



Passaic Valley Water Commission

*Public stewards of health and safety, community well-being and
economic growth for existing and future generations*

2023: A Year in Review

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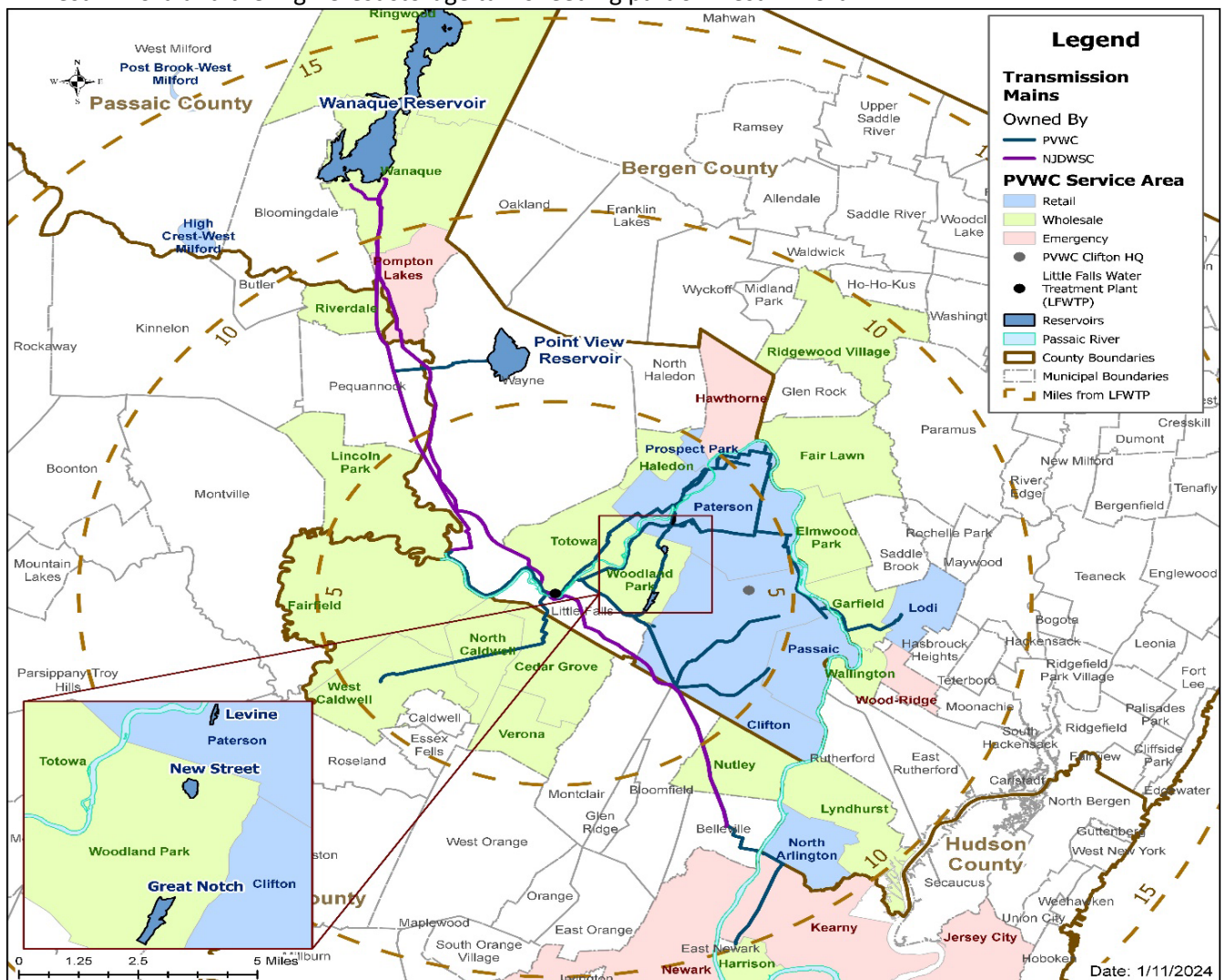


