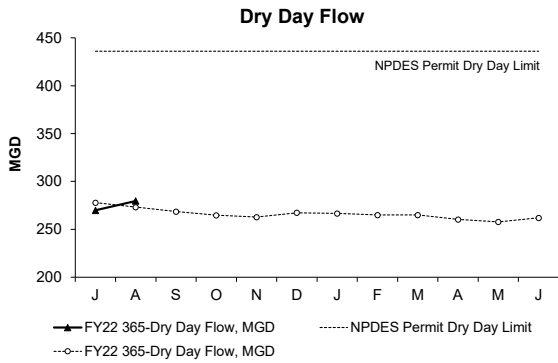
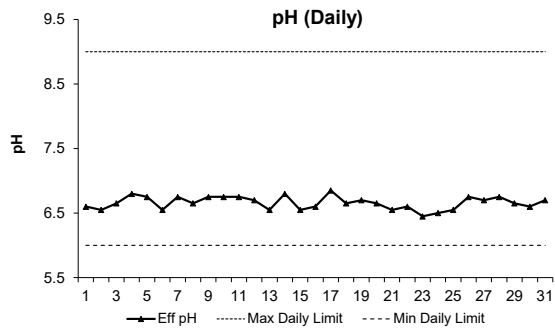


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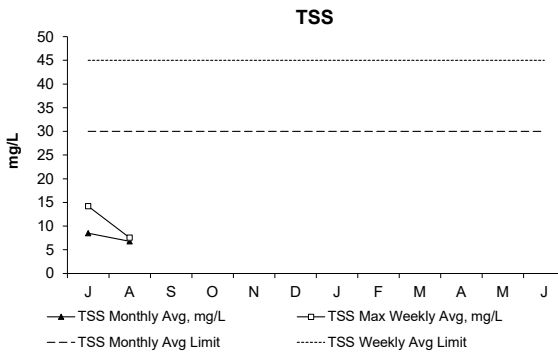


August's Dry Day Flow is the average of all dry weather influent flows over the previous 365 days from 9/1/2020 to 8/31/2021. The Dry Day Flow for the month was 279.6 MGD, well below the permit limit of 436 MGD.



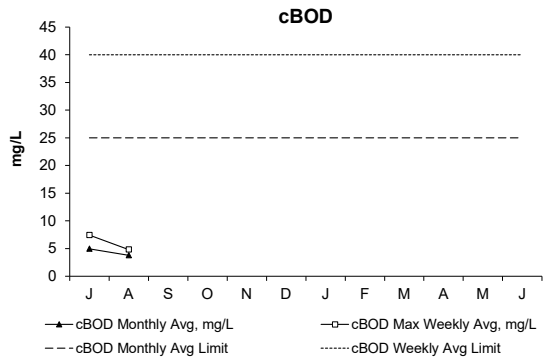
In August, all pH measurements were fairly typical for the season and within permit limits.

pH is a measure of the acidity or basicity of the effluent. Small fluctuations in pH do not have an adverse effect on marine environments. Because pure oxygen is used in the activated sludge reactors, the effluent pH tends to be at the lower range.



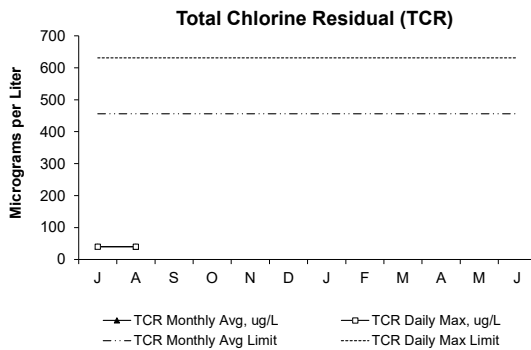
In August, both the weekly and monthly concentrations of TSS were below permit limits.

TSS, or Total Suspended Solids, in the effluent is a measure of the amount of solids that remain suspended after treatment.



