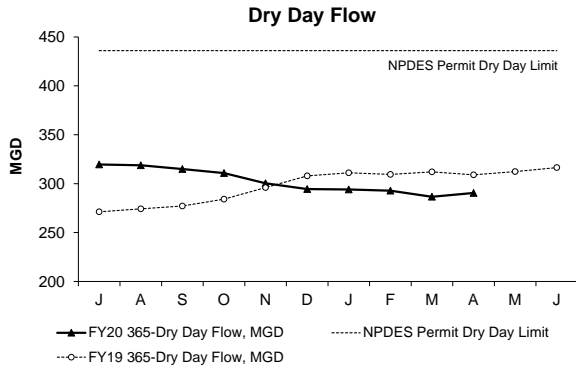
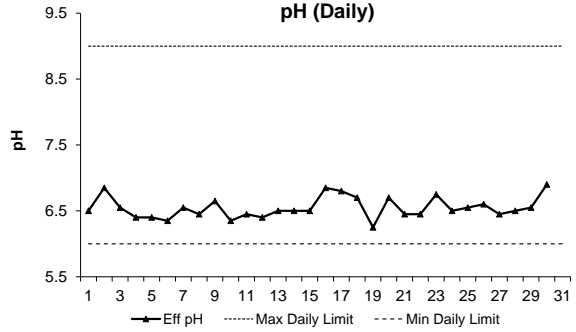


Deer Island Operations

April 2020 - FY20

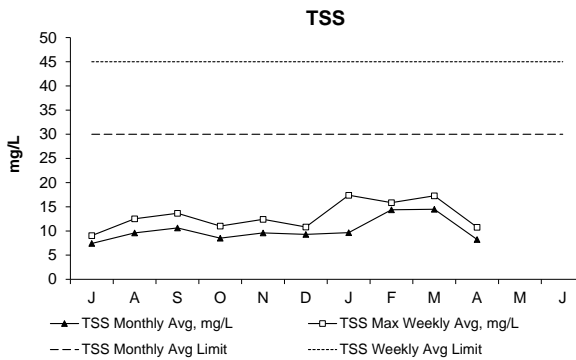


April's Dry Day Flow is the average of all dry weather influent flows over the previous 365 days from 5/2/2019 to 4/30/2020. The Dry Day Flow for the month was 290.5 MGD, well below the permit limit of 436 MGD.



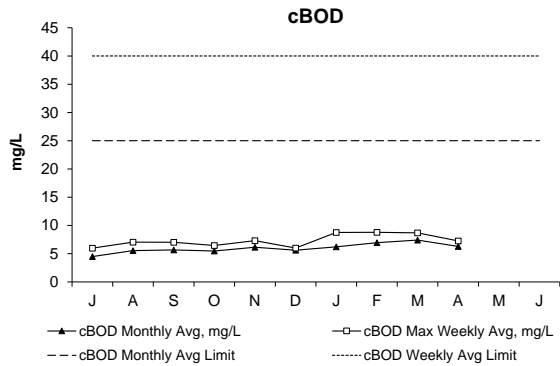
In April, all pH measurements were fairly typical for the season and within permit limits.

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.



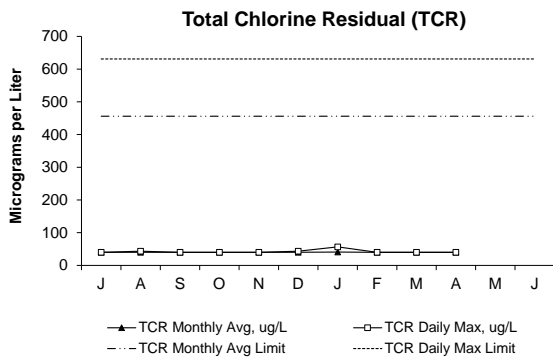
In April, both the weekly and monthly concentrations of TSS were below permit limits.

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



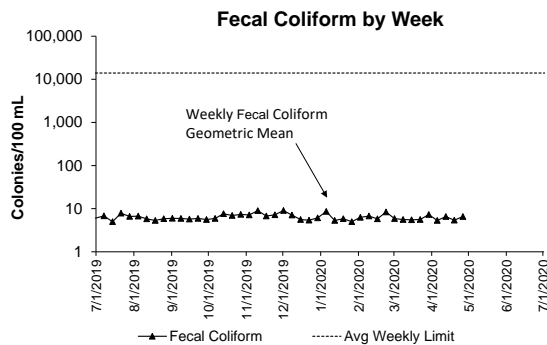
In April, both the weekly and monthly concentrations of cBOD were well below permit limits.