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System Overview

PVWC supplies high-quality drinking water to almost 800,000 people across four (4) counties in Northern New Jersey: Passaic, Bergen, Essex and Morris. The population served is split between retail cities where PVWC operates and maintains the water distribution pipes in addition to supplying water; and 23 wholesale cities where PVWC supplies water and the distribution systems are operated independently by municipalities or other water utilities. In addition, dozens of interconnections exist between PVWC’s water distribution system and surrounding water systems to share water resources in the event of planned infrastructure outages for maintenance and capital upgrades or unplanned emergencies.

There are two major water sources: 1) Wanaque Reservoir – treated and conveyed to PVWC by North Jersey District Water Supply Commission (NJDWSC); and 2) Passaic River – treated by PVWC at the Little Falls Water Treatment Plant in Totowa, NJ. The total annual average daily flow is 77 million gallons per day (MGD) with 35 MGD provided by NJDWSC and 42MGD provided by the PVWC Little Falls Treatment Plant (see map below). PVWC also operates the Post Brook groundwater supply and distribution system in West Milford and the High Crest storage tanks feeding part of West Milford.





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History

Water Treatment

The Passaic Valley Water Commission (PVWC) has a rich history of service, adaptation and innovation spanning 175 years since the Passaic Water Company was incorporated in 1849, securing franchises for water distribution with the town of Paterson and surrounding areas. Under the guidance of water industry titans such as George Warren Fuller, Allen Hazen, and Dr. John L. Leal, the company has always been an industry leader. PVWC constructed the world's first large scale rapid filtration plant in Little Falls, NJ in 1902 and became one of the first large scale users of chlorine for drinking water disinfection. Since that time, filtration upgrades have been constructed in the 1960's and 1980's that are still in service today. In 2004, the last major upgrade of the treatment plant was completed including modern instrumentation and a smaller site footprint with high-rate, sand-ballasted settling, the largest of its kind in North America at the time of commissioning. Ozonation was also added as a safer disinfection alternative to the previous chlorine gas process which had been a higher safety threat to the community in the event of an unplanned release. The plant was renamed the Alan C. Levine Little Falls Treatment Plant after the former PVWC Commissioner and President.

Reservoirs

Storage is a necessary component of the water supply system to meet high peak demands, maintain pressure in the system, provide a buffer for droughts and allow various components of the system to be out of service for maintenance or repair. The Stony Road reservoir completed in 1886 located in Paterson, is still in service today and was renamed the Levine Reservoir, after the former PVWC commissioner, Stanley M. Levine. This 20-million-gallon (MG) reservoir is one (1) of three (3) uncovered, reservoirs that store treated water where it is distributed to customers as needed for potable use. The other uncovered, finished water reservoirs are New Street, constructed in 1925 in Woodland Park with a capacity of 52 MG and Great Notch, constructed in 1900 with a capacity of 179MG. In 1964, PVWC completed construction on a fourth reservoir to store raw, untreated water in Wayne, NJ, named the Point View reservoir with a capacity of 3 billion gallons. This reservoir can release water back to the Pompton River in times of drought to either be pumped out and treated through the NJDWSC treatment plant in Wanaque or PVWC's Little Falls Water Treatment Plant, and then put into distribution.

Distribution System

As water treatment and storage was evolving, the PVWC water distribution system was also being expanded to support community growth of local residences and businesses. There are currently 647 miles of water mains operated and maintained by PVWC serving six (6) cities/towns that include: Paterson, Clifton, Passaic, Prospect Park, Lodi and North Arlington. The retail service area has a population of approximately 370,000 with a significant amount of the system containing pipes ranging between 100-135 years old. Paterson, the largest city in the service area with a population of almost 160,000, has 223 miles of pipe with 72% of the existing pipes constructed between 1890 and 1925. Clifton, with a population of 90,000, has 211 miles of pipe, with over one-third (1/3) constructed between 1940 and 1950 during, and immediately following, World War II. Passaic, with a population of 70,000, has 73 miles of pipe with almost 70% constructed between 1890 and 1925. Prospect Park has a similar growth pattern to Patterson and Passaic with a population of 6,300 and 9 miles of pipe. Lodi, with a population of 26,000 and 51 miles of pipe, experienced system expansion throughout the 1960's. Finally, North Arlington, with a population of 16,000 and 36 miles of pipe, experienced significant expansion between 1910 and 1930. By the year 2030, almost 60% of the pipes system-wide will be at least 100 years old with some approaching 150 years old.