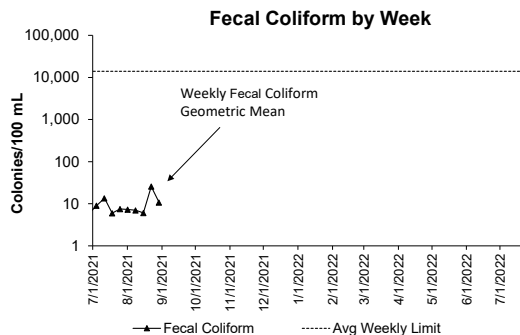
In August, both the weekly and monthly concentrations of cBOD were well below permit limits.

cBOD, or Carbonaceous Biochemical Oxygen Demand, is a measure of the amount of dissolved oxygen required for the decomposition of organic materials in the environment.



In August, both the maximum daily and monthly concentrations of TCR were below permit limits. The TCR Monthly Avg and the TCR Daily Max values were non-detectable at 40 ug/L for July and August. Therefore, both parameters appear to be represented by the same trendline in the above graph.

TCR, or Total Chlorine Residual, in the effluent is a measure of the amount of chlorine that remains after the disinfection/dechlorination process. If the chlorine residual in the effluent is too high, it may threaten marine organisms.

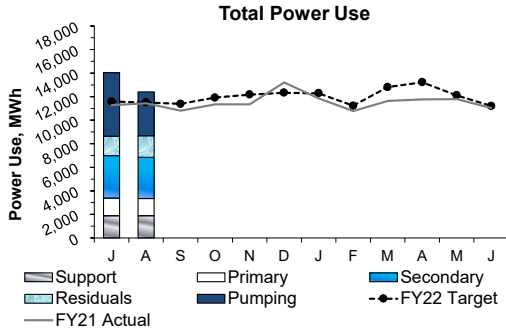


In August, all permit conditions for Fecal Coliform were met. Fecal Coliform is an indicator for the possible presence of pathogens. The levels of these bacteria after disinfection show how effectively the plant is inactivating many forms of disease-causing microorganisms.

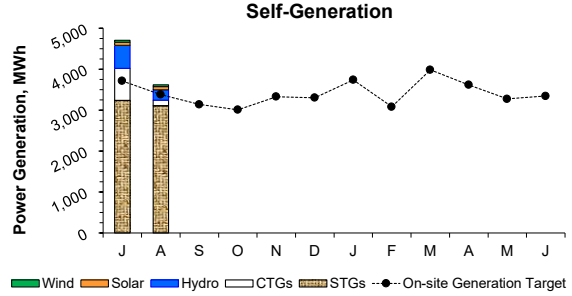
There are four (4) conditions in the permit that must be met: daily geomean; weekly geomean; 10% of all samples in a month; and greater than three (3) consecutive samples not to exceed 14,000 colonies/100mL.

Deer Island Operations

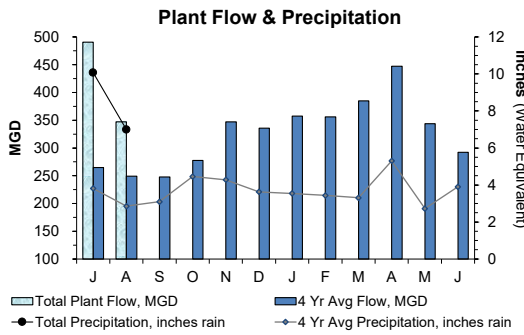
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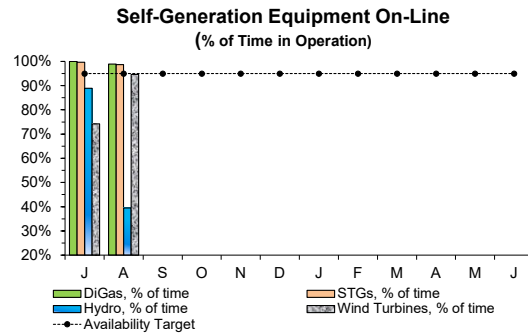
Total plant power usage for this period was 7.8% above target. Plant flow for this period was 39.2% above target with historical data (4 yr avg) used to generate the electricity model, as August precipitation was 2.5 times the target (2.86 inches expected vs. 7.0 inches actual). The region experienced the fourth highest rainfall on record for the combined months of June, July, and August resulting in higher sustained plant flows. As a result, power usage in most areas was above target. Power used for raw wastewater pumping was 37.6% above target, with 35.4% higher energy usage for pumping the North System flows and 45.5% higher usage for pumping the South System flows.



