PENNSYLVANIA
AMERICAN WATER

Pittsburgh Water Treatment Plant Projects

by
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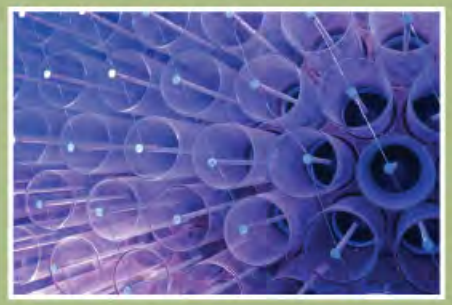


Who Is American Water

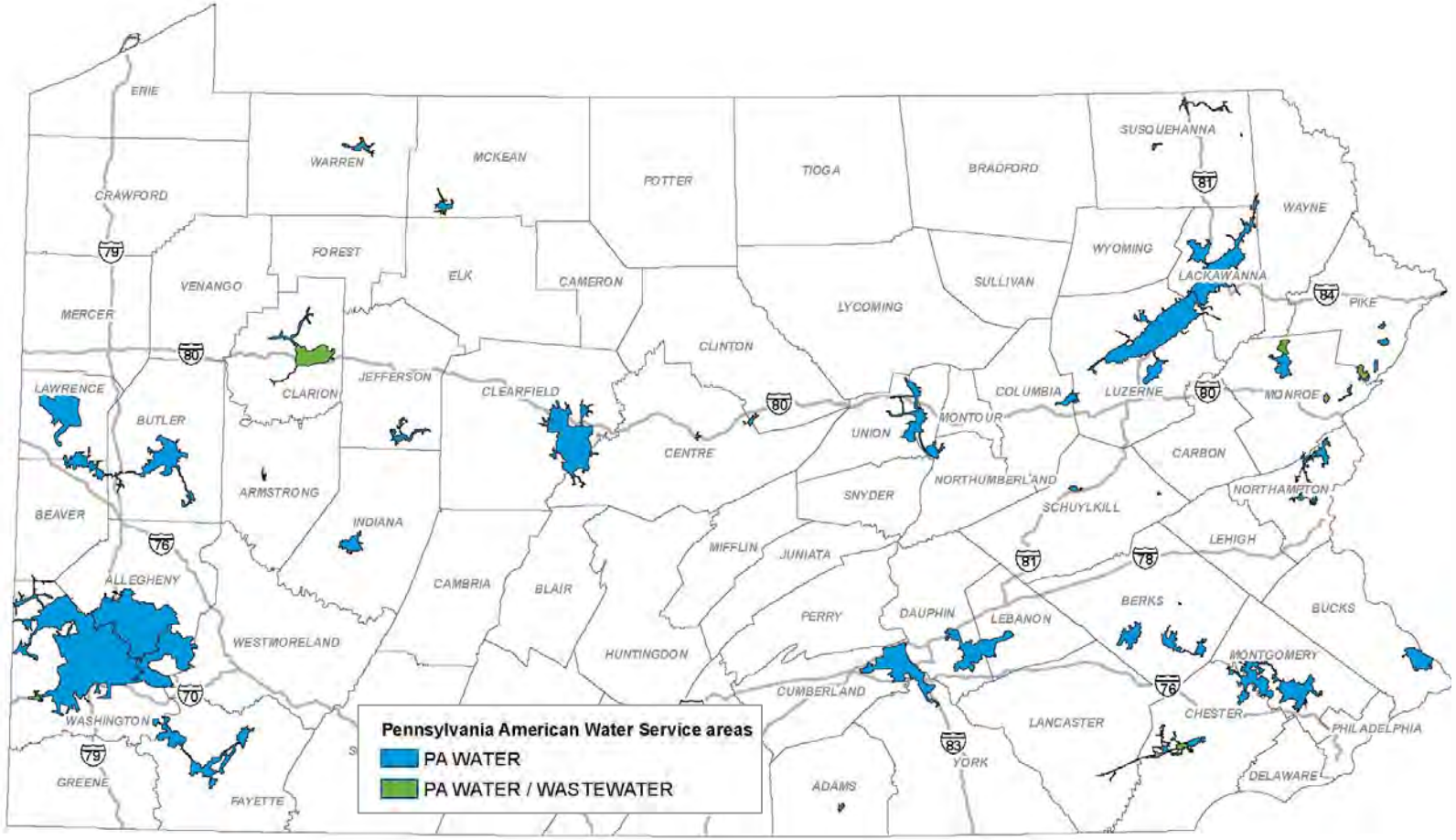
We are the largest publicly traded water and wastewater utility in the United States

