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Agendas & Minutes Posted:
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LEHIGH COUNTY AUTHORITY

Published: December 2, 2024

BOARD MEETING AGENDA – December 9 – 12:00 p.m.

In-Person or Virtual Meeting Attendance Options Available: Meetings of the LCA Board of Directors will be held at LCA's Main Office as well as online using the Zoom Meetings application, which includes a telephone option. Public participation is welcomed both in-person or virtually. Instructions for joining the meeting online or by phone are posted on the LCA website in the morning on the day of the meeting, prior to the start of each meeting. You may also issue comment to LCA via email to LCABoard@lehighcountyauthority.org in advance of any meeting or view the meeting at a later time by visiting the LCA website. Please visit https://www.lehighcountyauthority.org/about/lca-board-meeting-videos/ for specific instructions to join the meeting if you are attending virtually. If attending in-person at LCA's Main Office, please follow all safety and sanitation protocols posted.

1. Call to Order
   - NOTICE OF MEETING RECORDINGS

     Meetings of Lehigh County Authority's Board of Directors that are held at LCA's Main Office at 1053 Spruce Road, Wescosville, PA, may be recorded for viewing online at lehighcountauthority.org. Recordings of LCA meetings are for public convenience and internal use only and are not considered as minutes for the meeting being recorded, nor are they part of public record. Recordings may be retained or destroyed at LCA's discretion.
   - *Public Participation Sign-In Request*
2. Review of Agenda / Executive Sessions
   - Additions to Agenda (vote required if action will be taken)
3. Approval of Minutes
   - *November 11, 2024 Board Meeting minutes*
4. Public Comments
5. Action / Discussion Items:

FINANCE AND ADMINISTRATION

- *SEIU Collective Bargaining Agreement: 2025-2027 (Approval)* ***(blue)*** *(digital Board packet, pages 7-60)*
- *Resolution 12-2024-1: Adoption of 2024 Lehigh Valley Hazard Mitigation Plan (Approval)* ***(yellow)*** *(digital Board packet, pages 61-90)*
- *Resolution 12-2024-2: Customer Facility Fees & Connection Fees (Approval)* ***(green)*** *(digital Board packet, pages 91-96)*
- *Capital Program Management Services (Approval)* ***(pink)*** *(digital Board packet, pages 97-100)*

WATER

- *Water Filtration Plant: PFAS Treatment (Approval)* ***(gray)*** *(digital Board packet, pages 101-153)*
- *Emmaus Interconnect (Discussion)*

WASTEWATER

- *Wynnewood Terrace WWTP Expansion - Developer Cost-Sharing Agreement (Approval)* ***(salmon)*** *(digital Board packet, pages 154-164)*

6. Monthly Project Updates / Information Items (1st Board meeting per month) (*digital Board packet, pages 165-173)* **– December report attached**
7. Monthly Financial Review (2nd Board meeting per month)
8. Monthly System Operations Overview (2nd Board meeting per month)
9. Staff Comments
10. Solicitor's Comments
11. Public Comments / Other Comments
12. Board Member Comments
13. Executive Sessions
14. Adjournment

UPCOMING BOARD MEETINGS		
January 13, 2025	January 27, 2025	February 10, 2025

PUBLIC PARTICIPATION POLICY

In accordance with Authority policy, members of the public shall record their name, address, and discussion item on the sign-in sheet at the start of each meeting; this information shall also be stated when addressing the meeting. During the Public Comment portions of the meeting, members of the public will be allowed 5 minutes to make comments/ask questions regarding non-agenda items, but time may be extended at the discretion of the Chair; comments/questions regarding agenda items may be addressed after the presentation of the agenda item. Members of the public may not request that specific items or language be included in the meeting minutes.

REGULAR MEETING MINUTES
November 11, 2024

The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:01 p.m. on Monday, November 11, 2024, Vice Chairman Amir Famili presiding. The meeting was hybrid via in-person and video and audio advanced communication technology ("ACT"), using the Zoom internet application, including telephone option. Each Board member and other attendees of the meeting were able to hear each other attendee and be heard by each other attendee. The public could also participate in the meeting in-person or via ACT, using the Zoom internet application, including telephone option. A Roll Call of Board members present was taken. Brian Nagle, Amir Famili, Ted Lyons, Jeff Morgan, Norma Cusick, Sean Ziller, and Marc Grammes were present for Roll Call, and remained for the duration of the meeting. Kevin Baker entered the meeting at 12:04 p.m.

Attorney Kevin Reid, the Authority's Solicitor, was present along with Authority Staff, Liesel Gross, Ed Klein, Andrew Moore, Chris Moughan, AJ Capuzzi, Chuck Volk, Phil DePoe, Susan Sampson, and Lisa Miller.

Vice Chairman Famili announced that the Board received their electronic and hard copies of the Board packet in advance. A copy of the packet is also available online.

REVIEW OF AGENDA

Liesel Gross announced that there is no Executive Session scheduled for today and the only agenda change is a slight re-order of agenda items.

APPROVAL OF MINUTES

October 28, 2024 Meeting Minutes

On a motion by Jeff Morgan, seconded by Ted Lyons, the Board approved the minutes from the October 28, 2024 meeting as written (7-0).

PUBLIC COMMENTS

None.

Resolution 11-2024-2: Revised Borrowing Resolution, PENNVEST Financing – Lead Service Line Replacement Cycle 1 Project

Tim Horstmann from McNees, Wallace & Nurick was present to provide an overview of the Resolution regarding securing a loan for the Lead Service Line Replacement Cycle 1 Project. He explained that the resolution was previously adopted by the Board; however, PennVEST requested the language to be changed from "grant" to "principal forgiveness loan." The transaction is expected to close this week but there is an issue regarding the security structure of the loan. He said the Authority is working through the concerns raised by PennVEST. If this security structure is not approved by PennVEST, the Authority will move forward with financing the project with cash on hand, then close on the PennVEST grant and loan to reimburse the Authority for the outlay of cash. The issue is with the Authority's existing Trust Indenture for the lease bonds, which includes strict language as to how other loan structures may interact with the bonds. There was discussion regarding how the PennVEST loans work.

On a motion by Norma Cusick, seconded by Sean Ziller, the Board approved Resolution 11-2024-2 authorizing the securing of a loan from PennVEST in the maximum principal amount of $1,555,508.00 and the acceptance of a principal forgiveness loan from PennVEST in the maximum

principal amount of $3,383,892.00 for the purpose of providing funds to finance the replacement of lead service lines and authorizing officials to sign all documents (8-0).

2023 Audit & Financial Statements

Ed Klein introduced Nate Swartz from Zelenkofske Axelrod LLC who was present to give an overview of the financial statements and auditor's report for the years ending 2022 and 2023. Mr. Swartz thanked Ed Klein and his staff for providing the information for the audit in a timely manner. He also noted that the statements from the Pennsylvania Municipal Retirement System (PMRS) were provided in a timely manner this year. Mr. Swartz said the Authority was given an unmodified, or clean, opinion on the Authority's basic financial statements, which is the highest level of assurance provided. He also noted there were no control issues, material weaknesses, or adjustments, no significant or unusual transactions noted, and no disagreements with management that needed to be brought before the Board. The audit complied with all legal and ethical requirements regarding independence during the engagement of the audit. The pension plan had changed from a pension asset to a liability in 2022 due to the market conditions at that time. He complimented the Authority for setting up a trust to address the liability for post-retirement benefits for the Suburban Division, noting that the fund is performing well.

Ted Lyons asked about the unfunded liabilities regarding the pension plan. Mr. Swartz said that the pension plan is well funded and should get return to good standing in future actuarial evaluations.

On a motion by Jeff Morgan, seconded by Ted Lyons, the Board accepted the 2022 & 2023 Audit & Financial Statements (8-0).

2025 Water & Wastewater Rate Schedules

Liesel Gross provided the 2025 Water & Sewer rate schedules noting that the rates were discussed in detail as part of the development of the 2025 Budget, which was adopted October 28, 2024. Ms. Gross said the Authority is recommending an increase in the fire flow testing fee to reflect the actual cost of providing that service to customers. The sampling and laboratory fees for the industrial pretreatment program have also been updated to reflect actual costs. The Suburban water rates are going up 6.0 to 7.5 percent depending on usage and Allentown water and sewer will increase an average of 5.5 percent. This information has been posted on the website for comment through January 1, 2025. Any comments received will be shared with the Board.

On a motion by Norma Cusick, seconded by Sean Ziller, the Board approved the 2025 Water & Wastewater rate schedule (8-0).

2025 Board Meeting Schedule

Liesel Gross presented the 2025 Board Meeting schedule and noted that the meetings scheduled in May 2025 will only be one week apart due to the Memorial Day holiday. She also noted that there is only one meeting in December 2025. Board approval of the schedule is requested so the Authority staff can move forward with the requirement advertisement of the schedule.

On a motion by Norma Cusick, seconded by Marc Grammes, the Board approved the 2025 Board meeting schedule as presented (8-0).

Resolution 11-2024-1: Authorizing the Authority's Application for Grant Funding, Water Meter Replacement Project

Liesel Gross provided an overview of the resolution authorizing submission to the Pennsylvania Statewide Local Share Assessment Grant Program for financial assistance for the water meter replacement project. The grant will allow the Authority to purchase meters in bulk.

On a motion by Norma Cusick, seconded by Sean Ziller, the Board approved Resolution 11-2024-1 authorizing the submission of a PA Statewide Local Share Assessment grant request and designating Lehigh County Authority Officials authorized to execute all necessary documents and agreements in connection with the grant (8-0).

Suburban Division – Water Main Replacement Program Cycle 7 – Change Order

Chuck Volk reviewed the project that was authorized previously to replace approximately 2 miles of pipe in North Whitehall Township, replacing developer-installed plastic piping that was experiencing a high amount of water loss. He reviewed the need for the change order due to unforeseen site conditions and inaccurate data from the developer. The contractor's original bid was based on water services to be installed via trenchless means. However, subsurface conditions prevented the use of the trenchless system and required open-cut installation, which resulted in an exceedance of unit quantities and costs. There was some discussion regarding the pipe material and leak detection capabilities with plastic pipes. The new pipes installed via this project are ductile iron for the water mains and copper for the service lines.

On a motion by Jeff Morgan, seconded by Marc Grammes, the Board approved the Capital Project Authorization Amendment for the Construction Phase in the amount of $172,693.00 which includes the General Construction Contract – Contract Change Order for the General Construction to Pact One, LLC in the amount of $172,693.00 (8-0).

MONTHLY PROJECT UPDATES / INFORMATION ITEMS

Liesel Gross reviewed the November report and noted that the only items for the November 25 meeting are the monthly reports for Finance and Operations. Therefore, she recommends canceling the November 25 Board meeting and sending the monthly reports to the Board. She noted that there are some items listed in the report to give a preview of the agenda for the December 9 meeting.

STAFF COMMENTS

None.

SOLICITOR'S COMMENTS

None.

PUBLIC COMMENTS / OTHER COMMENTS

None.

BOARD MEMBER COMMENTS

Ted Lyons commented on a letter his neighbor received from the Authority regarding the water service line material and water quality testing available from the Authority. There was some discussion about the new requirements from the U.S. Environmental Protection Agency regarding removal of service lines made of lead or galvanized material, and the required notifications that were distributed to customers over the past month.

EXECUTIVE SESSION

None.

ADJOURNMENT

There being no further business, the Vice Chairman adjourned the meeting at 12:51 p.m.

Jeffrey J. Morgan
Secretary

Lehigh County Authority

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MEMORANDUM

TO: LCA Board of Directors
FROM: Liesel Gross, CEO
DATE: December 2, 2024
RE: SEIU Contract: 2025-2027

Attached: Draft Collective Bargaining Agreement between SEIU and LCA

On December 31, 2024, Lehigh County Authority's union contract with the Service Employees International Union (SEIU) is set to expire. A significant effort was made to negotiate a new contract in good faith, and the LCA staff is satisfied that the proposed terms of the new contract are favorable for both the organization and its employees. This memo seeks to explain some of the highlights of the contract changes, as well as to request Board approval of the contract.

The Board action requested is:

- Approval of the new Collective Bargaining Agreement with SEIU for the years 2025 through 2027 in the substantial form presented, with such minor revisions, if any, as approved by the Chief Executive Officer in consultation with the Authority Solicitor.

SEIU Contract Review

The Service Employees International Union (SEIU), Local 32BJ, unit represents 76 employees who work in LCA's Allentown Division, 17 of whom transferred to LCA employment through the lease of the City water and sewer systems in 2013. Through the terms of the lease agreement, LCA honored the terms of the Collective Bargaining Agreement (CBA) that existed at the time of the transfer and an updated contract was negotiated in 2016 and again in 2020.

Through the efforts undertaken by LCA staff and SEIU in 2024, the contract has been revised in meaningful ways to address the environment, hours, and emergency situations in which LCA employees are required to work. Certain provisions have been added to support recruiting and retention efforts. In addition, a wage proposal has been crafted to recognize economic factors and changes that have taken place since the last contract was negotiated in 2020. A red-lined copy of the proposed contract is attached for Board review, with key changes described in this memo.

Work Environment:
The vast majority of LCA employees in the SEIU group work in operational roles that require occasionally long hours, active participation in emergency responses, shift work, weekend and holiday work, etc. The following updated contract provisions provide increased support for employees who face these conditions on a regular basis:

- A rest period of eight hours is provided after an employee works an overtime shift before returning to their regular work schedule. If the rest period extends into the employee's normal work shift, the employee will receive straight time pay for those hours, without requiring the employee to use their regular paid time off to get the rest needed. This will apply most often to employees working overnight to complete an emergency repair (e.g. main breaks) or treatment plant operators who extend their shift from day shift into night shift (or vice versa) to cover a vacancy in the operator schedule. *The existing contract requires the employee to use paid time off if they need a rest period after working in these conditions*.

- Employees who serve on stand-by, meaning they carry a cell phone and/or beeper and are required to be the first LCA employee to respond to emergencies at any time of day or night, will receive three hours of straight time pay on each weekend day or holiday. *This is an increase from the current contract that provides two hours' pay for serving on stand-by on a weekend day or holiday*.

- Due to LCA's plant operations, which require staffing on a 24-7-365 basis, employees are often scheduled to work on an actual holiday that is different from the "observed" company holiday. For example, if the 4th of July falls on a Saturday, the company holiday is observed on the Friday before. However, employees are still scheduled to work on the actual 4th of July holiday that falls on Saturday. In these cases, employees who work the actual holiday will receive double-time pay for those hours worked. *The current contract provides no recognition of employees working on the actual holiday when it falls on a weekend*.

- The allowance for safety shoes has been increased from $120 per pair to $150 per pair, twice per year.

Recruiting & Retention:
During contract negotiations, there was productive discussion about the challenges LCA faces in recruiting and retaining qualified employees for certain positions. Feedback from employees during the negotiation process has indicated the following provisions would be beneficial in increasing LCA's ability to recruit new employees and reduce turnover rates:

- LCA and SEIU agree that during some periods of the year when significant staff vacancies have existed, the current contract term that requires management to repeatedly force the most junior qualified employee to work the overtime shift can have negative impacts on that employee. Therefore, a new "overtime wheel" approach will be developed in 2025 to support more equitable distribution of overtime, and labor-management meetings will be used to discuss overtime assignment procedures.

- Employees who bid on a new job for promotion will be placed into the new pay grade at the same step they are currently in for their prior position. This offers a more significant promotional pay increase for employees who are seeking to advance their careers at LCA. *The current contract provides for employees to attain promotions, but their placement in the new pay grade is the step closest to, but higher than, their current pay rate. In many cases, the "promotion" results in very small pay incentive awarded to the employee.*

- Employees who are working a middle- or night-shift position will receive a shift differential payment of $1.40 per hour, increased from $0.80 per hour.

- A two-week parental leave will be offered to employees for birth or adoption of a child, allowing the employee to use paid time off to take this leave. *The current contract does not include a parental leave provision.*

- Funeral leave is extended to employees who lose a life partner with whom they reside, in addition to all other family categories previously provided.

- Employees who currently hold the position of Utility Technician II will be increased by one full pay grade to improve the alignment of pay for similar jobs across the organization.

- Employees who are hired specifically to provide services to customers in multiple languages will be paid at one pay grade higher than the established pay grade for their position. Employees who are assigned to a specific project specifically to provide language services that fall outside their normal job scope will also be paid at one pay grade higher than their normal pay grade while they are completing the project. *This is a new provision and would immediately apply to two customer service representative positions that are required to be bilingual.*

Wage Adjustment:
When the last SEIU contract was being negotiated in 2020, LCA faced an unknown financial future due to the global COVID-19 pandemic. As a result, both the union and LCA agreed to take a more conservative approach on wage growth to support the organization's financial sustainability. Wage increases offered to LCA employees in this group over the past four years were:

2021 – 2.00%
2022 – 2.25%
2023 – 3.50% (2.50% by contract plus 1.00% added by LCA's Board)
2024 – 2.75%

According to the Bureau of Labor Statistics September 2024 Employment Cost Index report, wage growth during this same period for the government and utilities sectors were:

	State & Local Govt. Workers	Private Industry - Utilities
2021	1.65%	2.59%
2022	3.09%	3.26%
2023	4.71%	3.54%
2024	5.04%	4.48%

Based on this review, a more generous "catch up" increase is warranted in 2025, with future years' increases returning to more traditional levels. The proposed contract includes wage increases for the next three years as follows:

January 1, 2025	7.00%
January 1, 2026	2.75%
January 1, 2027	2.75%

Due to the volatility of the economy during the prior four years, LCA and SEIU have agreed to shorten the term of this contract to three years vs. the traditional four years. It is hoped that this shorter term of contract will allow for a reduced need to "catch up" on wages in future contracts.

Health Insurance:
LCA employees in the SEIU bargaining unit receive health insurance provided by the union's "32BJ Health Fund" and LCA pays 100 percent of the cost via a monthly contribution to the health fund per employee. These costs are comparable to the insurance premiums LCA pays for other employee groups including non-union employees. The health insurance costs are locked in at the time of contract negotiations for the full contract period. During the three-year contract term, LCA health insurance costs for SEIU employees will increase by less than 3 percent per year.

In January 2025, the 32BJ Health Fund will offer LCA a one-month "Health Care Holiday" due to strong fund performance in prior years. This will result in LCA paying only $50 per employee for that month's insurance premiums. The cost savings from the Health Care Holiday will be paid directly to each employee, resulting in no change in cost to LCA.

AGREEMENT

BETWEEN

SERVICE EMPLOYEES' INTERNATIONAL UNION (SEIU)
LOCAL 32 BJ

AND

LEHIGH COUNTY AUTHORITY (LCA)

DRAFT

Term: **January 1, 2025~~1~~ through**
December 31, 202~~7~~4

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AGREEMENT

THIS AGREEMENT entered into as of the ___1st____ day of__January_, **2025~~1~~** by and between the LEHIGH COUNTY AUTHORITY, LEHIGH COUNTY PENNSYLVANIA, (hereinafter referred to as "LCA"), and the SERVICE EMPLOYEES' INTERNATIONAL UNION, LOCAL 32BJ, (hereinafter referred to as "Union"), shall be effective the **1st** day of **January 2025~~1~~** and shall continue through **December 31, 2027~~4~~.**

1. RECOGNITION

LCA hereby recognizes the Union as the sole and exclusive representative for the purpose of collective bargaining with respect to wages, hours, and other terms and conditions of employment for any bargaining unit position involving work within the Allentown Water and Sewer Utility System, assumed by LCA pursuant to the Allentown Water and Sewer Utility System Concession and Lease Agreement between the City of Allentown and LCA, but excluding confidential employees, management level employees, and first level supervisors, as defined in the Act of Pennsylvania General Assembly, Number 195 (hereinafter referred to as "Act 195").

2. MANAGEMENT PREROGATIVES

Section 1. The Union recognizes that an area of responsibility must be reserved to the LCA and its officials and Department Heads if the LCA is to function effectively, and the Union recognizes the prerogatives of the LCA to operate and manage its affairs in accordance with its responsibilities and in accordance with its power and authority. In recognition of the foregoing, unless otherwise specifically provided in this Agreement, it is agreed that the following rights and responsibilities, among others, are reserved for management and are not subject to collective bargaining.

(a) The determination of services to be rendered to the customers of the LCA;

(b) The determination of the LCA's financial, budgetary, accounting, and organization policies, procedures, and programs, and the overseeing of personnel policies, procedures, and programs;

(c) The determination of the duties included in job classifications and the making of personnel appointments;

(d) The right to discipline and discharge for just cause; the right to determine the number of persons to be employed, subject to Section (e)(1) below including the right to lay off personnel for lack of work or funds or when such continuation of work would be wasteful or unproductive; the right to determine reasonable schedules of work, to determine and schedule overtime, to schedule employees to work as the LCA determines necessary, to establish the methods and processes by which such work is to be performed, and to take whatever actions are necessary in emergencies in order to assure the proper functioning of the LCA;

(1) LCA agrees to maintain staffing at sixty-five (65) employees in the bargaining unit at all times.

(2) LCA may use subcontractors to perform bargaining unit work so long as the bargaining unit employment level remains at or above the minimum staffing level, and there is no reduction in the regular hours of work of bargaining unit employees. Except in cases of emergency, before any such subcontracting occurs, LCA will first meet and discuss such subcontracting with the Union.

Section 2.

(a) Delivery of safe and reliable water and sewer services in the most efficient and effective manner is of high importance and interest to LCA management and the Union. Such achievement is recognized to be a mutual obligation of both parties within their respective roles and responsibilities. To achieve and maintain a high level of effectiveness the parties hereby agree that, consistent with each job title, an employee is expected to perform duties in accordance with his or her abilities, training, and experience.

(b) In accordance with this Article, no bargaining unit work shall be performed by non-bargaining unit employees with the following exceptions:

(1) Performance of experimental work beyond the ability of the employee.

(2) The instruction of a bargaining unit employee when such employee is observing the instruction being given.

(3) In the case of a bona fide emergency as long as no members of the bargaining unit are available, and it does not result in a reduction in bargaining unit employees' regular hours of work or overtime.

3. EMPLOYEE RIGHTS

The LCA recognizes that it shall be lawful for public employees to join the Union and to engage in lawful concerted activities for the purpose of collective bargaining, except as expressly limited by the terms and conditions of this Agreement, or to bargain collectively through representatives of their own free choice. Public employees shall also have the right to refrain from any and all such activities.

4. NON-DISCRIMINATION

It is agreed by the LCA and the Union that there shall be no discrimination because of race, color, creed, sex, age, national origin, handicap, political affiliation, family relationship, or sexual ~~**preference**~~**orientation**. It is further agreed by the LCA and the Union that there shall be no harassment and/or bullying of *any* kind or manner permitted at the LCA and any and all of its work sites.

No official or agent of the LCA or the Union shall:

(a) Interfere with, restrain, or coerce employees in the exercise of their right to join or refrain from joining a labor organization;

(b) Initiate, create, dominate, contribute to, or interfere with the formation or administration of any employee organization meeting the requirements of the law;

(c) Discriminate in regard to employment or conditions of employment in order to encourage or discourage membership in a labor organization;

(d) Discriminate against any employee because he/she has given testimony or taken part in any grievance procedures or other hearings, negotiations, or conferences as part of the labor organization recognized under the terms of this Agreement;

(e) Refuse to meet, negotiate, or confer on proper matters, subject to timely notice, with representatives of the Union as set forth in this Agreement.

5. MAINTENANCE OF MEMBERSHIP

Section 1. All unit employees who are members of the Union on the effective date of this Agreement, or who join the Union in the future, must remain members for the duration of this Collective Bargaining Agreement as a condition of employment in accordance with the provisions of Act 195, except that such employee or employees may resign from the Union during a fifteen (15) day period immediately prior to the termination of this Agreement.

Section 2. The Union agrees that there shall be no discrimination, restraint, coercion, harassment, or pressure by it or its officers, agents, or members against any employee who refuses or fails to join the Union.

6. PROBATION FOR NEW EMPLOYEES

New employees shall serve an initial probationary period of one hundred eighty (180) calendar days from the date and hour the employee begins to work after the effective date of employment.

During the initial probationary period, new employees shall have no seniority rights and may be disciplined, terminated, or laid-off at any time at the sole discretion of the LCA, and not subject to the grievance and arbitration procedure set forth in this agreement. However, the LCA, at its sole discretion, shall have the right to extend the probationary period of any new employee, if the employee's performance in the position to which he/she was hired is not satisfactory, and/or the employee has not secured the required licenses or certifications, if any, that are required to remain an incumbent in the position, provided that this action is supported with a written statement giving detailed reasons why he/she is not qualified to perform the duties. There shall be no more than one (1) extension period of one hundred eighty (180) calendar days granted. If the LCA determines that the employee's performance is not satisfactory during the extended probationary period, or if the required licenses or certifications, if any, have not been secured during the extended probationary period, he/she shall be terminated. Such action by the LCA during the

extended probationary period is subject to the grievance and arbitration procedure set forth in this agreement.

New employees shall not be eligible to bid as outlined in Article 12., Job Bidding, for a period of twelve (12) months from the date of the successful completion of his/her probationary period.

Upon satisfactory completion of the probationary period, the employee shall acquire seniority status retroactive to the employee's hour and date of employment. The name, department, plant, classification, and wage rate of all new employees shall be furnished to the Union after the completion of the probationary period.

7. CHECK-OFF

Section 1.

(a) If authorized by an employee by unrevoked written assignment on file with the LCA, the LCA will deduct from the employee's wages a sum equal to such employee's initiation fee or dues owed the Union, as established in accordance with the International Constitution and Local Number 32BJ By-Laws.

(b) If authorized by an employee who is a Union member and who signs an authorization card, the LCA agrees to honor and to transmit to the Union deductions for contributions to the Service Employees' International Union, Pennsylvania, Committee on Political Education, COPE. The deductions shall be in the amounts specified on the authorization cards, and the funds will not be used for local elections.

The LCA and the Union agree to comply with all provisions of said law.

The LCA agrees to deduct dues and/or fees from the wages of employees covered by this Agreement in equal installments as mutually agreed upon and to transmit the monies by check promptly to the Union.

The Union shall indemnify and hold the LCA harmless against any and all claims, suits, orders, damages or judgments brought or issued against the LCA as a result of any action taken or not taken by the LCA under the terms and conditions of this Agreement relating to deductions.

Section 2. A check-off shall commence for each employee who signs a properly dated authorization card during the month following the filing of such card with the LCA. The LCA shall deduct dues and/or initiation fees upon successful completion of the probationary period. LCA shall deduct the initiation fees in equal amounts over ten (10) pays.

Section 3. The dues of this Article shall be deducted from the first and second pay of each month.

Section 4. The Union agrees to indemnify the LCA against any and all loss or expense, including attorney fees, which the LCA may incur by checking off Union dues and COPE contributions. The Union also agrees, at the request of the LCA, to defend any action brought against the LCA arising from such check-off.

Section 5. The LCA shall maintain accurate employee information and effective September 1, 2016, transmit dues, initiation fees and all legal assessments deducted from employees' paychecks to the Union electronically via ACH or wire transfer utilizing the 32BJ self-service portal, unless the Union directs in writing that dues be remitted by means other than electronic transmittals. The transmittal shall be accompanied with information regarding the employees for whom the dues are transmitted, the amount of dues payment for each employee, the employee's wage rate, the employee's date of hire, the employee's location or location change, whether the employee is part-time or full-time, the employee's social security number, the employee's address, and the employee's classification. The Union shall provide any necessary training opportunity to the LCA to facilitate electronic transmissions.

