

To: Lewes Board of Public Works

From: Thomas S Panetta

Date: 18 February 2021

Subject: Status Update on Root Cause Report December 2019 WWTF Failure and Discharge Corrective Action

This memo is to document the current status of the Corrective Actions that were put in place as a result of the December 2019 Failure.

Below are the Corrective Actions from the subject report. The status of each item is listed in each section.

Corrective Actions

1. Replace all four trains of filter membranes

Status: Two trains have been installed and the remaining two have been ordered and will be installed by no later than the beginning of May 2020 in advance of the Memorial Day weekend

Status January 2021- Closed, All four trains have been replaced and were placed in-service in May 2020.

2. Reset Turbidity set-point to Manufacture recommended setting

Status: Complete as of 13 February 2020

Status January 2021- Closed

3. Replace all four Turbidity monitors with new models that have additional functionality, including the ability to alarm on loss of flow.

Status: Complete as of 13 February 2020

Status January 2021- Closed

4. Have the BPW consulting engineers and BPW staff perform Quarterly WWTF walk through to evaluate the field condition, maintenance records, compliance records and the operation and maintenance of the WWTF.

Status: Contract was awarded in February 2020 and the first walk through was performed on 14 February 2020

Status January 2021- Closed, ongoing and is part of routine operational rhythm.

5. Review and update the plant Operation and Maintenance Manual to ensure that the current plant configuration is captured, including other updates such as Suez's recommendation on chemical and mechanical cleaning

Status: In-process, estimated to be complete 1 May 2020

Status January 2021- Closed, was completed with installation of new membranes

6. Issue Contract with Suez to remotely collect data (Insight-Pro) and provide cloud-based access to the data for BPW and plant operator. Suez will monitor and trend data, provide bi-weekly reporting and cleaning recommendations. Suez will provide an annual summary report.

Status: In-process, to be completed by 1 May 2020

Status January 2021- Closed, was completed with installation of new membranes.

Reports are reviewed by Operator and at the monthly BPW Board Meetings

7. Perform an engineering analysis of the entire plant to identify ways to improve redundancy and reliability of the plant, including:
 - a. Review current screen design to determine if there is a way to remove more of the "soft and spongy" material to reduce filter fouling
 - b. Potential for splitting the four filter trains to have them operate in a redundant parallel configuration
 - c. Configuration of turbidity meters to provide better protection against use of dirty water during back flush cycle

Status: To be completed by 31 June 2020

Status January 2021-A task force of GMB, BPW and input from others experts has completed a review of the WWTF plant. This covered both the failure in Dec 2019 and the spill in August 2020. A list of improvements has been developed and added to the Project list maintained by the GM for tracking and closeout.

8. WMES to establish an improvement program for monitoring of plant performance to be evaluated and accepted by BPW. The Corrective Actions contained in the WMES report are not detailed enough to provide assurance to BPW that the plant is being operated to industry Best Practices

Status: WMES to provide a schedule in their April 2020 report

Status January 2021- Closed, WMES has been replaced with Inframark, Inframark has been given a copy of the Root Cause Failure report and has incorporated the Lessons Learned into the operating procedures and rhythm.

9. Improve reporting requirements from WMES to BPW for:
 - a. Off-normal conditions at the plant
 - b. Discharges outside of Permit limits
 - c. OSHA accidents
 - d. Details included in monthly reports (to include trending of performance data, trending of equipment failures, preventative maintenance required, suggested capital improvements and other concerns)
 - e. WMES to present their report at the monthly BPW meeting
 - f. Require, as per the contract, a detailed yearly reporting on the operation of the plant to include the items listed in a. through d. above

Status: To start with April 2020 report

Status January 2021- Closed, WMES has been replaced with Inframark. Inframark has been given a copy of the Root Cause report and has incorporated the Corrective Actions into the operating procedures and rhythm. BPW and GMB continue to monitor the performance of the plant as outlined in Corrective Action #4, 10, 11

10. BPW staff to strengthen its oversight of Operators performance
 - a. Through the review of trending data in monthly and annual reports
 - b. Schedule routine plant walk through with plant WMES management
 - c. Annual review of WMES Policies and Procedures
 - d. Reporting to the BPW Board of condition of the plant
 - e. Developing of an open Item tracking system

Status: Starting with April 2020 report

Status January 2021- Closed, ongoing and is part of routine operational rhythm. An Open Item tracking system has been developed using Microsoft Projects which will be kept up-to-date by the GM.

