLC

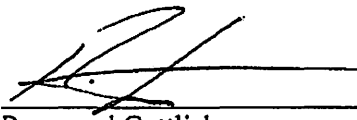
By: 
Raymond Gottlieb
Manager

Exhibit A

Updated Operator Training Plan

Sandler Utilities at Mill Run, LLC
Eagle Creek Collection System
Operator Training Plan

This Operator Training plan is intended to ensure that operators employed by Sandler Utilities at Mill Run, LLC, ("Permittee") receive necessary training in operating and maintaining the Eagle Creek Collection System. The Permittee shall adhere to the following requirements:

1. At least one trained lead technician will be onsite or available for consultation 24/7/365 with that individual being on-site during business hours. This operator must be knowledgeable of the location of all the collection chambers, lines, division valves, and other key components of the system. This operator must have a thorough knowledge of the main components of the vacuum sewer system and how the different components (pits, vacuum station, and homeowner services) are interrelated and work together as a system. Other staff must be under the direct supervision of this lead operator.
2. Both Owner and Operator recognize that proper training is critical for identification of faulty services, and overall, this system requires skilled technicians to minimize service disruptions. Formal training via a third-party vendor such as Flovac has been and will continue to be provided. Additionally, four months of on-site training under a qualified trained lead operator must be performed prior to qualification to become a lead technician. Operator shall submit a monthly report to the Defendant identifying plant operators and the level of training, type of training (onsite or formal), and present a monthly schedule confirming that at least one qualified lead technician is onsite during business hours and available during non-business hours.
3. Training will be held annually for all full-time operators assigned to the plant that have not previously received formal training. A qualified third-party vendor will provide a 3-day operator training course which must cover the following items:
 - a. Day 1 Classroom - Introduction to Vacuum Systems
 - i. How they work and basic principals
 - ii. Major Components
 - iii. Vacuum Pump Station
 - iv. Vacuum Pipework and Division Valves
 - v. Household Gravity Line and Venting
 - vi. Vacuum Collection Pit and Vacuum Valve
 - vii. Design Basics
 - viii. System Layout
 - ix. Master Plan
 - x. Reading a Design Drawing
 - xi. Extensions
 - xii. Systems Overview

- xiii. Layout
- b. Day 1 Classroom - Vacuum Pump Station
 - i. Vacuum Pumps
 - ii. Sewage Pumps
 - iii. Collection Tank and Pipework
 - iv. Controls
 - v. Reading a Chart Recorder
 - vi. Vacuum Valves and Controllers
 - vii. Operation
 - viii. Components
 - ix. Rebuilding (to include rebuilding controllers and valves)
- c. Day 2 Classroom
 - i. Tuning a Vacuum System
 - ii. Air/Liquid Ratio
 - iii. Controller Timing
 - iv. System Alarms
 - v. Vacuum Level
 - vi. Long Running Vacuum Pump
 - vii. Low Vacuum Alarm
 - viii. Homeowner Call
 - ix. Noisy Vacuum Pit
 - x. Affected Service
 - xi. Sewage Overflow
 - xii. Troubleshooting
 - xiii. Finding a vacuum leak
 - xiv. Flooded vacuum main
 - xv. Valve won't open
 - xvi. Valve won't close
- d. Day 2 Field
 - i. Vacuum Pump Station Review
 - ii. Air Liquid ratio calculation
 - iii. Sources of leaks
 - iv. Regular Maintenance Items
- e. Day 3 Field
 - i. Collection Pit Set-ups
 - ii. Troubleshooting
 - iii. Broken Pipework Repair

The Permittee will keep a running list of full-time plant technicians with documentation of training received and/or scheduled training to be received. This will be kept at the plant location and will be available for review upon request. Additionally, a monthly report will be provided to DWR on the first business day of each calendar month identifying plant technicians and their schedule, level of training received, and type of training received.

Exhibit B

Updated Interim Service and Restoration Plan

Sandler Utilities at Mill Run, LLC
Eagle Creek Collection System
Interim Service and Restoration Plan

This Interim Service and Restoration Plan (“ISRP”) is intended to prevent future SSOs, restore and sanitize areas impacted by prior SSOs, and expeditiously restore and maintain service to homeowners in the event of any system failures. In furtherance of this requirement, the ISRP requires Sandler Utilities at Mill Run, LLC (“Permittee”) to adhere to the following requirements.

Technician Availability

1. The Permittee will assign two onsite technicians from 8am-5pm Monday through Friday, and one assigned on-site technician 5pm-12am and 4am-8am Monday through Friday.
2. On Saturday and Sunday, one technician will be assigned to the facility from 4am-12am.
3. The Permittee will ensure that at least one on-call shift technician lives within 30-mile radius of the plant for response during wet weather events or during any service disruptions where additional resources are required. Additional on-call shift technicians will be available to work at one time during an outage to the extent that is necessary to properly recover the system as quickly as possible.

The following items must be completed or performed to prevent future SSOs:

1. **Daily System Checks.** On a daily basis, the Permittee shall:
 - a. Record and review daily pump run times via the standard log sheet to assist in evaluating vacuum pump and sewage pump operating conditions
 - b. Calibrate chart recorder for vacuum and sewer pump run times
 - c. Inspect check valves on force main headworks to verify that they are operating properly and replace as needed
 - d. Check compressor on high level valve to ensure that it is in the on position and is operating properly
 - e. Check recirculation lines to avoid sewer pump cavitation and ensure lines are open and remain open.
 - f. Check vacuum pump’s recirculation line float box and ensure there are no oil leaks.
 - g. Check oil levels in the vacuum pumps and repair oil leaks to ensure oil levels are maintained for a reasonable duration of time
 - h. Inspect sewer pump couplings to ensure proper alignment and ensure mounting base is secured with proper bolts.
 - i. For pits without pedestal mounted controllers:
 - i. Connect all hoses within vacuum pits as needed
 - ii. Replace in-sump breathers within vacuum pits as needed
 - j. Repair clipped vacuum lines as needed
2. **Weekly System Checks.** On a weekly basis, the Permittee shall:
 - a. Test alarm notifications

- b. Check conical screens in vacuum pumps and replace any damaged screens
 - c. Verify that appropriate tools and spare parts are available on site, including operational controllers, valves and repair kits
 - i. A purchase list shall be sent from Operator to Owner every Monday with items needed.
 - d. Test the monitoring system and conduct maintenance as necessary
3. **Monthly System Checks.** On a monthly basis, the Permittee shall:
- a. Ensure that the alarm system, sensors, and electrical components have been inspected by a qualified electrician
 - b. Inspect all individual customer valve pits and:
 - i. Test each valve multiple times by hand
 - ii. Check hose orientation and confirm connection correctness per operation manual
 - iii. Clean and secure sump breathers
 - iv. Inspect vents and the pit area for overflows and provide sanitation services as necessary.
 - v. Complete necessary repairs.
 - c. Change oil in vacuum pumps and replace vacuum filters
 - d. Inspect vacuum pump set points and confirm proper pressure limits are established and that solenoid valves are opening and closing.
 - e. Check collection tank for debris and remove debris if found
 - f. Clean probes at tank and check against the design levels
4. **Additional Requirements.** The Permittee shall:
- a. Replace control panel in the vacuum pump station by March 15, 2022
 - b. Install air admittance at four system dead end locations by March 15, 2022
 - c. Install Pedestal Mounted Controllers on an expedited schedule with all pits having been outfitted with a Pedestal Mounted Controller no later than February 15, 2022.

The following items must be completed or performed in the event of an SSO or system failure and to expeditiously restore and maintain service to homeowners in the event of any system failures. The Permittee shall:

1. ***Within 4 hours of knowledge of a discharge of waste to land or surface water begin performance of clean-up and sanitization services as follows:***
- a. All solids must be physically removed and disposed of properly
 - b. Lime shall be applied at all locations where wastewater is suspected of having discharged
 - c. Hard surfaces shall be cleaned with bleach and any ponded cleanup water shall be properly managed by neutralizing and returning the ponded cleanup water to the wastewater treatment plant.
 - d. Vacuum trucks shall be mobilized as needed to recover any spilled wastewater

2. *The Permittee shall communicate with residents in accordance with paragraph 3 of the Amended Consent Judgment.*
3. *By no later than January 31, 2022, the Permittee shall develop a contingency plan for review and approval by DWR to provide residents with sewer service in the event of material system failures.* Such contingency plan may include, but should not be limited to:
 - a. Use of larger vacuum trucks to bring pits back into service more quickly
 - b. Installation of new taps at select locations along primary vacuum lines for vacuum trucks to attach if sufficient vacuum pressure can be created
 - c. Provision of portable restroom/shower trailers to provide residents with toilets, sinks, and showers during outages

Reporting Requirement

By the first business day of each calendar month, the Permittee shall provide a monthly report to DWR to convey progress of the Interim Service and Restoration Plan. The Report must include documentation sufficient to verify that all elements of the ISRP have been completed during the prior month. These monthly status reports will be submitted via e-mail to David May.