Section 6. The LCA shall provide each new employee the Union's membership and check-off authorization card but shall make no statement to the employees about whether they should sign such card and may not be present while employees sign such cards. The LCA shall direct any questions by employees regarding Union membership, dues, and fees to the Union.

Section 7. With prior approval of the Employer, the Union shall have access during scheduled working hours to the buildings or sites where bargaining unit employees are employed. The LCA shall provide space, if available, for the Union to meet with bargaining unit members at the work site. The LCA shall provide notice to the union of meetings comprised of bargaining unit members only, in which at least 50% of the bargaining unit are expected to be present and shall permit Union representatives to attend such meetings. During such meetings, the Union shall be allowed up to 10 minutes to address bargaining unit members.

Section 8. The Union shall have the opportunity to meet with each newly hired employee at the worksite, for up to thirty (30) minutes, in order to provide the employee with a copy of the Collective Bargaining Agreement, to effectuate the signing of applicable documents, and to explain the terms and conditions of employment provided for by the Agreement.

Section 9. The LCA shall provide the Union copies of any Right to Know Request it receives concerning only the bargaining unit employees of the Union as soon as practicable after receipt of such request.

8. UNION REPRESENTATIONS/VISITATIONS/BULLETIN BOARDS

Section 1.

The LCA agrees to recognize three (3) Shop Stewards for three (3) Plants, as follows: Wastewater Treatment, Water Filtration, Distribution and Collection (including Customer Care Department). In addition, the Union may designate a Chief Steward, creating a total of four (4) Shop Stewards. A Union representative, if he/she first obtains the permission of his/her Manager, shall be permitted to transact the following Union business during the representative's work shift without loss of pay. If the Union business involves discussions or meetings with LCA representatives at the LCA's request, which last beyond the Union Representative's normal work shift, the Union Representative shall be compensated at his/her hourly rate for such time beyond his/her normal work shift.

(a) Investigate and process grievances;

(b) Consult with LCA representatives;

(c) Attend negotiation meetings; and

(d) Meet with local Union officers and other Union representatives concerning the enforcement of any provision of this Agreement.

Section 2.

(a) The Union shall furnish the LCA with a written list of Union representatives. The Union shall have the right to designate alternates to such regularly assigned stewards. Alternate stewards shall not be permitted to transact Union business during normal hours unless the regular steward fails to report to work.

(b) A duly authorized representative of the Union shall be admitted to LCA premises for the purpose of assisting the adjustment of grievances. Such visits shall not interfere with, hamper, or obstruct normal operations. Upon the LCA's request, the UNION representative shall state the purpose and nature of his/her visit. The LCA shall be notified of the visit at least one (1) working day in advance.

(c) The Union shall be permitted to have the use of a single bulletin board in each LCA plant for the sole purpose of posting notices relating to Union activities, which notices must be signed by a duly designated Union official. The Union shall not post any material of a political nature. There should be no defamatory or scurrilous material posted.

(d) Union representatives may conduct Union business, as specified by this Agreement, on LCA time provided that said business does not interfere with work requirements.

(e) The Union shall notify LCA in writing of all designated Shop Stewards. Shop Stewards shall be granted one (1) day off per Contract year to attend Steward training classes, provided written request is submitted to LCA at least one (1) week in advance. LCA

will reimburse each Steward for time lost, up to a maximum of eight (8) hours straight-time pay per day, for one (1) day per Contract year.

9. MEET AND DISCUSS

Section 1.

(a) Upon request of either party, representatives of the Union and the LCA shall meet to resolve problems dealing with the implementation of this Agreement and discuss other labor/management problems that may arise.

(b) A Committee of Job Training, composed of four (4) members of the LCA and four (4) members of the UNION, will be established. This Committee may meet as needed to:

(1) Identify areas where employees' present or future job performance can be enhanced through training programs for the mutual benefit of the employee and the LCA.

(2) Make recommendations for the development and implementation of such job training programs throughout the LCA. Any recommendations of the Committee are not binding upon the LCA and are to be considered as advisory only.

10. SENIORITY

Section 1.

(a) ~~**Seniority shall be defined as the length of continuous full-time service in the bargaining unit of the LCA and the LCA's predecessor, the City of Allentown, and shall be computed from the date of the employee's most recent hire with LCA or the City of Allentown, whichever is earlier, except for former part-time employees who will receive one-half (½) credit for their part-time service.**~~ All full-time employees shall retain their current seniority status as of the execution of this Agreement. Employees' seniority commencing with their date of hire with the City of Allentown shall be recognized for all purposes.

(b) Employees who are off work due to a work-related injury, in accordance with Article 24 of this Agreement, shall continue to accrue seniority for purposes of layoffs, bumping, bidding, and vacations.

Section 2. All employment rights shall be lost by any employee if deemed terminated under one of the following circumstances; IF THE EMPLOYEE:

(a) Resigns or retires;

(b) Is discharged for just cause;

(c) Does not return to work as required within fourteen (14) calendar days when recalled after a layoff;

(d) Is absent due to working elsewhere;

(e) Is absent three (3) consecutive scheduled working days, unless on sick leave, without the LCA's expressed consent;

(f) Fails or refuses to return to work as required after termination of leave of absence, unless an extension of leave has been granted on request made no less than forty-eight (48) hours prior to expiration of said leave.

(g) The LCA will notify the employee on a leave of absence of the date of expiration of the leave at least two weeks before such expiration.

(h) Refuses assigned work when returning from illness or injury or refuses light duty assignments (that have been approved by a physician) while on Worker's compensation or sick leave.

Section 3. The LCA shall not employ part-time employees to perform bargaining unit work.

Section 4. The LCA will furnish the Union an up-to-date seniority list every three (3) months.

11. JOB VACANCIES

Section 1. All job vacancies and new positions that fall within the bargaining unit shall be posted on all bulletin boards for a period of seven (7) working days. The posting shall state the number of jobs, the job classification title, department and plant, working schedule, rate of pay, and requirements of the job. For purposes of this Article, a reclassified position in which there is an incumbent shall not be posted. If a reclassified position is vacant, it shall be posted in accordance with the provision of this section. Employees on any leave of absence shall not be permitted to submit a bid unless said leave expires within fourteen (14) calendar days from the expiration of the posting period and the employee is available for work.

Section 2. Positions determined by the LCA to be filled shall be awarded to the senior employee with the stated qualifications to perform the job.

Section 3. "Qualifications" or "Qualified" is the skill, ability, experience, previous performance, physical condition, education, and other factors which make an employee suitable for the job and for further promotion. The LCA reserves the right to test to determine "qualifications" through valid testing procedures and to determine the method of testing.

Section 4. The LCA's Human Resources Office shall provide the Chief Shop Steward with the names and seniority dates of all bidders including the name of the successful bidder and also provide unsuccessful bidders with the name of the successful bidder. When the LCA requires a test, employees requesting their test results shall receive a pass/fail notification. In addition, the LCA will meet with the affected employee and Chief Shop Steward to address areas that resulted in failure of the test. A score of 70 shall constitute a passing grade on all written tests, excluding the test for clerical employees where a lower passing grade may be selected.

12. JOB BIDDING

Section 1. An employee who is the successful bidder on a lateral, higher, or lower bid will not be entitled to another lateral, higher, or lower bid for a period of twelve (12) months. The twelve (12) month restriction shall not apply to an employee who bids and is awarded a position due to a disability.

However, if there are no qualified and eligible bidders for vacant bargaining unit positions, the LCA may consider other qualified but contractually ineligible bidders who have more than one (1) year of service in their current position. LCA may, at its sole discretion, award the position to such senior qualified but contractually ineligible bidder before transferring or hiring someone from outside the bargaining unit.

A "successful bidder" will be charged the aforesaid bids when the employee has reported to the new job.

If a vacancy has not been filled pursuant to Article 11 of this Agreement, and the vacancy is causing operational issues, LCA may use a temporary employee to fill the vacancy for up to 60 days and will take necessary steps to fill the position. If the position has not been filled after this 60-day period, LCA and the Union shall meet and discuss the filling of the vacancy.

Section 2. An employee bidding to a job ~~**one, two, or three pay grades higher than the employee's current pay grade**~~**with a higher pay grade** shall be placed at the same step in the job as the step the employee was in for his/her prior position**.** ~~**If an employee bids to a job four grades or higher than the employee's current pay grade, the employee shall be placed at the step that is closest to but higher than his/her old rate.**~~ An employee moving laterally shall remain at the same hourly rate and step. An employee bidding down to a job with a lower pay grade shall be placed at the step closest to, but not higher than, his/her current rate of pay.

~~**Note: If any such employee shall be promoted, such promotion shall not affect said employee's placement, on his/her third (3rd) anniversary, to Step 4 of such pay grade.**~~

Section 3 Any employee bidding, promoted, or transferred is subject to a trial period of up to one hundred twenty (120) calendar days. When an employee demonstrates the ability to perform the job before the end of one hundred twenty (120) calendar days, the said employee shall be certified for the position, at which time the Manager will notify the Human Resources Office in writing, and the Human Resources Office will notify the employee and the Union. If the employee's performance in the position to which he/she has bid to, been promoted to, or transferred to is not satisfactory, he/she shall be returned to his/her previous job at any time during the demonstration period, provided that he/she is supplied with a written statement giving detailed reasons why he/she is not qualified to perform the duties and the LCA will revert back to the senior bidder on the list who initially may have refused the job. This employee shall be charged with a bid as described in Section 1 of this Article. An employee who desires to return to his/her previous job must exercise this option within fifteen (15) scheduled working days of the demonstration period; such employee shall be charged with a bid as described in Section 1 of this Article and shall not be allowed another bid for a period of six (6) months. Employees bumped by the return

of this non-certified bidder to his/her original position shall also be returned to their previous positions and shall not be charged with a bid, as described in Section 1 of this Article.

Section 4. If an employee is awarded a position and later a senior bidder is determined to be qualified for a position through the grievance procedure, the senior qualified bidder shall receive back pay (if applicable) either to the date of the grievance filing or to the date of the awarding of the position, whichever is earlier. The amount of said back pay, if such is awarded by the LCA or by the arbitrator, shall not be increased or decreased by the LCA or by the arbitrator.

13. PROMOTION TO NON-BARGAINING POSITION

Bargaining unit employees promoted or transferred to supervisory or confidential positions shall have the right to return to their previous positions provided that they do so within sixty (60) working days from the day they report to their new position.

14. LAYOFF

Section 1. Employees to be laid off from work will be laid off in reverse order of seniority. If it becomes necessary to lay off an employee because of lack of work, changes in job duties, or lack of funds, the LCA will follow this procedure:

(a) The employee to be laid off may accept the layoff or may exercise his/her seniority rights to bump. If the employee chooses to bump, the employee shall not be entitled to choose a particular job. The employee shall identify the job classification. In all cases when an employee chooses to bump, the employee must:

(1) Bump into a job classification where there is a junior employee;

(2) Have the qualifications to perform and be able to perform the job duties of the job classification he/she is bumping into.

(b) The LCA reserves the right to: (1) test/retest employees affected by the bumping process to determine their qualifications and (2) determine the method of testing.

(1) Any employee bumping is subject to a trial period of up to ninety (90) calendar days. When an employee demonstrates the ability to perform the job, the said employee shall be certified for the position. If the employee's performance in the position to which he/she bumped is not satisfactory, he/she shall be laid off, provided that he/she is supplied with a written statement giving detailed reasons why he/she is not qualified to perform the duties. This employee shall have the right to grieve the LCA's decision in accordance with Article 31., Grievance Procedure. In addition, this employee shall have recall rights as stated in Section 3 of this Article. If this employee is determined not to be qualified, the employee who was bumped shall be returned to his/her previous position.

(c) An employee who is off work due to a work-related injury or who is on sick leave shall be entitled to bump as provided under this Article. The LCA reserves the right to test/retest affected employees to determine their qualifications when they return to work.

Section 2.

(a) When an employee has been bumped by another employee, the employee being bumped shall be placed in a non-pay status until such time as the employee has exercised his/her bumping rights and has reported to work.

(b) When bumping into another job with either a higher or a lower pay grade but within a range that contains the step with the same wage that the employee was being paid in his/her job prior to the bump, the employee shall be placed at the step equivalent to his/her wage prior to the bump.

(c) If an employee bumps into a job with a higher pay grade in which all steps are higher than the wage in the employee's job prior to the bump, he/she shall be placed at the lowest step of the new job.

(d) For an employee bumping down who has a rate of pay that is in between two steps of the grade he/she is bumping into, a "plus-step" shall be created at that employee's current rate of pay until the next annual step increase.

(e) An employee bumping down who has a rate of pay that is higher than the highest step of the grade he/she is bumping into shall be placed at the highest step of the new grade.

(f) If an employee bumps into a job in which the pay grade and all the steps are the same, the employee shall remain at the same hourly rate and step.

Section 3.

(a) Any employee laid off due to a lack of work shall retain his/her seniority for a period of four (4) years, and the LCA shall be required to recall the employee to perform a job for which he/she is qualified prior to hiring a new employee or recalling a junior qualified employee. Seniority is not accumulated during the four (4) year period in this Section. If an employee refuses to return to a position for which he/she is qualified to perform, within fourteen (14) calendar days, he/she shall lose all recall rights and seniority. For recall purposes, a full time laid off employee shall be given preference to a part-time employee regardless of seniority.

(b) Notices of recall shall be sent by certified or registered mail to the employee's last known address as shown on the employer's records, and it shall be the obligation of the employee to provide the LCA with a current address and telephone number.

Section 4. As to layoff and recall, Shop Stewards shall have super-seniority, provided they have the necessary qualifications for the job in question.

15. HOURS OF WORK

Section 1. Definitions:

(a) Work Week - shall consist of seven (7) consecutive days, commencing at 0001 Saturday and continuing to 2400 Friday, but subject to items (c) and (d) below.

(b) Workday – the Workday for Treatment Plant Operators ("TPOs") shall be twelve (12) hours and the Workday for all other employees shall be eight (8) hours, except in emergency circumstances as determined by the LCA.

(c) Work Shift - Definitions: (1) day shift – the regularly scheduled hours are primarily during the daytime hours; (2) middle shift – the regularly scheduled hours end at or near midnight; and night shift – the regularly scheduled hours are primarily during nighttime hours.

(d) Start of Work Shift or Overtime Assignment Work Period: The day of the week the employee clocks in or punches in to his or her shift or overtime assignment shall qualify as the date and time the employee's shift or overtime assignment has commenced. For example, if an employee clocks in or punches in on a Friday at 6:00 p.m. and that employee's work shift or overtime assignment continues through early Saturday morning, the employee's hours will be recorded as if all hours were worked on Friday. This term also applies if an employee is called in to replace another employee on a normally scheduled work shift. For example, if an employee is called in at 2:00 a.m. on a Saturday to fill the remaining hours of a normal shift that runs from 6:00 p.m. Friday to 6:00 a.m. Saturday, the employee who filled in from 2:00 a.m. to 6:00 a.m. Saturday would have his or her hours recorded as if they worked on Friday.

(e) Work Shift – Lunch Break. If employees are working a shift that includes a Lunch Break, the lunch break shall be thirty (30) minutes unpaid per shift. Said thirty (30) minute unpaid Lunch Break shall include any travel time if the employee chooses to leave his or her job site during the Lunch Break. If an employee is working off LCA property at a job site, the employee shall at no time leave a job site unattended to go on his or her unpaid Lunch Break.

(f) Hours worked will be payable to the nearest one-tenth ($1/10^{th}$) of an hour.

Section 2.

(a) The regular work week shall consist of five (5) consecutive eight (8) hour workdays (Monday through Friday) with the exception of those employees that work on a seven (7) day twenty-four (24) hour a day basis in the areas of Wastewater Treatment and Water Filtration which include the Operations, Laboratories and on occasion the Dewatering Building. In the event of an emergency, the LCA shall have the right to schedule employees to work as the LCA determines necessary in order to assure proper functioning of the LCA. In addition, if the LCA determines that any operation of work is to be performed on a seven (7) day twenty-four (24) hour a day basis, it shall be included with the work areas stated above.

(b) The aforesaid hours as stated in this section shall not apply in those cases where a sixth day is scheduled in a work week, utilized to achieve the base work week consisting of forty (40) hours.

(c) LCA shall have the right to employ eight (8) seasonal employees, providing the use of such does not cause the layoff or reduction of hours of regular employees in the area in which they are used. Of the eight (8) seasonal employees, two (2) seasonal employees will be assigned to the Water Filtration Department, two (2) seasonal employees will be assigned to the Wastewater Department, two (2) seasonal employees will be assigned to the D & C Department, and two (2) seasonal employees will be assigned as Floaters based on the organizational needs of LCA. LCA agrees not to place any seasonal workers in any area in which there was a layoff of a regular full-time employee for a period of eighteen (18) months after such layoff occurred. Seasonal employees may be employed for a total of sixteen (16) weeks during a calendar year, which may occur during the periods May 1st to September 15th and/or December 15th through January 15th. Seasonal employees may work only in an entry level job or the lowest job classification in the applicable department. Should a seasonal employee work in excess of 16 weeks in a calendar year, the position shall be deemed a permanent position and shall be subject to bid pursuant to Article 12 of this Agreement.

(d) Employees shall be permitted to leave their assigned duties as arranged by Management, for the purpose of personal relief. Employees shall be permitted a fifteen (15) minute relief at a period during the first half of their shift and a fifteen (15) minute relief during the second half of their shift. Said fifteen (15) minute relief period shall include any travel time if the employee chooses to leave his or her job site during the relief period. If an employee is working off LCA property at a job site, the employee shall at no time leave a job site unattended to go on his or her relief period.

Section 3.

If the LCA determines that a change in starting and quitting times is necessary, the LCA will notify the UNION of the change and negotiate the method by which the change is to be implemented. If the LCA determines that a change in starting and quitting times is necessary, the LCA will notify the Union of the change and negotiate the method by which the change is to be implemented. Work schedules showing the regular assignment work shifts, workdays and hours shall be posted on the plant bulletin boards. Affected employees shall be given the option to complete their normal work shift provided that the total of continuous hours worked, including hours on overtime, do not exceed sixteen (16) hours. Approval to leave before completing their normal work shift will be at the discretion of management.

Section 4.

(a) The normal work week for all employees shall be forty (40) hours per week.

(b) With the exception of paragraph (a) above, all employees shall continue to work the same number of hours/week as in effect on the date of execution of this Agreement.

~~**The LCA and the Union agree that they shall address in 2021 labor-management meetings the issue of respite time.**~~

Section 5.

~~(c)~~ **Respite Time: Employees who work an overtime shift after completing their regular shift, or who are called in between shifts for emergencies (e.g. main breaks) must be provided at least an eight (8) hour rest period before returning to regular duty. If the rest period extends into the employees' normally scheduled workday, the employees shall lose no pay and shall be excused from work for that tour and shall be paid at straight time rates for the hours that the employees are excused from work.**

16. OVERTIME

Section 1. Employees shall be compensated at time and one-half (1-½), including shift differential, for hours worked in excess of forty (40) hours in one work week and/or the normal work shift in each workday, except as follows:

(a) Those employees whose normal work schedule is less than forty (40) hours per week will not be eligible for such overtime pay until such time as the employee has actually performed work in excess of forty (40) hours in the work week.

(b) There will be no "pyramiding" of overtime.

Section 2. Vacation, holiday, **personal holiday, comp time,** funeral leave, jury duty, and management authorized Union business shall be included as time worked when computing overtime ~~**and any other paid leaves.**~~ **Sick leave and respite time shall not be included as time worked when computing overtime.** On the job injury shall count as time worked when computing overtime provided such claim is approved under the provisions of the Pennsylvania Workers' Compensation Act.

Section 3.

(a) ~~**To the extent feasible, overtime shall be offered equally to employees who normally perform the job in question.**~~**All employees in a job classification shall be offered an opportunity to perform overtime before it is offered to employees in another job classification.** However, in any event, the LCA shall have the right to require the junior qualified employee(s) to work the overtime in question. Day Shift Overtime will be offered to Day Shift employees **in the job classification** first. Night Shift Overtime will be offered to Night Shift employees **in the job classification** first. For Planned Overtime, in instances where the LCA is aware of a need to schedule overtime hours, the existing practice shall apply in the offering and scheduling Overtime hours (i.e., LCA will first offer overtime to the most senior employee). The offering of overtime will continue to work its way down the list until everyone on the seniority list has been offered overtime. Thereafter, overtime hours will be offered to the most senior employee on the list, thereby continuing the rotation of overtime. If no employee accepts the offer for overtime, then forced overtime will be issued by reverse seniority. However, in the event of a shift vacancy created by a Treatment Plant

Operator (TPO) calling off work, the off-shift employees will be asked to fill the vacancy prior to the adjacent crews (the shift before or after the vacant shift). A TPO may volunteer to work up to 18 hours but shall not be required to work more than 16 hours.

(b) In the event of an emergency where normal overtime procedures are not feasible, as set forth in Section 3(a), the LCA shall have the right to assign employees to work the emergency overtime.

(c) The LCA agrees to keep overtime (normal and emergency) charts and post them for examination by Union representatives.

(d) **The LCA and the Union agree that they shall address in 2025 labor management meetings the need for overtime scheduling processes and procedures that ensure the equitable distribution of overtime. This will include developing and implementing details of seniority and reverse seniority overtime lists (also known as a "rotating overtime wheel") for overtime distribution, and a review and agreement on procedures for managing treatment plant operator shift coverage.**

~~**The LCA and the Union agree that they shall address in 2021 labor-management meetings the need for mandatory overtime.**~~

~~(e)~~

Section 4. Voluntary Compensatory Time

(1) By mutual agreement between LCA, the appropriate local Union representative, and the employee involved, compensatory time at the appropriate rate of pay may be granted in lieu of overtime pay.

(2) Employees who receive compensatory time may accumulate up to two hundred forty (240) hours annually. Compensatory time shall not carry over to the following calendar year.

(3) Employees separated from LCA employment shall be compensated at their regular hourly rate of pay for all unused compensatory time accumulated.

(4) Employees shall use all compensatory time in the calendar year it is earned.

(5) Compensatory time may not be carried from one calendar year to the next.

(6) In the event an employee has unused compensatory time at the end of the calendar year, he/she shall be paid his/her regular rate of pay for all unused compensatory time. The employee's manager may require the employee to use his/her unused compensatory time prior to the end of the calendar year.

(7) Said compensatory time not used by the employee **in the calendar year in which it was incurred** shall be paid in the last pay period of the calendar year **prior to the implementation of the annual general wage increase specified in this contract**~~**for which the employee incurred the compensatory time**~~. Compensatory time shall not accrue during the last **two (2)** pay period**s** of the calendar year.

(8) All requests for use of compensatory time shall be approved or disapproved by the employee's manager. Work needs of the LCA shall control the use of all compensatory time.

Section 5. Treatment Plant Operators ("TPO")

(a) Workday: The normal TPO workday shall consist of twelve (12) consecutive hours except in emergency circumstances as determined by LCA. Employees will not work more than sixteen (16) hours in one day.

(b) Shift Differential: Day shift TPOs will be paid a shift differential of $0.80 cents per hour for all hours worked between 2:00 p.m. and 6:00 p.m. Night shift TPOs will be paid a shift differential of $0.80 for all hours worked between 6:00 p.m. and 6:00 a.m.

(c) Overtime: TPOs will be compensated at time and one-half (1 ½), including shift differential, for all hours worked in excess of forty (40) hours in one week and/or twelve (12) hours in one workday. There shall be no pyramiding of overtime.

Section 6. Any employee who works a full shift for seven consecutive calendar days shall receive two times (2x) his or her regular rate of pay for all hours worked on such seventh consecutive calendar day. However, work that begins on the sixth consecutive day and continues into the seventh calendar day shall not be considered to be a seventh day. **If the seventh day is a holiday worked, the amount paid shall never exceed two times (2x) the employee's regular rate of pay. This means that the employee who works a holiday on the seventh consecutive day worked would receive 2x pay for the worked holiday and holiday pay at straight time (i.e. his/her regular rate of pay).**

17. WORK ASSIGNMENT

Section 1. Daily Work Assignment

In assigning daily duties in non-emergency situations, the LCA agrees to use the senior-qualified non-probationary or certified employee in circumstances where there are more staff available within a job classification than the equipment, material, and supplies will accommodate and/or the workload requires.

Employees not assigned to work within their job classification shall be required to do work in any lower job classification wherever the LCA deems necessary within that particular department. Assignments from one department to another shall be based on reverse seniority within their job classification. The LCA reserves to itself the right to assign duties within a job classification and, further, the right not to interrupt job assignments exceeding one (1) day until the job is completed. Furthermore, the LCA reserves the right not to interrupt or disrupt shift and crew designations when making any of these work assignments. Employees shall not be entitled to choose particular jobs within their job classification.

Section 2. Temporary Assignment

The LCA will offer to qualified employees, to the extent feasible, temporary assignment equally to those qualified employees on a seniority basis. The LCA reserves the right to test interested employees to determine their qualifications. Furthermore, the LCA reserves the right not to interrupt or disrupt shift and crew designations when making any temporary assignment.

An employee temporarily assigned to a higher rated job shall receive the higher rate of pay retroactive to the first full day upon the completion of four (4) full working hours. Job assignment shall not be made to avoid the intent of this Article.

18. EMERGENCY PHASE-BACK

When employees cannot reasonably be phased back from emergency night shifts to their regular work schedules, they will be given the following options: (1) working middle shift; (2) working regular shift; (3) vacation day; (4) personal holiday; (5) zero day. All other affected departments will continue their existing phase-back schedules.

19. STANDBY & CALL-IN

(a) Standby status is the condition whereby, at the request of the LCA, an employee is required to remain within the immediate Allentown area and be prepared to work within a reasonable period of time. Such employees shall be issued, at the LCA's expense, "beepers" or other similar technology to notify the employees that they are needed. Any employee in standby status will receive one (1) hour of pay at the regular hourly rate, excluding shift differential, for each workday (Monday-Friday) on standby, and ~~two (2)~~ three (3) hours' pay at the regular hourly rate for each Saturday, Sunday, or official LCA holiday on standby.

(b) Employees who are called in to work at times other than hours for which they are scheduled will receive four (4) hours of straight time or time and one-half (1-½) for actual hours worked, whichever is greater.

~~(b)~~(c) **An employee's compensation for being called in under the provisions in this section shall include commute time. The commute time paid for each employee will be determined based on the travel time computed from the employee's permanent residence to his/her normal work location, using Google Maps to determine the fastest route. A list of all employees' residences and standard travel time to be applied for the purpose of paying for commuting time will be developed and maintained by management. An employee who moves to a new permanent residence is responsible for notifying management.**

~~(c)~~(d) When an employee completes the job for which he or she has been called, he or she will be allowed to return home, provided no additional work is assigned. A subsequent call-in within the first four-hour call-in period which causes the employee to work beyond the initial four (4) hours will qualify the employee to be paid one and one-half (1 ½) times the hourly rate for the actual time worked exceeding the four-hour time period. However, in no circumstances will the employee be paid a second minimum

of four (4) hours if he or she is again called out within the four (4) hour period for which he or she was initially called.