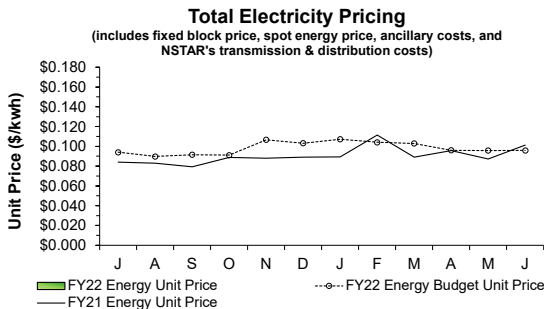
Overall total on-site generation was 7.1% above target with budgetary estimates. The CTGs were operated for three (3) Eversource Demand Response Events and for testing. As a result, CTG generation was 18.2% above target. STGs generation was 9.6% above target even though Digas production was 2.1% below target as supplemental fuel oil usage was used to maintain stable boiler operation during periods of lower Digas production. Hydro Turbine generation was 3.1% below target, as Hydro Turbine #1 was offline for scheduled annual maintenance for 17 days and Turbine #2 remained offline during August pending repair of the runner blade assembly. Generation from the Wind Turbines was 37.4% below target, partially due to scheduled maintenance by the manufacturer and turbulence caused by wind blowing through the digesters tripping the turbine out of service. Solar Panel generation was 19.5% below target due to the number of rain events and the accompanying overcast skies this month.



Total Plant Flow for the month of August (347.1 MGD) was 39.2% above target with the 4 year average flow estimate (249.4 MGD) as precipitation was 2.5 times the 4 year average (7.00 inches actual vs. 2.86 inches expected).

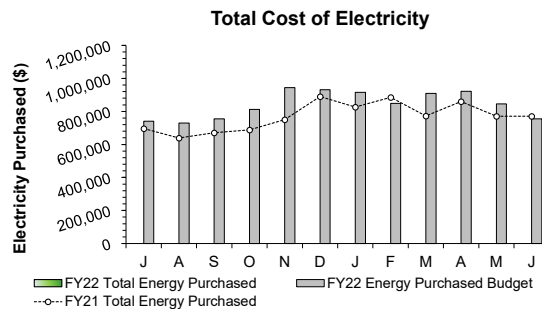


The DiGas system, STGs, and Wind Turbines met or exceeded the 95% availability target in August. Hydro Turbine availability was 39.5% due to scheduled annual maintenance on Turbine #1, which required the turbine to be out of service for 17 days, while Turbine #2 remains out of service pending repair of the runner blade assembly.



Under the current energy supply contract, a block portion of DI's energy is a fixed rate and the variable load above the block is purchased in real time. The actual Total Energy Unit Prices in July and August are not yet available as the complete invoices have not been received. The Total Energy Unit Price includes a fixed block price, spot energy price, transmission & distribution charges, and ancillary charges.

Note: Only the actual energy prices are reported. Therefore, the dataset lags by two (2) month due to the timing of invoice receipt and review.



