

FACT SHEET

Durham's Department of Water Management recently closed out the contracts on the final phase of a multi-year project to make improvements and upgrades at its Wade G. Brown and Williams Water Treatment Plants. The total cost of this project was \$110 million, including expanding the capacity of the Wade G. Brown Water Treatment Plant from 30 million gallons per day to 42 million gallons per day; improvements to the Williams Water Treatment Plant and a new concrete apron for its terminal reservoir; as well as upgrades to the residuals processes at both water treatment plants to meet applicable regulations. Following are the highlights of the improvements at these facilities.

Wade G. Brown Water Treatment Plant—Upgrades and Expansion

Date started: October 2016

Date complete: October 2020

Construction cost: \$51 million

Expansion to 42 million gallons per day (MGD) from 30 MGD

- New raw water pump
- New raw water pipeline contactor (66" diameter)
- New static mixer
- Two new flocculation basins (71' x 40' x 16')
- Two new sedimentation basins (295' x 40', 6 MG each)
- Two new filters (Media: 12" Sand, 24" Anthracite)
- New filtered water piping
- New finished water pump suction pipe
- New electrical switchgear building (26' x 60')
- New generator (2.5 MW, 4160/2700 V) paired with existing generator (same size)

Water treatment process upgrades

- Replaced existing flash mixers with static mixer
- Reconfigured inlets to flocculation basins
- New sedimentation basin launders
- Filter upgrades (media, meters, and actuators)
- New chlorine contact basin (115' diameter)
- New sample system
- Instrumentation improvements including a new Supervisory Control and Data Acquisition (SCADA) System

Chemical upgrades

- New chemical building (permanganate, ferric sulfate, orthophosphate)
- New caustic metering pumps
- New fluoride tank, day tank and metering pumps
- New hypochlorite tanks and metering pumps

Building upgrades

- New Administration Building (offices, training room, vegetative roof)
- Renovated existing Operations Building (lab, SCADA, conference room restrooms, locker room)
- Converted old Chemical Building to Maintenance Building (future)

Williams Water Treatment Plant—Upgrades

Date started: November 2017

Date complete: July 2019

Construction cost: \$15 Mmillion

Water treatment process upgrades

- Filter upgrades (media, meters, and valves)
- West clearwell baffles
- Sample system upgrades
- Instrumentation improvements including a new Supervisory Control and Data Acquisition (SCADA) System

Other upgrades

- Renovated administration areas (conference room, offices, SCADA)
- Enlarged locker room

Chemical upgrades

- New orthophosphate tank and metering pumps
- New fluoride tank and metering pumps
- Upgrade the wood stave coagulant tanks

Wade G. Brown Water Treatment Plant—Residuals Process Upgrades

Date started: October 2016

Date complete: July 2019

Construction cost: \$22 million

New processes and construction includes:

- New Backwash Equalization (EQ) Tanks (60' dia X 24' h) - two each
- New settled solids EQ tanks (30' dia. X 24' h) – two each
- New backwash EQ and settled solids EQ pump station
- New backwash clarifiers, gravity thickeners and flow splitter boxes (65' dia X 18' h) and (60' dia x 20' h) – two each
- New thickened solids holding tanks (30' dia X 30' h) – two each
- New thickened solids pump station
- New dewatering building (three – 200 gallons per minute dewatering presses)
- New dewatered cake storage area (108' x 285')
- New filtrate equalization tank (28' x 28' x 18 h) – two each
- Demolition of existing drying beds, and other miscellaneous demolition
- New drive and pavement areas
- New on-site sewage lift station
- Instrumentation integrated with Supervisory Control and Data Acquisition (SCADA) System
- Electrical system improvements
- Site restoration work

Williams Water Treatment Plant—Residuals Process Upgrades

Date started: November 2017

Date complete: July 2019

Construction cost: \$15 million

New processes and construction includes:

- New backwash equalization tanks (43' x 43' x 24' h) – two each
- New settled solids equalization tanks (20' x 20' x 23' h) – two each
- New backwash EQ and settled solids EQ pump station
- New backwash clarifiers, gravity thickeners and flow splitter boxes (45' dia X 15' h) and (40' x 15' h) – 2 each
- New solids building, including recycle wet well, recycle pumps, backwash clarifier pump, and thickened solids pumps (55' x 37')
- Rehabilitation of sludge storage tanks
- Demolition of existing drying beds, Alum storage tank and other miscellaneous demolition
- New drive and pavement areas, yard piping, storm water improvements
- New on-site sewage lift station
- Instrumentation integrated with Supervisory Control and Data Acquisition (SCADA) System
- Electrical system improvements
- Site restoration work

Williams Water Treatment Plant—Concrete Apron Replacement

Date started: July 2016

Date complete: July 2018

Construction cost: \$2.6 million (solids removal); \$3.65 million (apron replacement)

New processes and construction includes:

- Solids removal (sediment and material at bottom of reservoir) – 4,750 dry tons of material removed
- Apron replacement – 3,600 cubic yards of concrete
- Length of rim wall – 2,860 lineal feet (0.54 miles)
- Reused historical railing around reservoir



**Improvements to Wade G. Brown and
Williams Water Treatment Plants**

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