~~(d)~~(e) When an employee is ordered to report early for work or to continue to work without interruption after his or her scheduled shift end time, he or she shall be paid overtime and shall not be eligible for the minimum as set forth above.

~~(e)~~(f) When an employee is ordered to report to work within two (2) hours of the start of his or her scheduled work shift, the employee shall remain at work until the commencement of his or her scheduled work shift start time.

~~(f) **The LCA and the Union agree that they shall address in 2021 labor-management meetings the need to use substitutes in standby assignments.**~~

20. SHIFT DIFFERENTIAL

The LCA will pay a shift differential of ~~**eighty cents ($.80)**~~**one dollar and forty cents ($1.40)** per hour as follows:

(a) ~~**All persons who work either a middle or night shift will receive differential pay for the actual hours worked. Partial shifts will be payable to the nearest one-tenth (1/10th) hour**~~**All employees who are regularly scheduled to work either a middle or night shift will be paid shift differential for all hours worked on those shifts.**

~~(a)~~(b) **Employees who are filling a vacancy to work on a bona fide regular middle or night shift, either a full shift or partial shift, will be paid shift differential.**

The LCA will pay a shift differential of eighty cents ($0.80) per hour to day shift employees whose work extends beyond the employee's normal day shift schedule due to an extended work assignment or emergency operation.

~~(b)~~ Shift d~~D~~ifferential in all cases will only be paid for time actually spent on the job: lunch breaks, holidays, vacation, sick leave, or employees on standby will not qualify for differential pay.

21. BENEFITS FOR EMPLOYEES HIRED AFTER MAY 31, 1992

(a) Full-Time Employees

Holidays, personal, sick, and vacation days shall be earned by full-time employees but not used during the employee's first four (4) calendar months. Full-time employees will be eligible for pension benefits following completion of ninety (90) days of employment. Employees shall be eligible to enroll for health and welfare benefits after completing sixty (60) calendar days.

Sick leave shall be earned but not used during the employee's first four (4) calendar months of employment.

22. INSURANCE

Section 1. Active Employees.

(a) Health Insurance.

(1) The LCA agrees to make payments into a health trust fund known as the "Building Service 32BJ Health Fund," under such provisions, rules, and regulations as may be determined by the Trustees, as provided in the Agreement and Declaration of Trust, to cover employees covered by this Agreement who are regularly scheduled to work more than 39.5 hours per week, and their eligible dependents, with such health benefits as may be determined by the Trustees of the Fund.

(2) The monthly contribution to the Health Fund for each covered employee shall be:

Effective January 1, 2025~~1~~: - **$1,~~646~~851.00*~~*~~**

Effective January 1, 2026~~2~~: - **$1,~~720~~880.00**

Effective January 1, 2027~~3~~: - **$1,~~799~~926.00**

~~**Effective January 1, 2024:** - **LCA's Contribution to be established by the Fund Trustees Not to Exceed 6%**~~

~~*~~ During one month in 2025, the Building Service 32BJ Health Fund will provide LCA with a one-month "Health Care Holiday" in which LCA will pay $50 per employee for benefits provided during that month, and $1,801 will be paid directly to the employee as a "Health Care Holiday Bonus."

(3) If any future applicable legislation is enacted, there shall be no duplication or cumulation of coverage and the parties will negotiate such changes as may be required by Law.

(4) Newly hired employees shall have a waiting period of sixty (60) days before becoming eligible to be participants in the Funds, and no contributions shall be made on behalf of newly hired employees during the sixty (60) day period.

(b) Prescription Safety Glass Plan.

LCA's Prescription Safety Eyewear Program is attached hereto.

(c) The Building Service 32BJ Health Fund currently provides life insurance to participating employees in the amount of $25,000.00. Should the Fund trustees determine to eliminate this benefit, LCA shall be obligated to provide life insurance

coverage in the amount of $20,000.00 for all full-time employees who have completed four (4) calendar months with the provision for double indemnity for accidental death and dismemberment.

(d) Cost Containment Committee

At the request of the Union, the LCA and the Union will create a Cost Containment Committee to discuss ways to control medical costs in the future. The Committee will be made up of three (3) members from both the LCA and the Union. The Committee will meet at mutually agreeable times and places.

Section 2. Retired Employees.

(a) Health Insurance.

LCA shall provide post-retirement health and welfare benefits to eligible bargaining unit employees who retire on or after January 1, 2021. LCA shall recognize all service by those individuals employed by the City of Allentown prior to the Lease Concession Agreement between the City of Allentown and Lehigh County Authority for purposes of determining eligibility for such post-retirement health and welfare benefits.

(1) Eligible Employees – Regular employees hired before January 1, 2017. Employees hired after January 1, 2017 will be eligible to continue health care only for a period of three (3) years from their retirement date, or until reaching age 65, whichever occurs sooner.

(2) Coverage – Coverage will be equivalent to medical and prescription drug coverage provided to active, non-Union employees of LCA.

(3) If a covered employee retires, he/she may elect to enroll in the healthcare coverage provided by the LCA to retirees as described in (1) above. The coverage for the retiring employee may start at any age and remain in effect until the retiree has reached the age of sixty-five (65).

(4) If the retiree's spouse does not have substantially equivalent health insurance in terms of coverage and cost (including but not limited to out-of-pocket costs, deductibles, and contribution to premium), the health insurance coverage will include the retiree's spouse; however, the spouse's coverage will continue only while the retiree remains eligible for health insurance pursuant to Section 2(a)(3) above or the covered retiree dies.

(5) The coverage will not include dental.

(6) If an employee retires, he/she may opt-in or opt-out of the medical plan as described in (2) above at the time of his/her retirement. If a covered employee chooses to opt-out of the current medical program as described in (2) above at the time of his/her retirement, that retiree may elect to opt-in to

a medical program offered to retired SEIU employees as described in (2) above at the time of subsequent, future open enrollment periods, but prior to the ~~w~~age of 65. However, the election of the retiree to opt-in to a future LCA sponsored medical program for retired SEIU employees may be exercised only once during each retiree's lifetime. If a retiree has elected to opt-in to the LCA sponsored retiree program for retired SEIU employees, and elects to opt back out again in the future, that retiree shall forever be precluded from opting back in. Should a covered employee choose to opt-in to the medical program offered as described in (2) above at the time of his/her retirement, that retired SEIU employee may, at any time in the future, elect to opt-out of the LCA sponsored medical program. A retiree who exercised that option to opt-out after having been a covered employee at the time of his/her retirement will be permitted to opt back in one time in the future to a medical program as described in (2) above at the time of a subsequent, future open enrollment period, but prior to age 65.

(7) An employee who retires with at least fifteen (15) years of service will pay twenty-five (25%) percent of the monthly health insurance/prescription drug premiums.

(8) An employee who retires with less than fifteen (15) years of service, but with at least ten (10) years of service, will pay fifty (50%) percent of the monthly health/prescription drug premium.

(9) An employee who retires with less than ten (10) years of service is ineligible.

23. SICK LEAVE

The LCA will grant annual sick leave to each of its full-time employees subject to the following conditions:

(a) Sick leave may be accumulated for a maximum of two hundred (200) workdays.

(b) Sick leave will be charged against that portion which was accumulated at the earliest date.

(c) Sick leave will be accrued at the rate of five (5) hours per pay period for a total of 16.25 days per year. Accumulation is based upon a 40-hour work week.

(d) The accrual of sick leave on a bi-weekly basis will begin with the employee's hiring date with the accrual being added to the accumulated total as of the first pay in the next calendar month. Newly hired employees shall earn sick leave during their first four (4) calendar months, but they shall not be able to use such earned sick leave until they have completed four (4) calendar months.

(e) For payroll purposes, if an employee works part of a day and using the remaining as sick leave, the LCA will pay employees for hours actually worked and the balance will be charged against their sick days. For example, if an employee works one (1) hour out of an eight (8) hour shift and uses the remaining seven (7) hours as sick leave, the employee will be paid one (1)1 hour with the remaining seven (7) hours charged against the employee's sick bank accrual.

(f) No employee will be paid for any sick leave days in excess of the number accrued.

(g) Any employee using sick leave shall call his/her immediate supervisor, or a supervisory person designated by the Manager, at least thirty (30) minutes before the scheduled starting time for that day's work, stating the nature and estimated length of the illness.

(h) Absent a bona fide documented emergency, any employee who fails to call in according to the rules set forth herein will not be compensated for the day.

(i) The employee must call in to the supervisor, or Manager's supervisory designee in accordance with Section (g) above, every day of the illness, each time stating the nature and estimated duration of the illness. The LCA's Human Resources Office may permit exceptions to the daily call-in requirement only in cases of long-term illness; however, employees are still required to call-in to their supervisor every two-weeks.

(j) In a case of serious illness or accident which prevents the employee from calling in sick him/herself, he/she may have someone else call in for him/her. In such cases, however, the employee him/herself must also contact the supervisor, or Manager's supervisory designee, as soon as the employee is able to do so.

(k) The employee will remain at his/her primary residence of record (referenced to as "home" throughout this Article) while on sick leave unless hospitalized, consulting with a physician or other recognized practitioner, obtaining medication, or pursuing medically required exercise. During regular working hours, the employee must notify his/her supervisor, or Manager's supervisory designee, when he/she leaves home for and upon returning from a medical appointment, pharmacy visit, etc.

(l) The employee's supervisor, or the Manager's supervisory designee, may call or visit the employee on sick leave. The LCA will not pay any employee who has reported off sick and is found not to be at home, unless the employee has reported in according to the above. An employee who is found not to be at home, and who has not reported in, will also be subject to disciplinary action.

(m) Upon returning to work after being on sick leave, and prior to the start of work on the day of returning, the employee must report to a supervisor.

(n) The employee must submit a medical certification form if the use of sick leave exceeds three (3) consecutive days. The employee is required to notify his/her

supervisor of any changes to the expected date of his/her return to work and provide a new medical certificate with the new return to work date. Whenever an employee's illness extends for a period of time greater than one (1) calendar month, an additional medical certification form will be required for each additional full or partial month.

(o) Any employee who reaches or who has reached his/her fourth occasion of sick leave usage within a twelve-month period may be required to submit a medical certification form. An employee who exceeds five (5) unrelated occasions of sick leave in a twelve-month period will be subject to disciplinary action. For the purposes of this Section, an "occasion" of sick leave usage is any period of consecutive days (or portions of consecutive days) off; or any single day or single portion of a day. An occasion of sick leave will not include time off due to an on-the-job injury.

(p) It shall be the prerogative of the LCA to conduct an investigation and/or to require an employee to provide a medical certification form in any cases where the possibility of excessive use, improper use, or abuse of sick leave is suspected.

(q) The LCA may require that, prior to starting work, an employee returning from sick leave supply a medical certification form stating that the employee is sufficiently recovered from the illness which caused the absence to return to work and the employee may return to work without restriction.

(r) In all cases in which an employee must submit a medical certification form, the medical certification must be from a physician, must be on the certification form supplied by the LCA and be completely filled out, and must state the following:

(1) That the employee on sick leave has been examined;
(2) The nature of the illness or injury;
(3) Whether or not the employee is fit to work; and
(4) The probable date at which the employee will be able to return to work.

It is the responsibility of the employee to obtain a LCA medical certification form from the LCA and present it to the treating physician. The LCA will not be responsible for any problems or costs that may occur between the treating physician and the employee in acquiring a completed LCA medical certification form.

(s) Any employee who is or has been placed under a requirement to submit a medical certification form for every illness will continue under that requirement until the employee has gone twelve (12) months with no occasions of sick leave. Failure to submit a required LCA medical certification form will result in an employee not receiving his/her sick pay benefit. The employee must visit the physician's office on one of the days that the employee was out of work.

(t) The LCA will not make sick leave payments to any person whose injury or illness is attributable to employment outside the LCA service; and the LCA reserves the

right to demand repayment of the sick leave benefits made under such circumstances.

(u) Any disabilities caused or contributed to by pregnancy, miscarriage, childbirth, or recovery from any of the aforesaid shall be construed as a sickness or disability and shall be treated as such under any and all terms and conditions of this Agreement.

(v) Each covered employee taking normal, full retirement (60 years of age, or 20 years of service and 55 years of age) will be compensated as additional severance pay sick days accrued during his/her career and unused at the time of retirement, payable as follows:

i. For employees with 100 accrued sick days or less, the employee shall receive $10.00 for each unused sick day**.**~~;~~

ii. For employees with 101 – 150 accrued unused sick days, the employee shall receive $20.00 for each unused sick day **in excess of 100 days. For example, if the employee has 120 accrued sick days, they shall be paid $1400.00 (100 x $10.00) + (20 x $20.00).**~~; and~~

iii. For employees with 151~~0~~ – 200 accrued unused sick days, the employee shall receive $40.00 for each accrued unused sick day **in excess of 150 days. For example, if the employee has 151 accrued sick days, they shall be paid $2,040.00 (100 x $10.00) + (50 x $20.00) + (1 x $40.00).**

The maximum dollar payout under this Article shall not exceed $4,000.00.

(w) The parties shall establish a program to permit participating employees covered by this Agreement to donate accrued vacation or sick time to a leave bank for employees who can demonstrate a catastrophic medical condition and who are approaching exhaustion of all paid leave.

24. WORK-RELATED INJURY

Section 1.

(a) Under this Article, any employee who qualifies for the benefits under the "Pennsylvania Workers' Compensation Law and Occupational Disease Laws" shall not be entitled to use sick, vacation, personal, or any other paid leave during the period of eligibility. Sick leave, personal leave, and vacation shall accrue during the period of eligibility. Sick leave accumulation may be taken at the expiration of the eligibility period if the disability continues.

Section 2. An employee may use accrued sick leave for any absence caused by a compensable injury for workdays for the period from the date of the injury through the seventh day after the injury. On the eighth day after the injury, Workers' Compensation payments will begin, and the employee may no longer use and will not be charged sick leave.

Section 3. An employee is required to refund to the LCA the amount of overpayment of pay if an overpayment results because a claim denial or approval is issued under the operation of the Workers' Compensation Insurance program after the issuance of a LCA paycheck to the employee for the same period of time covered by a Workers' Compensation payment.

Section 4. LCA paid coverage for life insurance and medical insurance under the LCA's program, as provided in Article 22, will continue for the period of time that the employee is on a work-related disability as provided for under this Article.

Section 5. An employee off work because of a work-related injury and who qualified for benefits under the "Pennsylvania Workers' Compensation Law and Occupational Disease Laws" shall be permitted to submit a job bid only if said leave expires within thirty (30) calendar days from the expiration of the posting period and the employee is available to work.

Section 6. An "on-the-job injury" shall count as time worked when computing overtime subject to the following conditions: The injured employee:

(a) must report to his/her supervisor, as soon as possible, the nature of his/her injury and the cause of such injury:

(b) must obtain treatment as prescribed by the Pennsylvania Workers' Compensation Act, including use of the LCA's designated health care providers;

(c) may seek emergency medical treatment as provided by the Pennsylvania Workers' Compensation Act;

(d) must submit, to the LCA, a medical certification form from the treating physician stating the following:

(1) that the employee has been examined;
(2) the nature of the injury;
(3) whether or not the employee is fit to work with/without restrictions;
(4) the probable date at which the employee will be able to return to work with/without restrictions.

25. VACATION

Section 1. The LCA will grant to each of its full-time employees who have completed four (4) calendar months, vacation leave as follows. Years of service shall be defined to mean continuous years of service since the last date of hire as a LCA employee, as defined by Article 10, (Seniority).

Years of Completed Service	Vacation Hours Earned per Year	Vacation Days Earned per Year
~~**Less than 1 year**~~	~~**.625 day for each completed month**~~	
0 – 1	40	5

2 and 3	80	10
4 and 5	112	14
6 through 10	128	16
11	136	17
12	144	18
13	152	19
14	160	20
15 or more	200	25

Section 2. All vacation leave will be accrued at the rate indicated in the above table. If an employee has an anniversary date that would impact his/her vacation benefit during the calendar year, the annual vacation allowance will be prorated to the nearest day to reflect the new benefit. Hours worked shall mean regularly scheduled hours exclusive of overtime.

(a) Effective January 1 each year, all employees shall be eligible to take all of their vacation days as per the schedule in Section 1 of this Article, subject to the approval of their Department Head. The accrued vacation shall be used during the calendar year which begins January 1.

(b) No employee shall use vacation leave in an anniversary year in excess of the aforesaid tables, except as described below:

Each year employees are required to take at least 10 vacation days or lose them. Additional days beyond the first 10 days may be carried over to the following year. The carry over days will be classified as "prior year" vacation. Each year, an employee can only carry over as many days as they will earn that year. Any employee who is unable to take his/her accrued vacation due to a work-related disability may carry over to the succeeding anniversary year all unused vacation; however, any carry over days must be used in the anniversary year to which they have been carried over.

(c) All vacation leave schedules must be approved by the Department Head. Work needs of the LCA shall control all vacation scheduling.

(d) In the event voluntary agreement between employees over disputed vacation selections cannot be reached, preference will be given to the employee with the most seniority.

(e) Vacation time will not be granted as extra pay in lieu of time away from the job.

(f) If LCA employment is terminated due to retirement or resignation and an employee gives two weeks' notice, he/she will be paid for any remaining "Prior Year" vacation. In addition, he/she will receive a payout for any remaining current-year vacation, prorated for the amount of time actually worked during the calendar year. If an employee used more days than the prorated amount allowed during that partial year, a deduction will be made to the final paycheck to reflect that over-usage. The LCA, at its sole discretion, may accept the resignation immediately or at any time during the

two-week period. The employee, however, by giving two (2) weeks' notice, is entitled to two (2) weeks' pay.

(g) Accumulation of vacation leave is granted only to full-time employees.

Section 3. In order to change a vacation day to sick leave, the employee must give a twenty-four (24) hour notice to his department or submit a LCA medical certification form stating that the employee was hospitalized during that time.

26. HOLIDAYS

Section 1. The LCA shall give to each of its full-time employees who have completed four (4) calendar months of employment the following seven (7) holidays:

New Year's Day
Martin Luther King Day
Memorial Day (last Monday in May)
Independence Day
Labor Day (first Monday in September)
Thanksgiving Day
Day after Thanksgiving
Christmas Day

(a) Any employee who is absent without leave either the workday before or the workday following a holiday will forfeit the holiday pay. Any employee who reports off work sick the workday before or the workday following a holiday must submit a medical certification form as described in Article 23. Any employee who fails to submit such medical certification shall forfeit sick pay for that day and shall forfeit the holiday pay. Furthermore, any employee who reports off work sick when he/she is scheduled to work on a holiday will only receive sick pay for the day provided he/she submits medical certification as stated above.

(b) Any full-time employee who has completed four (4) calendar months shall receive paid holidays as described above. Seasonal part-time employees who have completed four (4) calendar months and who are scheduled to work twenty (20) hours or more per week and who are scheduled to work that day shall receive four (4) hours for each fixed holiday.

(c) Those employees who have completed four (4) calendar months and who are required to work on any holiday shall be compensated at time and one-half (1 ½) the employee's regular rate of pay for the number of hours actually worked, in addition to their eight (8) hour holiday pay for that day.

(d) Those employees who have completed four (4) calendar months and who are not required to work on one (1) or more of the above-listed holidays shall be compensated at their regular rate of pay for that (those) unworked holiday(s).

(e) **Those employees who have completed four (4) calendar months and who are required to work on New Year's Day, the Fourth of July, or Christmas Day will receive two times (2x) pay for the hours worked on those holidays when those actual holidays fall on a Saturday or Sunday.**

Section 2.

(a) The LCA will grant its full-time employees who have completed four (4) calendar months of employment up to seven (7) personal days in addition to the aforesaid holidays. All said requests may be approved or rejected by the Manager or his or her designee. Work needs of the LCA shall control all personal days. However, one (1) personal day shall be designated as an Emergency Personal Day and shall be granted so long as the employee notifies LCA at least one (1) hour prior to the start of his or her scheduled shift. If the Emergency Personal Day falls on a Holiday as identified in Article 26, the Employee shall provide written proof upon the employee's return to work of the basis for the Emergency Personal Day request, i.e., repair receipt, repair estimate, note from child's school, etc., in order to be paid for that personal day.

(1) All personal days shall be available for use beginning January 1 of a calendar year. During the initial year of employment and the year of termination, the personal day entitlement will be prorated to the nearest whole day based upon the actual number of days employed during that calendar year.

(b) Personal days may be used with the understanding that if an employee is separated from LCA employment, for any reason, and the personal days used exceeds the number actually accrued, the LCA will deduct any liabilities owed the LCA from the employee's final paycheck. The exception to this rule will be the following: (1) An employee retiring with at least twenty (20) years of service; (2) Disability related pension; (3) Employees who are laid off; and (4) Any employee who dies while actively employed.

(c) Personal days must be used by the last pay period paid in the calendar year.

27. LEAVE OF ABSENCE

Section 1. Whenever possible the LCA agrees to grant a leave of absence for up to ninety (90) calendar days per Contract year without loss of seniority rights and without pay to any employee designated by the Union when serving in the capacity of official Union business. Whenever possible, such unpaid leave will be taken in increments of at least one (1) day.

Section 2. The LCA may permit, with appropriate medical certification, unpaid leaves of absence for personal but not family medical reasons of up to, but not more than, one hundred eighty (180) calendar days per calendar year. Also, the LCA may permit unpaid leaves of absence for family hardship reasons of up to, but not more than, ninety (90) calendar days per calendar year, under the following conditions:

(a) The employee must have exhausted all sick and vacation leave to be eligible to apply for an unpaid medical leave of absence.

(b) The employee must make the request for the unpaid leave of absence in writing to his/her Supervisor, who in consultation with his/her Department Head will approve or disapprove the request.

Section 3. Request for unpaid leave of absence shall be made at least thirty (30) days prior to its commencement, if possible.

Section 4. Prior to commencing an unpaid leave of absence granted under the terms of this Article, an employee will be notified in writing of the monthly payment required in order to continue his/her health and life insurance coverage during the term of the unpaid leave of absence. The date by which payment must be made by the employee and the method of payment will be stated in the notification.

Section 5. During the term of the unpaid leave of absence, no sick leave, vacation leave, or seniority shall be accumulated, nor shall any such employee be entitled to holiday pay if a holiday occurs during the leave of absence.

Section 6. During the term of any unpaid leave of absence, employees shall not be eligible to bid as outlined in Article 12, JOB BIDDING unless said leave expires within fourteen (14) calendar days from the expiration of the posting period and the employee is available for work.

~~**Section 7.**~~ **Section 7. Each employee shall be entitled to a two-week leave for the birth or adoption of a child provided that the employee uses his/her available paid time off while on this leave. Paid time off shall be taken in the following order: vacation time is used first, personal holiday time is used second, and sick time is used third.**

28. JURY DUTY/COURT DUTY

Section 1. An employee summoned/subpoenaed by a United States or Pennsylvania Court of Law to serve as a juror will be excused from work, if scheduled, and will receive his/her regular daily rate for those days attendance is required.

Section 2.

(a) An employee who is asked to appear as a witness or is subpoenaed by a Federal Court of Law or a State Court of Law to testify as a witness concerning matters related to the employee's LCA job will be paid at the rate equivalent to his or her hourly rate for those hours the appearance was required. Employees shall be given up to two (2) paid hours to return to work during a partial day where they serve as a juror or a witness in a Federal Court of Law or a State Court of Law. Employees shall be guaranteed pay up to the hours scheduled for the applicable days.

(b) In the event an employee appears as a witness as required in (a) and is not scheduled to work that day, the employee will be paid at the rate equivalent to his/her hourly rate for those hours the appearance was required.

(c) In the event an employee appears as a witness as required in (a) and is scheduled to work a shift in addition to the appearance, the employee will be compensated at the rate equivalent to one and one-half (1 ½) his/her hourly rate for those hours the appearance was required.

Section 3. In order to qualify for pay under this Article, the employee must present proof of service to the payroll clerk.

29. FUNERAL LEAVE

Section 1. Full-time employees who have completed four (4) months shall receive leave with pay in the event of a death in the family, subject to the following conditions:

(a) The maximum leave shall be four (4) workdays off without loss of regular daily rate of pay in the event of the death of a member of the immediate family. The four (4) days off may be taken no later than the day of the funeral and continuing consecutively for the additional three (3) days beyond the day of the funeral. The immediate family includes: Spouse, parents, children, brothers, sisters, grandparents, grandchildren**, life partner with whom the employee resides.**

(b) The maximum leave shall be three (3) workdays off without loss of pay in the event of death of a member of the spouse's immediate family. The three (3) days may be taken no later than the day of the funeral and continuing consecutively for the additional two (2) days beyond the day of the funeral. The spouse's immediate family includes: Father, mother, brother, and sister.

(c) The maximum leave shall be one (1) calendar day off without loss of pay, on the date of the funeral, for the purpose of attending the funeral of the spouse of the employee's brother or sister. The employee shall only be entitled to this date if he/she is scheduled for work that day.

30. DISCIPLINE AND DISCHARGE

LCA shall have the right to discipline or discharge any employee for just cause. Just cause may be grieved under the Article defining Grievance Procedure. In all cases involving the suspension or discharge of an employee, LCA must immediately notify the employee in writing of his/her discharge or suspension and the reason thereof. Such written notice shall also be given to the Shop Steward and a copy mailed to the local Union office within three (3) working days from the time of discharge or suspension. In all cases involving suspension, the suspension shall be consecutive days off.

With respect to disciplinary meetings, under normal circumstances, disciplinary meetings shall not occur unless the employee and Union have been provided twenty-four (24) hours' notice.

Discipline shall not be imposed more than fourteen (14) days from the date LCA becomes aware of the alleged infraction. In situations where an investigation by LCA is necessary to evaluate an employee's alleged misconduct and/or infraction prior to issuing discipline, LCA will provide written notice within five (5) working days from the date the employee's alleged misconduct and/or infraction is reported to LCA, to the employee, Shop Steward, and Union, of LCA's intent to perform said investigation and the potential for disciplinary action. LCA will make reasonable efforts to conduct its investigation in an expeditious amount of time, factoring in the schedules of witnesses, employee leave time, company operations, etc. that may impact the timeframe in which an investigation can be completed. **If an extension of time is required beyond the fourteen-day period noted above, LCA shall provide notice to the union prior to the close of the fourteen-day period.**

31. GRIEVANCE PROCEDURE

Section 1.

(a) The purpose of the Grievance Procedure shall be to settle all grievances between the LCA and the UNION as quickly as possible so as to assure employee efficiency and promote employee morale.

(b) Should any employee or group(s) of employees feel aggrieved as a result of a LCA decision pertaining to wages, hours, or conditions of employment, adjustment shall be sought as follows by the employee with the assistance of the UNION:

(c) Settlement must be attempted between the aggrieved employee, with the Plant Steward, and the immediate supervisor within five (5) working days of the initial occurrence of the matter which is the basis of the complaint. The immediate supervisor must give his/her answer within five (5) working days of the day the grievant was first brought before him/her. If the matter is not satisfactorily resolved at this step:

(1) Within five (5) working days of the day the immediate supervisor gives his/her answer, the grievant may appeal the matter in writing to the Manager or his/her designee. Settlement shall be attempted during a hearing with the Manager or his/her designee, the immediate supervisor, the grievant, the Steward, and the Chief Steward; this hearing shall be held within five (5) working days of the day the grievance was presented in writing to the Manager or his/her designee. The Manager or his/her designee will give his/her answer to the grievance within three (3) working days of the day of the hearing, if the grievance is not satisfactorily settled at this step.