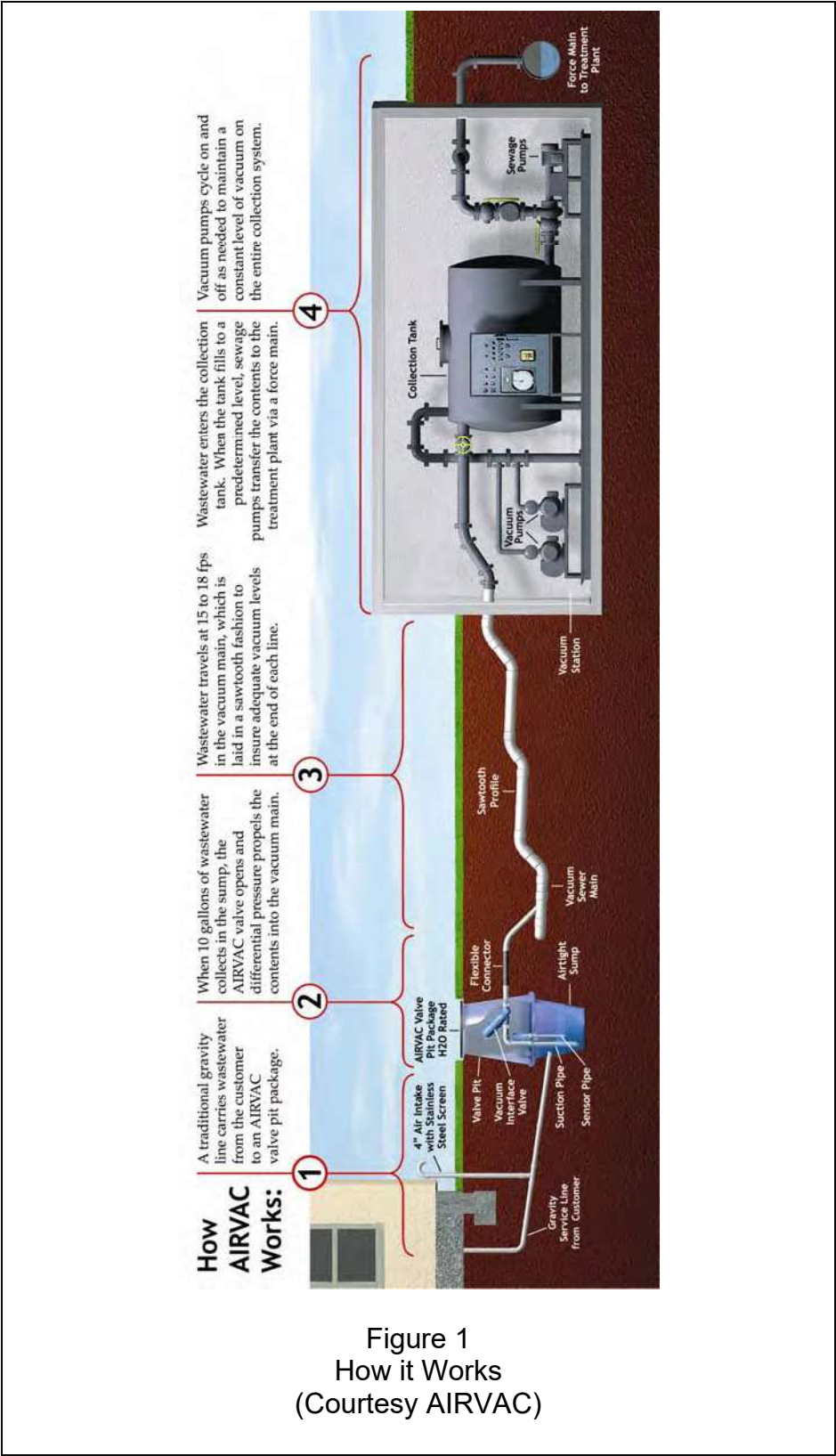


Figure 1
How it Works
(Courtesy AIRVAC)

I/A
SANDLER UTILITIES AT MILL RUN, LLC

April 1, 2021

Mr. William Grantmyre
Staff Attorney
North Carolina Public Staff Utilities Commission
4326 Mail Service Center
Raleigh, NC 27699-4300

Re: Docket No. W-1130, Sub 8
Eagle Creek Subdivision

Dear Mr. Grantmyre:

Sandler Utilities at Mill Run, LLC ("Sandler Utilities") sincerely regrets the recent wastewater system backups into the homes of customers caused by controller and valve failures due to water intrusion into the valve pit packages of the Eagle Creek Vacuum System ("Vacuum System"). As discussed in our January 22, 2021 letter, Sandler Utilities performed substantial capital improvements to the Vacuum System since the Commission's Recommended Order Granting Rate Increase, Requiring Refund, and Customer Notice was issued on December 11, 2015. As discussed in detail on our January 22, 2021 letter, more recently, Sandler Utilities (i) retained the services of FloVac to provide expert recommendations about how to address and correct the problems with the Vacuum System; (ii) enlisted FloVac's assistance in training the operator of the system, Envirolink, Inc. ("Envirolink"), as to how to prevent water ingestion in the system; (iii) installed 120 new controllers from October 12, 2020 through November 23, 2020 that are capable of processing small amounts of water and being submerged up to five feet with no impact to performance; (iv) performed proper installation of in-sump breather hoses on several valve pits; and (v) installed one new valve pit in December 2020. Also, Sandler Utilities has requested recommendations from FloVac about whether to install a monitoring system at each valve pit so that the operator of the system can timely respond to any issues with the system.

In addition to those actions and capital improvements, Sandler has performed, or will be performing, further remedial actions and improvements to the system to reduce rainwater intrusion and minimize flooding of the valve pits. Below is a list of the actions items and completion date for the additional improvements to reduce rainwater intrusion and minimize flooding of the valve pits.

Action Item	Recommended Response	Completion Schedule for Remedial Action
<u>Rainwater intrusion.</u> Reduce rainwater intrusion and minimize flooding in valve pits. Most rainwater intrusion is believed to be caused by I&I from the homeowners' laterals causing vacuum systems to struggle with inundation during heavy rain.	Install a monitoring system to detect in real time issues, such as missing clean out caps that the homeowners may have removed to relieve wastewater system back-ups. It will also alleviate time spent searching for leaks in the system, and response time is critical to keep problems from escalating.	FloVac has submitted proposals for the monitoring system to both Sandler Utilities and Envirolink, the potential purchaser of the Vacuum System. Sandler Utilities and Envirolink are reviewing FloVac's proposal, and determining the most effective method of addressing the problems with the system.

448 Viking Drive, Suite 220, Virginia Beach, Virginia 23452
Mailing Address: Post Office Box 8790, Virginia Beach, Virginia 23450
Telephone 757-463-5000 / Telefax 757-463-3358

April 1, 2021

Page 2

<u>Continuous operation of vacuum pump.</u> The vacuum pump frequently operates continuously during periods of high water levels within the vacuum holding tank, and the continuous operation of the vacuum pump creates the potential for motor failure.	Repair high-level lock-out valve.	This repair was completed in December 2020.
<u>System monitoring.</u> Appropriate and effective system monitoring during off-hours has been accomplished.	Sandler Utilities is committed to ensuring that Envirolink is appropriately staffed so that any required service to the system will be performed timely. Sandler Utilities has instructed Envirolink to have a 24/7 presence at the plant. Envirolink's 24/7 presence at the plant will address previous issues of response time, such as when issues occurred during weekends when Envirolink was not physically on-site.	At the instruction of Sandler Utilities, effective on 3/19/2021, Envirolink has a physical presence at the site for 7-day, 20-hour shifts. Also, Envirolink will have at least two technicians on call during the remaining 4 hours of the day in which the plant is not physically staffed by an operator. During projected wet weather events, Sandler Utilities will be proactive and request that Envirolink ensure that 24-7 physical coverage is maintained until the wet weather event has subsided.
<u>Outsource controllers.</u> Outsource controllers and valves to be rebuilt so fully functional ones are available when needed.	37 controllers that had been waiting for technician repair were delivered to FloVac for repair and rebuilding by their expert technicians. FloVac repaired the controllers and delivered them to the Eagle Creek plant.	The repairs to the controllers were completed in December 2021. In the event that Envirolink has a back-log for repair of the controllers in the future, Sandler Utilities has informed Envirolink to deliver the controllers to FloVac for repair.
<u>Controller failure.</u> Controller failure from water ingestion was the result of new controllers being properly fitted to the valves within the collection network.	Envirolink technicians were trained about the proper procedure for removing water from the valve upper before fitting a new controller to prevent water ingestion.	FloVac provided training to Envirolink during the week beginning November 20, 2020.
<u>Operator's technical experience.</u>	Envirolink has been gaining experience and expertise in operating a vacuum wastewater system since the EnviroTech team who had previously operated the system left in	In November 2002, Sandler Utilities hired a former EnviroTech employee with experience in operating vacuum systems. This former EnviroTech employee is leading operations at the facility, and he has been

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	September 2020. Training in vacuum systems for all technicians who work at or will potentially work at this plant is critical.	instrumental in leading his team to detect and address potential issues. Also, Sandler Utilities has requested that Envirolink continue a training regimen with its operators to ensure that the operators will be proficient with the vacuum system. Mike Myers with Envirolink has that training has occurred and that additional training by a technician who leads training efforts with both AirVac and FloVac will be scheduled.
<u>Extended outages.</u> A delay in receipt of the initial vacuum pump replacement caused an extended outage that resulted serious problems to the system. The ongoing disassembly and reassembly of the valve pit by pump truck operators to clear the pits left the valve pits vulnerable to failures.	Once the system was stabilized, technicians analyzed each valve pit, and tested, repaired, reconnected, and replaced items as necessary. During this analysis, a technician discovered that a valve pit had collapsed. Therefore, a new valve pit was ordered and installed to replace the failed valve pit.	The analysis of each valve pit was conducted and completed during December 2020. As a result of the analysis, most of the valve pits that had sustained damage during the September and October outages were repaired. For example, each valve was fired multiple times by hand and then analyzed for hose orientation and correct hose connection and timing.
<u>Problem identification.</u> Identify problems early that cannot be readily observed.	Envirolink operators are required to record daily run times during their daily station "walk-through."	An example of a log and recording document was provided to Envirolink in November 2020 to use as an example. This document is now utilized as part of Envirolink's daily protocol.
<u>Pump station alarm.</u> The excessive pump run alarm is the most effective warning to keep the system from collapsing and causing a complete failure. Therefore, the pump alarm must be operating properly at all times.	Envirolink is required to check the pump alarm on a weekly basis, and check the control panel and sensors associated with all alarm systems at the plant on a weekly basis.	Since January 2021, Envirolink has been inspecting these systems to make sure they are operating properly. By the end of 2021, Sandler Utilities plans to provide and overhaul the control panel.
<u>Couplings wearing prematurely to the motor of the sewer pumps.</u>	Alignment of the motor on the pumps has been checked.	Pearson pumps completed this work during their repair and replacement efforts in November 2020.
<u>Nonoperational check valves on the vacuum main.</u>	Replace or repair as needed.	Valves are exercised weekly and are all currently in working order.