- Broad national footprint and strong local presence
- Services to an estimated 14 million people in more than 1,500 communities in more than 30 states and parts of Canada
- Approx. 6,700 dedicated and active employees
- Treats and delivers more than one billion gallons of water daily

Our Company

- **Subsidiary of American Water Works Co. Inc.**
- **Roots date back to early 1800s, Incorporated in 1904**
- **Largest regulated water and wastewater service provider in PA**
- **Serving approximately 2.2 million people in 36 counties**
- **More than 1,000 employees**
- **Customer base:**
  - 640,000 water customers
    - 92% residential
    - 7% commercial
    - 1% industrial/other
  - 17,000 wastewater customers

Pennsylvania American Water Service Area



Serving 17 percent of the Commonwealth's population

Pittsburgh Water Treatment Plant History

- **Beck's Run Raw Water Pump Station**
  - Located at mile point 4.5 on the Monongahela River
  - Constructed in 1893
- **Hays Mine Filtration Plant**
  - Constructed in 1906 to treat, filter and pump river water
  - Expanded in 1923, 1936, 1952 to total capacity of 40 filters and 60 MGD; upgraded with Superpulsators in 1989
- **Hays Mine Chemical Building**
  - Constructed in 1922
- **E. H. Aldrich Water Treatment Plant**
  - Located at mile point 24.5 on the Monongahela River
  - Constructed in 1958 with 8 Aldrich Filter units and total capacity of 50 MGD

Project Overview

- $108 Million Water Treatment Plant Upgrade
- Main Focus Areas
  - Replace Aging Infrastructure
  - Improve Safety and Reliability
  - Ensure Compliance with latest DBP Regulations

Project Overview

- **Replace Aging Infrastructure**
  - New Beck's Run Intake and Raw Water Pump Station (BRPS)
  - New Hays Mine Chemical Building
  - New Hays Mine Water Treatment Plant (WTP) High Service Pumps

- **Improve Safety and Reliability**
  - Eliminate chlorine gas – switch to sodium hypochlorite generation
  - Improved chemical handling and containment, reliable chemical feed
  - Install emergency generators at BRPS, Hays Mine and Aldrich WTPs

- **Ensure Compliance with Latest DBP Regulations**
  - Switch to chloramination at Hays Mine and Aldrich WTPs
  - Reduce reliance of pre-chlorine at Hays Mine WTP
  - Construct 4.5 MG Clearwell Tanks with baffles at Hays Mine WTP for increased contact time (CT)