(1) Within five (5) working days of the day the Manager gives his/her answer, the Union may appeal the matter in writing to the LCA Chief Executive Officer, or his/her designee. The Chief Executive Officer, or his/her designee, shall conduct a hearing within fifteen (15) working days of the receipt of the grievance. At this

hearing, the LCA shall consider the presentation from the Steward, Chief Steward, the grievant, and one (1) other representative of the Union and interested representatives of the LCA. Within fifteen (15) working days of the conclusion of the hearing, the LCA shall render a written decision.

(a) The time limits stated in steps (1), (2), and (3) above may only be extended by mutual agreement, in writing, between both parties.

(b) Upon mutual agreement of the parties, grievances may be submitted to recommended settlement. Such grievances shall be submitted following the procedure as outlined in (2) above. The parties will execute a Memorandum of Understanding covering each expedited recommended settlement on grievance matters.

(c) Position classification grievances shall be excluded from steps (1) and (2) above and shall be processed starting at step (3).

Section 2. Upon mutual agreement of the parties, grievances may be submitted to state mediation for settlement. The decision of the state mediator may not be appealed or processed through Article 32 ARBITRATION of this Agreement.

32. ARBITRATION

Section 1. Either the LCA or the Union can appeal a grievance alleging a complaint arising out of the interpretation of this Agreement or the imposition of discipline. Contents of the job descriptions published by the LCA as part of the LCA's Job Classification and Pay Plan shall not be subject to the arbitration procedure. In order for a grievance to be taken to arbitration, it must first have been processed through the Grievance Procedure set forth in Article 32 of this Collective Bargaining Agreement unless the parties mutually agree to waive the steps set forth in Article 32, GRIEVANCE PROCEDURE.

Section 2. Within thirty (30) workdays after the receipt of the written decision of the Chief Executive Officer, or his/her designee, either party may request arbitration. Request for arbitration shall be given by either party in writing by certified mail. Letters addressed to the LCA shall be addressed to the Chief Executive Officer, or his/her designee, and letters addressed to the Union shall be addressed to the Union President at an address to be designated by the Union. Within five (5) workdays after the receipt of such request, the parties shall attempt to agree on an impartial arbitrator. In the event the parties cannot agree upon an impartial arbitrator, they shall request a panel of five (5) arbitrators to be submitted by the American Arbitration Association, Philadelphia Office or by another mutually acceptable arbitration service. The arbitrator shall be selected in accordance with the rules and regulations of the American Arbitration Association or of another mutually acceptable arbitration service. The jurisdiction and the authority of the arbitrator shall be limited to the resolution of the grievance. The arbitrator shall have no other jurisdiction or authority. The arbitrator shall have no right or authority to add to or subtract from this Agreement.

Section 3. The decision of the arbitrator shall be final and binding on both parties. Each party shall pay its costs of preparation for arbitration and shall pay one-half (½) of all other arbitration costs. Only one (1) grievance can be heard by each arbitration panel unless both parties agree to multiple grievance arbitration. Either party may request an official transcript of testimony at the arbitration hearing, in which case the costs of said transcript shall be borne by the requesting party.

Section 4. Three (3) representatives of the Union, in addition to the grievant(s), shall be granted time with pay, if scheduled to work, to attend the arbitration hearing.

Section 5. The LCA agrees that, in the event the Union initially declines to pursue a grievance to arbitration concerning the suspension or discharge of an employee, the time strictures for filing for arbitration shall be tolled pending the employee exhausting his or her appeal rights pursuant to the Union's Constitution and By-Laws, provided the following requirements are satisfied: (i) prior to the time for submitting the matter to arbitration as set forth above, the Union sends a written notice to the employee advising him/her of the right to appeal the Union's decision not to advance the grievance to arbitration, and the Union provides the LCA with a copy of that Appeal Notice; and (ii) the Union files for arbitration within the earlier of 120 days following the date of the Appeal Notice or 10 days following the Union's decision to grant the employee's appeal and pursue the grievance to arbitration.

33. WORK CLOTHING

(a) LCA shall provide work clothing/uniforms and replacements in sufficient quantities to employees based upon the needs of the particular job. Work clothing needs shall be determined by the appropriate Manager with input from the Union and shall be obtained only with the approval of the Manager.

Initial issue to new hires shall include:

1. Winter Coat/Coveralls (1)
2. Fall Jacket/Sweatshirt (Orange) (1)
3. Long Sleeve Shirt (5)
4. Short Sleeve Shirt (5)
5. Pants (5)

(b) All damaged/worn work clothing/uniforms must be returned to LCA before LCA provides replacement of such item(s).

(c) The employee shall be responsible for maintenance and upkeep of all work clothing and/or uniforms.

(d) Employees shall not wear these uniforms/work clothing when they are not working as a LCA employee.

(e) When safety shoes are required by LCA, LCA agrees to reimburse employees for the purchase of such shoes, up to ~~**$120.00**~~**$150.00 per pair**, as often as twice per calendar year. LCA will implement a voucher system, such that employees may purchase such

shoes through at least three (3) outfitters who will bill LCA for the cost of such shoes, up to ~~$120.00~~**$150.00** per pair**, and two pairs may be purchased simultaneously**. The employee is responsible for providing LCA with the receipt for each set of shoes so purchased.

34. MEAL ALLOWANCE

Employees who are required to work an additional four (4) or more hours as an extension of their shift will receive one (1) meal allowance of $12.00. Employees who are required to work for eight (8) or more hours on an emergency basis on a Saturday, Sunday, or LCA Holiday, and said work shift is not part of their regularly scheduled work shift, will receive one (1) meal allowance per work shift. Meal allowances shall be processed through LCA's payroll department.

35. CHANGES TO JOB DESCRIPTIONS

Should the LCA change or add to any Job Description, or create a new job, they shall bargain the adjustment to the rate of pay or bargain the initial rate of pay with the Union.

36. SAFETY

A system of safety committees shall be established that covers all work functions and areas with equal representation from the UNION and the LCA. The LCA shall determine the number and size of the committees. The UNION shall determine their representation on each of the committees. However, such representation shall be from the appropriate plant. The committees shall:

(a) Identify hazardous areas, conditions, or procedures and recommend action to correct them.

(b) Identify the need for and recommend necessary safety equipment including, but not limited to, safety shoes and other clothing.

(c) Review and comment upon proposed safety standards or regulations.

(d) Assist in formulating programs to increase the employee's knowledge and understanding of work safety and to foster safer working conditions in the LCA for the mutual benefit of both the LCA and the UNION.

The LCA shall provide necessary safety equipment including, but not limited to, safety shoes as required by reasonable safety standards and based upon the needs of the particular job.

Such safety equipment shall be obtained only with the approval of the Risk Manager and the appropriate Department Head.

LCA will form an Employee Communication Subcommittee within LCA's Incident Command Structure to address emergency situations that may arise that may last greater than two (2) weeks in duration. The Employee Communication Subcommittee will be made up of

front-line supervisors and employees and will contain one (1) bargaining unit member chosen through mutual agreement of LCA and the Union. LCA will appoint a liaison from the Incident Command Team to work with the Subcommittee. The Subcommittee will provide feedback to the Incident Command Team's liaison regarding action plans developed and will support the communication of any such plans to employees. The appointed members of the Employee Communication Subcommittee will sign a statement of confidentiality agreeing to disperse only such information as approved by LCA to the employees.

37. MISCELLANEOUS

The LCA agrees to pay fees for licenses and certificates, and their renewals, that are required for employment in the employee's present position. For purposes of this Article, driver's licenses are excluded. However, the LCA shall pay up to a maximum of fifty dollars ($50.00) towards the renewal of CDL licenses/endorsements. The fifty-dollar ($50.00) maximum shall apply to the difference between the standard Pennsylvania Driver's License renewal fee and the CDL license fee including endorsements.

38. EDUCATION AND TRAINING

LCA encourages the growth and development of each employee through continuing education and training. The program is administered by the Chief Executive Officer under the following general guidelines:

a. With the Chief Executive Officer's approval, the Authority will pay for memberships in organizations, which relate closely to the management and operation of LCA's facilities and/or technical, legal, and administrative facets of LCA. Where possible, the memberships shall be made in the name of LCA; otherwise, membership shall be made in the name of the employee determined to be the appropriate representative of LCA.

b. Selected employees may attend various seminars and conferences related to the activities of LCA, as deemed to be consistent with the needs of LCA. LCA will pay the appropriate costs incidental to such seminars or conferences. Reimbursable costs shall include the costs of membership, seminar or conference registration, course fee, books, supplies, travel, meals, and lodging. All such activity must be approved by the Chief Executive Officer prior to registration.

   By providing a program of financial assistance, LCA encourages employees to take two types of studies, which will enhance their abilities. The first is non-degree work-related courses, such as operator training, computer instruction and technical schools. LCA will pay the appropriate costs incidental to such courses, excluding travel needs. If the employee fails to complete the course or leaves LCA before completing the course, LCA will be reimbursed for the costs incidental to the course, which may be through a payroll deduction. Proof of satisfactory completion is required; in the case of graded courses, a "C" grade or better is required.

The second type is for work-related degree program for undergraduate or graduate studies. Approval of a degree program is subject to concurrence by LCA's Board. LCA will reimburse the employee for fifty (50%) percent of the appropriate costs, incidental to any course in such programs, excluding travel and meals, upon completion of the course with a grade "C" or better.

39. WAGES

The LCA will increase each base wage rate in the following manner:

Section 1. Regular employees shall receive:

Effective January 1, **2025~~1~~**, a **~~2.0~~7.00%** increase to base wages
Effective January 1, **2026~~2~~**, a **~~2.25~~2.75%** increase to base wages
Effective January 1, **2027~~3~~**, a **~~2.50~~2.75%** increase to base wages
~~**Effective January 1, 2024, a 2.75% increase to base wages**~~

Effective January 1, 2025, the position of Utility Technician II shall be increased one pay grade.

~~**General Wage Increase and Step Increases will be effective on the first pay period following the effective date of the change.**~~

General wage increases on January 1, 2025 will go into effect in the first full pay period following the effective date. General wage increases for January 1, 2026 and January 1, 2027 will go into effect in the full pay period that includes January 1, 2026 or January 1, 2027. Step increases will go into effect in the full pay period that includes the employee's anniversary date.

Section 2. Seasonal Employees

(a) Seasonal employees shall receive 20% less than the starting rate of comparable full-time positions.

Section 3. Bilingual Job Duties

An employee who is hired specifically to provide services to customers in multiple languages shall be paid at one grade higher than the established pay grade for the position. As of January 1, 2025, this provision would apply to two Clerk 2 positions on the customer care team.

An employee who is temporarily assigned to complete a special job or project due to their ability to provide services to customers in multiple languages will be paid at one grade higher than the established pay grade for their position during that special assignment.

Employees who speak multiple languages on the job, with coworkers or others for the convenience of the employee or other individuals, will not be paid any additional compensation.

40. LONGEVITY

Beginning with the fifth year of continuous full-time service, each covered employee shall be paid the sum of One Hundred Fifty Dollars ($150.00) longevity pay for that year increasing thereafter as indicated on the following longevity chart until the maximum of Sixteen Hundred Seventy-Five Dollars ($1,675.00) for twenty-six plus years of continuous service shall be attained.

LONGEVITY SCHEDULE

Years of Service	Payment
5	150
6	250
7	300
8	350
9	450
10	500
11	575
12	675
13	725
14	775
15	875
16	975
17	1,025
18	1,125
19	1,175
20	1,325
21	1,400
22	1,450
23	1,500
24	1,550
25	1,650
26+	1,675 (not pyramided)

41. NO STRIKE, NO LOCKOUT

The Union agrees that there shall be no strike, picketing, sit-down, slow-down, willful absence from assigned workstation, or the abstinence in whole or in part from full, faithful, and proper performance of the duties of employment during the life of this Agreement. The LCA agrees

that no lockout against any or all of the employees shall take place during the life of this Agreement.

Any employee who instigates or foments a strike, whether or not officially authorized by the Union, shall be discharged with appeal or recourse only on the fact situation involved.

42. PENNSYLVANIA MUNICIPAL RETIREMENT SYSTEM

All bargaining unit members shall be guaranteed participation in the Pennsylvania Municipal Retirement System in accordance with LCA's current plan of benefits and contributions. The formula for determining the monthly pension an employee is eligible to receive upon retirement is: the employee's years of service multiplied by the average of the employee's three (3) highest consecutive years of pay, multiplied by 0.01667.

43. COMPLETE AGREEMENT

The parties acknowledge that during the negotiations which resulted in this Agreement each had the unlimited right and opportunity to make demands and proposals with respect to any subject or matter not removed by law from the area of collective bargaining and that the understandings and agreements arrived at by the parties after the exercise of that right and opportunity are set forth in this Agreement which represents the complete agreement of the parties. Each party to this Agreement hereby waives the right to require the other party to negotiate concerning wages, hours, or other terms and conditions of employment which are set forth in the Agreement.

44. TERMINATION

This Agreement shall be effective **January 1, 2025~~1~~** and shall continue through **December 31, 2027~~4~~.** Notice of the desire to negotiate amendments to this Agreement shall be given in **2027~~4~~** in accordance with the provisions of the Act of Pennsylvania General Assembly, Act Number 195.

In witness whereof, the parties hereto have hereunto set their hands and respective seals this _____day of _____.

LEHIGH COUNTY AUTHORITY

BY:_____ Date:_____

BY:_____ Date:_____

BY:_____ Date:_____

SERVICE EMPLOYEES' INTERNATIONAL UNION LOCAL NO. 32BJ

BY:_____Date:_____

BY:_____Date:_____

BY:_____Date:_____

BY:_____Date:_____

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APPENDIX A
DRUG AND ALCOHOL POLICY

The Lehigh County Authority ("LCA") is firmly committed to the health and safety of employees and considers the influence of alcohol and drugs in the workplace to be detrimental to employees, co-workers, and the public. To maintain a drug-free workplace, the LCA has established a drug-free awareness program. Whenever necessary, employees are encouraged to seek drug or alcohol counseling and rehabilitation information through the LCA Employee Assistance Program.

Adherence to the LCA's policy on drugs and alcohol is a condition of employment for all employees.

As an employee of the LCA, it is unlawful to manufacture, distribute, dispense, or possess an illegal controlled substance at the LCA. The unlawful possession, distribution, or use of an illegal controlled substance in the workplace will result in immediate dismissal.

A. PRE-EMPLOYMENT TESTING

All applicants, regardless of position, are subject to testing for drugs and alcohol as part of the hiring process.

B. REASONABLE SUSPICION TESTING

All LCA employees shall be subject to urinalysis testing for the presence of a controlled substance or illegal drug and breath or blood alcohol testing for the presence of alcohol where there is reasonable suspicion to believe based on specific and immediate physical, behavioral or performance indicates probable drug or alcohol use. Employees shall not consume or use alcohol or controlled substances while off duty to the extent that evidence of such use is apparent when reporting for duty, or to the extent that the employee's ability to perform his/her duty is impaired. Employees who are taking medication that affects their job performance must alert their immediate supervisor. Symptoms which indicate reasonable suspicion include, but are not limited to the following:

- Odor of alcohol
- Glassy eyes
- Changes in speech pattern
- Staggering gait or poor coordination
- Unusual behavior, mood variations or deteriorating performance
- Physical or verbal altercations
- Possession of drugs or alcoholic beverages
- Excessive tardiness
- Insubordination
- Attendance problems
- Erratic operation of motor vehicle or equipment

- Drug or alcohol related arrests on or off the job

C. POST VEHICLE ACCIDENT TESTING

All LCA employees shall be tested through urinalysis for the presence of controlled substances or illegal drugs and breath or blood alcohol testing for the presence of alcohol when the following occurs:

- The loss of human life
- The employee receives a citation under state or local law for a moving traffic violation arising from the accident, or
- Bodily injury to any person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident; or
- One or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicle to be transported away from the scene by a tow truck or other motor vehicle.

Testing is required for each covered employee whose performance contributed to the accident or whose performance cannot be completely discounted as a contributing factor to the accident. Testing for alcohol shall be performed as soon as practical, but no more than eight (8) hours following an accident. Testing for drugs shall be performed as soon as practical, but not more than thirty-two (32) hours following an accident. The employee is prohibited from consuming alcohol until the alcohol test is performed or for an eight-hour period following the accident, whichever is less.

D. TESTING RESULTS

In the event of an initial positive drug test, a confirmatory urinalysis test will be conducted using the more reliable clinical testing procedure available (Gas Chromatography/Mass Spectrometry, or CS/MS Test). In the event the confirmatory test is positive, or an alcohol test and confirmatory test is positive, the employee shall be subject to the following:

First Offense – Applicants who refuse to take the drug/alcohol test or who have a confirmed positive test result shall not be hired.

Probationary employees who refuse to take the drug/alcohol test or who have a confirmed positive test result will be terminated for the first offense.

Non-probationary employees who refuse to take the drug/alcohol test or who have a confirmed positive test result shall be suspended without pay for thirty (30) workdays.

Second Offense – Employee is terminated.

For the purposes of discipline and all related matters, the refusal or failure to submit to testing shall be equal to testing positive.

E. RETURN TO DUTY

Employees who are suspended because of a positive test result or because they refused to take a drug/alcohol test must participate and complete the treatment that is prescribed by the Employee Assistance Counselor. Minimum requirement for any employee testing positive or refusing to take a drug/alcohol test is participation in an addiction awareness group. Employees who do not successfully complete the treatment prescribed by the Employee Assistance Counselor shall be terminated.

Employees must pass a drug/alcohol test before being able to return to work. Prior to returning to work from the 30-workday suspension, the employee shall contact the LCA Human Resources Administrator for return to duty drug/alcohol testing. The employee will pay in advance for the initial return to work testing. The employee will be reimbursed for the costs of the tests only in the event that the results are negative. The LCA will pay for follow-up testing thereafter. If the test is passed and the prescribed treatment program is successfully completed, the employee shall be reinstated to their former position and pay grade.

If the test is passed but the employee has not yet completed the prescribed treatment program, the employee will return to work and their pay is subject to be reduced by 5%. This employee cannot operate any vehicle that requires a Commercial Driver's License. If the return to duty test is positive, the employee shall be terminated.

F. FOLLOW-UP TESTING

Based on the recommendation of the Employee Assistance Counselor, an employee who returns to duty after substance abuse rehabilitation will be subject to a reasonable program of random follow-up drug and/or alcohol testing. A positive follow-up test result will be considered a second offense resulting in the termination of employment.

G. DRUG DETECTION LEVELS

The drug detection levels established below are subject to change based on Federal law for CDL drivers.

Drug Detection Levels

Initial screening: Detection sensitivities – All Reports are in ng/ml.

DRUG	APPLICANTS (HR)	CDL (DOT)
Amphetamines	1,000	1000
Barbiturates	300	
Benzodiazepine	300	
THC (marijuana metabolite)	50	50
Cocaine metabolite	300	300
Methadone	300	
Methaqualone	300	
Opiates	2000	2000
Phencyclidine	25	25
Propoxyphene	300	

Confirmation by GC/MS: Detection sensitivities

DRUG	HR	CDL
Amphetamines	500	500
Methamphetamines	500	500
Barbiturates	100	
Benzodiazepines	100	
THC (Marijuana metabolite)	15	15
Cocaine	150	150
Methadone	200	
Opiates – Total	300	
Codeine	2000	2000
Morphine	2000	2000
Phencyclidine	25	25
Propoxyphene	300	
Methaqualone	100	

Alcohol Testing Threshold
.02 Alcohol Concentration*

* Alcohol Concentration refers to the concentration of alcohol in a person's blood or breath. When expressed as a percentage, it means grams of alcohol per 100 milliliters of blood or grams of alcohol per 210 liters of breath.

APPENDIX B - LEHIGH COUNTY AUTHORITY/SEIU POSITIONS

Notes	Position	Grade
	Clerk 2	M06
	Maintenance Worker I	M06
-	~~Radio Operator~~	~~M06~~
	Utility Technician I	M06
	Clerk 3	M08
	Inventory Control Clerk	M08
-	~~Line Locator/ Water Mtr Reader~~	~~M08~~
	Maintenance Worker 2	M08
(1)	Utility Technician II	~~M08-M10~~ M09-M11
	Maintenance Mechanic B	M09
	~~Sewer Billing Clerk~~Clerk 4	M09
-	~~Equipment Operator 3~~	~~M10~~
	~~Water Meter Installer~~Metering & Maintenance Technician	M10
	Engineering Aide 2	M11
	Equipment Operator 2	M11
	Maintenance Mechanic ~~2~~A	M11
	~~Water Meter Repairman~~Senior Metering & Maintenance Technician	M12~~11~~
	~~Belt Press Operator I~~	~~M12~~
	Pretreatment Inspector	M12
(4)	Treatment Plant Operator I~~1~~	M12
~~(1)~~	~~Equipment Operator 4~~	~~M13~~
	Lab Technician	M13
	Tradesman	M13
(1)	~~Tradesman Carpenter~~Utility Technician III	M13-M14
	Tradesman Electrician	M13
-	~~Tradesman Plumber~~	~~M13~~
(5, 6)	Treatment Plant Operator I~~1~~	M13
(2)	Equipment Operator 4	M14
	Instrumentation Technician	M14
~~(3)~~	Sr. Lab Technician	M14
(5, ~~6~~6)	Treatment Plant Operator ~~2~~II	M14
(5, ~~6~~6)	Treatment Plant Operator II~~2~~	M15
(5, ~~6~~6)	Treatment Plant Operator II~~2~~	M16
	Crew Leader – Field Services	M16
	Crew Leader – Residuals	M16
	Crew Leader – Plant Maintenance	M16

(3)	Lead Operator	M18

NOTES

~~(1)~~ ~~**The EOIV position, grade 13 is a D&C position. Purpose is to operate CCTV truck and equipment**~~

(1) **The Utility Technician II and Utility Technician III position descriptions include requirements for commercial driver's licensing and water/sewer system operator's licensing. Pay grade placement will be determined based on the employee's then-current licensing, with an expectation of the employee achieving all required licensing within six (6) months prior to the employee's pay grade being increased to the next level in the job classification.**

(2) **The ~~EOIV~~ Equipment Operator 4 position, grade 14 is a ~~D&C/WFP/~~WWTP Residuals Department position. Purpose is to ~~operate heavy construction equipment~~drive trucks to haul treated biosolids to assigned disposal sites and on occasion to operate heavy construction equipment.**

(3) This is a newly created position.

(4) The TPO I position can be a grade 12 or 13

Grade 12 - No License required at hiring. Must obtain WA OR SA within two years, no subclasses required.

Grade 13 - Upgraded upon obtaining WA OR SA, no subclasses required.

(5) The TPO II position can be a grade 14, 15 or 16

Grade 14 - Bid to open TPOII position; must possess WA OR SA; no subclasses required to be a qualified bidder; must obtain required subclasses (WA - 1,7,8,10,12) OR (SA - 2) within 3 years.

Grade 15 - Updated upon obtaining WA 1,7,8,10,12 AND SA (no subclasses) OR WA (no subclasses) AND SA (subclass 2)

Grade 16 - Upgraded upon obtaining WA 1,7,8,10,12 AND SA 2. Additional requirement must be a TPOII for at least one (1) year.

(6) The Grades for the Treatment Plant Operator (TPO positions could change if there is a regulatory change that affects licensing). The first three pay steps for Treatment Plant Operators in Pay Grades 13 through 16 have been eliminated.

RESOLUTION NO. 12-2024-1

(Duly adopted 9 December 2024)

AUTHORIZING THE ADOPTION OF THE 2024 LEHIGH VALLEY HAZARD MITIGATION PLAN FOR LEHIGH AND NORTHAMPTON COUNTIES, IN ACCORDANCE WITH SECTION 322 OF THE DISASTER MITIGATION ACT OF 2000; AND AUTHORIZING AUTHORITY OFFICIALS TO COMPLETE SUCH ACTS CONSISTENT WITH THE IMPLEMENTATION OF THE PLAN.

WHEREAS, the Lehigh County Authority (the "Authority") is a body corporate and politic organized by the Board of County Commissioners of the County of Lehigh, Pennsylvania (the "County") under the provisions of the Pennsylvania Municipality Authorities Act, 53 Pa. C.S. §5601 et seq., as amended (the "Act"); and

WHEREAS, the Authority's service area for the public water and sewer services provided is vulnerable to natural and non-natural hazards, which may result in loss of life and property, economic hardship, and threats to public health and safety; and

WHEREAS, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities ("Hazard Mitigation Plan"); and

WHEREAS, the Authority acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

WHEREAS, the 2024 Lehigh Valley Hazard Mitigation Plan has been developed by Lehigh County Emergency Services and the Northampton County Emergency Management Services in cooperation with other county departments, and officials and citizens within the Authority's service area; and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the 2024 Lehigh Valley Hazard Mitigation Plan; and

WHEREAS, the 2024 Lehigh Valley Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by natural hazards that face the Lehigh County and Northampton County and their municipal governments and municipal authorities, including Lehigh County Authority,

NOW, THEREFORE, the Authority Board hereby resolves as follows:

Section 1. The 2024 Lehigh Valley Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the Authority.

Section 2. The respective Authority officials, other officials and agencies identified in the implementation strategy of the 2024 Lehigh Valley Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

On motion of _____, seconded by _____, this Resolution was adopted on the 9th day of December 2024.

Tally of Votes: Yeas _____ Nays _____

ꕥ

I, Kevin C. Reid, of the law firm of King, Spry, Herman, Freund & Faul, LLC, Solicitor to the Lehigh County Authority, do hereby certify that the foregoing is a true, correct and complete copy of a Resolution No. 12-2024-1 which was duly adopted by the Authority Board at a public meeting of the Authority Board held on December 9, 2024, after notice thereof had been duly given as required by law, at which meeting a quorum was present and voting, and which Resolution has been recorded in the Minutes and is now in full force and effect on the date of this certification.

_____

Kevin C. Reid, Esquire Date
King, Spry, Herman, Freund & Faul, LLC
Lehigh County Authority Solicitor

(SEAL)

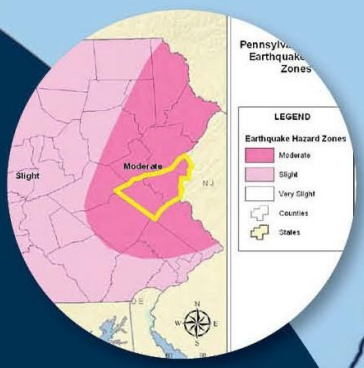
Attest:

_____

Lisa J. Miller Date
Executive Administrative Support Specialist

LEHIGH AND
NORTHAMPTON COUNTIES,
PENNSYLVANIA

2024 Lehigh Valley Hazard Mitigation Plan



Monroe County
Carbon County
Hokendauqua Creek
Creeks
Trout/Bertsch
Bushkill Creek
Monocacy Creek
Coplay Creek
Catasauqua Creek
Nancy Run
Jordan Creek
Saucon Creek
Little Lehigh Creek
Perkiomen Creek Headwaters
Bucks County
Montgomery County
Schuylkill County
Maiden Creek Headwaters
New Jersey
Delaware River

Table of Contents

Executive Summary

Introduction

The 2024 Lehigh Valley Hazard Mitigation Plan outlines a data-informed strategy for reducing the risk associated with natural and human-caused disasters for residents of Lehigh and Northampton Counties. Hazard mitigation planning is a critical tool for reducing the loss of life and property resulting from natural and human-caused hazards. The concept offers long-term and repeating benefits by disrupting the cyclical nature of disaster-related losses. While mitigation planning cannot fully eliminate the possibility of disasters, the aim of mitigation planning is to reduce the effort necessary to "return to normal" following a disaster. One fundamental principle of hazard mitigation is that investments made before a disaster will significantly diminish the need for post-disaster emergency response, repair, recovery, and reconstruction. By implementing mitigation practices, communities can bolster their resilience which enables residents, businesses, and industries to recover swiftly in a post-disaster environment.