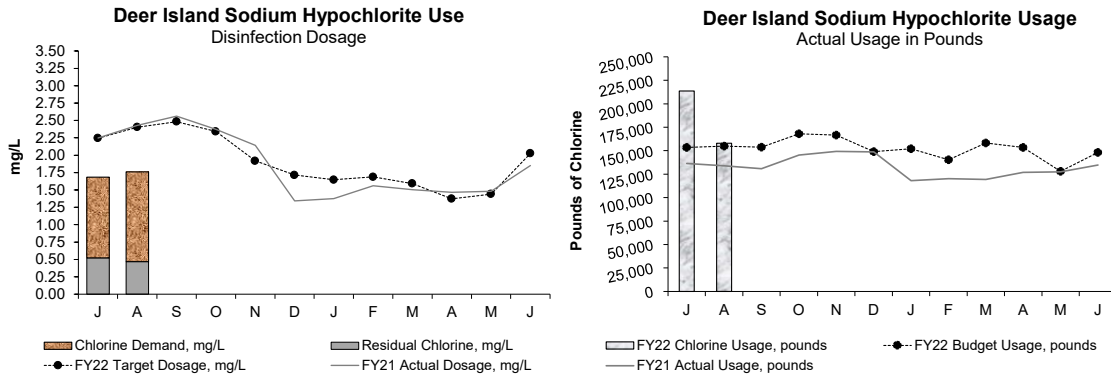
The Electricity cost data for Electricity Purchased July and August are not yet available as the complete invoices have not been received.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by two (2) month due to the timing of invoice receipt and review.

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The disinfection dosing rate in August was 27.0% below target with budgetary estimates. However, actual sodium hypochlorite usage in pounds of chlorine was 2.0% above target as plant flow was 39.2% higher than projected. DITP maintained an average disinfection chlorine residual of 0.47 mg/L this month with an average dosing rate of 1.76 mg/L as chlorine demand was 1.29 mg/L.

The overall disinfection dosing rate (target and actual) is dependent on plant flow, target effluent total chlorine residual levels, effluent quality and NPDES permit levels for fecal coliform.

Secondary Blending Events

Month	Count of Blending Events	Count of Blending Events Due to Rain	Count of Blending Events Due to Non Rain-Related Events	Secondary, as a Percent of Total Plant Flow	Total Hours Blended During Month
J	7	7	0	95.1%	84.65
A	6	6	0	98.96%	17.42
S					
O					
N					
D					
J					
F					
M					
A					
M					
J					
Total	13	13	0	96.7%	102.06

98.96% of all flows were treated at full secondary during the month of August. There were six (6) secondary blending events in August due to high flows from several significant rain events. These blending events resulted in 17.42 hours of blending and 111.67 MGal of primary-only treated effluent with secondary effluent. The Maximum Secondary Capacity for the entire month was 700 MGD.

Secondary permit limits were met at all times in August.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 1,061.6 MGD shortly after midnight on August 24. This peak flow occurred during a storm event that brought 2.45 inches of precipitation to the metropolitan Boston area. The Total Plant Flow in August was 39.2% above the 4 year average plant flow target for the month.

Secondary Treatment:

Inspection and routine preventative maintenance of DITP's two (2) flow control gates and appurtenances are currently conducted on a 10 year cycle. The flow control gates control the amount of primary-only treated flow that bypasses the secondary treatment process. These gate inspections are critical to ensure the proper operation of these flow control gates thus preventing unanticipated bypass events. The gate inspections require the area upstream and downstream of the gate to be isolated and drained of water and the inspections can only be conducted on a single gate at a time on separately spaced days due to the effort and length of time required to prepare the site, in addition to the time needed to conduct the inspection and to perform the preventative maintenance. The inspections were conducted during dry weather conditions on August 4 for flow control gate #1 and on August 25 for flow control gate #2. The final inspection reports are pending receipt from the contractor. The regulators (DEP and EPA) were provided with notifications in advance of these inspections.