Beck's Run Intake

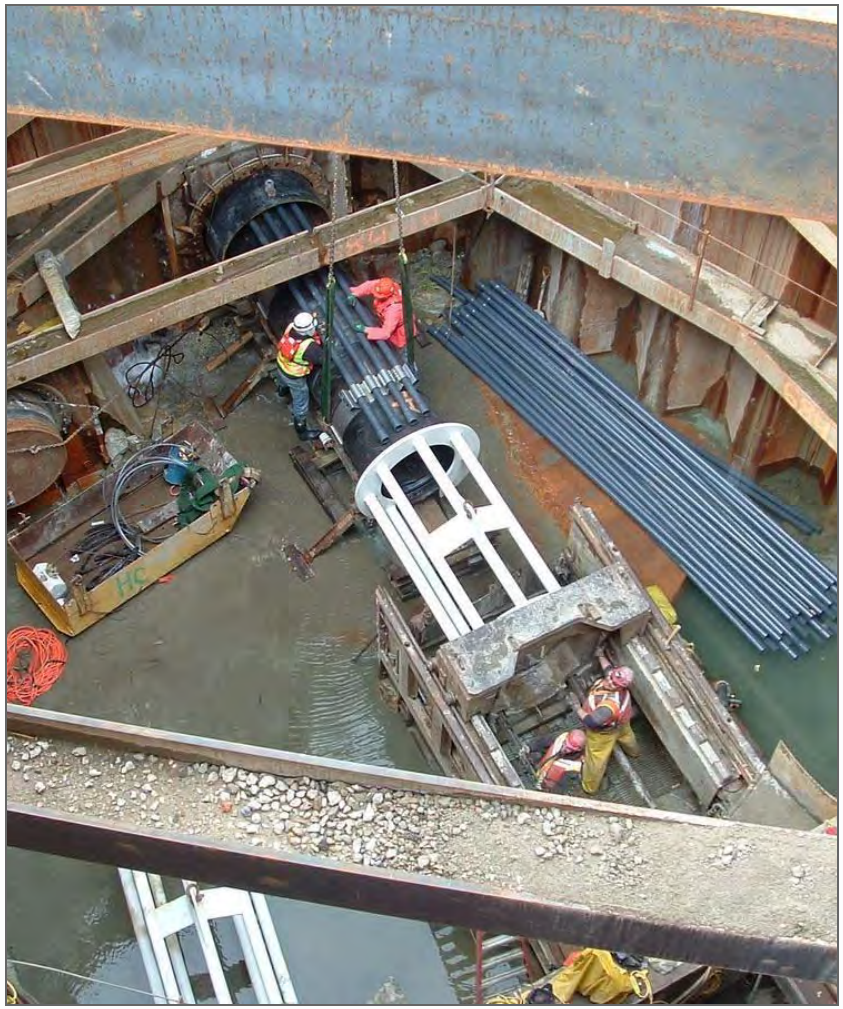
- **Old Beck's Run Intake**
  - Two travelling screens in poor condition
  - Maintenance Intensive
  - One common chamber to old Beck's Run Pump Station (BRPS)

- **New Beck's Run Intake**
  - Passive Screen technology
  - Air Burst system
  - Redundancy, including twin 42" diameter raw water suction lines to new BRPS

Beck's Run Intake – Existing Conditions

Beck's Run Intake – Cofferdam for New Construction

Beck's Run Intake – Raw Waterline & Screens



Beck's Run Intake - Complete

Beck's Run Raw Water Pump Station

- **Old Beck's Run Pump Station**
  - 100+ year old building with significant structural issues
  - Pumps electrified in 1970, coal fired and steam powered previously
  - Double stage pumping, very inefficient with high maintenance costs
  - Whole facility prone to flooding
  - No back-up emergency power
  - 31" riveted steel raw water discharge piping

- **New Beck's Run Pump Station**
  - Four vertical turbine, 1,750 hp pumps, rated at 20 MGD each; plus one spare bowl assembly. Three of four pumps have Variable Frequency Drives.
  - Small building footprint with pump motors and electrical gear out of flood plain
  - Dual electric feeds with 2 diesel, 2,922 hp, 2.0 megawatt back-up emergency power generators capable of producing 40 MGD
  - New 42" ductile iron raw water discharge piping

Beck's Run Pump Station – New Construction

Beck's Run Pump Station – New Header and Pumps

Beck's Run Pump Station – Finished Station

Hays Mine Chemical Building

- **Old Hays Mine Chemical Building**
  - 90+ year old building with significant structural issues
  - Four stories high - poor layout for storing, feeding chemicals and chemical containment
  - Across busy street from Hays Mine WTP
  - Difficult to unload chemicals, poor chemical injection and mixing