The goals of the 2024 Lehigh Valley Hazard Mitigation Plan are directly aimed at reducing the hardships the area might experience in the wake of a disaster. They include minimizing the risk to life and property, enhancing the resiliency benefits of our natural resources, improving planning and emergency response to protect public health and safety, raising public awareness, and promoting hazard avoidance. It is also intended to support equitable solutions for *all* residents, including individuals with access and functional needs, cultural minority and limited English-speaking populations, children, the elderly, and other vulnerable populations.

Hazard mitigation is not a zero-sum game, and benefits gained through the practice of hazard mitigation do not need to come at the expense of other community interests and objectives. To the contrary, the advantages of mitigation planning can often extend beyond merely reducing a community's vulnerability to hazards. Actions brought about by hazard mitigation can support broader community objectives, such as preserving open spaces, enhancing water quality, promoting environmental health, and creating recreational opportunities. Consequently, it is crucial to integrate local mitigation planning processes with concurrent local planning initiatives.

A Hazard Mitigation Plan serves as the tangible embodiment of a jurisdiction's commitment to minimizing risks associated with natural hazards. Local officials can rely on this plan in their day-to-day decision-making, from shaping regulations and ordinances to granting permits and funding capital improvements. Additionally, Local Hazard Mitigation Plans establish the foundation upon which communities prioritize future grant funding, aligning resources with areas most in need of support and protection.

Planning Process

Local hazard mitigation planning is the process of organizing community resources, identifying and assessing hazard risks, and determining how to best minimize or manage those risks. This process results in a Hazard Mitigation Plan that identifies specific mitigation actions, each designed to achieve both

short-term planning objectives and a long-term community vision. To ensure the functionality of each mitigation action, responsibility is assigned to a specific individual, department, or agency along with a schedule for its implementation. Plan maintenance procedures are established to implement, as well as to evaluate and enhance the Plan as necessary. Developing clear plan maintenance procedures ensures that the Lehigh Valley Hazard Mitigation Plan remains a current, dynamic, and effective planning document over time.

As an incentive for State and local governments to develop Hazard Mitigation Plans, the Federal Government requires mitigation planning as a component of eligibility for hazard mitigation project funding. The new FEMA Local Mitigation Planning Policy Guide, which took effect on April 19, 2023, outlines a strategy for developing a mitigation plan that can serve as the foundation of effective hazard mitigation. Local jurisdictions must have a FEMA-approved local Hazard Mitigation Plan at the time of obligation of grant funds to be eligible for grant funding under the unified Hazard Mitigation Assistance (HMA) programs. This requirement reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

Developing a hazard mitigation plan that best serves the interests and wishes of those in the Lehigh Valley is achieved in part by incorporating a wide range of community voices, resources, and stakeholders in a robust planning process. The process of creating the 2024 Lehigh Valley Hazard Mitigation Plan featured opportunities for public participation through meetings and multiple surveys. Collaboration with neighboring communities, and finding ways to leverage mutual needs to achieve common goals, was the focus of this process.

The 2024 Lehigh Valley Hazard Mitigation Plan was developed by a multi-jurisdictional planning team consisting of representatives of 65 jurisdictions. The Planning Team consists of leaders from the Lehigh Valley who possess skills and expertise benefiting the hazard mitigation planning process. Development of the Plan was also supported by numerous stakeholders and community members. The community feedback received by the Planning Team helped to shape the goals, objectives, and actions set forth in the Plan. The final product represents a multi-jurisdictional strategy that identifies the most effective risk reduction efforts for the Lehigh Valley as a whole. The following communities participated in the development of this plan:

Table 1: Participating Jurisdictions

Lehigh County	Northampton County
Alburtis Borough	Allen Township
Allentown City	Bangor Borough
Catasauqua Borough	Bath Borough
City of Bethlehem*	Bethlehem Township
Coopersburg Borough	Bushkill Township
Coplay Borough	Chapman Borough
Emmaus Borough	City of Bethlehem*
Fountain Hill Borough	East Allen Township
Hanover Township	East Bangor Borough
Heidelberg Township	Easton City
Lehigh Valley Authority	Forks Township
Lehigh Valley Planning Commission*	Freemansburg Borough
Lehigh-Northampton Airport Authority*	Glendon Borough
Lower Macungie Township	Hanover Township
Lower Milford Township	Hellertown Borough
Lowhill Township	Lehigh Township
Lynn Township	Lehigh Valley Planning Commission*
Macungie Borough	Lehigh-Northampton Airport Authority*
North Whitehall Township	Lower Mount Bethel Township
Salisbury Township	Lower Nazareth
Slatington Borough	Lower Saucon Township
South Whitehall Township	Moore Township
Upper Macungie Township	Nazareth Borough
Upper Milford Township	Northampton Borough
Upper Saucon Township	North Catasauqua Borough
Washington Township	Palmer Township
Weisenberg Township	Pen Argyl Borough
Whitehall Township	Plainfield Township
	Portland Borough
	Roseto Borough
	Stockertown Borough
	Tatamy Borough
	Upper Mount Bethel Township
	Upper Nazareth Township
	Walnutport Borough
	Washington Township
	West Easton Borough
	Williams Township
	Wilson Borough
	Wind Gap Borough

**Listed in both counties*

This plan was completed in compliance with the Disaster Mitigation Act of 2000, 44 CFR § 201.3(d), the 2020 Pennsylvania Emergency Management Agency Standard Operating Guide (PEMA SOG), and the Local Hazard Mitigation Planning Policy Guide effective April 19, 2023.

Risk Assessment

A core component of any hazard mitigation plan is a risk assessment. The 2024 Lehigh Valley Hazard Mitigation Plan analyzed the risk of 27 natural and human-caused hazards. The specific hazards profiled in this plan are listed in Table 2.

Table 2: Hazards Profiled in 2024 Lehigh Valley Plan

Natural Hazards	Human-Caused Hazards
Drought	Civil Disturbance/Mass Gatherings
Earthquakes	Dam Failure
Extreme Temperatures	Drug Overdose
Floods, Flash Floods, Ice jams	Environmental Hazards/Explosion
Hailstorms	Gas/Liquified Pipelines
Invasive Species	Levee Failure
Landslides	Nuclear Incident
Lightning Strikes	Structural/Urban Fires
Pandemic & Infectious Diseases	Structural Collapse
Radon	Terrorism
Subsidence/Sinkholes	Transportation Crashes
Wildfires	Utility Interruption
Windstorm/Tornadoes	Cyber-terrorism
Winter Storms	

The 27 natural and human-caused hazards analyzed in this Plan include 25 hazards from the 2018 plan as well as two new hazards: gas/liquified pipelines and cyber-terrorism. To analyze these hazards, the Planning Team reviewed local, state, and national datasets and relevant scientific literature to develop a detailed understanding of their frequency, magnitude, and other characteristics. Additionally, the Planning Team reviewed geospatial data for critical facilities in the planning area to assess the risk posed to these facilities by the different hazards. Where possible, the financial toll of hazards impacting critical facilities in the planning area was also assessed.

The hazard analysis included in this Plan supported the development of a hazard risk priority ranking based on conclusions about the frequency of occurrence, potential impact, spatial extent, warning time, and duration of each hazard. FEMA's Hazus-MH loss estimation methodology was also used in evaluating known flood risks according to their relative long-term cost, measured in expected damages. This risk assessment was designed to assist communities in seeking the most appropriate mitigation actions to pursue and implement by focusing their efforts on those hazards of greatest concern and those structures or planning areas facing the greatest risk(s).

The Community Profile and HIRA collectively served as the basis for updating the goals outlined in the 2018 plan to reflect Lehigh Valley's priorities in 2024. For more detailed information, see Section 4. Risk Assessment.

Capability Assessment

To inform the development of a comprehensive mitigation strategy, the planning team conducted a Capability Assessment to identify the tools, expertise, planning mechanisms, staff, and other resources and capabilities of the Counties and participating municipalities. This assessment contains three key components: an inventory of existing planning and regulatory tools, an analysis of the participating jurisdictions' capacity to use them effectively, and a review and summary of how the mitigation plan will be integrated into other planning mechanisms. The assessment process is a key step in the mitigation planning process that identifies existing gaps, conflicts, and/or weaknesses that may need to be addressed through future mitigation planning goals, objectives, and actions. It also highlights the measures in place that merit continued support and enhancement through future mitigation efforts. The capability assessment helps to ensure that proposed mitigation actions are practical considering the local ability to implement them. For more detailed information, see Section **Error! Reference source not found.**.

Mitigation Strategy

The Mitigation Strategy outlined in Section 6 of this plan functions as a comprehensive guide for future hazard mitigation policies and projects for the Lehigh Valley and its participating municipalities. This Plan continues the practice – implemented in the 2018 update – of utilizing goals, objectives, and actions to describe what the region aims to achieve. In the context of this plan, these are defined as follows:

1. **Mitigation Goals**: These represent the overarching aspirations of the Lehigh Valley. Defined as broad policy statements, they depict the long-term outcomes that the community seeks to achieve.

2. **Mitigation Objectives**: These delve deeper, detailing strategies or steps aimed at realizing the aforementioned goals. Unlike the broad strokes of goals, objectives are precise, often measurable, and typically come with a defined timeline for achievement.

3. **Mitigation Actions**: The Mitigation Strategy in Section 6 provides detailed explanations of specific tasks the participating jurisdictions can take to reduce the risk associated with each hazard profiled in the plan and to achieve the plan's overall goals and objectives.

To ensure that the 2024 goals reflect contemporary conditions, the goal evaluation process included a review of the updated capability assessments and risk assessments, which included two new hazard profiles. Throughout the planning process, both counties and all municipalities were encouraged to thoroughly consider their natural and human-caused hazard risks and vulnerabilities. Based on this review, the Planning Team determined that the revised goals reflect the Lehigh Valley's desire for a more disaster-resilient future. A mitigation technique matrix was completed to identify and evaluate

possible mitigation actions for each hazard. Municipal actions were categorized and prioritized on a regional basis.

Goal 1: To minimize the risk to human life associated with natural and non-natural hazards (NFIP).

- Objective 1: Create a better understanding among the public and local governments of the benefits and opportunities associated with hazard mitigation planning and actions. (NFIP)
- Objective 2: Continuously promote and maintain better early warning and emergency communications.
- Objective 3: Provide added protection for vulnerable populations. (NFIP)

Goal 2: To promote hazard avoidance, especially in floodplains (NFIP).

- Objective 1: Minimize future risks of losses associated with structures, including repetitive loss structures. (NFIP)
- Objective 2: Reduce flooding potential through planning, training, and outreach. (NFIP)
- Objective 3: Encourage and facilitate the development or revision of comprehensive plans and zoning/land use ordinances to limit development in high-hazard areas.

Goal 3: To reduce the damages and functional loss from natural and non-natural hazards to existing and future public and private assets, including structures, critical facilities, and infrastructure (NFIP).

- Objective 1: Identify the current risks of critical facilities and infrastructure from hazards, and determine actions to lessen those risks in the future. (NFIP)
- Objective 2: Encourage and/or perform regular maintenance and upgrades of existing drainage systems potentially impacting critical facilities.
- Objective 3: Encourage and/or provide backup power resources (generators) for critical facilities.
- Objective 4: Encourage and/or perform maintenance and upgrades to reduce long-term vulnerability to high-hazard potential dams.

Goal 4: To preserve and enhance the effectiveness of natural resources, including woodlands, streams, rivers, wetlands, floodplains, and riparian buffers to provide resiliency benefits (NFIP).

- Objective 1: Encourage and/or provide maintenance and restoration of streams and rivers and associated floodplains to naturally provide flood mitigation.
- Objective 2: Encourage regulation of and/or regulate development in priority conservation areas, including floodplains, to minimize flood damage. (NFIP)

Goal 5: To develop, prioritize, and implement cost-effective, long-term actions that will reduce the impacts of natural and human-caused hazards (NFIP).

- Objective 1: Thoroughly assess the community, and established capabilities, and identify specific cost-effective actions for improvement, relative to existing and future hazard risks. (NFIP)
- Objective 2: Establish mitigation action priorities, and encourage, and track progress. (NFIP)

Goal 6: To improve local regulations to reduce the impacts of natural and non-natural hazards (NFIP).

- Objective 1: Better integrate hazard mitigation planning with comprehensive planning and land use regulations. (NFIP)
- Objective 2: Identify and promote "best practices" for municipal regulation of land use in zoning and subdivision ordinances and official maps.
- Objective 3: Encourage proactive planning for potential hazard events and potential related property damage. (NFIP)
- Objective 4: Incorporate hazard mitigation planning into existing municipal policy.

Goal 7: To enhance planning and emergency response efforts among federal, state, county, and local emergency management personnel to protect public health and safety.

- Objective 1: Continually improve communication capabilities, training, and coordination for hazard events.
- Objective 2: Continually improve the planning for shelters, evacuation routes, and disaster recovery.
- Objective 3: Continue the promotion of disaster resiliency in the business community.
- Objective 4: Maintain and/or upgrade emergency response equipment and resources.

Goal 8: To promote public awareness of both the potential impacts of natural and human-caused hazards and actions to reduce those impacts (NFIP).

- Objective 1: Encourage and/or provide education and outreach to increase awareness of hazards and opportunities for mitigation. (NFIP)
- Objective 2: Encourage and/or provide public education programs for businesses, households, and individuals on mitigation, safety measures, and preparedness.

For more information, see Section 6. Mitigation Strategy.

Plan Adoption, Maintenance, and Implementation

Plan Adoption

Adoption of the 2024 Lehigh Valley Hazard Mitigation Plan by Lehigh and Northampton counties and each participating municipality demonstrates their commitment to fulfill the mitigation goals, objectives, and actions outlined in the Plan. For this multi-jurisdictional plan to be approved, each jurisdiction included in the Plan must have its governing body adopt the Plan upon notification of approval pending adoption by the Federal Emergency Management Agency (FEMA). Once complete, county and municipal adoption resolutions will be provided in Appendix B.

In addition to the requirement set forth in the Disaster Mitigation Act of 2000, the adoption of a hazard mitigation plan is an important step because:

- It lends authority to the plan to serve as a guiding document for all local and state government officials
- It certifies to program and grant administrators that the plan's recommendations have been properly considered and approved by the governing authority and jurisdictions' citizens
- It helps ensure the continuity of mitigation programs and policies over time because elected officials, staff, and other community decision-makers can refer to the official document when making decisions

Plan Maintenance

The Lehigh Valley Hazard Mitigation Planning Team will largely remain intact as the group responsible for monitoring, evaluating, and updating the 2024 Plan on an annual basis. The Planning Team will be co-chaired by the Lehigh County Office of Emergency Management Director or their designee and the Northampton County Emergency Management Services Director or their designee.

Each participating municipality in the Lehigh Valley is expected to maintain a Planning Team point of contact, and the Planning Team co-chairs are responsible for maintaining an updated list of municipal points of contact who will assist in keeping the plan current. The current points of contact for the participating municipalities are identified in the municipal annexes. Each municipality is responsible for informing the Planning Team co-chairs of any changes in their municipal representation. The co-chairs of the Planning Team will be responsible for selecting a replacement in the event that a Planning Team member can no longer fulfill their duties to the team.

Plan Implementation

Each participating municipality, the counties, or any other ancillary organization is responsible for implementing their mitigation actions and informing the Administrative Planning Team annually of any progress made. This includes incorporating those actions into other planning documents, such as comprehensive plans, zoning ordinances, capital improvement plans, and budgets, as necessary. It will remain the responsibility of the Lehigh and Northampton County Emergency Management Agencies to monitor grant opportunities to help the counties and municipalities fund their mitigation actions and inform the municipalities of those opportunities. To give the region enough time to perform the next five-year update, the counties will consider applying for Hazard Mitigation Planning grant funding in 2025-2026.

To promote continued involvement, the 2024 Lehigh Valley Hazard Mitigation Plan, including municipal annexes, will remain available to the public online on the Northampton County Emergency Management website. The website will include a place for members of the public to comment, and social media will be used as part of a continued outreach effort. Any media reports and public meeting notices will be posted online, as well as any progress reports and updates to the Plan. Annual progress reports or any proposed updates to the Plan will be open for public review online and during at least one public meeting each year. The co-chairs will assist in scheduling public meetings and Northampton County Emergency Management will be responsible for maintaining the Hazard Mitigation webpage. Over the next five years, municipal participation will continue to include assisting and promoting outreach to their community.

In addition, copies of the 2024 Plan will be made available for public access from each agency at:

Lehigh County Emergency Management Agency
Phone: 610-782-4600
Email: infoema@lehighcounty.org

Northampton County Emergency Management Services
Phone: 610-746-3194 ext. 3228
Email: tguth@ncem-pa.org

For more information, see Section 7. Plan Maintenance and Section *Lehigh County Emergency Management Agency*
Phone: 610-782-4600
Email: infoema@lehighcounty.org

Northampton County Emergency Management Services
Phone: 610-746-3194 Ext. 3228
Email: tguth@ncem-pa.org

8. Plan Adoption.

Lehigh County Authority, Lehigh/Northampton County Annex

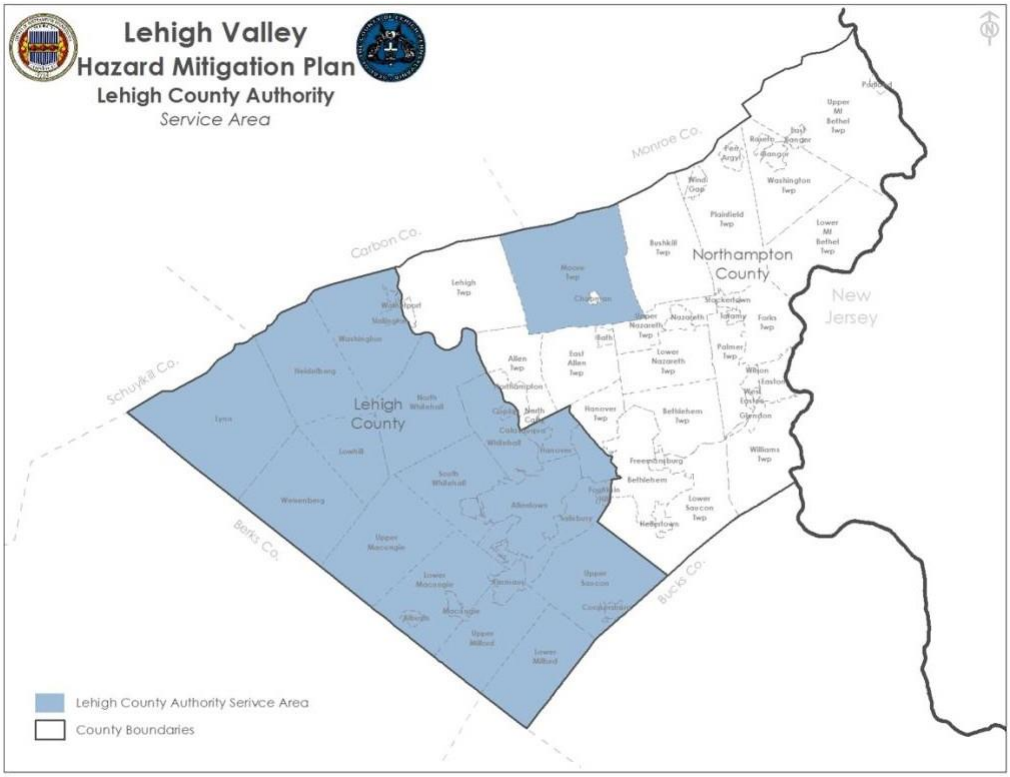
Hazard Mitigation Plan Points-of-Contact

Primary:
Liesel Gross
CEO
1053 Spruce Road, PO Box 3348, Allentown, PA 18106
610-398-2503
lieselgross@lehighcountyauthority.org

Alternate:
N/A

Participant Profile

Lehigh County Authority (LCA) is a public water and wastewater utility committed to protecting public health and the environment by providing high-quality, safe, and reliable water and wastewater services, serving a population of approximately 270,000 people. A nonprofit, public agency, LCA was founded in 1966 by the County of Lehigh and is governed by a nine-member board of directors appointed by the County. LCA provides water service to more than 55,000 residential and commercial properties throughout Lehigh and Northampton counties, including the City of Allentown, and sewer service to about 35,000 properties, primarily in the City of Allentown. The map below shows the LCAs service area.



Municipal Participation

1. Identify stakeholders to be involved in the planning process such as, floodplain administrator, public works, emergency management, engineers, planners, etc., and include their specific role in the process. Are there any departments, sections, or other divisions of the authority that will participate?

   N/A

2. Identify community stakeholders such as; neighborhood groups, religious groups, major employers/businesses, etc., that will be informed and / or involved in the planning process and describe how they will be involved. Are there any organizations, groups or people outside of the authority itself that will participate?

   N/A

3. Describe how the public **will be engaged** in the current planning process (examples, newsletters, social media, etc.), **and how they were engaged** since the 2018 Hazard Mitigation Plan.

   Current: Biweekly public meetings, newsletter, website
   Past: N/A

Compliance with the National Flood Insurance Program (NFIP)

Topic	Identify the source of information, if different from the one listed.	Additional Comments
1. Staff Resources		
Is the Community Floodplain Administrator (FPA) or NFIP Coordinator certified?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Is floodplain management an auxiliary function?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Provide an explanation of NFIP administration services (e.g., permit review, GGIS, education or outreach, inspections, engineering capability)	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
What are the barriers to running an effective NFIP program in the community, if any?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
2. Compliance History		
Is the community in good standing with the NFIP?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Are there any outstanding compliance issues (i.e., current violations)?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
When was the most recent Community Assistance Visits (CAV) or Community Assistance Contact (CAC)?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Is a CAV or CAC scheduled or needed?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
3. Regulation		
When did the community enter the NFIP?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Are the Flood Insurance Rate Maps (FIRMs) digital or paper? How are residents assisted with mapping?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Do floodplain regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP

Compliance with the National Flood Insurance Program (NFIP) - *continued*

Topic	Identify the source of information, if different from the one listed.	Additional Comments
4. Insurance Summary		
How many NFIP policies are in the community? What is the total premium and coverage?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
How many claims have been paid in the community? What is the total amount of paid claims? How many substantial damage claims have there been?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
How many structures are exposed to flood risk within the community?	N/A	N N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
Describe any areas of flood risk with limited NFIP policy coverage	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP
5. Community Rating System (CRS)		
Does the community participate in CRS?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP or CRS
If so, what is the community's CRS Class Ranking?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP or CRS
What categories and activities provide CRS points and how can the Class be improved?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP or CRS
Does the plan include CRS planning requirements?	N/A	N/A – The Lehigh County Authority is a public non-profit utility, and is not a municipality or county eligible to participate in the NFIP or CRS

Community Assets

Community assets are defined to include anything that is important to the character as well as the function of a community, and can be described in four categories, they are; people, economy, natural environment and built environment. Please identify the community assets and location under each category.

1. **People**
    - Concentrations of vulnerable populations such as the elderly, physically or mentally disabled, non-English speaking, and the medically or chemically dependent.

        N/A – The Lehigh County Authority is a non-profit entity that does not have any residents.

    - Types of visiting populations where large numbers of people are concentrated such as visitors for special events and students.

N/A – The Lehigh County Authority is a non-profit entity that does not have any residents

2. **Economy**
    - Major employers, and primary economic sectors such as agriculture and commercial centers where losses would have a severe impact on the community.

        N/A – The Lehigh County Authority is a non-profit entity that does not have any residents.

3. **Natural Environment**
    - Those areas/features that can provide protective functions that reduce the magnitude of hazard events such as wetlands or riparian areas, and other environmental features important to protect.

        Source water protection plans in place.

Community Assets- *continued*

4. Built Environment

- Existing structures such as concentrations of buildings that may be more vulnerable to hazards based on location, age, construction type and/or condition of use.

  Both the water and wastewater treatment plants are constructed within the flood plain.

- Infrastructure systems such as water and wastewater facilities, power utilities, transportation systems, communication systems, energy pipelines, and storage.

  The water and wastewater treatment plants are constructed in the floodplain. These facilities are attached as a separate spreadsheet.

- High potential loss facilities such as dams, locations that house hazardous materials, and military and/or civilian defense installations.

  N/A

- Critical facilities such as hospitals, medical facilities, police and fire stations, emergency operations centers, shelters, schools, and airports/heliports.

  LCA provides critical water and/or wastewater services to many of these facilities within their service area.

- Cultural/historical resources such as museums, parks, stadiums, etc.

  LCA provides critical water and/or wastewater services to many of these facilities within their service area.