11. BPW Board of Directors to review its oversight function of the operation of the BPW.
 - a. Continue to use outside subject matter experts such as Sargent and Lundy, Suez, GMB, etc. to provide the Board with guidance on the condition of the BPW systems
 - b. Perform audit by a sub-group of the Board of the BPW operation and management systems

Status: To be completed annually, Schedule to be determined and added to tracking list that will be developed in Corrective Action 10. e.

Status January 2021- The electrical SWM and WWTF have been reviewed by third party consultants. BPW is currently having a third-party review done on the condition of the water distribution system.

Items that have been identified for replacement/refurbishment have been added to the rolling 10-year Capital budget

12. WMES to develop plans for operating plant in off-normal conditions. BPW provided WMES with a Best Practices template and copy of the prior operating company plan. This should include, but not be limited to:
- Loss of filter membrane
 - Digesters
 - Other critical equipment
 - Loss of Power
 - Storm response
 - Security Breach
 - Terrorist/cyber terrorist attack

Status: WMES to provide BPW with a schedule in March Report

Status January 2021- Closed, WMES has been replaced with Inframark, Inframark has developed its own more comprehensive off-normal operating procedures, which have been reviewed and accepted by the BPW.

13. BPW to look at other areas of its operation to determine if there are generic implications from the failure at the WWTF
- Evaluate the operation of the Water Department, electrical department and other areas of BPW operation to determine where improvements in Management practices are needed.

Status: In process – Sargent & Lundy is currently performing a review of the BPW electrical system and will provide input to BPW for future capital projects and areas of improvement. Review quarterly at monthly BPW meeting

Status January 2021- Closed, see Corrective Action #11

14. Require all WMES operational staff to have appropriate training by Suez on the proper operation and maintenance of the filters and plant

Status: WMES to provide schedule in their April 2020 report

Status January 2021- WMES has been replaced with Inframark, Inframark employee have completed training as-of 8 January 2021 along with the inspection of the filters by Suez.

15. WMES to review its safety manual to verify they are complying with the appropriate CDC guidelines and industry best practices for sanitary conditions. Post the appropriate areas of the plant as no-smoking/no-eating

Status: In-process, need commitment date from WMES in their March 2020 report

Status January 2021- WMES had placed the appropriate Postings throughout the plant as verified by walkdowns by third part safety experts. WMES has been replaced with Inframark, Inframark Safety Manual has been reviewed by BPW's consulting engineer and the safety practices are part of the quarterly plant walkdowns.

16. WMES to review its safety practices and plant conditions to determine what changes may be required. Note: The Temporary cabling that was installed to protect employees appears to create other safety concerns.

Status: Need commitment date from WMES in their March 2020 report

Status January 2021- The temporary safety cabling has been replaced. The unintended safety concerns have been eliminated. WMES has been replaced with Inframark, See Corrective Action #15 for closure

17. BPW to audit WMES safety procedures and practices to included:

- a. Lock-out/Tag-out of equipment
- b. Confined entry permit
- c. Personal Protective Equipment
- d. General Housekeeping
- e. Chemical control and handling

Status: To be completed prior to work starting in April 2020 when new filters are installed

Status January 2021- WMES has been replaced with Inframark, Initial review completed and quarterly reviews are performed by BPW consulting engineer. Inframark reports are submitted to the BPW and reviewed as part of the routine monthly BPW Board Meeting.

18. WMES to provide a monthly update on its Corrective Actions to BPW

Status: to start with March monthly report

Status January 2021- Closed, WMES has been replaced with Inframark. Inframark has been given a copy of the Root Cause Failure report and has incorporated the Lessons Learned and Corrective Actions into the operating procedures and rhythm.

19. BPW Staff to provide an update on the status of the above Corrective Actions at routine monthly BPW meetings. This will be part of the standing agenda for the meetings

Status: Starting at the March 2020 meeting

Status January 2021- The applicable BPW Corrective Actions have been added to the BPW Open items list. The monthly reports from Inframark and Suez provide much better granularity to the operation of the WWTF and are reviewed at the monthly BPW meeting