April 1, 2021
Page 4

<u>Inadequate stock levels.</u>	Ensure multiple spare parts are available at all times.	From October 2020 through January 2021, numerous controllers, valves, pumps, motors, and valve pits have been ordered and kept on-site for Envirolink to use when needed.
<u>Excessive activations caused by inflow and infiltration from the homeowners' gravity laterals.</u>	Install a monitoring system to identify locations of excessive activations.	In December 2020, FloVac submitted proposals for a monitoring system to Sandler Utilities and Envirolink. Sandler Utilities and Envirolink are considering the proposals.
<u>The length of time it takes Envirolink to identify the location of a valve that is stuck open.</u>	Install a monitoring system to eliminate the need for this search.	In December 2020, FloVac submitted proposals for a monitoring system to Sandler Utilities and Envirolink. Sandler Utilities and Envirolink are considering the proposals.
<u>Short cycling of sewage pumps likely caused by debris in the vacuum collection tanks.</u>	Clean and inspect the collection tank thoroughly.	The vacuum tank was cleaned and thoroughly inspected in October 2020.

Sandler Utilities is committed to ensuring that the wastewater system for the Eagle Creek Subdivision is both safe and reliable. We are continuing our efforts to ensuring that the problems with the Vacuum System are satisfactorily addressed.

If you have any question about our plan to address the problems with the system, please let me know.

Sincerely,



Brittney M. Willis – Project Manager
Sandler Utilities at Mill Run, LLC

448 Viking Drive, Suite 220, Virginia Beach, Virginia 23452
Mailing Address: Post Office Box 8790, Virginia Beach, Virginia 23450
Telephone 757-463-5000 / Telefax 757-463-3358

Sandler Utilities at Mill Run, LLC
Docket No. W-1130, Sub 11
Currituck Water and Sewer, LLC
Docket No. W-1333, Sub 0

EAGLE CREEK RESIDENT COMPLAINTS TO DWR (BY ADDRESS)
JANUARY 26, 2021 TO NOVEMBER 5, 2021

Street

No	Street	Date	Complaint
103	Eagleton Circle	10/4/2021	System down - can't use water
105	Eagleton Circle	6/13/2021	Unable to flush toilet
105	Eagleton Circle	6/29/2021	Sewer service not working
105	Eagleton Circle	10/4/2021	Trouble flushing. Pits in neighborhood overflowing
105	Eagleton Circle	11/1/2021	Water on bathroom floor
108	Eagleton Circle	6/28/2021	Unable to flush toilet
110	Eagleton Circle	6/13/2021	Unable to flush toilet
111	Green View Road	6/13/2021	Sewage backup to back flow preventer and pit is full
113	Eagleton Circle	2/1/2021	Candy cane spews & neighbor @111 (connected to same pit), has backed up sewage in their house
113	Eagleton Circle	2/11/2021	Sewage backing up into house and coming out candy canes
113	Eagleton Circle	3/15/2021	Candy can spews. Downstairs toilet backing up
115	Eagleton Circle	10/3/2021	Water coming out of candycane. Water in downstairs bathroom
119	Eagleton Circle	10/4/2021	Pit is overflowing; ditch it full of stuff
125	Eagleton Circle	6/23/2021	Pit full
125	Eagleton Circle	7/4/2021	Pit overflowing - included photo
132	Eagleton Circle	3/15/2021	Sewage on walkway, driveway and ditches
134	Green View Road	6/13/2021	Sewage in downstairs bathroom and front yard
152	Green View Road	10/6/2021	Pit is overflowing into yard
162	Green View Road	1/26/2021	Sewage backed up into home. Pit full and pouring into ditch (w/photo)
162	Green View Road	11/3/2021	Raw sewage in yard - photos
162	Green View Road	11/5/2021	Candycane overflowing w/ video
168	St Andrews Road	11/2/2021	First time ever water coming out of candycane
169	Eagleton Circle	11/4/2021	Raw sewage exiting candycane - photos
172	Eagle Creek Road	2/1/2021	Candycane hissing

Sandler Utilities at Mill Run, LLC
Docket No. W-1130, Sub 11
Currituck Water and Sewer, LLC
Docket No. W-1333, Sub 0

Street

No	Street	Date	Complaint
176	Green View Road	3/15/2021	Sewage pouring out of pit and filling drainage ditch (Photo)
182	St Andrews Road	6/13/2021	A lot of water on side of house and pit 3/4 full.
186	Green View Road	11/3/2021	Pit is full. No wastewater service
189	Eagle Creek Road	11/3/2021	Overflows at residence. Day 5 without sewer.
189	Eagle Creek Road	11/3/2021	Candycane overflowing. Photos and videos
200	Green View Road	10/4/2021	Pit is full and coming out of candycanes
204	Eagle Creek Road	10/4/2021	Found 6 inches of wastewater in home
204	Eagle Creek Road	11/2/2021	Raw sewage in home
204	Eagle Creek Road	11/4/2021	Routine overflows and damage to home
205	Green View Road	11/3/2021	Candycane overflowing, raw sewage in yard (w/ photos)
206	Eagle Creek Road	6/13/2021	Plumbing issues
206	Eagle Creek Road	10/4/2021	Need pit pumped
206	Eagle Creek Road	10/5/2021	Day 5 without service
220	Green View Road	1/26/2021	Controller failed and valve is water logged {loud hissing noise coming from the pit itself}.
220	Green View Road	1/30/2021	Pit full and candycane overflowing. Some leakage in home.
220	Green View Road	2/8/2021	Water backed up to candy cane
220	Green View Road	3/13/2021	Sewage Backup in home; backflow valve full (w/photos)
222	Green View Road	10/2/2021	Water coming up from toilet, under wall inside pantry
226	Green View Road	11/3/2021	Sewage back up in house.
227	Eagle Creek Road	10/4/2021	System down all weekend
228	Green View Road	11/4/2021	Candycane overflowing w/ video
251	Green View Road	10/8/2021	Neighbors using pool pumps to pump pits - discharge to ditch
256	Green View Road	11/4/2021	Raw sewage in yard - photos
257	Green View Road	10/4/2021	Toilet making violent vacuum noises
257	Green View Road	10/6/2021	Unaware of system outage. Did laundry and flooded neighbor
257	Green View Road	10/26/2021	Water smells like fuel or oil

Sandler Utilities at Mill Run, LLC
 Docket No. W-1130, Sub 11
 Currituck Water and Sewer, LLC
 Docket No. W-1333, Sub 0

Street

No	Street	Date	Complaint
259	Green View Road	10/4/2021	Downstairs bathroom backed up three times since yesterday
261	Green View Road	6/13/2021	Pit sinking (Photos)

Total Complaints	52
Total Addresses Reporting Complaints	34
Homes with Multiple Complaints	9

Sandler Utilities at Mill Run, LLC
Docket No. W-1130, Sub 11
Currituck Water and Sewer, LLC
Docket No. W-1333, Sub 0

EAGLE CREEK RESIDENT COMPLAINTS TO DWR (BY DATE)
JANUARY 26, 2021 TO NOVEMBER 5, 2021

Street

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162	Green View Road	1/26/2021	Sewage backed up into home. Pit full and pouring into ditch (w/photo)
220	Green View Road	1/26/2021	Controller failed and valve is water logged {loud hissing noise coming from the pit itself}.
220	Green View Road	1/30/2021	Pit full and candycane overflowing. Some leakage in home.
113	Eagleton Circle	2/1/2021	Candy cane spews & neighbor @111 (connected to same pit), has backed up sewage in their house
172	Eagle Creek Road	2/1/2021	Candycane hissing
220	Green View Road	2/8/2021	Water backed up to candy cane
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Sandler Utilities at Mill Run, LLC
Docket No. W-1130, Sub 11
Currituck Water and Sewer, LLC
Docket No. W-1333, Sub 0

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Sandler Utilities at Mill Run, LLC
 Docket No. W-1130, Sub 11
 Currituck Water and Sewer, LLC
 Docket No. W-1333, Sub 0

Street

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Total Addresses Reporting Complaints	34
Homes with Multiple Complaints	9

Sandler Utilities at Mill Run, LLC
Docket No. W-1130, Sub 11
Currituck Water and Sewer, LLC
Docket No. W-1333, Sub 0

Notes from January 20, 2022 Site Visit to Oak Island Vacuum Collection System

PS attendees: Bill Grantmyre and Mike Franklin

Oak Island: Wastewater Supt: Mark Moore

1. Pit sizes are larger in size and capacity than those installed at Eagle Creek. Some areas have 4 homes connected to a single pit. Larger homes will have their own individual pit. Similar to Eagle Creek, the pit setpoint is 10 gallons, which causes the valve to open and the pit contents removed by vacuum force.
2. Each vacuum station has 3 vacuum pumps except for one smaller station that has 2. Normally 2 vacuum pumps run and the third pump runs if needed. Each vacuum station has two sewerage pumps.
3. Overflows are rare. Occasionally will have overflow through air intake. Usually due to a controller or sensor failing in the pit.
4. Controller failures are approximately 5 per month out of a system with 90 miles of vacuum mains. Per the Oak Island Annual Wastewater Treatment and Collection Report, July 1, 2020 through June 30, 2021: The Vacuum System consists of 9 Vacuum Stations, 17 Duplex Grinder Pump Stations, 17 Dual Buffer Tanks, 2 Single Buffer Tanks, 4,025 Vacuum Pits, Vacuum Mains sizing from 4" to 10", and Force Mains from 6" to 24".
5. Regular preventive maintenance on vacuum pumps include replacing the exhaust filters annually, changing the oil every 600 hours of operation. Manufacturer recommended oil is used. Every year each pit is inspected and the pit fired to check for proper operation. Airvac evaluates the system annually (sometimes twice a year) and provides system adjustments and feedback to Oak Island Wastewater Superintendent.
6. Internal leaks can be caused by valve bonnet (i.e. plunger) being worn causing valve not to close completely and reducing system vacuum or causing more frequent running of vacuum pumps to maintain vacuum pressure.
7. 2 to 3 spares of every component are maintained. Each controller costs \$275 new whether purchased from Flovac or Airvac. Refurbishment is sometimes performed depending on budget and if there are no time constraints.
8. System was installed in 2007 based on a decision by the town council.
9. Valve pits are not individually remotely monitored. Oak Island did not purchase the Airvac SMART system due to cost. Mark recalled the cost to be \$2K per pit which would be over \$8M.
10. 12 new pits cost \$70K with an additional \$4K to install each one. Total installation cost is \$6K, \$4K for installation and \$2K for service connection.
11. Water table is 2-3'. Town has installed a Wellpoint dewatering system where needed.
12. The monitoring system is a SCADA system that monitors vacuum stations and lift stations. SCADA system was purchased from ProPump & Controls located in Troutman, NC (north of Charlotte). SCADA system updates cost \$6K per year.