Capability Assessment

Capability	✓ Regulatory ✓ Tools ✓ Programs	Status			Department / Agency Responsible	Effect on Hazard Loss Reduction: -Supports -Neutral -Hinders	Change since the 2018 Plan? + Positive - Negative	Has the 2018 Plan been integrated into the Regulatory Tool/Program ? If so, how?	How can these capabilities be expanded and improved to reduce risk?	Additional Comments
		In Place	Date Adopted or Updated	Under Development						
1. Planning & Regulatory	Comprehensive Plan	X	2023				N/A	N/A		Strategic Plan & Strategic Asset Management Plan
	Capital Improvement Plan	X	2023				N/A	N/A		
	Economic Development Plan						N/A	N/A		
	Continuity of Operations Plan	X	2023				N/A	N/A		
	Stormwater Management Plan / Ordinance						N/A	N/A		
	Open Space Management Plan (or Parks/Rec., Greenways Plan)						N/A	N/A		
	Natural Resource Protection Plan						N/A	N/A		
	Transportation Plan						N/A	N/A		
	Historic Preservation Plan						N/A	N/A		
	Floodplain Management Plan						N/A	N/A		
	Farmland Preservation						N/A	N/A		
	Evacuation Plan	X	2023				N/A	N/A		
	Disaster Recovery Plan	X	2023				N/A	N/A		
	Hazard Mitigation Plan	X	2023				N/A	N/A		
	Emergency Operations Plan	X	2023				N/A	N/A		
	Zoning Regulations						N/A	N/A		
	Floodplain Regulations						N/A	N/A		
	NFIP Participation						N/A	N/A		
	Building Code						N/A	N/A		
	Fire Code						N/A	N/A		
	Other						N/A	N/A		

Capability Assessment - *continued*

Capability	✓ Staff ✓ Personnel ✓ Resources	Yes	No	Department / Agency	Change since 2018 Plan? + Positive - Negative	How can these capabilities be expanded and improved to reduce risk?	Additional Comments
2. Administrative & Technology	Planners (with land use / land development knowledge)	X			N/A		
	Planners or engineers (with natural and / or human-caused hazards knowledge)	X			N/A		
	Engineers or professionals trained in building and / or infrastructure construction practices (including building inspectors)	X			N/A		
	Emergency Manager	X			N/A		
	Floodplain administrator / manager		X		N/A		
	Land surveyors		X		N/A		
	Staff familiar with the hazards of the community	X			N/A		
	Personnel skilled in Geographical Information Systems (GIS) and / or FEMA's HAZUS program	X			N/A		
	Grant writers or fiscal staff to handle large / complex grants	X			N/A		
	Other	X			N/A		Emergency Responders on staff
3. Financial Resources	Capital improvement programming	X			N/A		
	Community Development Block Grants (CDBG)	X			N/A		
	Special purposes taxes				N/A		
	Gas / Electricity utility fees				N/A		
	Water / Sewer fees	X			N/A		
	Stormwater utility fees				N/A		
	Development impact fees				N/A		
	General obligation, revenue, and / or special tax bonds	X			N/A		
	Partnering arrangements or intergovernmental agreements	X			N/A		
	Other				N/A		
	StormReady Certification		X		N/A		
	Natural disaster or safety-related school programs	X			N/A		

Capability Assessment - *continued*

Capability	✓ Staff ✓ Personnel ✓ Resources	Yes	No	Department / Agency	Change since the 2018 Plan? + Positive - Negative	How can these capabilities be expanded and improved to reduce risk?	Additional Comments
4. Education & Outreach	Firewise Communities Certification		X		N/A		
	StormReady Certification		X		N/A		
	Natural disaster or safety-related school programs	X			N/A		
	Ongoing public education or information programs such as, responsible water use, fire safety, household preparedness, and environmental education.	X			N/A		
	Public-private partnership initiatives addressing disaster related issues.	X			N/A		
	Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	X			N/A		
	Other				N/A		

Capability		Degree of Capability			Change since the 2018 Hazard Mitigation Plan? If so, how?	Additional Comments
		Limited	Moderate	High		
5. Self – Assessment	Planning and Regulatory			X	N/A	
	Administrative and Technical			X	N/A	
	Financial			X	N/A	
	Education and Outreach			X	N/A	

Known or Anticipated Future Development / Redevelopment

Development / Property Name	Type of Development	Number of Structures	Location	Known Hazard Zone	Description / Status
None					

Natural & Non-Natural Event History Specific to Lehigh County Authority

Type of Event and Date(s)	FEMA Disaster # (if applicable)	Local Damage(s) or Loss(es)
2020-2021 COVID-19 Pandemic	4506DR	$23,427.31 was received from FEMA for PPE and related materials to support the 24/7 operation of critical facilities during the COVID-19 pandemic.

2023 Mitigation Action Plan

	Mitigation Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H / M / L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures
1	Pretreatment Plant Capital Improvements	14	Utility Interruption, Environmental Hazards		$6,000,000		Lehigh County Authority	Short Term	Existing
2	Tank and Reservoir Rehabilitation	15	Utility Interruption, Environmental Hazards		$1,000,000		Lehigh County Authority	Short Term	
3	Large Diameter Valve Replacement Project	15	Utility Interruption, Environmental Hazards		$1,950,000		Lehigh County Authority	Short Term	
4	Spring Creek Pump Station Upgrades	16	Flood, Utility Interruption, Environmental Hazards		$1,430,000		Lehigh County Authority	Short Term	
5	Park Pump Station Upgrade - Phase 2	16	Utility Interruption, Environmental Hazards		$2,100,000		Lehigh County Authority	Short Term	
6	KIWWTP Redundant Power Supply	17	Utility Interruption, Environmental Hazards		$770,000		Lehigh County Authority	Short Term	
7	WWTP Electrical Substation No. 1 Replacement	18	Utility Interruption, Environmental Hazards		$6,800,000		Lehigh County Authority	Short Term	
8	WWTP Boiler Replacement & Solids Process HVAC Upgrade Project	18	Utility Interruption, Environmental Hazards		$1,400,000		Lehigh County Authority	Short Term	
9	WWTP Final Clarifier 1-4 Rehabilitation	18	Utility Interruption, Environmental Hazards		$1,800,000		Lehigh County Authority	Short Term	
10	WWTP Primary Sludge Digester Feed Line Replacement	18	Utility Interruption, Environmental Hazards		$1,300,000		Lehigh County Authority	Short Term	
11	Upper System Pump Station & Water Main Extension	18	Utility Interruption, Environmental Hazards		$2,150,000		Lehigh County Authority	Short Term	
12	Central Lehigh System Supply Improvements	18	Utility Interruption, Environmental Hazards		$1,650,000		Lehigh County Authority	Short Term	

2023 Mitigation Action Plan - *continued*

	Mitigation Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H / M / L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures
13	WFP Redundant Power Supply	17	Utility Interruption, Environmental Hazards		$730,000		Lehigh County Authority	Short Term	
14	WFP Filter Upgrades	18	Utility Interruption, Environmental Hazards		$5,500,000		Lehigh County Authority	Short Term	
15	Big Lehigh Intake & Transmission Upgrades	18	Utility Interruption, Environmental Hazards		$1,120,000		Lehigh County Authority	Short Term	
16	PFAS Compliance Planning and Upgrades	27	Utility Interruption, Environmental Hazards		$10,250,000		Lehigh County Authority	Short Term	
17	Lead Service Line Replacement Program	18	Utility Interruption, Environmental Hazards		$55,000,000		Lehigh County Authority	Short Term	
18	Upper Western Lehigh Interceptor Pump Station & Force Main	18	Utility Interruption, Environmental Hazards		$7,750,000		Lehigh County Authority	Short Term	
19	WLI Major Rehabilitation and Repairs	18	Utility Interruption, Environmental Hazards		$6,975,000		Lehigh County Authority	Short Term	
20	Signatory I & I Investigation & Remediation Program	18	Utility Interruption, Environmental Hazards		$1,500,000		Lehigh County Authority	Short Term	
21	Manhole Inspection and Sealing Program	18	Utility Interruption, Environmental Hazards		$6,000,000		Lehigh County Authority	Short Term	
22	WWTP Wet Weather Capacity Enhancement - Main & Auxiliary Pump Station Improvements	16	Utility Interruption, Environmental Hazards		$12,600,000		Lehigh County Authority	Short Term	
23	WWTP Wet Weather Capacity Enhancement - IPS Pump Station Upgrade & 480v MCC Replacement	16	Utility Interruption, Environmental Hazards		$5,900,000		Lehigh County Authority	Short Term	

2023 Mitigation Action Plan - *continued*

	Mitigation Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H / M / L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures
24	Source Reduction Plan - I/I Elimination Program	18	Utility Interruption, Environmental Hazards		$23,000,000		Lehigh County Authority	Short Term	
25	WWTP Wet Weather Capacity Enhancement Project - Tertiary Bypass	16	Utility Interruption, Environmental Hazards		$1,300,000		Lehigh County Authority	Short Term	
26	Wynnewood I & I Investigation & Remediation Program	18	Utility Interruption, Environmental Hazards		$150,000		Lehigh County Authority	Short Term	
27	Heidelberg Heights I & I Investigation & Remediation Program	18	Utility Interruption, Environmental Hazards		$300,000		Lehigh County Authority	Short Term	
28	Lynn Township I & I Investigation & Remediation Program	18	Utility Interruption, Environmental Hazards		$150,000		Lehigh County Authority	Short Term	
29	North Whitehall Division Water System Supply Study and Improvements	16	Environmental Hazards / Hazardous Materials Release		$2,000,000		Lehigh County Authority	Short Term	
30	Central Lehigh County WW Capacity Planning & Expansion	18	Utility Interruption, Environmental Hazards		$800,000		Lehigh County Authority	Short Term	
31	Spring Creek Force Main Condition Assessment	18	Utility Interruption, Environmental Hazards		$150,000		Lehigh County Authority	Short Term	
32	North Whitehall Township Act 537 Sewage Facilities Planning	18	Utility Interruption, Environmental Hazards		$180,000		Lehigh County Authority	Short Term	
33	Act 537 Alternative Analyses	18	Urban Fire/Explosion		$700,000		Lehigh County Authority	Short Term	
34	Water Main Replacement Projects	18	Utility Interruption, Environmental Hazards		$12,100,000		Lehigh County Authority	Short Term	

2023 Mitigation Action Plan - *continued*

	Mitigation Action	Mitigation Technique Category	Hazard(s) Addressed	Priority (H / M / L)	Estimated Cost	Potential Funding	Lead Agency / Department	Implementation Schedule	Applies to New and/or Existing Structures
35	Annual Water Main Replacements	18	Utility Interruption, Environmental Hazards		$24,600,000		Lehigh County Authority	Short Term	
36	Kline's Island WWTP Wet-Weather Enhancement Projects	18	Utility Interruption, Environmental Hazards, Flooding		$51,000,000		Lehigh County Authority	Short Term	
37	Western Lehigh Interceptor Expansion	18	Utility Interruption, Environmental Hazards, Flooding		$98,000,000		Lehigh County Authority	Short Term	
38	Little Lehigh Relief Interceptor Expansion	18	Utility Interruption, Environmental Hazards,Flooding		$30,000,000		Lehigh County Authority	Short Term	
39	Industrial Pretreatment Plant Capacity Expansion & Upgrade	18	Utility Interruption, Environmental Hazards,Flooding		$148,000,000		Lehigh County Authority	Short Term	

Notes:

Estimated Costs:

- Where actual project costs have been reasonable estimated: Low = < $10,000; Medium = $10,000 to $100,000; High = > $100,000;
- Where actual project costs cannot reasonably be established at this time:
  - **Low** = Possible to fund under existing budget. The project is part of, or can be part of an existing ongoing program.
  - **Medium** = Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
  - **High** = Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Potential Funding (FEMA HMA):

- **BRIC =** Building Resilient Infrastructure and Communities
- **FMA** = Flood Mitigation Assistance Grant Program
- **HMGP** = Hazard Mitigation Grant Program
- **HSGP** = Homeland Security Grant Program
- **EMPG** = Emergency Management Performance Grant

Implementation Schedule:

- **Short Term** = 1 to 5 years
- **Long Term** = 5 years or greater
- **DOF** = Depending on Funding

Applies to New and/or Existing Structures:

- **N/A** = Not Applicable

RESOLUTION NO. 12-2024-2

(Duly adopted 9 December 2024)

A RESOLUTION ESTABLISHING THE VARIOUS COMPONENTS OF THE LEHIGH COUNTY AUTHORITY CAPITAL RECOVERY FEES FOR THE CITY DIVISION WATER SYSTEM CONNECTION FEE; AND THE CUSTOMER FACILITIES FEES FOR THE CITY DIVISION WATER SYSTEM AND THE SUBURBAN DIVISION WATER AND WASTEWATER SYSTEMS.

WHEREAS, Lehigh County Authority ("Authority") is a Pennsylvania municipal authority incorporated by the County of Lehigh in accordance with the Municipality Authorities Act to provide, among other services, wastewater and water services; and

WHEREAS, the Authority owns and/or operates water and wastewater systems throughout the Lehigh Valley of Pennsylvania, which systems are divided between its City of Allentown and Suburban Divisions; and

WHEREAS, the Authority charges certain rates and fees for use of and connection to its systems; and

WHEREAS, the Authority desires to establish its fees in accordance with §5607 of the Municipality Authorities Act, as amended, setting forth the appropriate fee components; and

WHEREAS, the Authority has calculated the allowable basis for such fees for certain of its wastewater and water systems in accordance with the attached calculations and its summary of the Capital Recovery Fees for the City Division Water System Connection Fee, the Customer Facilities Fees for the City Division Water System and the Suburban Division Water and Wastewater Systems (as Attachment A), the current version of which, as well as any future changes thereto, is made a part hereof as if included herein; and

NOW THEREFORE, the Lehigh County Authority, pursuant to powers invested in it by the Pennsylvania Municipality Authorities Act, as amended, hereby resolves that:

1. The capital recovery fees for wastewater and water service in various of the Authority's wastewater and water systems as indicated and shown on Attachment A, *LCA Customer Facilities Fees and Connection Fees, Allentown and Suburban Divisions - Water and Wastewater*, attached hereto and made a part hereof, are adopted effective 1 January 2025.

2. The Authority's Schedules of Rates and Charges shall be amended to reflect the fees hereby adopted, which fees shall be effective as of 1 January 2025.

3. All other Authority cost recovery fees, customer facilities fees, connection fees, and tapping fees, not contained in Attachment A hereto, continue in place, and are unaffected hereby.

On motion of_____, seconded by _____, this Resolution was adopted the 9th day of December 2024.

Tally of Votes: Yeas _____ Nays _____

ꕥ

I, Kevin C. Reid, of the law firm of King, Spry, Herman, Freund & Faul, LLC, Solicitor to the Lehigh County Authority, do hereby certify that the foregoing is a true, correct and complete copy of a Resolution No. 12-2024-2 which was duly adopted by the Authority Board at a public meeting of the Authority Board held on December 9, 2024, after notice thereof had been duly given as required by law, at which meeting a quorum was present and voting, and which Resolution has been recorded in the Minutes and is now in full force and effect on the date of this certification.

_____

Kevin C. Reid, Esquire Date
King, Spry, Herman, Freund & Faul, LLC
Lehigh County Authority Solicitor

Attest:

_____

Lisa J. Miller Date
Executive Administrative Support Specialist

ATTACHMENT A
LCA CUSTOMER FACILITIES FEES AND CONNECTION FEES
ALLENTOWN AND SUBURBAN DIVISIONS - WATER AND WASTEWATER

Suburban Division - Water System - Customer Facilities Fees

Meter Component - With DC Backflow

Meter Size	2025 Supply Cost	2025 Labor Cost	2025 Rate
5/8”	$407	$123	$530
5/8” Pit	$408	$123	$531
3/4”	$426	$123	$549
3/4” Pit	$427	$123	$550

Meter Component - With No Backflow

Meter Size	2025 Supply Cost	2025 Labor Cost	2025 Rate
5/8”	$349	$123	$472
5/8” Pit	$350	$123	$473
3/4”	$368	$123	$491
3/4” Pit	$369	$123	$492
1”	$496	$123	$619
1” Pit	$439	$123	$562
1 1/2” Displacement	$824	n/a	$874
1 1/2” Turbine	$1,288	n/a	$1,338
1 1/2” Compound	$1,781	n/a	$1,831
2” Displacement	$1,083	n/a	$1,133
2” Turbine	$1,503	n/a	$1,553
2” Compound	$2,037	n/a	$2,087

Suburban Division - Wastewater System - Customer Facilities Fees

Meter Purchase Only (Plumber Install)

Meter Size	2025 Supply Cost	2025 Inspection Fee	2025 Rate
5/8”	$349	$50	$399
5/8” Pit	$350	$50	$400
3/4”	$368	$50	$418
3/4” Pit	$369	$50	$419
1”	$496	$50	$546
1” Pit	$439	$50	$489
1 1/2” Displacement	$824	$50	$874
1 1/2” Turbine	$1,288	$50	$1,338
1 1/2” Compound	$1,781	$50	$1,831
2” Displacement	$1,083	$50	$1,133
2” Turbine	$1,503	$50	$1,553
2” Compound	$2,037	$50	$2,087

Allentown Division - Water System - Customer Facilities Fees

Meter Size	2025 Meter Price	Components	2025 Labor Cost	2025 Rate
5/8"	$98	$164.54	$132	$394
3/4"	$167	$164.54	$132	$463
1"	$154	$162.96	$132	$448
1 1/2"	$331	$321.70	$132	$784
2"	$431	$425.10	$132	$988
3" Compound	$2,110	$118.60	$50	$2,279
3" Turbine	$1,460	$118.60	$50	$1,629
4" Compound	$3,664	$118.60	$50	$3,833
4" Turbine	$2,843	$118.60	$50	$3,012
6" Compound	$6,525	$118.60	$50	$6,694
6" Turbine	$5,276	$118.60	$50	$5,445
6" Fireline	$12,137	$118.60	$50	$12,306
8" Compound	$10,540	$118.60	$50	$10,709
8" Turbine	$8,953	$140.32	$50	$9,143
8" Fireline	$19,235	$140.32	$50	$19,425

Other Components	2025 Price
5/8" Meter Horn	$65.51
3/4" Meter Horn	$76.69
Curb Box - Metal	$107.33

Allentown Division - Water System - Water Connection Fees

Water Taps 3/4 inch - 2 inch

	Corporation	Tail Piece	Saddle Clamp	Employee Wages	Equipment	2025 Rate
Size 3/4 "	$35	$28	$0	$294	$82	$439
Size 1 "	$52	$40	$0	$294	$82	$468
Size 1 1/2"	$158	$106	$61	$294	$82	$702
Size 2 "	$270	$170	$63	$294	$82	$879

Water Sleeve and Valve Connectors

	Valve	Casing	Tapping Fitting	Employee Wages	Equipment	2025 Rate
Size 4"x 4"	$782	$165	$1,020	$853	$277	$3,097
Size 6"x 4"	$782	$165	$1,213	$853	$277	$3,291
Size 6" x 6"	$1,045	$165	$1,213	$853	$277	$3,554
Size 8"x 4"	$782	$165	$1,490	$853	$277	$3,568
Size 8"x 6"	$1,045	$165	$1,490	$853	$277	$3,831
Size 8"x 8"	$1,634	$165	$1,612	$853	$277	$4,541
Size 12"x 4"	$782	$165	$2,947	$853	$277	$5,024
Size 12"x 6"	$1,045	$165	$2,947	$853	$277	$5,288
Size 12"x 8"	$1,634	$165	$3,130	$853	$277	$6,060
Size 12"x 12"	$3,134	$165	$3,722	$853	$277	$8,152

MEMORANDUM

Date: December 9, 2024

To: LCA Board of Directors

From: Charles Volk, PE, Chief Capital Works Officer

Subject: Capital Program Management Services

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Professional Service Authorization – Envision Consultants, Ltd.	$54,065

PROJECT OVERVIEW:

LCA seeks additional resources and tools to enable better management of a growing capital program. Project management requires management of scope, schedule, budget, quality, and customer satisfaction. Historically, projects have failed to meet forecasted schedules for a variety of reasons. One key driver is a lack of internal control and consistency with respect to how projects are scheduled, leading to various delays due to unforeseen issues such as permitting delays and long lead times on key pieces of equipment. In addition, engineering consultants have varying degrees of expertise in the area of project scheduling and predicting variances that may occur throughout the life of the project. This is an area of opportunity for improvement of LCA's capital program implementation. Staff have identified support to be provided by Envision Consultants, Ltd. (Envision) in this area. The objective is to provide LCA project managers with better tools to oversee and drive projects to completion.

PROJECT DETAILS:

LCA uses enterprise software for overall financial management (Munis), and Capital Works recently acquired Procore as project management platform (currently in implementation phase). The Procore software requires project schedules to be inputted or imported into the platform for each project. It serves as a clearinghouse for storing and managing information, including schedules, however, Procore does not manage individual project schedules. Staff (and many consultants and contractors) have experience with Primavera and/or Microsoft Project for development of detailed schedules, and standardization is desired for internal and external utilization.

LCA requires a tool to identify in real time when project tasks need to begin and when projects are not meeting schedule. A master schedule will also be beneficial to help ensure planning studies are completed in time for annual capital budgeting, and to ensure substantially complete design submissions for major capital projects meet the City of Allentown's compliance deadlines for the following year's Capital Cost Recovery Charge calculations. These tools emphasize the importance of schedule management and provide a vehicle for actively tracking work and making adjustments to get things on track before it is too late. Envision would help to get this into a format that can be used immediately and can grow with LCA's capital program.

SUMMARY OF WORK

There are three discrete tasks included in Envision's proposal:

1. Specification development to govern schedules received from Engineers and Contractors
2. Template development in MS Project/Primavera for the Schedule conforming to the Specification that Engineers can use to build their schedule
3. Development of a Master Schedule for all projects from the Capital Plan that includes all phases through construction.

Tasks 1 and 2 are intended to standardize schedules, which will improve upon the current approach of relying on various formats provided by engineers or contractors. It will provide uniformity and structure and hopefully better schedules. This would highlight for the engineer and contractor the requirement for preparing and updating a schedule. The specification will indicate minimum requirements (like a critical path method with predecessor and successors assigned); it will indicate the type of activities – reviews / approvals, design submissions, permitting activities, City review, etc. It would also define the process and frequency for updating the schedule. The Master Schedule is planned to be prepared in Primavera as it has superior capabilities for comparing planned versus actual schedule.

For Task 3, LCA currently does not have a way to see all projects in the Capital Plan from inception through construction. The lack of visibility on promised delivery dates has led to projects starting late and engineers not preparing nor meeting compliant schedules. The plan is to spend time to build good, accurate and achievable schedules for projects in the planning phase and pair that with the design and construction schedules, then use the master schedule to track progress. Scheduling software is a core tool needed to achieve better results.

Although not part of the scope of this authorization, Envision also has estimators on staff who provide third-party cost estimating services on an as-needed basis. Having professionally prepared estimates will help LCA better predict actual costs and assist with budgeting. While some consulting firms have engineers that possess estimating experience, it is treated as a standalone discipline for Envision. This effort will not replace all estimating by LCA's engineers but will provide support for critical projects or when a particular engineer does not have the capacity to provide detailed project estimates.

FINANCIAL:

This project will be funded by Suburban Division.

PROJECT STATUS:

Commencement of acquisition pending board approval.

THIS APPROVAL:

Envision is a leader in project controls management. They help public agencies and contractors prepare and update their schedules and estimates. They are supporting the City of Philadelphia with the following projects: Rebuild CHOP New Patient Tower and PWD's Lardner's Point Pumping Complex & Sewer Maintenance Facility, Belmont Boiler Replacement and Baxter Water Treatment Plant.

This authorization is for is approximately one year of support services as described above. Following the expiration of this authorization, the Capital Works team will have received the

training and experience to continue with the scheduling tools and protocols established by Envision.

PROJECT SCHEDULE:
Pending Board approval, this work is anticipated to begin in early 2025 for a period of approximately one year.

FUTURE AUTHORIZATIONS:
None at this time.

Lehigh County Authority

1053 Spruce Road * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: ENVISION CONSULTANTS, LTD
6309 Carpinteria Ave
Carpinteria, CA 93013

Date: December 9, 2024

Requested By: Charles Volk

Approvals

Department Head: _____

Chief Executive Officer: _____

Program Management Services

LCA requires a tool to identify in real time when project tasks need to begin and when projects are not meeting schedule. A master schedule will also be beneficial to help ensure planning studies are completed in time for annual capital budgeting, and to ensure substantially complete design submissions for major capital projects meet the City of Allentown's compliance deadlines for the following year's Capital Cost Recovery Charge calculations. These tools emphasize the importance of schedule management and provide a vehicle for actively tracking work and making adjustments to get things on track before it is too late. Envision would help to get this into a format that can be used immediately and can grow with LCA's capital program.

The scope of services includes, but is not limited to, the following:

Professional Services
1. Develop specification to govern scheduled received from Engineers and Contractors
2. Develop template in MS Project or Primavera for schedule conforming to the specification to be used by outside consultants and contractors to build out their schedule
3. Develop Master Schedule for all projects in the Capital Plan from design through construction

Please reference the cover Memo for additional information.

This authorization: $54,065
Approval Amount (not to be exceeded without further authorization): $54,065

Time Table and Completion Deadline: Pending Board approval, this work is anticipated to begin in early 2025 for a period of one year.

(For Authority Use Only)

Authorization Completion:

Approval: _____ **Actual Cost:** _____ **Date:** _____

MEMORANDUM

Date: December 9, 2024

To: Lehigh County Authority Board of Directors
From: Amy Rohrbach, Project Manager
Subject: Allentown Division – PFAS Treatment Design, Bidding, and Funding Assistance Phase Services

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization –Design, Bidding, and Funding Assistance Phase	$1,244,830
2	Professional Services Authorization – AECOM (1)	$1,069,830

(1) Included in the Capital Project Authorization

PROJECT BACKGROUND

On April 26, 2024, the Environmental Protection Agency (EPA) published the PFAS (per- and polyfluoroalkyl substances) National Primary Drinking Water Regulation. EPA established legally enforceable limits, called Maximum Contaminant Levels (MCLs), for six PFAS compounds in drinking water: PFOA, PFOS, PFHxS, PFNA, HFPO-DA and PFBS.

A recently completed PFAS Compliance Study identified Crystal Spring as a source requiring treatment due to its exceedance of the new regulatory limits for PFAS. The study evaluated three removal technologies: Granular Activated Carbon (GAC), anion exchange resin (IX), and the novel adsorbent, FLURO-SORB® (FS). Many different scenarios were evaluated for each water source used at the Allentown Water Filtration Plant, and the various combinations of water sources used, based on the current levels of PFAS in each source, capital cost, operational costs, and feasibility of construction. Following the completion of this study, treatment of Crystal Spring using GAC adsorbent technology was selected.

The purpose of this project is to design a PFAS treatment system for the Crystal Spring groundwater source. The scope will also include assistance with the PennVEST funding application, as federal grants via the Infrastructure Investment and Jobs Act may be available to support all or a portion of this project. This design will include a PFAS treatment system utilizing GAC and will include pumping, a backwashing system, site improvements, and control systems. The following phases are included: site investigation, preliminary design, detailed design, permitting, bidding, and funding assistance.

The Crystal Spring site poses design challenges due to site space constraints for the influent pumping, backwashing system, and chemical systems. The space available for the PFAS treatment is small and located within a regulated flood zone close to the public right-of-

way. Pumping will be needed to provide head through the proposed GAC pressure vessels, and this comes with potentially significant space and power requirements that the design team will need to overcome. Backwash water will be needed to supply the filters and then be disposed of; however, the existing filter residuals basin is located at the opposite end of the plant from the proposed PFAS treatment. Therefore, an alternative discharge location will need to be evaluated. Finally, due to the hardness of the Crystal Spring source, a chemical system to manage calcium carbonate must be evaluated. Additionally, coordination with local and state agencies will be required during design and construction to ensure all codes and regulations are being met.

Several additional services were reviewed with the selected consultant during the proposal evaluation period and are recommended to be included during the design phase. These services include Rapid Small-Scale Column Testing (RSSCT), to evaluate performance for PFAS removal by two varieties of GAC, as well as field evaluation utilizing field column piloting of potential anti-scalant chemicals. The design of pre-filters and an anti-scalant chemical feed is necessary due to the hardness of the Crystal Spring source and potential for scaling within the carbon media. Both services are proposed to be completed concurrently with the preliminary design phase.

FINANCIAL

This project will initially be funded by the Allentown Division and is eligible for cost recovery through rates via the Change of Law provision of the lease agreement with the City. LCA's Suburban Division will reimburse the Allentown Division for a proportionate share of the project cost related to the Suburban Water Purchase Agreement. Any grants received would offset rate increases applied as a result of this project.