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Organizational Structure

In 1927 Passaic Valley Water Commission was created by an Act of State Legislature to acquire the privately owned water works system, Passaic Consolidated Water Company, for Clifton, Passaic and Paterson. The Articles of Agreement defining the role of the Commission were finalized in 1931. The following additional water systems were acquired by PVWC over time: Prospect Park (1937); Lodi (1997 lease agreement); and North Arlington (2005).

PVWC is also a partial owner (37.75%) of the NJDWSC. That entity was created by statute in 1916, with the authorization to “develop, acquire, and operate a water supply system for use by any municipality in the “North Jersey District” defined as the 12 northernmost counties of the State of New Jersey”. In 2023 PVWC paid \$9,657,696 to the NJDWSC to fund the annual budget, proportional to PVWC’s ownership share.

PVWC is governed by a Board of Commissioners with the following responsibilities, as detailed in the Articles of Agreement: defining the job duties and compensation of PVWC staff, setting water rates, signing and executing all contracts, approving all money disbursements, and developing and enforcing Commission policies. Originally, in 1931, the Board was a four (4) member Board with one (1) Commissioner appointed from Clifton and Passaic respectively; and two (2) from Paterson. The Board of Commissioners was subsequently expanded to a seven (7) member Board with two (2) Commissioners appointed from Clifton and Passaic respectively, and three (3) from Paterson. The current composition of the Board is detailed in Table 1 below.

Table 1

Owner City	Mayor	Commissioners
Paterson	Andre Sayegh	Ruby Cotton, Secretary
		Carmen DePadua
		Jeff Levine, Vice President
Passaic	Hector Lora	Rigoberto “Rigo” Sanchez, Treasurer
		Ronald Van Rensalier
Clifton	Raymond Grabowski (City Council approves appointees)	Gerald Friend, President
		Joseph Kolodziej

Reporting to the Board of Commissioners is General Counsel, Yaacov Brisman; Administrative Board Secretary, Louis Amodio; and Executive Director, Jim Mueller. The Executive Director works at the general direction and oversight of the Board and is responsible for “...managing, planning, coordinating and administering all activities of PVWC” and “... is also charged with the short-term and long-term strategy of the organization subject to Board review.” All PVWC activities are aimed at achieving the overall company **mission**, as defined in the 2023 PVWC strategic plan: *Safely and efficiently maintain and distribute a secure and sustainable supply of high-quality drinking water as public stewards of health and safety, community well-being and economic growth for existing and future generations.*