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Deer Island Operations & Maintenance Report (continued)

Residuals Treatment:

On January 26, staff isolated Digested Sludge and Gas Storage (Dystor) Tank #1 from the second Dystor tank to empty the sludge and settled material from the tank. The Gravity Thickener Rehabilitation contract included a task to drain and clean Dystor Tank #1. In addition to material removal, piping and valves were also replaced as part of the project. A nitrogen purge of the Dystor #1 headspace was successfully completed by staff on August 26. A nitrogen purge is performed at this stage for safety reasons before placing the tank back on the digester gas system to ensure there is no oxygen remaining in the headspace that would mix with the methane once the tank is reconnected to the gas system thus avoiding explosive conditions. On August 31, the tank was returned to service and began receiving digested sludge.

Energy and Thermal Power Plant:

Overall, total power generated on-site accounted for 29.2% of Deer Island's total power use for the month of August. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 28.1% of Deer Island's total electrical power use for the month.

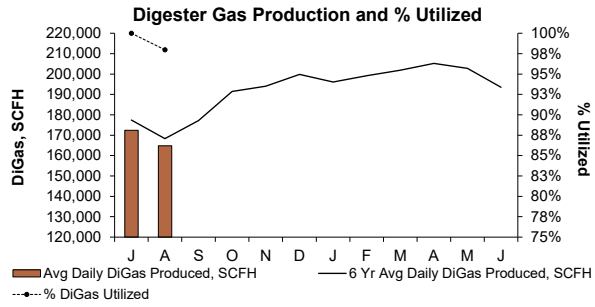
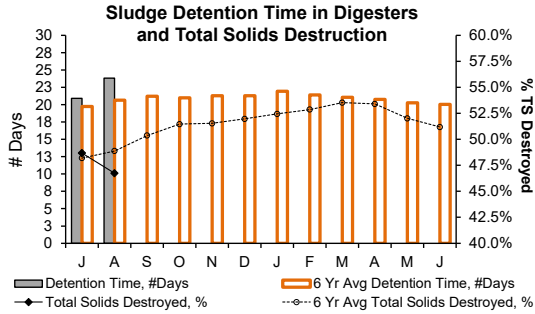
On August 2, Hydro Turbine #1 was taken offline for annual maintenance. The turbine was returned to service on August 20 following work and testing on both electrical and mechanical components of the turbine.

During the process of placing the second boiler into operation for the annual compliance emissions Relative Accuracy Test Audit (RATA) on August 26, staff identified a significant leak through the valve stem of the main steam stop valve. The valve is common to the entire steam system requiring both boilers to be taken out of service in order to repair the leak which was able to be completed by the end of the day. The RATA test which is conducted by a contractor and must be completed on each boiler will be rescheduled to a later date.

Deer Island Operations and Residuals

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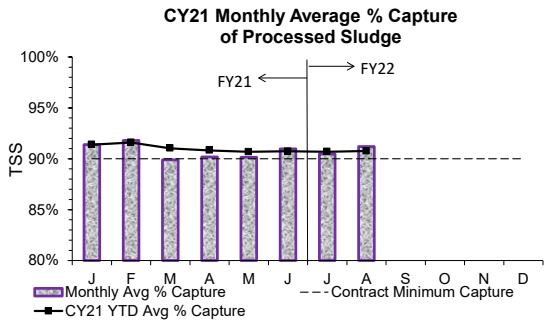
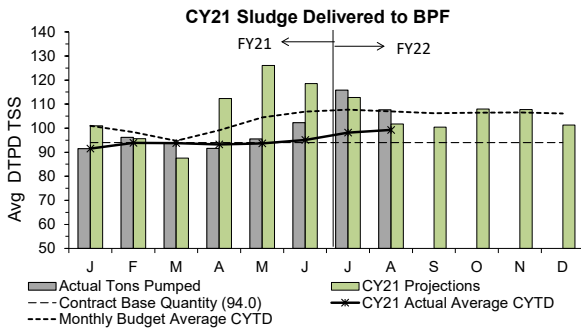
Total Solids (TS) destruction following anaerobic sludge digestion was 46.7% in August, 4.4% below the 6 year average target of 48.9% solids destruction even though sludge detention time in the digesters was 23.8 days, 15.4% above the 6 year average target of 20.6 days. Sludge detention time was higher-than-target as all eight (8) digesters were in operation in comparison to the 6 year average of 7.6 digesters.