CONSULTANT SELECTION PROCESS

Three (3) consulting firms were invited to submit proposals for Allentown Division PFAS Treatment design phase. All firms were provided with the May 10, 2024, Hazen and Sawyer PFAS Compliance Study as well as given an opportunity to tour the Water Filtration Plant and Crystal Spring facility. Each proposal was reviewed and scored based on Qualifications, Approach, Team, and Project Manager. The proposals are summarized below:

CONSULTANT	COST
AECOM	$943,330
Black & Veatch Corporation	$1,245,150
Hazen & Sawyer	DID NOT PARTICIPATE

The proposed additional services mentioned above are summarized below:

PROPOSED ADDITIONAL SERVICE	COST
Rapid Small Scale Column Testing (RSSCT)	$38,000
Field Column Pilot for anti-scalant chemical	$78,500
Additional design fee for cartridge filter and scale inhibitor	$10,000
Total Additional Services	$126,500

Total recommended PSA award to AECOM is **$1,069,830**.

The total cost by AECOM is approximately 6% of the estimate $17.3M construction cost which aligns with industry standards.

THIS APPROVAL – DESIGN, BIDDING, AND FUNDING ASSISTANCE PHASE SERVICES

Lehigh County Authority intends to retain the services of AECOM who provided the most responsive proposal at the lowest cost. The following table summarizes the professional services to be performed under this approval:

Professional Services [1]
1. Concept Development
2. Site Investigation (Survey & Geotech)
3. Preliminary Design Phase (30%)
4. Final Design Phase (60%, 90%, Final)
5. Permitting Services
6. Funding Assistance Services
7. Bidding Phase Services
8. Rapid Small Scale Column Testing [2]
9. Field Column Testing to determine chemical addition for anti-scalant [2]

(1) See AECOM's proposal dated November 1, 2024

(2) Additional services negotiated with AECOM during proposal review

PROJECT SCHEDULE

Assuming approval of the Preliminary Design Phase Services at the December 9, 2024 Board meeting, it is anticipated that the project will be ready for bid in March of 2026.

FUTURE AUTHORIZATIONS – CONSTRUCTION PHASE SERVICES

Following Design and Bidding Phase Services, Capital Project Authorization will be requested from the Board for Construction Phase Services.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.: AD-W-21 **BUDGET FUND:** Allentown Div\W\Capital

PROJECT TITLE: Allentown Division – PFAS Treatment Design, Bidding & Funding Assistance Phase Services

PROJECT TYPE:

- ☐ Construction
- ☒ Engineering Design
- ☐ Equipment Purchase
- ☐ Amendment No. 1

THIS AUTHORIZATION: **$1,244,830**
TO DATE (W/ ABOVE) **$1,244,830**

DESCRIPTION AND BENEFITS:

The purpose of this project is to design a PFAS treatment for the Crystal Spring groundwater source. The scope will also include assistance with the PennVEST funding application. This design will include a PFAS treatment system utilizing GAC including pumping, and backwashing system, site improvements, and control systems. The following phases are included, site investigation, preliminary design, detailed design, permitting, bidding, and funding assistance. Due to the change in law, Federal funding will be made available via PennVEST and the scope includes funding application assistance.

AUTHORIZATION STATUS:

Prior Authorizations	
None	
Requested This Authorization – Design, Bidding, and Funding Assistance Phase	
Design, Bidding & Funding Assistance Phase: AECOM	**$1,069,830**
Staff	**$75,000**
Contingencies	**$100,000**
Total This Authorization	**$1,244,830**

Future Authorizations	
Construction Phase	

Review and Approvals:

Amy Rohrbach	12/9/2024		
Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date

Lehigh County Authority

1053 Spruce Street * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413 * Email: service@lehighcountyauthority.org

PROFESSIONAL SERVICES AUTHORIZATION

Professional: AECOM
625 Est Ridge Pike, Suite E100
Conshohocken, PA 19425

Date: December 9, 2024
Requested By: Amy Rohrbach

Approvals
Department Head: _____
Chief Executive Officer: _____

Allentown Division – PFAS Treatment Design, Bidding, and Funding Assistance Phase Services

The purpose of this project is to design a PFAS treatment for the Crystal Spring groundwater source. The scope will also include assistance with the PennVEST funding application. This design will include a PFAS treatment system utilizing GAC including pumping, and backwashing system, site improvements, and control systems. The following phases are included, site investigation, preliminary design, detailed design, permitting, bidding, and funding assistance. Due to the change in law, Federal funding will be made available via PennVEST and the scope includes funding application assistance. The following professional services are included:

Professional Services (1)
1. Concept Development
2. Site Investigation (Survey & Geotech)
3. Preliminary Design Phase (30%)
4. Final Design Phase (60%, 90%, Final)
5. Permitting Services
6. Funding Assistance Services
7. Bidding Phase Services
8. Rapid Small Scale Column Testing (2)
9. Fiel Column Testing to determine chemical addition for anti-scalant (2)

(1) *Per AECOM proposal dated November 1, 2024*
(2) *Additional Services negotiated with AECOM during proposal review*

Design, Bidding & Funding Assistance Phase:

This Authorizations: ***$1,069,830***

Time Table and Completion Deadline: As outlined in the proposal to satisfactorily complete the preliminary design phase services. Anticipated project bidding in March 2026.

(For Authority Use Only)

Authorization Completion:
Approval: _____ **Actual Cost:** _____ **Date:** _____

Lehigh County Authority

AECOM

PROPOSAL

DESIGN PHASE, BIDDING PHASE AND FUNDING ASSISTANCE SERVICES:

Allentown Division PFAS Treatment

November 1, 2024

Delivering a better world

1 Executive Summary

1. Executive Summary

AECOM recognizes Lehigh County Authority's (LCA) need to provide a clean, safe, and reliable water supply for its customers. As Pennsylvania continues to enforce compliance for drinking water under USEPA and PADEP regulations, LCA will need a trusted partner that is not only familiar with these regulations but has executed and delivered numerous projects under its guidance. LCA needs a team that can act quickly and efficiently in providing a cost-effective approach that mitigates operational and site impacts and remains flexible in the design with reliable treatment for current and anticipated future PFAS regulations. Our team is also well versed in capturing funding opportunities through PENNVEST and potentially other funding sources available to finance the project.

AECOM is the team that will deliver. By partnering with the AECOM team, LCA will receive the following key benefits on this project:

- **Demonstrated PFAS experience** in operational facilities treating PFAS in groundwater (and surface water) supplies and integrating cost-effective strategies for PFAS compliance at facilities with unique water quality drivers and challenging site integration needs. We have proven experience of evaluating existing process trains and designing PFAS compliance strategies while considering other water quality objectives both in finished water and distribution system hydraulics. AECOM recently completed designs to comply with PFAS regulations and has developed and installed/operated PFAS facilities at over 40 locations throughout the US.
- **Experienced PFAS project team to optimize project delivery** that is versed in detailed design and implementation phases for numerous water matrices. Our team will craft effective strategies to present the best technical approach considering site constraints, operational constraints, aesthetics, annual operating and capital costs, and confidence in full-scale compliance.
- **A Technical Approach that considers process adaptability and constructability**. Whether provisions for future expansion to address additional available filtration plant water sources or conversion to a new optimized media, AECOM's approach considers project risks to schedule and implementation such as flood plain permitting and the addition of future short chain PFAS regulations. Our approach incorporates existing assets such as the current existing Crystal Spring Pumps, PAC solution tanks (with the upcoming relocation of PAC feed to the Big Lehigh Intake Facility), and a proposed building arrangement that minimizes short and long-term impacts to the compact site, and permitting requirements within the regulated flood plain.
- **Local Project Director to facilitate project coordination.** Having a local Lehigh Valley Project Director provides LCA with the local presence of a globally recognized firm with the vested interest of a Lehigh County resident who will be responsive to project needs. Chris Curran brings 25 years of engineering experience with AECOM to LCA and offers continuity along with broad technical experience as AECOM's Global PFAS lead for Water. In addition, as done with the wastewater program for LCA, he will leverage his internal network to connect specific technical resources to aid in project delivery where warranted. We will work with LCA staff to provide process improvements that can be implemented while minimizing operational disruptions.
- **Client-focused Project Management and Quality Standards.** We don't let project success occur by chance. Top-tier project control methodologies are built into the fabric of AECOM. Our tried-and-tested Project Delivery System enables our proposed Project Manager, Ben Deatrich, to nimbly plan for, oversee, and deliver projects of any scale, from studies and assessments to multidisciplinary design projects. Our Quality Management System is comprehensive and will streamline LCA reviews, allowing time to focus on the project elements that matter the most.

To accomplish your goals and objectives, we have assembled a readily available team of recognized experts with relevant PFAS experience, strong local and project knowledge, and a proven history of delivering PFAS treatment projects on an accelerated time frame. Our local team is supported by AECOM's full service Northeast Design Center, housing all technical disciplines in the depth necessary to execute significant water treatment plants, pumping facilities, and complex multidiscipline projects. This allows us to meet the resource demands frequently associated with peak design and construction periods. Our design center carries over experience from many projects across the country for various major utilities, including DC Water, Massachusetts Water Resources Authority (MWRA), Hampton Roads Sanitation District (HRSD), Philadelphia Water Department, City of Bethlehem, and Delaware County Regional Water Quality Control Authority (DELCORA), and can help execute projects efficiently with consistent quality and at a competitive cost.

2 Qualifications

2. Qualifications

AECOM is a recognized world leader in PFAS related services. Our teams have been working on PFAS projects for more than 21 years and at over 500 sites.

We have designed, installed, operated, monitored, and maintained dozens of full-scale PFAS treatment systems, including multiple potable systems using Ion Exchange (IX) and Granular Activated Carbon (GAC). AECOM's proposed team has successfully designed, engineered, and/or constructed over 40 similar water treatment systems for PFAS compliance. Notably, AECOM recently performed PFAS feasibility studies, designs and construction in Orange, NJ, Pennsville, NJ, Langhorne, PA, and Westborough, Chelmsford, and Braintree, MA that integrated GAC into existing process trains and included capital cost estimates and life-cycle cost projections as part of the analysis.

This is the type of experienced analysis and technology evaluation that AECOM will bring to LCA's PFAS program.

Regional PFAS Expertise

AECOM has designed PFAS water treatment plants for clients across the country, including significant experience in the Northeast United States. We are providing or have completed design services for the 40 MGD Delaware Regional Water Treatment Plant in Delran, NJ, 15 MGD Neshaminy Water Treatment Plant in Langhorne, PA, the 12.5 MGD Tri-Town Water Treatment Plant in Braintree, MA, the 3 MGD Water Treatment Plant in Chelmsford, MA; the 4.6 MGD Chestnut Street WTP in Orange, NJ; and the 1.3 MGD WTP in Westborough, MA.

AECOM has also performed testing of treatment technologies through RSSCT (Rapid Small-Scale Column Testing) at 6f WTPs in Pennsylvania alone to identify the most effective technology and anticipated life-cycle performance of the media which depends on the carbon utilization rate. We have successfully worked with state regulatory agencies to accept RSSCT testing in lieu of pilot testing to help accelerate project timelines.

National PFAS Experience

BY THE NUMBERS

20+ Years of PFAS projects
500+ PFAS Project Sites
40+ PFAS Treatment Systems
90+ PFAS Treatability Tests

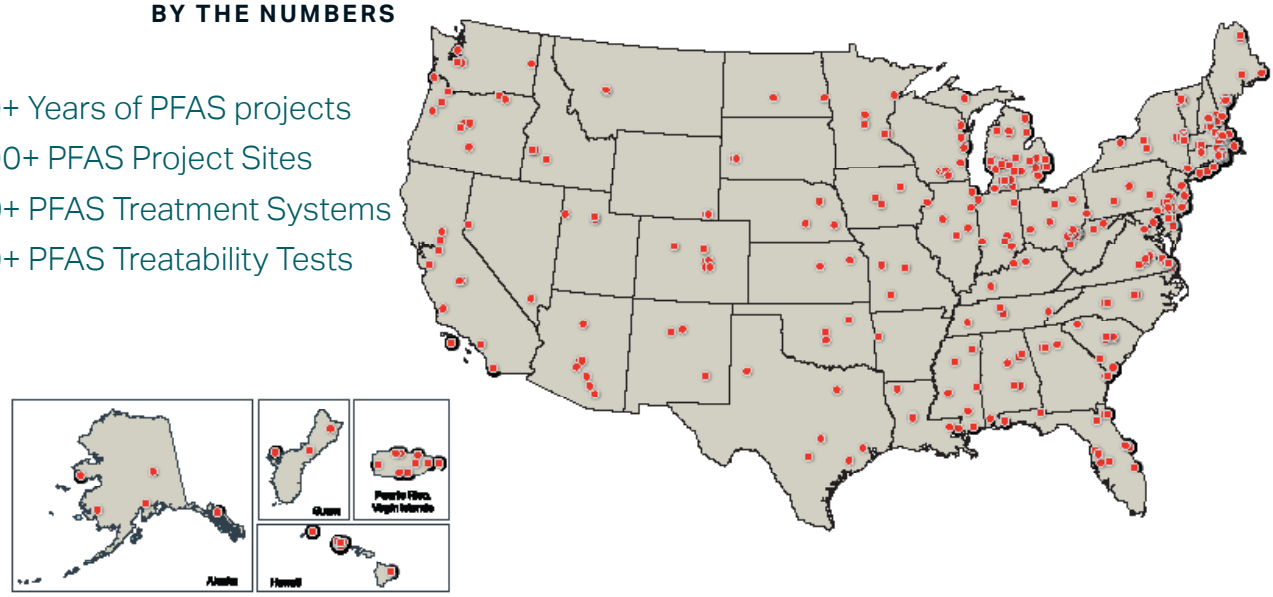


Table 2-1

AECOM's Drinking Water PFAS Studies

Project and Location	Size (MGD)	Source	Completed	Process Investigated	Client Contact
Cyclopure DEXSORB Pilot Study, MA	0.27	SW	2023	Novel Adsorbent	Frank Cassou, Chief Executive Officer, Phone: 917-612-4649, Email: fcassou@cyclopure.com
Delaware River Regional Water Treatment Plant PFAS Pilot Study, NJ	40	SW	2024 - ongoing	Granular Activated Carbon, Ion-Exchange, Novel Adsorbent	Adam Kane, NJAW, Email: adam.kane@amwater.com
Neshaminy Water Treatment Plant PFAS Alternative Evaluation PFAS Study, PA	15	SW	2024 - ongoing	Granular Activated Carbon, Ion-Exchange	Brennan Kelly, AQUA PA, Phone: 610-645-4297, Email: TKelly@aquaamerica.com
Surface Water PFAS Treatability Testing (RSSCT), Langhorne, PA (6 Locations)	up to 30	SW	2024 - ongoing	Granular Activated Carbon, Ion-Exchange	Brennan Kelly, AQUA PA, Phone: 610-645-4297, Email: TKelly@aquaamerica.com
Crooked Springs, Smith Street, and Riverneck WTPs (3 Facilities), Chelmsford, MA	7.0 (total)	GW	2023	Granular Activated Carbon, Ion-Exchange Resin, Novel Adsorbent	Lisa Quatrale, Business Director, Treasurer, Phone: 978-256-2381, Email: Lisa@chelmsfordwater.com
Newburyport Water Treatment Plant, Newburyport, MA	4	SW/GW	2022 – Ongoing	Granular Activated Carbon, Novel Adsorbent	Thomas Cusick Jr., Superintendent, Phone: 978-465-4466, Email: tcusick@cityofnewburyport.com
Ipswich Water Treatment Plant, Ipswich, MA	2.5	SW/GW	2023 – Ongoing	Dissolved Air Flotation, Granular Activated Carbon	Vicki Halman, Water & Sewer Director, Phone: 978-356-6635 ext. 2108, Email: vhalmen@ipswichutilities.org
Tri-Town Water Treatment Plant, Braintree, MA	12.5	SW	2020	Granular Activated Carbon	Jim Casagrande, PE, Director of Public Works, Phone: 781-794-8254, Email: jarensault@braintreema.gov
Chestnut Street WTP, Orange, NJ	3.5	GW	2021	Ion-Exchange Resin, Granular Activated Carbon	Siavesh Isazadeh, Ph.D., P.E. BCEE, Process & Engineer Manager, Phone: 609-491-6800, Email: siavash.isazadeh@veolia.com
Oak Street WTP PFAS Improvements, Westborough, MA	1.3	GW	2021	Ion-Exchange Resin, Granular Activated Carbon, Novel Adsorbent	Lisa Allain, PE, Town Engineer, Phone: 508-366-3766, Email: lallain@town.westborough.ma.us
Ann Arbor WTP, Ann Arbor, MI	50	SW/GW	2023 – Ongoing	Softening/Ozone/Granular Activated Carbon/UV	Brian Steglitz, Water Treatment Services Manager, Phone: 734-794-6426, Email: bsteglitz@a2gov.org
Airway Heights, WA	0.8	GW	2018	GAC / IX	Confidential
Warren County, OH	15.5 & *5	GW *RO By-pass only	2023	GAC / IX	Chris Wojnicz, P.E., Deputy Sanitary Engineer, Phone: 513-695-1646, Email: christopher.wojnicz@co.warren.oh.us
Aquarion Water Rewak, Well, C"	0.5	GW	2022	GAC / IX	Mike Hiltz, Manager, Engineering and Capital Planning, Phone: 203-337-5903, Email: mhiltz@aquarionwater.com
Village Weston, WI	0.7	GW	2022	GAC / IX	Joshua Swenson Utility Superintendent,Village of Weston, WI, Phone: 715-241-2637, Email: jswenson@westonwi.gov
Well 15, Madison, WI	2.2	GW	2022 –Ongoing	GAC / IX Hybrid	Joseph Grande, P.E. Water Quality Manager, Madison Water, Phone: 608-225-9135, Email: JGrande@madisonwater.org
Pennsville WTP, Pennsville, NJ	3	GW	2022	GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, Email: Andrew.S.Hartten@chemours.com
Lake Murray WTP, West Columbia, SC	34.5	SW	2023 (PFAS)	Conventional +Ozone, GAC	Andy Zaengle, Director of Engineering and Water Plants, Phone: 919-636-0360, Email: azaengle@westcolumbiasc.gov
Riverside WTP, West Columbia, SC	6	GW	2023 (PFAS)	Conventional	Andy Zaengle, Director of Engineering and Water Plants, Phone: 919-636-0360, Email: azaengle@westcolumbiasc.gov
Whittier Narrows / San Gabriel Valley Water District, South El Monte, CA	5	GW	2019 – ongoing	GAC	Confidential
Veolia Lambertville WTP, NJ	1	SW	2024 - ongoing	GAC	Mohammed Selimgir, Project Manager, Phone: 201-538-0368, Email: mohammed.selimgir@veolia.com
Veolia Matchaponix WTP, Manaplan, NJ	8	SW	2024- ongoing	GAC, RO, NA, IX	Mohammed Selimgir, Project Manager, Phone: 201-538-0368, Email: mohammed.selimgir@veolia.com

Table 2-2

AECOM's PFAS Designs

Project and Location	Size (MGD)	Source	Completed	Process Investigated	Client Contact
Tri-Town WTP, Braintree, MA	12.5	SW	2019 - Ongoing	DAF/Filtration	Jim Casagrande, PE, Director of Public Works, Phone: 781-794-8254, Email: jarensault@braintreema.gov
Chestnut Street WTP, Orange, NJ	4.6	GW	2021 - Ongoing	Granular Activated Carbon	Siavesh Isazadeh, Ph.D., P.E. BCEE, Process & Engineer Manager, Phone: 609-491-6800, Email: siavash.isazadeh@veolia.com
Oak Street WTP PFAS Improvements, Westborough, MA	1.3	GW	2021 – Ongoing	Granular Activated Carbon	Lisa Allain, PE, Town Engineer, Phone: 508-366-3766, Email: lallain@town.westborough.ma.us
Design-Build PFAS Water Treatment System (Three Separate Well Head Locations), Wood County, WV	3.2	GW	2016 – 2019	Granular Activated Carbon	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Design-Build PFAS Treatment System #1, Colorado	4.8	GW	2019 – 2021	IX Resin	Confidential
Design-Build PFAS Treatment System #2, Colorado	10.0	GW	2019 – 2021	IX Resin	Confidential
Irvine Ranch WD, Orange County, CA	2.9	GW	2020 – Ongoing	IX Resin	Ryan Bouley, Principal Engineer, Phone: 714-378-3200, Email: rbouley@ocwd.com
Pennsville, NJ WTP, Pennsville, NJ	3.0	GW	2021 – Ongoing	Greensand, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, Email: Andrew.S.Hartten@chemours.com
Graham Hill WTP Improvements, Santa Cruz, CA	20	GW	2021 – Ongoing	DAF/ Ozone / GAC	Matt Zeman, Engineering Associaste, City of Santa Cruz, Water Department, Phone: 831-420-5211, Email: mzeman@cityofsantacruz.com
Neshaminy Water Treatment Plant PFAS Design, PA	15.0	SW	2024 – Ongoing	Granular Activated Carbon, Ion-Exchange, Alternative Evaluation and detailed design	Brennan Kelly, AQUA PA, BTKelly@aquaamerica.com
Crooked Springs, Smith Street, and Riverneck WTPs (3 Facilities), Chelmsford, MA	7.0 (total)	GW	2023 – Ongoing	Granular Activated Carbon, Ion-Exchange Resin, Novel Adsorbent Desktop Study, RSSCT	Lisa Quatrale, Business Director, Treasurer, Phone: 978-256-2381, Email: Lisa@chelmsfordwater.com
Ipswich Water Treatment Plant, Ipswich, MA	2.5	SW/GW	2023 – Ongoing	Dissolved Air Flotation, Granular Activated Carbon Pilot Study	Vicki Halman, Water & Sewer Director, Phone: 978-356-6635 ext. 2108, Email: vhalmen@ipswichutilities.org
Aquarion Water Rewak, Well, CT	0.5	GW	2022	GAC / IX Feasibility Study, RSSCT	Mike Hiltz, Manager, Engineering and Capital Planning, Phone: 203-337-5903, Email: mhiltz@aquarionwater.com
Village Weston, WI	0.7	GW	2022 - interim treatment online, final design underway	GAC / IX Feasibility Study RSSCT Intermittent Treatment	Joshua Swenson Utility Superintendent,Village of Weston, WI, Phone: 715-241-2637 Email: jswenson@westonwi.gov
Well 15, Madison, WI	2.2	GW	2022 – Ongoing	GAC / IX Hybrid Feasibility Study, RSSCT	Joseph Grande, P.E. Water Quality Manager, Madison Water, Phone: 608 225 9135, Email: JGrande@madisonwater.org
Confidential Water Utility (Potable), WV	1.3	GW	2005 – 2007	Greensand, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), WV	0.7	GW	2006 – 2008	Granular Activated Carbon	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), WV	0.4	GW	2006 – 2008	Greensand, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), WV	0.4	GW	2007 – 2009	Greensand, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), OH	1.3	GW	2005 – 2007	Granular Activated Carbon	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), OH	2.2	GW	2006 – 2008	Granular Activated Carbon	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), OH	2.0	GW	2008 – 2010	IX Softening, Granular Activated Carbon	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Water Utility (Potable), OH	1.0	GW	2008 – 2010	Greensand, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Client Treatment (Plant Water System), WV	3.5	GW	2019 – 2021	Greensand, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Client, Treatment Plant, NJ (non-potable Groundwater System)	0.5	GW	2008 – 2012	Air Stripping, Sedimentation, Filtration, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Confidential Client, Treatment Plant, VA (non-potable Groundwater System)	0.5	GW	2014 – 2020	Air Stripping, Sedimentation, Filtration, GAC	Andrew Hartten. Remediation Manager, Phone: 302-773-1289, email: Andrew.S.Hartten@chemours.com
Lake Murray WTP, West Columbia, SC	34.5	SW	2023 (PFAS)	Conventional + Ozone, GAC	Andy Zaengle, Director of Engineering and Water Plants, Phone: 919-636-0360, Email: azaengle@westcolumbiasc.gov

Chelmsford Water District PFAS Improvements

Chelmsford, MA

The District owns and operates three WTPs, two of which are Greensand filtration plants and the third is a membrane filtration plant. One of their Greensand filtration plants, Crooked Spring WTP, had an exceedance of the Massachusetts regulated six PFAS in 2021. AECOM completed an alternative analysis to select an appropriate PFAS removal process and produce detailed design documents around the process. During the alternative analysis, the draft EPA MCL caused the District to consider expanding the PFAS treatment to the other two WTPs.

Client
Chelmsford Water District
Brandon Cannata
978-256-2931
bcannata@chelmsfordwater.com

Completion Date
Ongoing

Project Relevance
- Granular Activated Carbon
- Funding Assistance
- WTP Upgrade
- RSSCT

Key Staff
Chris Curran, Bryan Sadowski, Bill Clunie, Steve DeFrancesco

AECOM determined the most feasible approach to PFAS treatment throughout the District is to convey finished water from the membrane filtration facility to Crooked Spring WTP for PFAS treatment and construct an identical PFAS treatment facility at Riverneck WTP, the other Greensand filtration, on the other side of the District's service area.

Oak Street WTP PFAS Improvements

Westborough, MA

When Massachusetts passed their limit of six PFAS in 2020, it was discovered that one of the two wells, the Chauncy Wells, supplying the Oak Street WTP was above the limit. The Oak Street WTP was previously a Greensand filtration facility until the well which contained high iron and manganese was rerouted to the surface water treatment plant. Since this relocation, the filters were bypass and WTP used only to provided finished water chemicals before discharging into the distribution system. AECOM was tasked with completing an alternative analysis, which included rapid small scale column testing, to reuse the existing infrastructure at the Oak Street WTP to treat for PFAS. This analysis concluded GAC to be the most cost effective technology for the removal of PFAS. AECOM completed a detailed design which added a building addition to the Oak Street WTP to house the GAC vessels and contained several improvements including the addition of a bathroom, providing appropriate chemical storage and containment, and various instrumentation upgrades.

Client
Town of Westborough
Lisa Allain, PE
508-366-3766
lallain@town.westborough.ma.us

Completion Date
July 2024

Project Relevance
- Granular Activated Carbon
- Funding Assistance
- WTP Upgrade
- RSSCT

Key Staff
Chris Curran, Bryan Sadowski, Bill Clunie, Steve DeFrancesco

Chestnut Street WTP PFAS Improvements

Orange, NJ

AECOM conducted a feasibility study and preliminary design for a 4.6 MGD water treatment plant in Orange to address PFAS contamination in groundwater. After installing a temporary ion-exchange resin system, AECOM investigated permanent treatment options, focusing on granular activated carbon (GAC) and ion-exchange resin technologies. The feasibility study favored GAC due to its lower operational costs, operator familiarity, and resilience. AECOM completed a detailed design and permitting for the permanent system, which will features pressure vessels with GAC in a lead/lag configuration within a new pre-engineered metal building, optimizing site constraints and hydraulic performance.