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 April, both the maximum daily and monthly concentrations of TCR were below permit limits. The TCR Monthly Avg and the TCR Daily Max values for FY20 to date have been non-detectable at 40 ug/L or were just above detectable levels. Therefore, both parameters appear to be represented by the same trendline for much of the time 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.

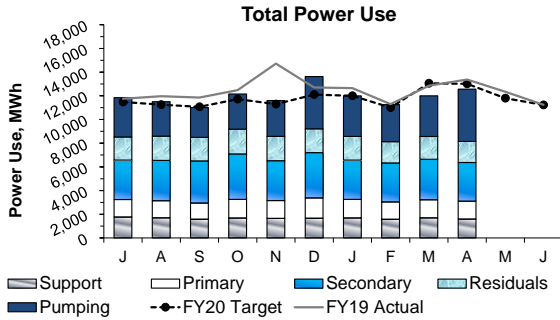


In April, all permit conditions for Fecal Coliform were met. Fecal Coliform is an indicator for the possible presence of pathogens. The levels of these bacteria after disinfection show how effectively the plant is inactivating many forms of disease-causing microorganisms.

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

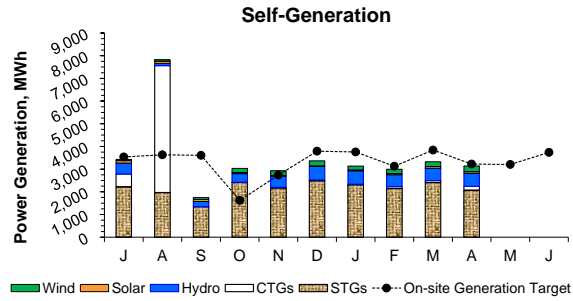
Deer Island Operations

March 2020 - FY20

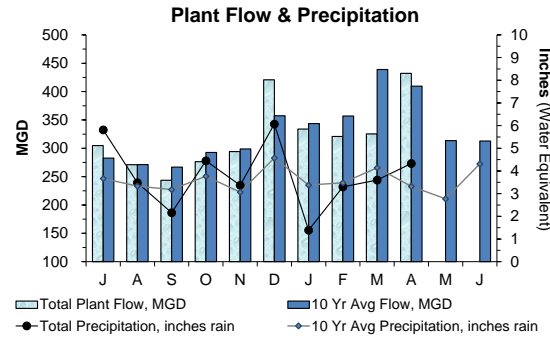


Total plant power usage in April was 3.4% below target, even as plant flow for this period was on target (-0.6%) with the 4 year average. Precipitation however was 30.5% above the 10-year rainfall target (3.32 inches expected vs. 4.33 inches actual). Power usage was similar to or below target for all treatment process areas in April and was 2.3% below target for raw wastewater pumping.

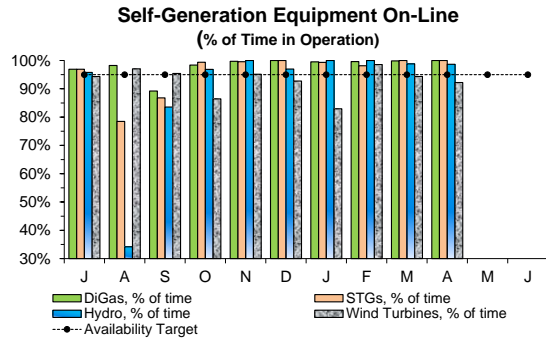
Note: Power usage projections are based on 4 year averages.



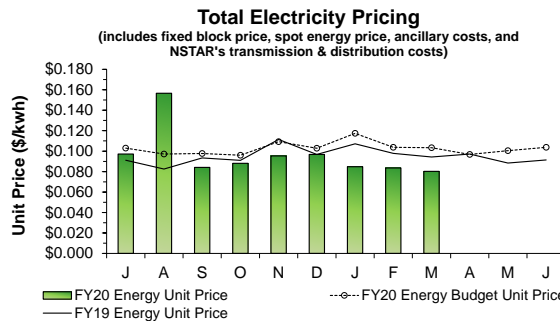
Overall total on-site generation for April was 2.6% below target with budgetary estimates. The CTGs were only operated on April 13 for 16.2 hours, as a precaution during a nor'easter storm event with high winds and for maintenance/checkout purposes on April 30. As a result, CTG generation was 37.4% lower than budgetary estimates. The FY20 budget estimate is based on CTG generation data from FY15 to FY18 which included on average higher CTG operation during storm events during the month of April. The STGs generation was 11.5% below target as digester gas production was 10.6% below target. All digester gas produced was utilized at the Thermal Power Plant. Hydro Turbine generation was 60.0% above target. Generation from the Solar Panels was 12.5% below target, while the Wind Turbine generation was 48.3% above target.