13. Leaks still occur. Earlier pits had a thinner bottom of ¼" fiberglass/plastic. Over time the vacuum pulled the bottom out and caused the pits to sink. Newer pit designs have a heavier bottom
14. System works well. Needs continuous maintenance. Check status of the 9 vacuum stations daily. Gravity system lift stations are checked weekly. 5 techs are employed.
15. MC Schroeder Equipment located in Charlotte provides pump parts and performs pump repairs. Other vacuum system parts and components are purchased from Airvac and Flovac.
16. Employee turnover is low. Newest employee started 5 years ago. Initially sent techs to Airvac training. Now new employees are trained on the job by current staff.

Franklin, Mike

From: Brittney Willis <brittney@lmssi.com>
Sent: Thursday, October 7, 2021 3:51 PM
To: Franklin, Mike
Cc: Grantmyre, William
Subject: [External] RE: Docket No. W-1130 Sub 8: Sandler Utilities at Mill Run, LLC - Eagle Creek Subdivision
Attachments: Consent Order Response-revision to DEQ comment 2 - final.pdf; 2021-09-20 2d Ltr to Sandler re CJ submissions.pdf; 2021-08-31 Supplemental Submission re Consent Judgment.pdf; 2021-08-31 Sandler CJ Submissionrev.pdf

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Hi Mike,

We actually received another letter with comments on September 20th from DEQ that was in response to the revised letter we sent on August 31st. I have attached that letter for reference since it is the most recent. The one prior to that is also included since that is what you specifically asked for.

You are correct, we replaced sewage and vacuum pumps last year, one new sewage pump, and one repaired sewage pump.

As far as the sewage pumps, we did one full replacement with new motor and one tear down and rehab. With the vacuum pumps, we did one new vacuum pump, two reconditioned pumps, and one new motor.

Brittney M. Willis, P.E.
Wakefield Development

Office: 757-463-5000 ext 3388 | Direct: 757-463-6026 | Mobile: 757-510-4234

From: Franklin, Mike <Mike.Franklin@psncuc.nc.gov>
Sent: Tuesday, October 5, 2021 9:50 AM
To: Brittney Willis <brittney@lmssi.com>
Cc: Grantmyre, William <william.grantmyre@psncuc.nc.gov>
Subject: Docket No. W-1130 Sub 8: Sandler Utilities at Mill Run, LLC - Eagle Creek Subdivision

Brittney, Good morning. I know you are busy dealing with the current issues at Eagle Creek. When you get a chance could you send me Sandler's response to the Attorney General's August 13, 2021 letter where they stated the July 21, 2021, Engineering Evaluation and the July 23, 2021, Consent Judgement Response provided by Sandler were insufficient.

Also, last Fall when there was the widespread system failure, as I recall Sandler replaced the sewage pumps and vacuum pumps. Can you tell me which pumps were replaced and specify whether it was the pump motor, the pump (i.e. impeller, shaft, etc.) and if the replacement was new or refurbished. Thanks!

Mike Franklin
Water, Sewer & Telephone Division - Public Staff
430 N. Salisbury Street, Suite 2074

4326 Mail Service Center
Raleigh, NC 27699-4300
Ph: (919) 715-2666

I/A

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JUN 22 2022

INDEX TO MORGAN EXHIBIT I

<u>Line No.</u>	<u>Title</u>	<u>Schedule Number</u>
1	ORIGINAL COST RATE BASE	1
2	CALCULATION OF PLANT IN SERVICE, ACCUMULATED	
3	DEPRECIATION AND DEPRECIATION EXPENSE	1-1(a) 1-1(b)

INDEX TO MORGAN EXHIBIT I - REVISED

Line No.	<u>Title</u>	<u>Schedule Number</u>
1	CALCULATION OF NET PLANT IN SERVICE	1
2	CALCULATION OF PURCHASE PRICE	2
3	CALCULATION OF PLANT IN SERVICE, ACCUMULATED DEPRECIATION AND AND DEPRECIATION EXPENSE - SUB 8 RATE CASE	3
4	CALCULATION OF PLANT IN SERVICE, ACCUMULATED DEPRECIATION AND AND DEPRECIATION EXPENSE - POST RATE CASE ADDITIONS	4

CURRITUCK WATER AND SEWER, LLC
Docket No. W-1333, Sub 0
CALCULATION OF NET PLANT IN SERVICE
As Of June 30, 2022

Public Staff
Morgan Exhibit I
Schedule 1
Revised

Line No.	Item	Amount Per Sub 8 Rate Case (a)	Additions Since Sub 8 Rate Case (b)	Total Net Plant In Service (c)	[6]
1	Plant in service	\$2,206,202 [1]	\$515,820 [4]	\$2,722,022	
2	Accumulated depreciation	(268,603) [2]	(\$91,041) [5]	(359,644)	
3	Contributions in aid of construction	(1,937,599) [3]	0	(1,937,599)	
4	Net plant in service (Sum of L1 thru L3)	<u>\$0</u>	<u>\$424,779</u>	<u>\$424,779</u>	

- [1] Morgan Exhibit I, Schedule 3, Column (a), Line 111.
[2] Morgan Exhibit I, Schedule 3, Column (f), Line 111.
[3] Morgan Exhibit I, Schedule 3, Column (a), Line 43.
[4] Morgan Exhibit I, Schedule 4, Column (a), Line 47.
[5] Morgan Exhibit I, Schedule 4, Column (f), Line 47.
[6] Column (a) + Column (b).

I/A

Docket Nos. W-1333, Sub 0 and W-1130, Sub 11

CURRITUCK WATER AND SEWER, LLC

Docket No. W-1333, Sub 0

CALCULATION OF PURCHASE PRICE

As Of June 30, 2022

Public Staff

Morgan Exhibit I

Schedule 2

Revised

Line No.	Item	Amount
1	Purchase price	<u>\$250,000</u> [1]
2	Post April 2021 plant additions	413,590 [2]
3	Post April 2021 plant additions accumulated depreciation	<u>(49,967)</u> [3]
4	Post April 2021 net plant in service (L2 + L3)	<u>363,623</u>
5	Total purchase price (L1 + L4)	<u><u>\$613,623</u></u>

[1] Per Asset Purchase Agreement.

[2] Morgan Exhibit I, Schedule 4, Column (a), Line 46.

[3] Morgan Exhibit I, Schedule 4, Column (f), Line 46.

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JUN 22 2022

CURRITUCK WATER AND SEWER, LLC
Docket No. W-1333, Sub 0
**CALCULATION OF PLANT IN SERVICE, ACCUMULATED
DEPRECIATION AND DEPRECIATION EXPENSE - SUB 8 RATE CASE**
As Of June 30, 2022

Public Staff
Morgan Exhibit I
Schedule 3
Revised

Line No.	Item	Plant In Service Per Public Staff (a)	Year Placed In Service (b)	Life (c)	Years in Service [2] (d)	Annual Depreciation [3] (e)	Accumulated Depreciation [4] (f)
Plant in service allowed in Sub 8 rate case proceeding:							
1	Installation: EQ pumps & Bar screen	\$13,000 [1]	2004 [1]	10	[1] 18.0	\$0	\$13,000
2	Replacement: 2 hp surge pump	5,301 [1]	2005 [1]	5	[1] 17.0	0	5,301
3	Replacement: Busch 0630 vacuum pump	10,687 [1]	2005 [1]	10	[1] 17.0	0	10,687
4	Noise reduction at plant	2,066 [1]	2005 [1]	5	[1] 17.0	0	2,066
5	Rewind Myers pump	874 [1]	2005 [1]	5	[1] 17.0	0	874
6	Rebuild 50 hp motor	1,176 [1]	2005 [1]	5	[1] 17.0	0	1,176
7	Repair: blower motor	1,969 [1]	2005 [1]	5	[1] 17.0	0	1,969
8	Replacement: relay, pressure switch fill cap	897 [1]	2006 [1]	5	[1] 16.0	0	897
9	Replacement: vacuum pump	13,458 [1]	2006 [1]	5	[1] 16.0	0	13,458
10	Repair: collapsed pit (labor)	3,000 [1]	2006 [1]	5	[1] 16.0	0	3,000
11	Replacement: surge pump at plant (labor)	330 [1]	2006 [1]	5	[1] 16.0	0	330
12	Replacement: motor and pulley	680 [1]	2006 [1]	5	[1] 16.0	0	680
13	3" rebuild kit and diaphragm	393 [1]	2006 [1]	5	[1] 16.0	0	393
14	77" valve pit flex hose & diaphragm	468 [1]	2006 [1]	5	[1] 16.0	0	468
15	Replacement: valves, controller and surge compressor	1,870 [1]	2006 [1]	5	[1] 16.0	0	1,870
16	Replacement: controllers	960 [1]	2006 [1]	5	[1] 16.0	0	960
17	Controller/Sensor	5,746 [1]	2006 [1]	5	[1] 16.0	0	5,746
18	Control relay	508 [1]	2006 [1]	5	[1] 16.0	0	508
19	Controller/Valve	793 [1]	2006 [1]	5	[1] 16.0	0	793
20	Pump tanks repair	10,572 [1]	2007 [1]	5	[1] 15.0	0	10,572
21	Motor removal & repair	720 [1]	2007 [1]	5	[1] 15.0	0	720
22	Motor repair	1,065 [1]	2007 [1]	5	[1] 15.0	0	1,065
23	Materials	2,607 [1]	2007 [1]	5	[1] 15.0	0	2,607
24	Motor repair	1,007 [1]	2007 [1]	5	[1] 15.0	0	1,007
25	Motor repair	869 [1]	2007 [1]	5	[1] 15.0	0	869
26	8" Milliken valve	1,813 [1]	2008 [1]	5	[1] 14.0	0	1,813
27	Repair: collapsed pit (102 Eagleton)	2,380 [1]	2008 [1]	5	[1] 14.0	0	2,380
28	Pump	903 [1]	2008 [1]	5	[1] 14.0	0	903
29	Valve replacement	1,323 [1]	2008 [1]	5	[1] 14.0	0	1,323
30	Replacement: collapsed pit (St. Andrews)	2,432 [1]	2008 [1]	5	[1] 14.0	0	2,432
31	Pain ing at wastewater treatment plant	1,992 [1]	2008 [1]	5	[1] 14.0	0	1,992
32	Pump	731 [1]	2008 [1]	5	[1] 14.0	0	731
33	Repair: collapsed pit (Greenview)	2,490 [1]	2008 [1]	5	[1] 14.0	0	2,490
34	Installation: rebuilt pit (Greenview)	1,923 [1]	2008 [1]	5	[1] 14.0	0	1,923
35	Motor	428 [1]	2008 [1]	5	[1] 14.0	0	428
36	Install 6 controller rebuild kits	540 [1]	2008 [1]	5	[1] 14.0	0	540