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2023 Summary

Industry Leadership

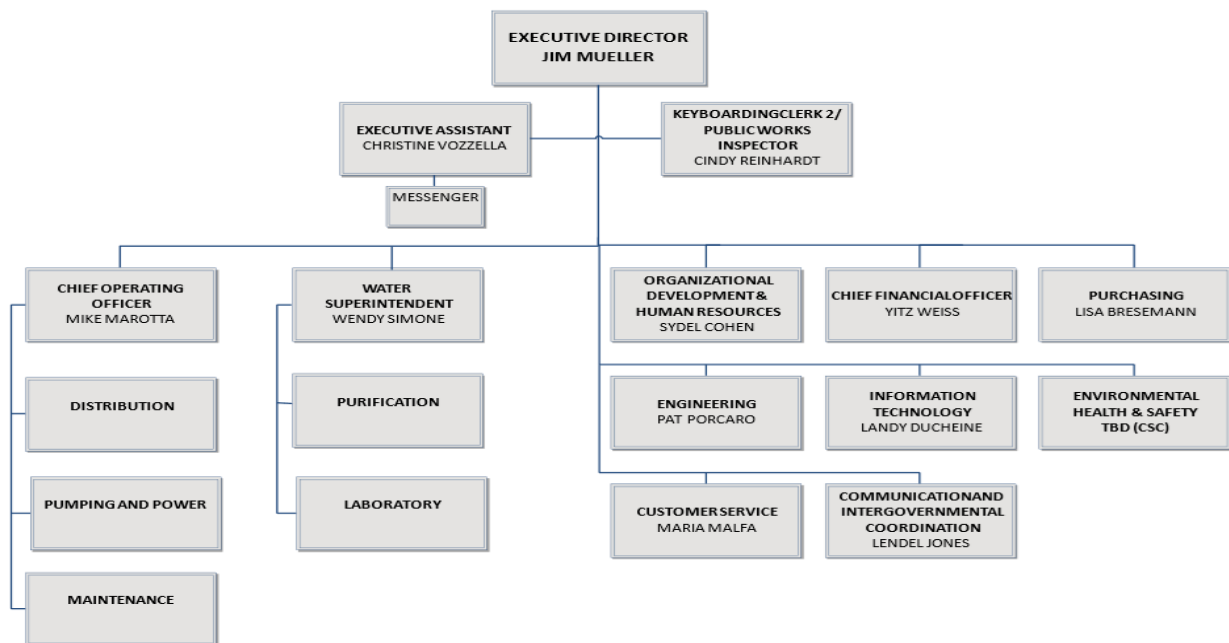
There were several key accomplishments in 2023 that serve as examples of PVWC’s leadership in the water industry. In March 2023 **Joseph Aldighieri** was named NJ Section Chair of the American Water Works Association (AWWA). **CJ Mills**, Distribution department (W-2), was named chairperson of the NJ AWWA Licensed Operators committee. The Executive Director spoke about PVWC’s lead service line replacement program as a model for other communities at multiple national and international conferences. The **Customer Service** department participated in a collaborative effort with Trenton Water Works (TWW) to exchange best practices and lessons learned as TWW looks to revamp their operations. Finally, in October of 2023, PVWC received the **Gold Award** from the Association of Metropolitan Water Agencies (AMWA) for outstanding performance by a water utility. This was a direct result of the hard work and dedication of PVWC staff that is demonstrated in the work highlighted in this Year-In-Review report.

Table of Organization

One of the challenges facing many utilities including PVWC, is an aging workforce facing retirement leaving succession planning gaps in skills and experience. To begin to address this issue, we have focused on instituting a performance management program for all staff; hiring qualified individuals; measuring productivity and promoting capable people to supervisory positions. As of January 2024, PVWC is staffed by 235 full-time employees with over two-thirds (2/3) serving in operational or maintenance roles and the balance serving in administrative/management roles. See Figure 1 below for the PVWC Administration organization chart.

Figure 1

PASSAIC VALLEY WATER COMMISSION ADMINISTRATION ORGANIZATIONAL CHART





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Employee Engagement

The overall **vision** for PVWC, as defined in the 2023 strategic plan is to: *Be an industry leader in developing and applying best practices in all facets of customer service, communications, operations, and administration through a culture of continuous improvement, transparency and transformative organizational investments in people, infrastructure, and systems.* Creating engagement opportunities with all staff is a critical focus to assist in communicating the company direction, discuss issues employees are facing, and generate ideas for how to improve the workplace environment. Throughout 2023 multiple efforts were undertaken for employee engagement including:

- Regular internal department meetings either weekly or bi-weekly with periodic executive director attendance at each department meeting.
- Two (2) surveys were distributed to all employees regarding the following: 1) quality of life issues in the workplace; and 2) medical insurance. As a result of the well documented responses management action was taken improving facility cleanliness, executing parking lot improvements, and HVAC upgrades as well as evaluating medical insurance options and moving to new providers.
- Succession planning meetings have been initiated starting with Distribution and Purification/Laboratory departments to highlight career path development and the need for professional licenses and gaining experience in various facets of operations. Recent accomplishments include **Javier Velazquez** (Purification) obtaining his T-3 license and **Daniel Bartolomeo** (Pumping and Power) obtaining his W-1 license. These succession plan meetings will rotate through departments once the effort is finalized with the Distribution and Purification/Laboratory.
- Holding group meetings with senior staff and the **25** summer interns who worked at PVWC in 2023 to encourage careers in the water industry and take feedback on the work experience to improve the summer help program going forward.
- **90** mass communication emails to all employees distributing the monthly executive director report used to report company status to the Board of Commissioners; the monthly bulletin *PVWC Proud!* highlighting key accomplishments of various staff; alerts regarding local or regional state-of-emergency during severe weather; notices/invitations to employee engagement events as well as transmitting materials covered at those events.
- **11** town halls were held (virtual and in person) to discuss topics ranging from medical insurance, organizational structure, new timekeeping system, the strategic plan, periodic organizational updates, and performance management.

Performance Management

The performance management process is a key tool in creating transparency, fostering continuous improvement, and investing time and effort into people. In 2023 company-wide performance evaluations were rolled out for the first time in over 30 years starting with quarterly evaluations of department heads in the first quarter 2023 (Q1). In subsequent quarters throughout 2023 the evaluations were rolled out in a staggered manner based on the reporting hierarchy of staff. By the fourth quarter of 2023 the vast majority of PVWC staff had been given tasks and standards that the performance evaluations are based upon.

In general, expectations between supervisors and staff are becoming clearer and more aligned over time. This is part of the process of transparent communications. Focusing on measurable productivity continues to be emphasized as well as maintaining high standards of conduct. When there are



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productivity issues identified, potential solutions include improving tools or resources inhibiting work production in addition to improving individual performance and accountability. When conduct issues are identified the initial goal is to raise awareness of the issues and discuss options to address them. We will look to focus on supervision and leadership training as well as technical training and continuing education for staff in 2024.

Key Personnel Changes

Over the course of 2023 there were vacancies in department head positions in Organizational Development and Human Resources (ODHR), Laboratory, and Environmental Health and Safety (EH&S). In addition, there were vacancies created in 2022 with the departures of the prior department head in Distribution and Supervising Engineer in Engineering. These vacancies created opportunities for consolidating departments or adding new leadership to better align with PVWC's mission, vision and core values. Key changes in senior leadership and organizational structure are detailed below:

- **Alexandra Wells** was hired as the new **Supervising Engineer** for the distribution system in the Engineering department and started on January 3, 2023. Alex has been ramping up the evaluations of 650 miles of transmission and water mains to prioritize an accelerated water main replacement program, initiating over \$1M in emergency repairs to the Kearney multiples water mains that were failing allowing water supply to be maintained to customers in North Arlington and Lyndhurst, and managing the \$36M lead service line replacement program. Alex also received the 2023 NJ AWWA Dedication Award for her years of industry service, commitment and fellowship.
- **Mike Marotta** was promoted to the newly created title of **Chief Operating Officer (COO)** in February 2023 with three departments consolidated under him: Distribution, Pumping and Power, and Maintenance. The prior department head position for Distribution was eliminated. Immediately following the consolidation, Mike began identifying needs for modernizing the antiquated vehicle fleet, upgrading work tools and equipment to improve safety and efficiency, assessing qualified staff for key supervisory positions, and identifying opportunities to insource work at a significant cost savings versus contracting out.
- **Lendel Jones** was hired as the new **Director of Communications and Intergovernmental Coordination** in March 2023 with the goal of setting up the department and mentoring staff. Lendel immediately began working with existing staff to initiate new programs for internal bulletins, press releases, community outreach, and emergency notification systems. In addition, Lendel began collaborating with other departments on revamping the website and coordinating facility tours for college students and elected officials.
- **Wendy Simone, Water Superintendent**, was put in charge of the Laboratory in May 2023 in addition to her existing duties managing the Purification department. Wendy immediately began assessing the volume of samples and types of analyses being conducted and reevaluating sampling and staffing needs. The results indicated that of the 50,000 annual samples processed through the laboratory, many tests were no longer needed because of changing regulatory requirements or conclusion of prior studies rendering them obsolete. This resulted in annual savings of almost \$200,000.
- **Joseph Aldighieri**, was appointed to the title of **Incident Commander** in September 2023 and also assumed the duties for EH&S, in addition to his existing duties in the Maintenance department. Joe immediately began working with the executive director and department heads to complete training on the National Incident Management System (NIMS) for key PVWC staff