Total Plant Flow for the month of April (432.2 MGD) was 5.5% above target with the 10 year average flow estimate (409.6 MGD) as precipitation was 30.5% above the 10 year average (4.33 inches actual vs. 3.32 inches expected). Total Plant Flow was on target (-0.6%) with the 4 year average plant flow used for the energy budget projections.

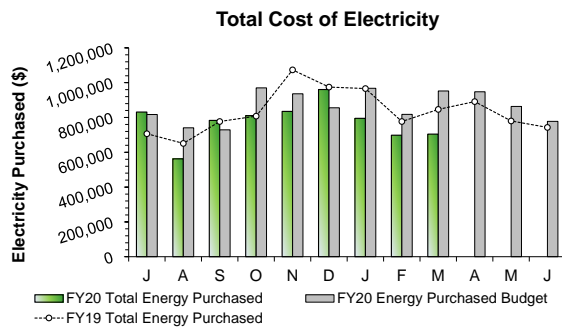


The DiGas system, STGs, and Hydro Turbines all exceeded the 95% availability target in April. The Wind Turbine availability fell 2.8% below target due to downtime for turbine #2 resulting from an issue with the yaw counter and turbulence caused by wind blowing through the digesters, tripping the turbine out of service.



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 Price in March (the most current invoice available) was 22.3% below target with budgetary estimates. The actual total energy unit price in April is 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 one (1) month due to the timing of invoice receipt and review.



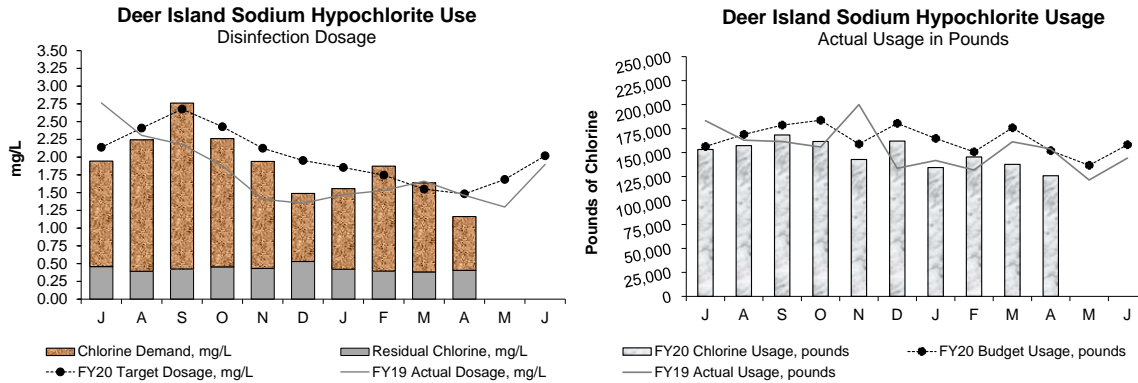
The Electricity cost data for Electricity Purchased in April is not yet available. Year-to-date Total Cost of Electricity is \$805,397 (10.3%) lower than budgeted through March. Even though the Total Electricity Purchased was on target (+0.7%) through March, the Total Energy Unit Price was 11.0% lower than target.

Note: Only months with complete Electricity Purchased data are reported. Therefore, the dataset lags by one (1) month due to the timing of invoice receipt and review.

Deer Island Operations

March 2020 - FY20

Page 3 of 5



The disinfection dosing rate in April was 22.0% below target with budgetary estimates. As a result, actual sodium hypochlorite usage in pounds of chlorine was 17.2% lower than expected. The lower sodium hypochlorite usage is likely due to the much higher than expected precipitation resulting in a lower effluent chlorine demand. DITP maintained an average disinfection chlorine residual of 0.41 mg/L this month with an average dosing rate of 1.16 mg/L (as chlorine demand was 0.76 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	4	4	0	99.6%	10.26
A	2	2	0	99.3%	7.64
S	1	1	0	99.8%	2.45
O	3	3	0	99.0%	11.13
N	1	1	0	99.6%	4.81
D	2	2	0	99.4%	17.99
J	0	0	0	100.0%	0.00
F	0	0	0	100.0%	0.00
M	1	1	0	99.4%	7.45
A	3	3	0	99.8%	7.64
M					
J					
Total	17	17	0	99.6%	69.37

99.8% of all flows were treated at full secondary during the month of April. There were three (3) secondary blending events due to high plant flows resulting from heavy rain. These blending events resulted in 7.64 hours of blending and 22.29 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 April.