CURRITUCK WATER AND SEWER, LLC
Docket No. W-1333, Sub 0
**CALCULATION OF PLANT IN SERVICE, ACCUMULATED
DEPRECIATION AND DEPRECIATION EXPENSE - SUB 8 RATE CASE**
As Of June 30, 2022

Public Staff
Morgan Exhibit I
Schedule 3
Revised

Line No.	Item	Plant In Service Per Public Staff (a)	Year Placed In Service (b)	Life (c)	Years in Service (d) [2]	Annual Depreciation (e) [3]	Accumulated Depreciation (f) [4]
37	Replacement: controller valve	120 [1]	2008 [1]	5	14.0	0	120
38	Replacement: controller valve	120 [1]	2008 [1]	5	14.0	0	120
39	Replacement: controller valve & surge	120 [1]	2008 [1]	5	14.0	0	120
40	Replacement: 7 controllers & 5 valves	600 [1]	2008 [1]	5	14.0	0	600
41	Replacement: controller	120 [1]	2008 [1]	5	14.0	0	120
42	Replacement: pit and troubleshoot pit at Eagleton	4,911 [1]	2009 [1]	5	13.0	0	4,911
43	Fully contributed plant from W-1130, Sub 2 rate case proceeding	1,937,599 [1]				0	0
44	Rainbird stratus II irrigation computer	10,622 [1]	2009 [1]	5	13.0	0	10,622
45	Replace pit 266 Greenview Road	2,389 [1]	2009 [1]	5	13.0	0	2,389
46	Repair pits replace valves and controllers (Nov storm)	9,916 [1]	2009 [1]	5	13.0	0	9,916
47	Replace pit 252/254 Greeview Road	4,201 [1]	2010 [1]	5	12.0	0	4,201
48	Replace pit 197/199 Greenview Road	3,159 [1]	2010 [1]	5	12.0	0	3,159
49	Replace clarifier arm	614 [1]	2010 [1]	5	12.0	0	614
50	Replace blower motor	7,999 [1]	2010 [1]	5	12.0	0	7,999
51	Consulting fees on expansion of plant	4,195 [1]	2010 [1]	5	12.0	0	4,195
52	Replacement transformer on EQ panel	440 [1]	2010 [1]	5	12.0	0	440
53	Replace EQ panel	420 [1]	2010 [1]	5	12.0	0	420
54	Replace vacuum canister	708 [1]	2010 [1]	5	12.0	0	708
55	Replace skimmer motor	1,198 [1]	2010 [1]	5	12.0	0	1,198
56	Replace pit 266 Greenview Road	3,584 [1]	2010 [1]	5	12.0	0	3,584
57	Pond repair	7,600 [1]	2010 [1]	5	12.0	0	7,600
58	Backwash pump filter	439 [1]	2010 [1]	5	12.0	0	439
59	150 signs	2,700 [1]	2011 [1]	5	11.0	0	2,700
60	Electric blower motor	4,799 [1]	2011 [1]	5	11.0	0	4,799
61	Replace solenoid valve	1,303 [1]	2011 [1]	5	11.0	0	1,303
62	Rainbird rain watch system	3,170 [1]	2011 [1]	5	11.0	0	3,170
63	Bridge filter	1,228 [1]	2011 [1]	5	11.0	0	1,228
64	Replace EQ panel	1,610 [1]	2011 [1]	5	11.0	0	1,610
65	Hurricane Irene repairs	2,910 [1]	2011 [1]	5	11.0	0	2,910
66	Repair pit 220 Greenview Road	2,925 [1]	2011 [1]	5	11.0	0	2,925
67	Replace mud well pump	613 [1]	2011 [1]	5	11.0	0	613
68	Replace auto dialer	2,665 [1]	2011 [1]	5	11.0	0	2,665
69	Airvac pumps and valves	4,587 [1]	2011 [1]	5	11.0	0	4,587
70	Replace beaker blower #2	627 [1]	2012 [1]	5	10.0	0	627
71	Repair blower motor	420 [1]	2012 [1]	5	10.0	0	420
72	Replace mud well pump	939 [1]	2012 [1]	5	10.0	0	939
73	Replace mud well pump	939 [1]	2012 [1]	5	10.0	0	939

CURRITUCK WATER AND SEWER, LLC
Docket No. W-1333, Sub 0
**CALCULATION OF PLANT IN SERVICE, ACCUMULATED
DEPRECIATION AND DEPRECIATION EXPENSE - SUB 8 RATE CASE**
As Of June 30, 2022

Public Staff
Morgan Exhibit I
Schedule 3
Revised

Line No.	Item	Plant In Service Per Public Staff (a)	Year Placed In Service (b)	Life (c)	Years in Service [2] (d)	Annual Depreciation [3] (e)	Accumulated Depreciation [4] (f)
74	Repair pit 163 Eagleton	1,140 [1]	2012 [1]	5	10.0	0	1,140
75	Repair UV system	360 [1]	2012 [1]	5	10.0	0	360
76	Replacing bearing one blower #1	293 [1]	2012 [1]	5	10.0	0	293
77	Repair blower control	842 [1]	2012 [1]	5	10.0	0	842
78	Gravel driveway	1,630 [1]	2012 [1]	5	10.0	0	1,630
79	Controller rebuild	3,230 [1]	2012 [1]	5	10.0	0	3,230
80	Pump	1,823 [1]	2012 [1]	5	10.0	0	1,823
81	Replace Pit 282 GVR	1,831 [1]	2013 [1]	5	9.0	0	1,831
82	Rebuild starter	643 [1]	2013 [1]	5	9.0	0	643
83	Replace dich pump motor	3,201 [1]	2013 [1]	5	9.0	0	3,201
84	Replace rebuild EQ Pump	963 [1]	2013 [1]	5	9.0	0	963
85	Repair leak in main vacuum line	1,718 [1]	2013 [1]	5	9.0	0	1,718
86	Replace EQ pump at the WWTP	2,325 [1]	2013 [1]	5	9.0	0	2,325
87	Replace Controller Valve 259 GVR	600 [1]	2013 [1]	5	9.0	0	600
88	Unclog and reinstall diffusers	1,000 [1]	2013 [1]	5	9.0	0	1,000
89	Replace Pit 276 GVR	1,200 [1]	2013 [1]	5	9.0	0	1,200
90	Change out pump impellers	1,400 [1]	2013 [1]	5	9.0	0	1,400
91	Replace Pit 148 GVR	925 [1]	2013 [1]	5	9.0	0	925
92	Troubleshoot filter bridge and blower	1,251 [1]	2013 [1]	5	9.0	0	1,251
93	Repair 3" Vac Line 237 GVR	4,637 [1]	2013 [1]	5	9.0	0	4,637
94	Repair and reinstall washwater pump	969 [1]	2013 [1]	5	9.0	0	969
95	Testing equipment	3,997 [1]	2013 [1]	5	9.0	0	3,997
96	Testing equipment	834 [1]	2014 [1]	5	8.0	0	834
97	Replace controllers and valves at multiple locations	930 [1]	2014 [1]	5	8.0	0	930
98	Replace controllers and valves at multiple locations	1,380 [1]	2014 [1]	5	8.0	0	1,380
99	Replace bearing on blower	2,869 [1]	2014 [1]	5	8.0	0	2,869
100	Repair Dister Motor	1,407 [1]	2014 [1]	5	8.0	0	1,407
101	Replace starters on vacuum pumps	2,634 [1]	2014 [1]	5	8.0	0	2,634
102	Rebuild valve pit - elementary School	2,148 [1]	2014 [1]	5	8.0	0	2,148
103	Replace controllers and valves at multiple locations	1,170 [1]	2014 [1]	5	8.0	0	1,170
104	Replace tube filters in vacuum pumps	6,547 [1]	2014 [1]	5	8.0	0	6,547
105	Replace Pit 1129 Eagleton Circle	1,481 [1]	2014 [1]	5	8.0	0	1,481
106	Replace float in Clearwell, controllers and valves	882 [1]	2014 [1]	5	8.0	0	882
107	Repair UV racks at plant	753 [1]	2014 [1]	5	8.0	0	753
108	Replace controllers and valves at multiple locations	944 [1]	2014 [1]	5	8.0	0	944
109	System failure - replaced controllers and valves	4,960 [1]	2014 [1]	5	8.0	0	4,960
110	Rebuild vacuum pump material and labor	10,805 [1]	2015 [1]	5	7.0	0	10,805

CURRITUCK WATER AND SEWER, LLC
Docket No. W-1333, Sub 0
**CALCULATION OF PLANT IN SERVICE, ACCUMULATED
DEPRECIATION AND DEPRECIATION EXPENSE - SUB 8 RATE CASE**
As Of June 30, 2022

Public Staff
Morgan Exhibit I
Schedule 3
Revised

Line No.	Item	Plant In Service Per Public Staff (a)	Year Placed In Service (b)	Life (c)	Years in Service [2] (d)	Annual Depreciation [3] (e)	Accumulated Depreciation [4] (f)
111	Total plant in service since the last rate case (Sum of L1 thru L110)	<u>\$2,206,202</u>				<u>\$0</u>	<u>\$268,603</u>

[1] Based on prior rate case proceeding, Docket No. W-1130, Sub 8.