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and setting up the incident command structure. In addition, he collaborated with the executive director to develop SOPs and identify opportunities for tabletop exercises with neighboring jurisdictions and agencies. He also worked with the COO to identify inventory needs. This pre-established structure makes it more efficient to respond to dynamic and diverse incidents including infrastructure failures, severe storms, and planned facility/infrastructure shutdowns for maintenance or capital upgrades.

- **Sydel Cohen, Director of ODHR** started on October 2, 2023 and immediately began to focus on high priority initiatives including: updating and standardizing policies for disciplinary and leave procedures; updating the employee handbook, working with the Executive Director on obtaining additional recruiting resources and mechanisms, and identifying priority ODHR SOPs for 2024.

Capital Program

Given PVWC's long, rich history and large system, there are significant challenges in terms of aging infrastructure; compliance with more stringent regulations; and climate change impacts to existing facilities from severe weather. It has been 20 years since major upgrades were completed on treatment systems and 50 years since major distribution system upgrades were performed. The age of these systems and evolving regulations requires PVWC to make major capital investments to keep the water system in a state of good repair, maintain compliance with State and Federal regulations, and continue to improve the level of service provided to our customers.

To begin to address the challenges identified above, PVWC's Board of Commissioners recently approved a 5-year capital plan of \$809M, the largest capital plan ever undertaken by the company. Consistent with PVWC's history of leadership in the water industry, the planned capital investments in infrastructure have additional benefits in skills development for staff as well as creation of local community jobs. More significantly, these investments will lead to long-term socioeconomic growth for the communities PVWC serves. All these benefits are derived from a robust and secure water system for future generations to build on and grow.

In 2023 there were major capital projects undertaken and advanced by PVWC as well as key planning initiatives launched that will lead to the development and prioritization of future construction. Below is a summary of key aspects of the 2023 capital program:

- February 27 – March 6th – last phase of coordination with NJ DOT over the last few years to relocate and replace water mains near Rte. 46 and Rte. 3. This included a section of the of the 51" transmission main in Clifton on Valley Road and the repair of 48" gate valve at Great Notch pump station. Value of work estimated at \$5M and was paid for by NJ DOT because it was part of the DOT roadway improvements program.
- February/March – kick-off of four (4) engineering contracts valued at \$800,000 covering the six (6) retail areas to perform condition assessments on water mains and develop a prioritized capital replacement program;
- April – May – PVWC contractor performed emergency investigations and installation of water main lining for failing water mains in Kearney increasing the number of mains available for service from one (1) to four (4) and adding at least a decade of useful life. The cost of the work was \$1.3M.
- July 14th – PVWC achieved substantial completion and beneficial use of the \$28.5M project that installed four (4) 12 megawatt generators at the Alan C. Levine Little Falls Water Treatment Plant.