Deer Island Operations & Maintenance Report

Environmental/Pumping:

The plant achieved an instantaneous peak flow rate of 872.5 MGD during the evening on April 13. This peak flow occurred during a storm event that brought 0.56 inches of precipitation to the metropolitan Boston area. Total Plant Flow in April was 30.5% above the 10 year average plant flow target for the month.

Secondary Treatment:

Annual turnaround maintenance that is typically performed on Train #2 at the Cryogenic Oxygen Facility in April was postponed as the contractor has suspended all non-essential work activities and travel due to the nation-wide shutdown response to the COVID-19 pandemic. An update of this maintenance work will be available at a later date.

Deer Island Operations & Maintenance Report (continued)

Residuals Treatment:

The rehabilitation of Gravity Thickener #4 under the major Gravity Thickener Rehabilitation project was completed in mid-April and Gravity Thickener #3 was turned over to the contractor at the end of the month to begin the rehabilitation work. DITP has six (6) gravity thickeners used to concentrate sludge that is generated from the primary treatment process, and scum that is generated from all treatment processes. The sludge and scum thickening equipment and five (5) of the six (6) Fiberglass-Reinforced Plastic (FRP) domed covers have reached the end of their useful lives and are in need of replacement. This rehabilitation project will upgrade all six (6) gravity thickeners including complete replacement of each tank's sludge and scum thickening equipment as well as replacement of five (5) of the six (6) FRP dome covers (the FRP domed cover for Gravity Thickener #2 has already been replaced). Additionally, critical components which were previously fabricated from carbon steel, including the center columns and center cages, will now be fabricated from type 316 stainless steel in order to provide superior protection against hydrogen sulfide gas which is present in high concentrations in this highly corrosive environment. The entire rehabilitation project is anticipated to take nearly three (3) years to complete in 2021. The rehabilitation of Gravity Thickeners #1, #2, and #4 have now been completed.

Energy and Thermal Power Plant:

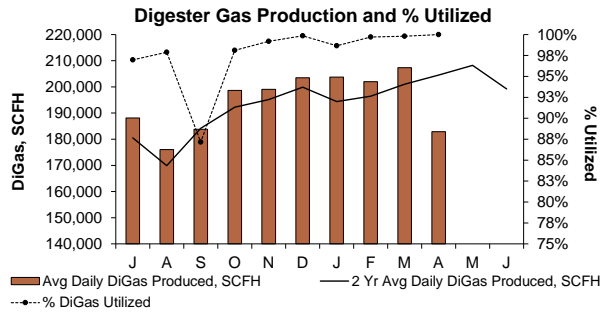
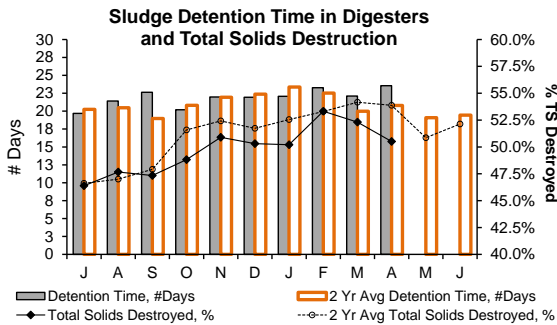
Overall, total power generated on-site accounted for 25.0% of Deer Island's total power use for the month. Renewable power generated on-site (by Solar, Wind, STGs, and Hydro Turbines) accounted for 23.6% of Deer Island's total electrical power use for the month.

DITP took delivery of 126,000 gallons of #2 fuel oil, a total of 13 oil tanker trucks, without incident from March 30 through April 1. This procurement of fuel oil was made to take advantage of the significantly lower-than-normal fuel oil prices caused by the nation-wide shutdown in response to the COVID-19 pandemic. This fuel oil is used for CTG operation, for boiler startup operations, and for supplemental fuel for boiler operation during periods of low or unstable digester gas production.