[2] Based on year placed in service using half year convention.

[3] Column (a) divided by Column (c), unless fully depreciated.

[4] Column (d) x Column (e), unless fully depreciated.

CURRITUCK WATER AND SEWER, LLC

Docket No. W-1333, Sub 0

**CALCULATION OF PLANT IN SERVICE, ACCUMULATED DEPRECIATION
AND DEPRECIATION EXPENSE - POST RATE CASE ADDITIONS**

As Of June 30, 2022

Public Staff

Morgan Exhibit I

Schedule 4

Revised

Line No.	Item	Plant In Service Per Public Staff [1] (a)	Year Placed In Service [1] (b)	Life [2] (c)	Years in Service [3] (d)	Annual Depreciation [4] (e)	Accumulated Depreciation [5] (f)
Plant additions since Sub 8 rate case proceeding							
1	Isolation valve installation	\$4,200	2016	7	6.0	\$600	\$3,600
2	Isolation valve installation	4,800	2016	7	6.0	686	4,116
3	UV System repair	6,392	2016	7	6.0	913	5,478
4	Gravel roadway to plant	2,381	2016	15	6.0	159	954
5	Grading and gravel entrance to plant	1,665	2016	15	6.0	111	666
6	Hurricane Matthew - 4 pits replacement	6,000	2016	10	6.0	600	3,600
7	EQ pump and cable replacement	2,061	2017	7	5.0	294	1,470
8	Back up motor for vac pumps	1,241	2017	7	5.0	177	885
9	Ditch pump repair	9,669	2018	7	4.0	1381	5,524
10	Replace Pit @ 304 GVR	2,566	2020	10	2.0	257	514
11	Controllers, labor, pumps & motor miscellaneous items	7,618	2020	7	2.0	1088	2,176
12	45 FloVac Controllers & Shipping	2,762	2020	7	2.0	395	790
13	Reconditioned HP vacuum pump & 1 Baldor 25HP motor	1,951	2020	7	2.0	279	558
14	New Cornell pump furnish and installation	7,008	2020	7	2.0	1001	2,002
15	HP motor	500	2020	7	2.0	71	142
16	Additional taxes due on invoices 4989/4990/4991	350	2020	7	2.0	50	100
17	30 New Controllers	6,363	2020	7	2.0	909	1,818
18	26 Controllers, 10 FloVac 3" valve piston type & parts/install	10,747	2020	7	2.0	1535	3,070
19	Sewer plant, pump renew and replace	855	2020	7	2.0	122	244
20	57 FloVac Controllers, 20 New & 37 Rebuilt	4,734	2020	7	2.0	676	1,352
21	Complete pits	8,808	2021	10	1.0	881	881
22	Engineering System - ditch motor	4,168	2021	7	1.0	595	595
23	E Haddock Enterprises - excavate pit for sewer tank	5,391	2021	10	1.0	539	539
24	Plant additions through April 2021 (Sum of L1 thru L23)	102,229				13,319	41,074
25	HP Ebara sewage pump	4,822	2021	7	1.0	689	689
26	Check valve furnish and installation	6,929	2021	7	1.0	990	990
27	Pole mount lock box for controllers	10,595	2021	10	1.0	1060	1,060
28	30 Flovac controllers	9,607	2021	7	1.0	1372	1,372
29	263 GVR - replace pit	4,830	2021	10	1.0	483	483
30	35 Flovac controllers	13,375	2021	7	1.0	1911	1,911
31	Remote mounting kits	23,952	2021	7	1.0	3422	3,422
32	Controllers, valves & rebuild service	21,777	2021	7	1.0	3111	3,111
33	Wireless monitoring system	32,025	2021	7	1.0	4575	4,575
34	Monitoring kit	1,586	2021	7	1.0	227	227
35	Filter kit for vacuum pit	1,601	2021	7	1.0	229	229
36	50 tons of rock driveway repair	10,350	2021	7	1.0	1479	1,479

CURRITUCK WATER AND SEWER, LLC
Docket No. W-1333, Sub 0
**CALCULATION OF PLANT IN SERVICE, ACCUMULATED DEPRECIATION
AND DEPRECIATION EXPENSE - POST RATE CASE ADDITIONS**
As Of June 30, 2022

Public Staff
Morgan Exhibit I
Schedule 4
Revised

Line No.	Item	Plant In Service Per Public Staff [1] (a)	Year Placed In Service [1] (b)	Life [2] (c)	Years in Service [3] (d)	Annual Depreciation [4] (e)	Accumulated Depreciation [5] (f)
37	Monitoring system	183,775	2022	10	1.0	18378	18,378
38	Remote Monitoring Kits 3rd Shipment of 56	21,937	2022	7	1.0	3134	3,134
39	Vacuum Pump	17,080	2022	7	1.0	2440	2,440
40	Ultrasonic Flowmeter	3,635	2022	7	1.0	519	519
41	26 Additional Pedestal Mounted Controllers	12,730	2022	7	1.0	1819	1,819
42	Exchange Vacuum Pump	19,371	2022	7	1.0	2767	2,767
43	Failed Pit Replacement	5,046	2022	10	1.0	505	505
44	Failed Pit Replacement	4,967	2022	10	1.0	497	497
45	Construct 3 Monitoring Wells & Submit Completion Report	3,600	2022	10	1.0	360	360
46	Post April 2021 plant additions (Sum of L25 thru L33)	413,590				49,967	49,967
47	Total plant in service since the last rate case (L24 + L46)	\$515,820				\$63,286	\$91,041

- [1] Per examination of Company's financial records.
[2] Provided by Public Staff Engineer Franklin.
[3] Based on year placed in service using half year convention.
[4] Column (a) divided by Column (c), unless fully depreciated.
[5] Column (d) x Column (e), unless fully depreciated.

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. W-1130, SUB 11
DOCKET NO. W-1333, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of
Application by Currituck Water and Sewer, LLC,)
4700 Homewood Court, Suite 108, Raleigh,)
North Carolina 27609, and Sandler Utilities at)
Mill Run, LLC, 448 Viking Drive, Suite 220,)
Virginia Beach, Virginia 23452, for Authority to)
Transfer the Sandler Utilities at Mill Run)
Wastewater System and Public Utility Franchise)
in Currituck County, North Carolina, and for)
Approval of Rates)

VERIFIED RESPONSE OF THE
PUBLIC STAFF TO REPORT
ON CUSTOMER COMMENTS
FROM PUBLIC HEARINGS BY
SANDLER UTILITIES AT MILL
RUN, LLC

NOW COMES THE PUBLIC STAFF by and through Christopher J. Ayers, Executive Director, and files this response to Sandler Utilities at Mill Run, LLC's (Sandler) Report on Customer Comments from Public Hearings Held on February 2, 2022 (Report on Customer Comments) filed with the North Carolina Utilities Commission on March 4, 2022.

Background

On November 18, 2021, the Commission filed an Order Scheduling Hearings, Establishing Discovery Guidelines, and Requiring Customer Notice. Ordering paragraph 4 states that Currituck Water and Sewer, LLC (Currituck) and Sandler are required to file, separately, verified reports addressing all customer service and service quality complaints expressed during the public witness hearing held on February 2, 2022, within 15 days of the conclusion of the public witness hearing. The Public Staff shall and other intervenors

may file a verified response and any comments to Currituck and Sandler's reports on or before February 24, 2022.

On February 17, 2022, the Commission filed an Order Granting Extension of Time to File Report, extending the deadline for Currituck and Sandler to file their reports to and including March 4, 2022. The order also provided that the Public Staff shall, and other intervenors may file a verified response and any comments to Currituck and Sandler's reports on or before March 11, 2022.

On March 4, 2022, Currituck and Sandler filed separate Reports on Customer Comments from the February 2, 2022 public hearing.

Purpose

The purpose of this response is to provide the results of the Public Staff's review of Sandler's report addressing customer testimony heard at two public hearings held on February 2, 2022, and the Public Staff's opinion of whether Sandler's response adequately addressed the customer service and service quality problems.

Overview of Public Hearings

The Eagle Creek wastewater utility system currently serves 420 residential and two non-residential customers. Eight customers, all residents of Eagle Creek subdivision, testified at the two virtual public hearings as follows:

1. Ms. Rhonda Klussmann, 151 Eagleton Circle
2. Ms. Gertrude Elder, 139 Green View Road
3. Mr. Gary Lickfeld, 220 Green View Road
4. Ms. Tammy Green, 186 Green View Road

5. Mr. Gregory Ewan, 198 Green View Road
6. Ms. Susan Powers, 251 Green View Road
7. Mr. David Shephard, 173 Saint Andrews Road
8. Mr. James Hutson, 254 Green View Road

Comments Regarding Individual Customer Responses of Sandler

The Report on Customer Comments identified improvements made by Sandler to the Eagle Creek wastewater utility system since approximately August 2020. However, it was silent on identifying that several of the improvements were required by the State of North Carolina, *ex rel.*, North Carolina Department of Environmental Quality (Plaintiff) versus Sandler Utilities at Mill Run, LLC (Defendant) Consent Judgment (Consent Judgment), filed with Currituck County Superior Court on July 1, 2021 and the Amended Consent Judgment filed with Currituck County Superior Court on December 28, 2021 (Amended Consent Judgment). Additionally, the Report on Customer Comments failed to address customer testimony describing neglect by Sandler of the Eagle Creek wastewater utility system since the last general rate case in 2015. Customer hearing testimony identifying these areas are as follows:

1. Ms. Rhonda Klusmann, 151 Eagleton Circle, Tr. Vol. 1, pp. 13 - 27

Ms. Klusmann testified during the public hearing that Sandler failed to fund necessary upgrades and repairs until criminal charges were imminent.