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- August – Great Falls pumping station and gate house construction begins on \$2.1M upgrade to restore buildings that were in a state of disrepair consistent with historic preservation guidelines. Work will be completed by August 2024.
- September – October – the PVWC Distribution department worked to replace almost 600 feet of 2” water main in Paterson with in-house staff. This main was installed in 1912 and was almost fully tuberculated (narrowing of pipe from iron deposits) and riddled with leaks. This work cost approximately \$120,000 (a cost savings of 50% if the work was contracted out) and resulted in drastic improvement in pressure and reduction in discolored water to local residences and businesses.
- October – November – PVWC began finalizing the initial water storage optimization and distribution system hardening study. This study reevaluated storage tank volumes for New Street and Great Notch reservoirs and identified other precursor work necessary before those reservoirs are taken out of service. The results will inform future PVWC capital prioritization efforts.
- November – December – reached milestone under the \$36M lead service line replacement contract initiated in 2022 by approaching 2,500 lines replaced at no cost to the customer. The project is nearing 50% completion.
- December – capital bond issuance closed for \$104M that will reimburse \$17M in capital cash expenditures in 2023 and forecasted 2024 cash flow for the following ongoing or planned projects:
 - \$6M of distribution improvements on the industrial loop in Paterson that is precursor work for the Levine reservoir storage tanks that will be bid by March 2024;
 - \$2.5M modernization of vehicle and equipment for antiquated fleet of heavy-duty trucks
 - Procurement and installation of hydrants, pipe, valves, and curb stops for a total cost of \$6M. This resulted in a total of 850 new hydrants installed system-wide.
 - Emergency water main repairs for a total cost of \$3M and another \$1.2M was expended on planned water system improvements;
 - \$35M residual process upgrade at the Little Falls treatment plant;
 - \$2.7M of IT upgrades including switches, servers, fiber optic networks
 - Roof and HVAC upgrades in Clifton
 - Planning and design professional services for modernize the antiquated financial management system and electronic payment processing system at a cost of \$477,000.

Emergency Response

Given the age and interconnectedness with other jurisdictions of PVWC’s system, as well as climate change impacts causing more frequent severe weather, the need for robust emergency response and organizational adaptiveness is critical. This applies to both unplanned infrastructure outages and weather events as well as planned outages to support maintenance and construction activities. Below is a summary of various emergency response events that triggered the activation of a formal incident command structure within PVWC.

- February – 51” main replacement on Valley Road in Clifton and 48” valve upgrade at Great Notch requiring 16-hour shifts for seven (7) consecutive days.
- April–May – coordinated with State DOT for prolonged closure of Rte 21 exit 6 ramp in Belleville for investigation and construction activities to address failing water mains (referred as the



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Kearney Multiples) leaking into the roadway and impacting pressure and flow to neighboring towns. Construction took two (2) weeks.

- May - successful 12-hr. test of the new emergency generators was conducted by the contractor, consultants and PVWC staff at the Little Falls site. The entire process took 20 hours including preparatory activities and load transfers, actual testing, and transferring back to normal operations.
- June-July – 42” valve leak on inlet line at Levine Reservoir requiring multiple investigations to determine location and isolation options. Dechlorination treatment was also added to minimize impacts to nearby waterbodies.
- August – catastrophic valve failure on the 120-year-old, 36” pipe in the Little Falls pumping station knocking the facility offline for 6 hours. It took five (5) days to resume normal operations.
- December 2023 – Jan 2024 severe rainfall – activated incident command structure and instituted interim measures at New Street to protect from flooding and avoiding contamination of the reservoir.

In addition to the emergency response events listed above, PVWC distribution staff also responded to **91** water main breaks, **721** emergency mark-outs and **86** emergency lead service line replacements due to leaks throughout 2023.