Deer Island Operations and Residuals

March 2020 - FY20

Page 5 of 5



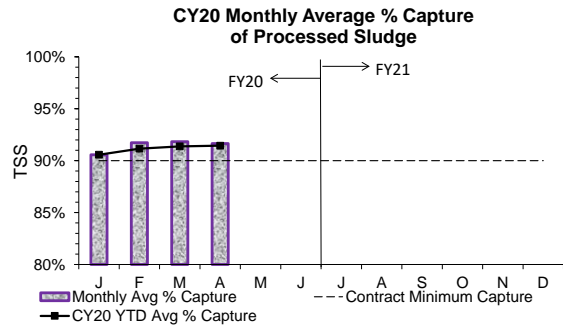
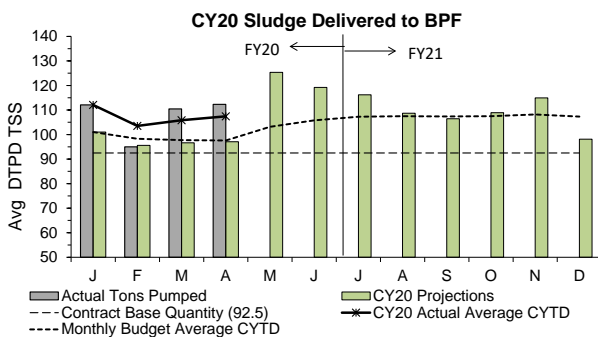
Total Solids (TS) destruction following anaerobic sludge digestion was 50.5% in April, 6.3% below target with the 2 year average of 53.9% solids destruction. This lower destruction rate is attributed to a 38.9% higher-than-expected amount of secondary waste sludge, which is more difficult to break down during anaerobic sludge digestion. Sludge detention time in the digesters was 23.5 days, 13.2% above the 2 year average target of 20.8 days, while DI operated on target with 8.0 digesters.

The Avg Daily DiGas Production in April was 10.6% below target with the 2 Year Avg Daily DiGas Production due to much lower than expected primary sludge production which breaks down more readily during anaerobic sludge digestion. 100.0% of the DiGas produced was utilized at the Thermal Power Plant (TPP).

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

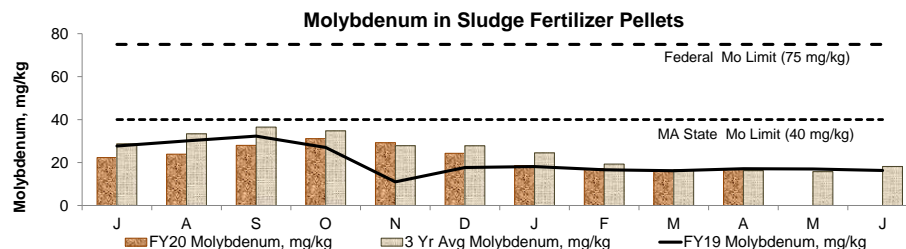
New England Fertilizer Company (NEFCO) operates the MWRA Biosolids Processing Facility (BPF) in Quincy under contract. MWRA pays a fixed monthly amount for the calendar year to process up to 92.5 DTPD/TSS as an annual average. The monthly invoice is based on 92.5 DTPD/TSS (Dry Tons Per Day/Total Suspended 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 92.5 DTPD/TSS each year (FY20's budget is 107.4 DTPD/TSS and FY21's budget is 107.9 DTPD/TSS).



Total sludge sent to the Biosolids Processing Facility (BPF) was 15.7% above target in April. DITP delivered 112.3 TSS Dry Tons Per Day (DTPD) to the BPF, resulting in a variance of 15.7% (approximately 15.2 TSS DTPD) from the April target of 97.1 TSS DTPD for the month. The higher amount of sludge sent to the BPF was attributed to a 38.9% higher-than-budgeted secondary sludge production, approximately 20.7 TSS DTPD more secondary sludge than expected. Additionally, secondary waste sludge is more difficult to break down during anaerobic sludge digestion as evidenced by the 6.3% lower-than-expected solids destruction. Also, an inventory shift in the digested sludge holding tanks on DITP accounted for approximately 5.6 TSS DTPD more sludge being sent to the BPF.

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 April was 91.65%.

The CY20 average quantity of sludge pumped to the BPF through the month of April is 107.4 DTPD - 10.1% above target with the CY20 average budget of 97.6 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 have been below the DEP Type 1 limit for all three (3) metals. For Mo, the level in the MWRA sludge fertilizer pellets was 17.2 mg/kg for April, 6% above target with the 3 year average, 57% below the MA State Limit, and 77% below the Federal Limit.