Sandler's Report on Customer Comments does not address this specific statement made by Ms. Klusmann. The Report on Customer Comments provides actions Sandler has taken since approximately August 2020 to address the Eagle Creek wastewater utility system service issues.

2. Mr. Gary Lickfeld, 220 Green View Road, Tr. Vol. 1, pp. 32 - 54

Mr. Lickfeld testified that when Envirolink became the Eagle Creek wastewater utility system operator, the wastewater system was non-operational due to Sander's negligence. Additionally, Mr. Lickfeld testified that the operator's technicians would identify "ideas and things they wanted to do" but Sandler would not provide the funding to implement the technician recommendations.

Sandler's Report on Customer Comments did not specifically address Mr. Lickfeld's identified testimony. Instead, the report restated the investment Sandler has made in Eagle Creek wastewater utility system upgrades since 2020.

3. Ms. Tammy Green, 186 Green View Road, Tr. Vol. 1, pp. 54 - 64

Ms. Tammy Green testified that the Eagle Creek community experienced a rate increase in 2015 that provided no return on investment and neglect of the Eagle Creek wastewater utility system.

Sandler's Report on Customer Comments did not address Ms. Green's testimony on the neglect of the Eagle Creek wastewater utility system since the last rate case. The Report on Customer Comments provided the improvement Sandler has made since 2020.

4. Mr. David Shepheard, 173 Saint Andrews Road, Tr. Vol. 2, pp. 38 – 59

Mr. Shepheard stated in his testimony that Sandler did not provide funding to Eagle Creek wastewater utility system to allow the vendor-recommended maintenance to be performed. Mr. Shepheard cited the Airvac and Flovac site survey reports from late 2020 that indicated oil had not been changed in the wastewater vacuum collection system pumps and the vacuum pump filter screens were totally clogged. Mr. Shepheard further testified that he does not believe Sandler collected enough money through rates to

maintain the Eagle Creek wastewater utility system. Mr. Shepherd stated in his testimony that preventive maintenance to rebuild controllers and vacuum valves prior to failure was not performed. Instead, these components were only rebuilt or replaced when they failed.

The Report on Customer Comments did not address any of the identified items provided in Mr. Shepherd's testimony.

There was additional testimony provided by these and other customers on the large amount of failures of the Eagle Creek wastewater utility system since September 2020. The Report on Customer Comments addressed the testimonies by identifying improvements made to the Eagle Creek wastewater utility system since approximately August 2020.

Closing Comments

The Report on Customer Comments was silent on identifying that several of the improvements made to the Eagle Creek wastewater utility system were required by the Consent Judgment and Amended Consent Judgment. Additionally, the Report on Customer Comments did not address customer comments on neglect by Sandler of the Eagle Creek wastewater utility system since the last rate case in 2015. Due to this omission, the Public Staff recommends that the Commission require Sandler to file a supplement to its Report on Customer Comments, on or before March 22, 2022, addressing the period of 2015 through August 2020.

The Public Staff respectfully requests that the foregoing verified response be entered into evidence in the present dockets.

This the 11th day of March, 2022.

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PUBLIC STAFF
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Executive Director

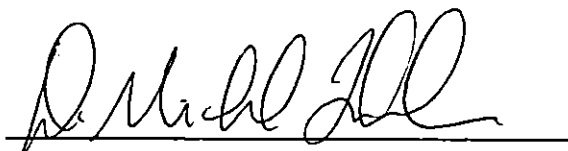
Dianna W. Downey
Chief Counsel

Electronically submitted
/s/ Gina C. Holt
Staff Attorney

VERIFICATION

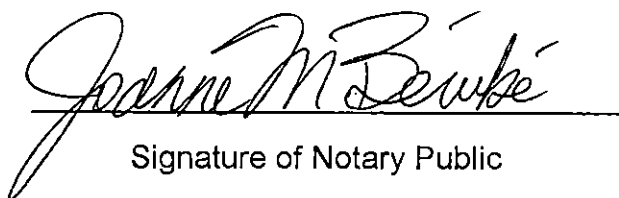
STATE OF NORTH CAROLINA)
)
 COUNTY OF WAKE)

D. Michael Franklin, first being duly sworn, deposes and says that he is a Public Utilities Engineer with the Water, Sewer, and Telephone Division, Public Staff – North Carolina Utilities Commission and has read the foregoing Response of the Public Staff to the Report on Customer Comments from Public Hearings by Sandler Utilities at Mill Run, LLC, and knows the contents thereof; that the same is true of his own knowledge, except as to those matters stated therein on information and belief, and as to those, he believes them to be true.

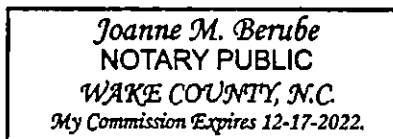


D. Michael Franklin

Sworn to and subscribed before me,
 this 11th day of March, 2022.



Signature of Notary Public



JOANNE M. BERUBE

Name of Notary Public – Typed or Printed

My Commission Expires: 12/17/22

CERTIFICATE OF SERVICE

I certify that I have this day served a copy of the foregoing Verified Response on all parties of record in accordance with Commission Rule R1-39, by electronic delivery upon agreement of the receiving party.

This, the 11th day of March 2022.

Electronically submitted
/s/ Gina C. Holt

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. W-1130, SUB 11
DOCKET NO. W-1333, SUB 0

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

<p>In the Matter of Application by Currituck Water and Sewer, LLC,) 4700 Homewood Court, Suite 108, Raleigh,) North Carolina 27609, and Sandler Utilities at) Mill Run, LLC, 448 Viking Drive, Suite 220,) Virginia Beach, Virginia 23452, for Authority to) Transfer the Sandler Utilities at Mill Run) Wastewater System and Public Utility Franchise) in Currituck County, North Carolina, and for) Approval of Rates)</p>	<p>VERIFIED RESPONSE OF THE PUBLIC STAFF TO REPORT ON CUSTOMER COMMENTS FROM PUBLIC HEARINGS BY CURRITUCK WATER AND SEWER, LLC</p>
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NOW COMES THE PUBLIC STAFF by and through Christopher J. Ayers, Executive Director, and files this response to Currituck Water and Sewer, LLC's (Currituck) Report on Customer Comments from Public Hearings Held on February 2, 2022 (Report on Customer Comments) filed with the North Carolina Utilities Commission on March 4, 2022.

Background

On November 18, 2021, the Commission filed an Order Scheduling Hearings, Establishing Discovery Guidelines, and Requiring Customer Notice. Ordering paragraph 4 states that Currituck and Sandler Utilities at Mill Run, LLC (Sandler) are required to file separately, verified reports addressing all customer service and service quality complaints expressed during the public witness hearing held on February 2, 2022, within 15 days of the conclusion of the public witness hearing. The Public Staff shall and other intervenors may file a verified response and any comments to Currituck and Sandler's reports on or

before February 24, 2022.

On February 17, 2022, the Commission filed an Order Granting Extension of Time to File Report, extending the deadline for Currituck and Sandler to file their reports to and including March 4, 2022. The order also provided that the Public Staff shall, and other intervenors may file a verified response and any comments to Currituck's and Sandler's reports on or before March 11, 2022.

On March 4, 2022, Currituck and Sandler filed separate Reports on Customer Comments from the February 2, 2022 Public Hearing.

Purpose

The purpose of this response is to provide the results of the Public Staff's review of Currituck's report addressing customer testimony heard at two public hearings held on February 2, 2022, and the Public Staff's opinion of whether Currituck's response adequately addressed the customer service and service quality complaints.

Overview of Public Hearings

The Eagle Creek wastewater utility system currently serves 420 residential and two non-residential customers. Eight customers, all residents of Eagle Creek subdivision, testified at the two virtual public hearings as follows:

1. Ms. Rhonda Klusmann, 151 Eagleton Circle
2. Ms. Gertrude Elder, 139 Green View Road
3. Mr. Gary Lickfeld, 220 Green View Road
4. Ms. Tammy Green, 186 Green View Road
5. Mr. Gregory Ewan, 198 Green View Road

6. Ms. Susan Powers, 251 Green View Road
7. Mr. David Shephard, 173 Saint Andrews Road
8. Mr. James Hutson, 254 Green View Road

Overview Comments of the Public Staff

The Report on Customer Comments (Report) filed by Currituck inadequately focuses on and addresses “all customer service and service quality complaints expressed during the public witness hearing held on February 2, 2022.” Instead, Currituck has filed a response that is closer to rebuttal testimony on behalf of Envirolink, Inc. (Envirolink), an unregulated full-service water, wastewater, and public works management services company that is not a party to this proceeding. Additionally, Currituck’s Report (1) questions the experiences and intentions of customers, (2) casts aspersions against the Public Staff, DEQ, and the Commission, and (3) asserts the need to replace the Eagle Creek wastewater collection system instead of repairing the current vacuum collection system. The separation, or lack thereof, between Currituck and Envirolink is blurred by these “responses.” In its Report, Currituck asserts reasons Envirolink should not bear any responsibility for the Eagle Creek wastewater utility operational issues that have occurred since September 2020. The reasons Currituck provided regarding why Envirolink is not responsible include:

1. “[T]here is documented evidence dating back to 2010, from third party wastewater professionals, that the Eagle Creek vacuum and wastewater system was not being properly operated, maintained or managed.”

2. “[T]here is additional evidence that both the Commission, the Public Staff and the North Carolina Department of Environmental Quality knew or should have known of the condition of the Eagle Creek wastewater system.”
3. “[T]he frequency of service interruptions (prior to Envirolink taking over Operations) were more frequent than that described by some of the memory of some of the witnesses.”
4. “[P]rior to the catastrophic failure of September 2020, Envirolink staff had assumed operation for less than 25 days, Envirolink does not agree that it is responsible for a lack of maintenance or the deteriorated condition of the wastewater treatment plant, vacuum station or service pits in the community.”
5. “Specifically, regarding the disruptions experienced from the installation of the force main serving the Fost development were the results of mismarked utility lines and the locator for which Dominion Energy has taken responsibility. Dominion freely admitted this error. In addition, to the disruption of electrical service, the irrigation system was damaged during construction. This was a result of mismarked lines by the Golf Course owner.”
6. “The reality is that the condition of the system documented in these reports (Airvac and Flovac site surveys) is the result of years of poor operation, maintenance, management and oversight by Envirotech, Sandler, NC DEQ and NC Public Staff.”