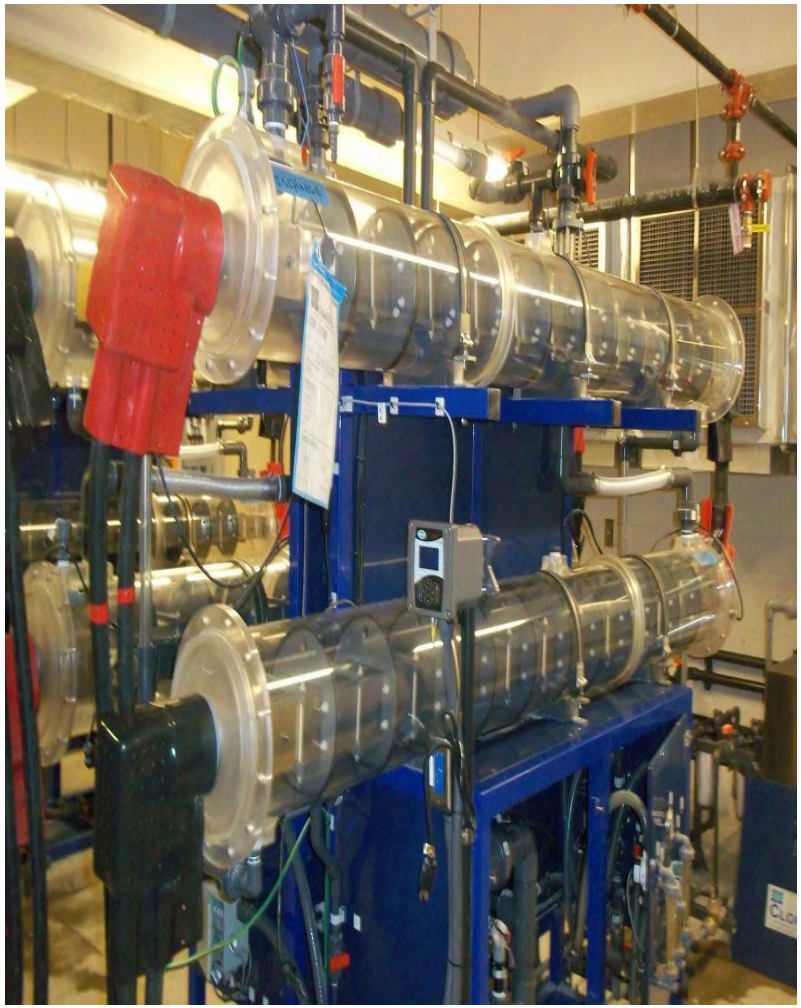
- **New Hays Mine Chemical Building**
  - Addition to existing Hays Mine WTP, all new facilities in one location
  - Complete SCADA monitoring and control
  - Standardized and redundant construction with bulk tanks, day tanks, feed pumps, chemical spill containment, etc.
  - Standardized chemical fill area with automated spill overflow containment
  - All new chemical injection points with enhanced mixing

Hays Mine Chemical Building - Existing

Hays Mine Chemical Building – New Location

Hays Mine Chemical Building - Completed

Hays Mine Chemical Building – Sodium Hypochlorite



Hays Mine Chemical Building – Chemical Feed

Hays Mine High Service Pump Station (HSPS)

- **Old Hays Mine HSPS**
  - Located in existing Hays Mine WTP, seven pumps ranging from 5 to 15 MGD; only one with a VFD
  - Most of the pumps installed in 1950
  - Each pump has its own discharge meter
  - Dual electric feeds but no back-up emergency power

- **New Hays Mine HSPS**
  - Four horizontal, split case, 2000 hp pumps, rated at 20 MGD each; plus one spare impeller assembly. Three of four pumps have VFD's
  - Common venturi metering point
  - Two surge tanks to reduce system water hammer
  - Dual electric feeds with two diesel, 3705 hp, 2.5 megawatt back-up emergency power generators capable of producing 40 MGD

Hays Mine High Service Pump Station - Overview

Hays Mine – New Clearwell Tanks with Baffles

Hays Mine High Service Pump Station – Piping/Pumps

Hays Mine High Service Pump Station - Completed

Project Summary

- **Replace Aging Infrastructure**
  - New Beck's Run Intake and Raw Water Pump Station
  - New Hays Mine Chemical Building
  - New Hays Mine WTP High Service Pumps

- **Improve Safety and Reliability**
  - Eliminate chlorine gas
  - New chemical feed facilities
  - Emergency power

- **Ensure Compliance with Latest DBP Regulations**
  - MCL for TTHM's is 80 ug/l
  - Before Chloramination, TTHM ranged from 65 to 112 ug/l
  - After Chloramination, TTHM ranged from 35 to 55 ug/l

Questions?

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