Community Engagement

Due to evolving expectations regarding communications, responsiveness and reporting to elected officials and community residents; a formal PVWC communications department was created in March 2023. Since that time, communication efforts on key activities across PVWC entire operation include:

- **40** press-releases published and multiple interviews conducted with major news outlets and radio stations regarding lead line replacements, delinquencies and shut-offs; and the overall capital program;
- Two (2) press conferences held covering the following – 1) financial assistance for low-income accounts; and 2) capital work at PVWC’s Great Falls facilities;
- Nine (9) municipal meetings were held throughout the year with the administrations of Clifton, Passaic, Paterson, Prospect Park, Lodi and North Arlington to discuss paving coordination, lead service line replacements, planned capital work, restricting illegal hydrant usage and site restorations for street and curb work;
- Four (4) joint training events between PVWC Distribution staff and local fire departments on proper hydrant operations to minimize water main breaks and occurrences of discolored water;
- Maximizing social media including **341** Facebook posts; **300** Instagram posts; **309** X (formerly Twitter) posts; and **101** Linked-In posts.
- *PVWC Alerts* was established in July 2023 as the company emergency notification system with **142** alerts sent out for events such as main breaks, hydrant flushing, payment system maintenance, and valve work. Opt-in lists for wholesale customers were also created.

Optimizing Operations

Focusing on operations and streamlining efforts to improve efficiency and effectiveness is a key part of being an industry leader. PVWC continued to provide high-quality water in compliance with State and Federal regulations to all customers. The following are key activities that PVWC staff engaged in to continuously improve what we do:



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- The Purification department collaborated with NJDEP on the NJ Area-Wide Optimization Program (AWOP) with the goal of enhancing existing treatment and operations. The main focus was individual filter effluent (IFE) and combined filter effluent (CFE) including identifying best practices and areas that could be further optimized. PVWC serves as a model for other facilities.
- The Distribution department continued to identify opportunities to modernize tools and fleet vehicles to improve safety and efficiency. With better tools and increased training, staff have begun to insource work, saving \$15,000 per in-house job performed vs. contracting out.
- Customer Service staff continued to implement improved ways to connect with customers including in-person appointments, video chats, customer call backs and follow-ups on issues, cross training on duties and doing site tours to better familiarize themselves with operations.
- The executive office and department heads worked with an outside consultant to develop a roadmap for data dashboards to make it easier to visualize and integrate key operational data from all departments. The first phase of work is under development to be rolled out in 2024.
- The consolidation of the Laboratory with the Purification department led to a reevaluation of sampling protocols and resulted in streamlining and scaling back redundant or unnecessary sampling which saves \$200,000 annually.
- The Purchasing department reevaluated the length of contracts to minimize exposure to inflationary prices by moving to one-year contract terms for key supplies and equipment. In addition, they initiated new vendor performance evaluations to document best practices as well as quality or timeliness issues that need to be addressed.
- PVWC senior leadership continued to meet owner cities and retail areas as well as PSE&G on a quarterly basis to discuss key issues regarding street work coordination, paving plans and need for tight restriction of hydrant usage due to resulting discolored water issues and water main breaks, work site restorations and progress on the customer lead service line replacement program.
- At the Little Falls treatment plant and remote sites, the Pumping and Power department coordinated contractor maintenance activities on critical electrical assets throughout the year. This includes inspection, testing, calibration, and preventative/corrective maintenance as needed which is critical to keep equipment in a state-of-good-repair and available for service. Facility outages were necessary to accommodate the activities which needed to be well coordinated amongst our pumping and treatment staff.
- Purification is executing a pilot study to determine the best filter configuration to comply with the new PFAS regulations that are expected in the next few years. The Water Research Foundation (WRF) will be providing national subject matter experts to peer review the pilot methodology and results. Successive demonstration phases of work may also be eligible for funding through WRF.
- The Information Technology department continues to modernize the PVWC hardware and upgrade the network to ensure there is a resilient backbone to build on in the future.

In conclusion, 2023 has been a year of PVWC industry leadership, organizational growth, infrastructure stabilization, operational optimization, and planning for the future. This is a direct result of 175 years of experience as public stewards of health and safety, community well-being and economic growth for existing and future generations. As we look forward to 2024 and beyond, our accomplishments and ability to overcome challenges will continue to result from the efforts of dedicated staff and the support, guidance and leadership of the Board of Commissioners.