7. “Envirolink has experienced difficulties beyond its own control in communicating with consumers in the Eagle Creek community.”

Currituck claims Envirolink employees did not start operating the system until 25 days prior to the catastrophic failure in September 2020, despite the undisputed fact that Envirolink purchased Enviro-Tech in the spring of 2020. Furthermore, Currituck has not provided evidence that Envirolink made any recommendations to Sandler to purchase or replace the wastewater treatment or vacuum collection system equipment, despite claiming historically improper maintenance and the existing equipment being in a degraded state. Therefore, Envirolink owned Enviro-Tech and was operating the system for over six months prior to the catastrophic failure.

The Report fails to acknowledge Envirolink’s, and by association Currituck’s, responsibility for the operational and communication issues of the Eagle Creek wastewater utility system, which significantly worsened coincidentally when Envirolink acquired Enviro-Tech and took over operations, as identified during the customer hearing, notwithstanding the following:

- (1) As stated in the Report, Envirolink acquired Enviro-Tech in the spring of 2020. Envirolink took or obtained photographs of the Eagle Creek wastewater utility system in August 2020 showing the “wastewater system in a state of serious deterioration”. The Report on Customer Comments does not provide actions taken by Envirolink or communications Envirolink had with Sandler to address the wastewater system deteriorated conditions.
- (2) As stated in the Report, Envirolink acquired Enviro-Tech in the spring of 2020 with Envirolink staff taking over operation of the Eagle Creek

wastewater utility system on September 7, 2020. The Report on Customer Comments further states that in the September 30, 2020 Airvac Site Survey, Airvac stated the “current operators have no experience with vacuum technology systems.” The Report on Customer Comments does not address what actions Envirolink took to train personnel on vacuum technology from the time Enviro-Tech was purchased to when Envirolink took over operation of the wastewater system. Especially since Envirolink knew of the deteriorated state of the wastewater system and the unique design of a wastewater vacuum collection system.

- (3) The Report states the Envirolink staff began operating the Eagle Creek wastewater utility system on September 7, 2020. The Report emphasizes the number of days that Envirolink was the Operator of the Eagle Creek wastewater utility system when site surveys performed by Airvac and Flovac were issued identifying areas of concern with the Eagle Creek wastewater utility system. Site surveys include the September 30, 2020 Airvac Site Survey, the October 7, 2020 Flovac Survey, the October 30, 2020 Airvac Site Survey, and the November 20, 2020 Flovac Site Survey. The Report on Customer Comments fails to identify any proactive actions taken by Envirolink since purchasing Enviro-Tech in the spring of 2020, to address any of the areas of concern prior to being identified by Airvac and/or Flovac site surveys.

Comments Regarding Individual Customer Responses of Currituck

The Report either fails to address or denigrates specific customer testimony made

during the public hearing. Specifically, the Report failed to adequately address the lack of timely communications to customers, lack of trust and confidence in Envirolink and Currituck, and the catastrophic nature of recent system-wide failures. Customer hearing testimony identifying these areas are as follows:

1. Ms. Rhonda Klussmann –151 Eagleton Circle, Tr. Vol. 1, pp. 13 - 27

Ms. Klussmann testified during the public hearing that Envirolink has failed to adequately respond to service issues and communicate system status in a timely manner until forced to do so by a court order issued in December 2021. Ms. Klussmann further stated that she has no confidence in Mr. Michael Myers because he has demonstrated repeatedly, based upon the service disruptions she has experienced, and his lack of communication, that he is not necessarily interested in providing customer service.

Currituck's Report addressed Ms. Klussmann's concerns of timely communication by stating, "Envirolink has experienced difficulties beyond its own control in communicating with consumers" in Eagle Creek. Currituck's Report did not address Ms. Klussmann's lack of confidence in Mr. Myers.

2. Ms. Gertrude Elder, 139 Green View Road, Tr. Vol. 1, pp. 27 - 32

Ms. Elder testified that her main concern is that she finds Mr. Myers, Envirolink and Currituck completely untrustworthy and their words meaningless. Ms. Elder also stated that prior to Envirolink taking over operation of the Eagle Creek wastewater utility system she only experienced wastewater service problems occasionally and that it was never catastrophic.

Currituck's Report, however, did not address Ms. Elder's concerns of Currituck's trustworthiness. Regarding the occasional wastewater system issues and lack of catastrophic failures, Currituck regarded this statement as being inaccurate.

3. Ms. Tammy Green, 186 Green View Road, Tr. Vol. 1, pp. 54 - 64

Ms. Tammy Green testified that she has not experienced any major, catastrophic events with the wastewater utility system being out of service for days until September 2020. Ms. Green further stated that the trust between Eagle Creek subdivision and Sandler, Envirolink and Mr. Michael Myers is broken. Ms. Green added that not until the December 20, 2021 hearing in Elizabeth City had communication from Envirolink improved.

Currituck's Report regarded the statement of a lack of a major catastrophic service event as inaccurate. Furthermore, the Report states that Ms. Green's testimony conflicts with other testimony that purports that Envirolink was not communicating. The Report did not address Ms. Green's lack of trust in Envirolink.

4. Mr. Gregory Ewan, 198 Green View Road, Tr. Vol. 2, pp.12 - 21

Mr. Ewan testified that in terms of responsiveness, Envirolink's communication with the neighborhood has been very poor until recently when in December 2021, residents began receiving daily updates. Mr. Ewan further testified that he had personally sent messages to Envirolink's customer service when notices have been issued regarding a service disruption. Mr. Ewan stated he did not remember receiving a reply to any of the messages sent to Envirolink's customer service. Furthermore, Mr. Ewan testified that when he has spoken to Envirolink technicians working in the Eagle Creek subdivision, he

has been told by the technicians that they were newly hired and inexperienced, and were not able to answer whether or not Mr. Ewan needed to conserve water.

Mr. Ewan also testified that he has a lack of confidence in Currituck's ability, knowing of their relationship with Envirolink, to properly manage and maintain a wastewater utility system. Mr. Ewan further testified that the maintenance (Operations) contract should be held by a party that understands the Eagle Creek wastewater utility system and knows how to maintain it as the prior operator, Enviro-Tech, was able to, stating that he was not aware there was ever any issues with the wastewater system prior to September of 2020.

Currituck's Report did not address Mr. Ewan's testimony regarding Envirolink's failure to respond to messages Mr. Ewan sent to Envirolink's customer service. Nor did the Report address Mr. Ewan's lack of confidence in Currituck.

5. Ms. Susan Powers, 251 Green View Road, Tr. Vol. 2, pp. 21 - 37 t

Ms. Powers testified as to the Eagle Creek wastewater utility system being down for four days and Envirolink denied the system was down. This despite "so many people posting on Facebook that they were having (wastewater utility service) issues."

Currituck's Report on Customer Comments did not specifically address the wastewater system status discrepancy identified by Ms. Powers. The Report on Customer Comments states Envirolink does not dispute that initial communication procedures proved ineffective but has since been modified and increased communication efforts. It is unclear if Currituck included the wastewater system status discrepancy in their response.

6. Mr. David Shepheard, 173 Saint Andrews Road, Tr. Vol. 2, pp. 38 – 59

Mr. Shepherd stated in his testimony that when Envirolink took over operation of the Eagle Creek wastewater utility system, for a significant duration, Envirolink did not have trained personnel to properly analyze and logically determine what the wastewater system problem was and how to repair it. Mr. Shepherd also testified that the Eagle Creek wastewater utility system went through a significant period where the slow response time of Envirolink technicians exacerbated problems experienced with the wastewater vacuum collection system.

In response to Mr. Shepherd's testimony, the Report o states the restoration efforts performed during the significant wastewater system outage in September 2020 "were not the result of not having qualified personnel." The Report on Customer Comments provides information contained in site surveys performed by Airvac and Flovac. The Report provides the findings from the September 30, 2020, Airvac site survey, which states, "The current operators have no experience with vacuum technology systems." Additionally, the November 30, 2020, Flovac site survey states, "The assistant operators lacked technical experience with vacuum sewer systems and wastewater collection in general." Thus, while the Envirolink technicians may have been "qualified", in general they lacked the necessary experience and expertise required to be effective in maintaining and restoring the Eagle Creek wastewater vacuum collection system.

Closing Comments

The Public Staff considers Currituck's Report on Customer Comments deficient in "addressing all customer service and service quality complaints expressed during the public witness hearing held on February 2, 2022." Instead of providing how the potential transfer to Currituck would be in the public interest and the public convenience and

necessity and the actions planned or being taken to address customer's concerns, Currituck presents its rationale for replacing the Eagle Creek wastewater vacuum collection system by selectively emphasizing customer testimony that Currituck contends supports its plan.

The Public Staff respectfully requests that the foregoing verified response be entered into evidence in the present dockets.

This the 11th day of March, 2022.

PUBLIC STAFF
Christopher J. Ayers
Executive Director

Dianna W. Downey
Chief Counsel

Electronically submitted
/s/ Gina C. Holt
Staff Attorney

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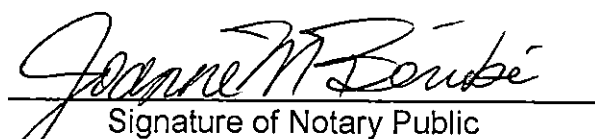
VERIFICATION

STATE OF NORTH CAROLINA)
)
 COUNTY OF WAKE)

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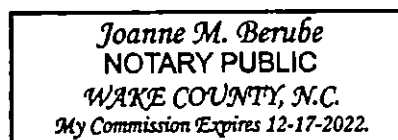

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 Signature of Notary Public

JOANNE M. BERUBE
 Name of Notary Public – Typed or Printed

My Commission Expires: 12/17/2022



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/s/ Gina C. Holt