The Avg Daily DiGas Production in August was similar to the 6 Year Avg Daily DiGas Production. 98.0% of the Digas produced was utilized at the Thermal Power Plant (TPP) partially due to a leaking steam valve that required both boilers to be taken out of operation to allow for the valve repair and to a digester gas compressor issue that reduced the amount of digester gas that was able to be delivered to the Thermal Power Plant for several days.

Total solids (TS) destruction is dependent on sludge detention time which is determined by primary and secondary solids production, plant flow, and the number of active digesters in operation. Solids destruction is also significantly impacted by changes in the number of digesters and the resulting shifting around of sludge.

Residuals Pellet Plant

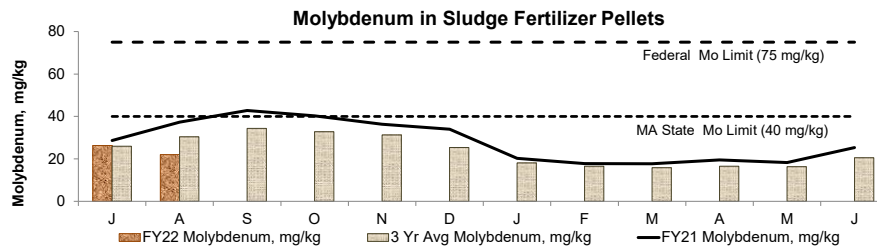
New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 94.0 DTPD/TSS as an annual average (for the extended contract period of January 1, 2021 through December 31, 2022). The monthly invoice is based on 94.0 DTPD/TSS (Dry Tons Per Day/Total Suspended Solids) times 365 days divided by 12 months. At the end of the year, the actual totals are calculated and additional payments are made on any quantity above the base amount. On average, MWRA processes more than 94.0 DTPD/TSS each year (FY21's budget is 107.9 DTPD/TSS and FY22's budget is 106.2 DTPD/TSS).



Total sludge sent to the Biosolids Processing Facility (BPF) was above target in August. DTPD delivered 107.6 TSS Dry Tons Per Day (DTPD) to the BPF resulting in a variance of 5.8% (approximately 5.9 TSS DTPD from the August target of 101.7 TSS DTPD for the month. The higher amount of sludge sent to the BPF was partially attributed to a 9.8% higher-than-expected primary sludge production resulting in slightly more sludge being sent to anaerobic sludge digestion than was expected. This above normal primary sludge production is due to the higher-than-expected plant flows.

The contract requires NEFCO to capture at least 90.0% of the solids delivered to the Biosolids Processing Facility (BPF). The capture rate of solids in August was 91.2%.

The CY21 average quantity of sludge pumped to the BPF through the month of August is 99.3 DTPD - 7.2% below target with the CY21 average budget of 106.9 DTPD for the same time period.



Copper, lead, and molybdenum (Mo) are metals of concern for MWRA as their concentrations in its biosolids have, at times, exceeded regulatory standards for unrestricted use as fertilizer. Molybdenum-based cooling tower water is a significant source of Mo in the sludge fertilizer pellets. The Federal standard for Mo is 75 mg/kg. In 2016, Massachusetts Type I biosolids standard for molybdenum was changed to 40 mg/kg from the previous standard of 25 mg/kg. This has allowed MWRA to sell its pellets in-state for land application whereas the previous limits forced several months' worth of pellets to be shipped out of state. This made it an impractical source of fertilizer for local Massachusetts farms since NEFCO does not distribute product that does not meet the suitability standards.

The levels were below the DEP Type 1 limit for all three (3) metals in August. For Mo, the level in the MWRA sludge fertilizer pellets was 22.0 mg/kg for August, which was 28% below target with the 3 year average, 45% below the MA State Limit, and 71% below the Federal Limit.