Client
Veolia
Siavesh Isazedeh, PhD, PE, BCEE
609-491-6800
siavash.isazadeh@veolia.com

Completion Date
April 2023

Project Relevance
- Granular Activated Carbon
- Funding Assistance
- WTP Upgrade
- RSSCT

Key Staff
Chris Curran, Bryan Sadowski, Bill Clunie, Steve DeFrancesco

Neshaminy WTP Evaluation and PFAS Treatment System Design

Langhorne, PA

Client
Aqua Pennsylvania
Brennan Kelly
610-645-4297
BTKelly@aquaamerica.com

Completion Date
Ongoing

Project Relevance
- Surface Water
- Granular Activated Carbon
- WTP Upgrade
- Site Constraints

Key Staff
Chris Curran, Ben Deatrich, Bryan Sadowski, Bill Clunie, Pat Duggan

Following a condition and performance evaluation prepared by AECOM in 2023, of which a key recommendation was the implementation of PFAS treatment to address elevated PFAS concentrations above the proposed EPA MCL in the raw water source of the Neshaminy WTP, AECOM was retained by Aqua PA to design a full-scale PFAS Treatment System. The plant currently uses PAC for advanced oxidation and T&O treatment, which also provides some PFAS removal, we determined that the removal capacity of PAC was a limiting factor and that more substantial improvements are needed to meet compliance goals. AECOM evaluated several alternatives, including GAC pressure vessels, deep-bed gravity filters, and using a combination GAC and IX. In addition to the treatment technology, we also evaluated pumping requirements, backwash water supply source, spent backwash water supply, and potential impacts to disinfection CT across the plant. Our recommended alternative was to provide GAC contactors with intermediate pumping in a new PFAS Treatment Building. We advanced this alternative to a conceptual level and developed process flow diagrams, conceptual site plans, schematic contactor and equipment layouts, and considered provisions for additional power for pumping, and site constraints including the adjacent 100-year floodplain. AECOM is currently assisting Aqua PA in the detailed design of the PFAS Treatment System, with an in-service goal of the end of 2028.

City of Madison Well 15 Treatment

Madison, WI

Client
City of Madison
Joe Grande
608-261-9101
JGrande@madisonwater.org

Completion Date
Ongoing (under construction)

Project Relevance
- Granular Activated Carbon
- WTP Upgrade
- Site Constraints
- RSSCT

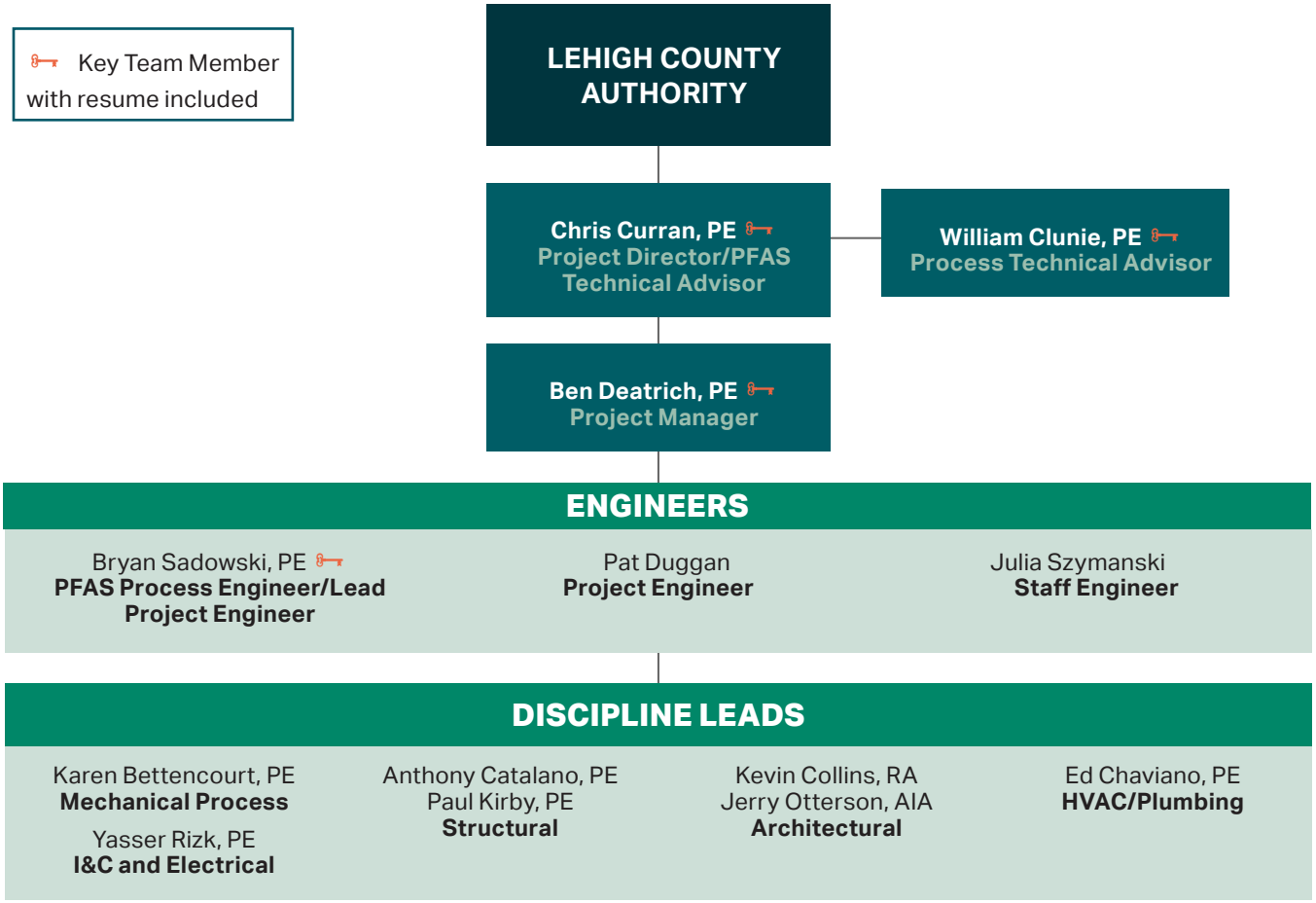
Key Staff
Chris Curran

The City of Madison determined that PFAS treatment was essential for Unit Well 15 due to its critical role in water supply. AECOM conducted a Rapid Small Scale Column Test for GAC and unique testing for IX resin to address both Volatile Organic Compounds (VOCs) and PFAS removal. Six preliminary options were presented, but due to restrictions on building size modifications, only options fitting within the existing facility footprint were considered. AECOM performed a detailed alternatives analysis, collaborated with the City, and participated in public information sessions, modifying treatment objectives based on feedback to achieve PFAS levels below detection. The final treatment plan, approved by the City, includes GAC for VOC removal and IX resin for PFAS polishing. Comprehensive design drawings were prepared, and the project, receiving federal funding, adhered to all required standards. Additionally, AECOM evaluated the PFAS source with a separate client near the airfield by Unit Well 15.

Team 3

3. Team

AECOM is committed to providing a highly qualified team to deliver effective depth and breadth of resources, skills, and capabilities necessary to fulfill the requirements as detailed in this project. The proposed team of highly talented professionals brings extensive knowledge in PFAS treatment services to LCA. On the following pages, we have included resumes for our key staff members listed in our organization chart.



Ben Deatrich, PE

Project Manager

Ben is a water/wastewater project manager with experience in planning, design, and construction management of water and wastewater treatment plants, pump stations and distribution/collection systems. He has worked with many clients in the Northeast, including the Philadelphia Water Department, NYC Department of Environmental Protection, Aqua Pennsylvania, and PA American Water.

PFAS Projects Completed: 9

Projects involved in: Neshaminy WTP Evaluation and PFAS Treatment System Design, Delaware River Regional Water Treatment Plant PFAS Pilot Study, and Surface Water PFAS Treatability Testing (6 Locations)

Bryan Sadowski, PE

PFAS Process Engineer/Lead Project Engineer

Bryan is a project engineer with experience in water and wastewater treatment processes, experimental design, statistical data analysis and drinking water treatment plant design. He performs a variety of engineering services from full-scale design and construction of drinking water treatment plants to development and implementation of bench scale treatability studies, including PFAS treatment systems.

PFAS Projects Completed: 16+

Projects involved in: Chelmsford Water District PFAS Improvements, Oak Street WTP PFAS Improvements, Chestnut Street WTP PFAS Improvements, Neshaminy WTP Evaluation and PFAS Treatment System Design

Chris Curran, PE

Project Director/PFAS Technical Advisor

Chris provides extensive experience in water and wastewater, environmental, and water resources engineering, including project management services for water and wastewater treatment design. He has been successfully involved with many planning through detailed design and construction support for the removal of PFAS compounds from potable water, groundwater remediation, leachate and stormwater systems for over 18 years along with studies within wastewater systems. He presently serves as the National Practice PFAS lead for the water business line and has been personally involved with over 35 PFAS water treatment projects.

Years of Experience

Total Years: 28

Education

MS, Environmental Engineering, Pennsylvania State University

BS, Civil Engineering, Virginia Polytechnic Institute and State University

Registrations, Certifications, Licenses, Special Training

Professional Engineer: MD, DE

Professional Affiliations

Water Environment Federation

American Water Works Association

Pennsylvania Water Environment Association

Board Member, Water Resources Agency of the Delaware River Basin

Representative Experience

Aqua Pennsylvania, Neshaminy Water Treatment Plan Condition and Performance Evaluation, Langhorne, PA. Project Lead for performance and condition assessment of a 15 mgd drinking water treatment plant, including a visual site assessment, processing plant data, evaluating historical performance, and preparing a capital improvement plan. Evaluated process improvement options and identified additional studies to evaluate the need for future PFAS treatment. Preparing detailed design for PFAS treatment.

Aqua Pennsylvania, Surface Water PFAS Treatability Testing (6 locations). Project Director for evaluating the PFAS treatability of six surface water treatment plants in Southeastern PA using rapid small scale column testing (RSSCT).

New Jersey American Water, Delaware River Regional Water Treatment Plant PFAS Feasibility Study and Alternative Evaluation, Delran, NJ. Project director for a PFAS feasibility study and alternative evaluation for a 40 mgd drinking water treatment plant. Project includes a 9-month pilot of several adsorption media for design criteria selection and an evaluation of different alternatives for full scale implementation PFAS treatment of the surface water source.

City of West Columbia, Lake Murray WTP Surface Water Improvements, West Columbia SC. PFAS Lead to conduct a bench and desktop evaluation to determine PFAS treatment approach at the Lake Murray and Riverside Water Treatment Plants. This included evaluation of GAC in the existing gravity filters downstream of ozone or treatment with post-filtration pressure vessel adsorbers.

Tri-Town Regional Water Treatment Plant PFAS Design, Braintree, MA. Lead bench testing, treatability assessment and design of implementing PFAS treatment to comply with new state PFAS regulations on a new 13 MGD regional surface water facility. Testing was performed to determine the most effective carbon and the integration into the proposed treatment train considering total organic carbon (TOC) removal as well for disinfection by-product mitigation. Existing treatment train consists of oxidation, dissolved air flotation and deep bed GAC filtration. Upon review it was determined that enlargement of the proposed deep bed GAC filtration to achieve desired PFAS removal needs concurrent with TOC would be most cost-effective when compared to dedicated tertiary GAC or IX facilities. Provisions will include the ability to add a novel adsorbent for additional targeted PFAS removal during any periods of elevated TOC in the source water that may impact PFAS breakthrough rates.

Chelmsford Water District, PFAS Improvements, Chelmsford, MA. PFAS lead for the evaluation and design of two WTP upgrades to incorporate PFAS removal from three separate well fields totaling 6 MGD. GAC, IX, RO and novel adsorbents were investigated through initial treatability testing / alternatives analysis.

Aquarion Water Company of Connecticut, Aquarion Rewak Well PFAS Evaluation, Darien, CT. Technical lead engineer conducting a bench treatability and alternative evaluation to provide PFAS treatment at an existing water treatment plant. The study is evaluating the optimal location for PFAS treatment related to an

Chris Curran, PE

PFAS Technical Lead

(Continued)

existing air stripper for VOC removal and pH adjustment so that the well can be put back into service and comply with regulations.

Town of Westborough, Water Treatment Plant Upgrades for PFAS, Westborough, MA. Performing treatability testing and detailed design for improvements at a 3 MGD groundwater supplied water treatment facility impacted by PFAS. Treatability testing for GAC, a novel adsorbent and modelling of IX was conducted to evaluate media performance. An alternative analysis is now being performed to identify the most optimal integration into the existing facility considering site constraints and processes.

City of Newburyport, Water Treatment Plant Evaluation for PFAS, Newburyport, MA. Performing sampling and evaluation of multiple sources including springs, groundwater supply wells and surface water reservoirs that contribute to the raw water supply of the facility. Considerations for PFAS and other water quality drivers such as disinfection by-products, taste and odor and seasonal algae.

NYC Water Board, Kensico Watershed PFAS Assessment, NY. Lead PFAS engineer investigating potential sources of PFAS into the Kensico Reservoir considering supplies from the two large aqueducts as well as the watershed to the reservoir. A review of available data and watershed assessment of potential sources is underway to identify any streams that may contribute PFAS that could be a potential risk to the large supply of potable water to NYC.

Chestnut St PFAS Project, Orange, NJ. Project lead that conducted a feasibility study for the installation of ion exchange or GAC to address PFAS levels in the raw water that exceeded NJDEP state regulations. Incorporation of the best available technology and location within the existing 4.6 MGD treatment train were evaluated considering numerous site constraints and continual operations of plant during construction. AECOM now preparing the 100% design for bidding at end of year.

New Jersey American Water Delaware River Regional Water Treatment Plant PFAS Pilot and Feasibility Study, Delran, NJ. PFAS lead for the evaluation of multiple alternatives to provide PFAS treatment on a variable surface water supply at a 40 MGD water treatment plant. The feasibility study includes 12 months of field column piloting of GAC, IX and novel adsorbents to determine the best technology considering retrofitting into a large surface water plant with other water quality drivers.

Confidential Client, CO. Provided technical review of two new regional ion exchange treatment facilities sized at 5 MGD and 10 MGD to provide treatment for 27 wells impacted by PFAS compounds.

Water Treatment Plant Upgrades for PFAS, Pennsville, NJ. Providing quality review of proposed design improvements for a 3 MGD groundwater supply impacted by PFAS. In addition, improvements to address elevated iron and manganese and residual management needs will be assessed.

Confidential Client, Water Treatment Plant Upgrades, Mid-Ohio River Valley. Task manager and lead design engineer responsible for design treatment process upgrades to nine water treatment plants ranging in size between 0.5 mgd to 2.4 mgd in the Mid-Ohio River Valley in Ohio and West Virginia after an industrial facility contaminated regional groundwater supplies with a trace organic compound (PFOA). The design used treatment with granular activated carbon and provisions for backwash handling to manage suspended solids discharge. The granular activated carbon treatment process design was applicable to each facility but the overall design needs, constraints, and details were unique to each water treatment plant with each plant having their own hydraulic and treatment complexities.

Process Water Treatment System, Parkersburg, WV. Project involves design for a process water system impacted by multiple PFAS. Currently, a 2.2 MGD production well is impacted in the part per billion range with both short and long chain PFAS. We evaluated GAC and IX technologies based on treatment effectiveness and project timing for installation considering permitting requirements and developed a design for initial use of GAC that can be retrofitted to IX in the future if warranted for life-cycle cost savings. Project challenges included elevated inorganics requiring pretreatment and the need for new backwash facilities along with site constraints that included limited space availability for the two parallel trains of 80,000 lb GAC vessels arranged in series with lead-lag operation.

Confidential, Groundwater Remediation, Parlin, NJ. Lead design engineer responsible for conceptual through final design of a 500 gpm groundwater collection, transmission, and treatment system to address organic contaminants. The force main piping for the extraction of raw water and transmission of treated effluent exceeds 12,500 linear feet. The system consists of oxidation, sedimentation, and filtration processes to remove high iron levels; an air stripping system for removal of volatile organics; and granular activated carbon to remove PFAS.

William Clunie, PE, BCEE

Process Technical Advisor

Bill is a technical manager and Associate Vice President specializing in all aspects of municipal water treatment systems. He has provided comprehensive services for water treatment unit process design, regulatory compliance, bench studies, pilot tests, feasibility studies, and construction sequencing programs. He has extensive experience with commissioning and in alternative delivery projects including progressive design build (PDB) and design-build-operate (DBO).

Years of Experience

Total Years: 27

Education

MS, Civil Engineering, Colorado State University

BS, Civil Engineering, University of Massachusetts Lowell

Registrations, Certifications, Licenses, Special Training

Professional Engineer: MA

Board Certified Environmental Engineer

Professional Affiliations

American Water Works Association

Engineers Without Borders

Rural Water Supply Network

Representative Experience

Connecticut Water Company, Rockville Water Treatment Plant, CT. Technical manager, lead process design engineer and Startup Leader for new 9 mgd conventional water treatment plant. Performed process design, solids and flow balances, filter and dissolved air flotation (DAF) residuals handling systems, and chemical feed systems for new facility. Provided support during construction and Owner interface with CT DPH and successfully performed the commissioning to bring the new plant on-line.

Connecticut Water Company, Williams Water Treatment Plant Clarification Feasibility Study, Piloting, and Facilities Planning, Chester, CT. Conducted a one season pilot study at the Williams water treatment plant. Evaluated the Superpulsator clarifier, intermediate ozonation, and granular activated carbon filtration to meet the requirements of the Disinfectants/ Disinfection By-Products Rule and Interim Enhanced Surface Water Treatment Rule.

South Norwalk Electric and Water, Wilton Water Treatment Plant Feasibility and Pilot Studies and Improvements Design, South Norwalk, CT. Managed a water treatment pilot study. Operated four process trains in parallel to determine the process that would yield the best performance, including conventional processes such as dissolved air flotation- ozonation- filtration and ballasted settling-ozonation-filtration (GAC) as well as two types of ultrafiltration: Koch pressurized ultrafiltration and Zenon immersed ultrafiltration. Provided technical review and start- up services for membrane system.

City of Pittsfield, Water Master Plan and Capital Improvements Plan, Pittsfield, MA. Lead water process engineer for the preparation of a comprehensive water master plan and capital improvements plan for the City's water system. The project consisted of the preparation of demand projections, evaluation of historical water use, a water treatment plant evaluation, a water distribution system evaluation, evaluation of supply, and watershed protection. Served as technical manager for the water treatment plant performance evaluation and proposed alternatives to upgrade, modify, or replace the plants. Assisted with a 20 year capital improvements plan that incorporated the findings of the evaluations.

Tri-Town Board of Water Commissioners, Regional Water Treatment Plant, Braintree, MA. Lead process design manager and technical reviewer for 13 mgd regional water treatment plant serving the communities of Holbrook, Randolph, and Braintree near greater Boston, Massachusetts. Process includes pre-oxidation, dissolved air flotation and GAC filtration for organics and PFAS removal. The facility will be the largest surface water PFAS removal system in New England.

Providence Water, Residuals and Backwash Recycle Upgrades for Philip J. Holton Water Purification Plant, Providence, RI. Technical specialist for water treatment process to provide engineering services for the residuals and backwash recycle upgrades at the Philip J. Holton Water Purification Plant. Currently in design, this project addresses the separation of spent filter backwash waste from the existing drainage system; the construction of a new spent backwash recycle system to manage spent filter backwash; construction of new engineered residuals

William Clunie, PE

Process Engineer

(Continued)

thickening lagoons; modification of existing drying beds to handle the thickened residuals; construction of a new decant pumping station to handle decant from the new engineered lagoons; and the removal of residuals from the South Sedimentation Basin and Lagoons 1A, 1B, and 2.

Springfield Water & Sewer Commission West Parish Filters Plant, Springfield, MA. Provided filter assessment for 60 mgd direct filtration facility. Evaluated unit filter run volumes, backwash hydraulics, backwash sub-routines, and filtered water quality in order to improve filter run times. Recommended a short-term program to extend second low rate wash program as well as conducted chemical filter cleaning. Cleaning increased filter run times by 35%. Currently working with Owner for long term planning of underdrain replacement project.

City of Newport, Lawton Valley and Station No. 1 Water Treatment Plants Design Build Project, Newport, RI. Process design engineer. Responsible for the process design for this $64 million project. The scope includes upgrading the 9 mgd Station No. 1 plant; and replacing the 7 mgd Lawton Valley plant with a new treatment plant on the same site. The two plants will each have a core process of rapid mix, coagulation, dissolved air filtration (DAF) followed by primary carbon filtration and, finally, post-filter absorbers using granular activated carbon (GAC) to meet the City's water quality requirements.

Milford Water Company, Dilla Street WTP, Milford, MA. Served as lead process engineer for the design of the 5 mgd Dilla Street Water Treatment Plant for the Milford Water Company. Designed and managed a two-season pilot study consisting of DAF & GAC versus UF membranes, developed conceptual design report, and continuing to provide process design for the 5 mgd facility. This is a combined groundwater and surface treatment plant, which will target removal or iron, manganese, TOC, color, turbidity, and T&O.

Inima/Aquaria LLC, Taunton River Desalination Plant Design-Build, Dighton, MA. Lead process engineer on the pilot study and design of the Taunton River plant, a 5 mgd brackish water desalination plant that includes immersed membrane ultrafiltration for pretreatment followed by reverse osmosis for removal of salinity. Managed the pilot study, evaluated disinfection by-product control strategies, and oversaw the process design.

City of Northampton, Water Filtration Facility Design and Construction, Northampton, MA. Project engineer for the bench-scale treatability study for a proposed 6 mgd water treatment plant. Devised a three-season jar testing program to identify optimal coagulant and coagulant doses, and optimal blending ratios of the three raw water sources. Assisted the city in seeking financial assistance through the state revolving fund program and assisted in the final design of the facility.

City of Columbus, Dublin Road Water Treatment Plant Capacity Increase Evaluation, Columbus, OH. Process engineer for the Dublin Road water treatment plant upgrade and expansion from 65 to 90 mgd, including processes suitable for softening. Assisted with the development of a feasibility study; evaluated process alternatives including clarification, precipitative softening, filtration, and reverse osmosis for reblending softened water for evaluation in pilot scale; and developed a pilot study design and cost estimates for the pilot facility.

Woonsocket Water Treatment Facility, Woonsocket, RI. Technical manager for 7.5 mgd DAF and GAC water treatment plant for design-build-operate (DBO) project for City of Woonsocket Rhode Island. Served as lead start-up and commissioning manager, performed tracer studies and corrosion control monitoring program to obtain regulatory approval for new facility.

Graham Hill Water Treatment Plant Facility Improvement Program, Santa Cruz, CA. Providing detailed design for 20 mgd progressive design build project for surface water treatment facility utilizing inclined plate settlers, intermediate ozone, biological filtration, and second stage post-filter GAC adsorbers for organics and PFAS removal. Prepared alternatives analysis for various solids handling alternatives and future UV disinfection.

Ben Deatrich, PE

Project Manager

Ben is a water/wastewater project manager with experience in planning, design, and construction management of water and wastewater treatment plants, pump stations and distribution/collection systems. He has worked with many clients in the Northeast, including the Philadelphia Water Department, NYC Department of Environmental Protection, Aqua Pennsylvania, and PA American Water.

Years of Experience

Total Years: 12

Education

MS, Civil Engineering, Temple University, 2018

BS, Civil Engineering, Temple University, 2012

Registrations, Certifications, Licenses, Special Training

Professional Engineer: PA, NJ

Professional Affiliations

American Water Works Association

Water Environment Federation

American Society of Civil Engineers

Representative Experience

Aqua Pennsylvania, Neshaminy Water Treatment Plan Condition and Performance Evaluation, Langhorne, PA. Project manager for performance and condition assessment of a 15 mgd drinking water treatment plant, including a visual site assessment, processing plant data, evaluating historical performance, and preparing a capital improvement plan. Evaluated process improvement options and identified additional studies to evaluate the need for future PFAS treatment.

Aqua Pennsylvania, Surface Water PFAS Treatability Testing (6 locations). Project Manager for evaluating the PFAS treatability of six surface water treatment plants in Southeastern PA using rapid small scale column testing (RSSCT). Assisted in testing plan development, sample collection, dechlorination, and transit to AECOM's treatability lab. Oversaw project management of the effort including coordination with analytical laboratory and technical memoranda preparation.

New Jersey American Water, Delaware River Regional Water Treatment Plant PFAS Feasibility Study and Alternative Evaluation, Delran, NJ. Project manager for a PFAS feasibility study and alternative evaluation for a 40 mgd drinking water treatment plant. Project includes a 9-month pilot of several adsorption media for design criteria selection and an evaluation of different alternatives for full scale implementation PFAS treatment of the surface water source.

Philadelphia Water Department, Wastewater Master Plan Update, Philadelphia, PA. Lead for asset evaluation task including defining equipment types, estimating service life, estimating costs, preparing a replacement schedule, and developing prioritization methods based on risk. Assisted in wet weather capacity evaluations including hydraulic bottleneck identification and evaluation.

Philadelphia Water Department, West Oak Lane Pumping Station Rehabilitation, Philadelphia PA. Project engineer for the rehabilitation of a drinking water booster station including replacement of pumps, switchgear, and building repairs. Produced drawings and specifications for final design documents. Coordinated the preparation of drawings and specifications from all disciplines and provided technical comments. Project manager for engineering services during construction.

Philadelphia Water Department, Water Security Improvements, Philadelphia, PA. Project engineer for updates to water security design at Baxter WTP. Also assisted with engineering services during construction including submittal and RFI coordination and O&M manual/record drawing review. Project manager for engineering services during construction.

Philadelphia Water Department, Plant-wide Hydraulic Models, Philadelphia, PA. Developed spreadsheet-based hydraulic models for three water pollution control plants. programmed calculations to predict the hydraulic grade line throughout the plant at various flow rates and operating scenarios. Wrote custom iterative macros to allow for continuous backwater calculations through the plant during periods of high flow. Developed user-friendly interface which allows users to recalculate results after modifying inputs. Calibrated models using field data.

Philadelphia Water Department, 2016 Wastewater Master Plan, Philadelphia, PA. Assisted with master planning activities on combined sewer infrastructure

Ben Deatrich, PE

Project Manager

across the City of Philadelphia. Performed technical writing and editing. Performed planning level alternatives analysis for increased in-plant wet weather treatment capacity and future regulatory scenarios. Collected asset data and conducting site assessments for asset service life and replacement schedule. Developed cost estimates using historical data and by developing planning level quantity take-offs and obtaining per-unit cost data. Calculated per capita flow and peaking factors based on historical data and rainfall records. Performed calculations on existing infrastructure to determine treatment parameters like surface overflow rate for comparison with potential treatment by advanced technologies.

Philadelphia Water Department, Northeast WPCP Secondary Bypass Conduit, Philadelphia, PA. Staff engineer for the construction of a two-barrel secondary treatment bypass conduit. Assisted with engineering services during construction including submittal review and RFI responses.

Philadelphia Water Department, Coulter Street Bridge Water Main Relay, Philadelphia, PA. Technical lead for the design of approximately 400 feet of 8-inch water mains, including a bridge crossing over SEPTA tracks. Developed custom details for bridge attachment and casing pipe, including pipe hangars, cradles, and spacers. Prepared plans, details, special provisions, and cost estimates.

Philadelphia Water Department, Adams Avenue Connector (I-95) Water Main Relay, Philadelphia, PA. Project engineer for the design of approximately 2,800 feet of water distribution pipe with larger, ductile iron mains. Selected horizontal and vertical alignments to maintain utility separation. Prepared plans, details, specifications, and cost estimate.

Philadelphia Water Department, Green Infrastructure, Philadelphia, PA. Designed stormwater BMPs for local and state roads in Philadelphia. Calculated stormwater runoff volume, inlet spacing, detention time, and gutter spread. Experience with both infiltration and slow-release BMPs.

Veolia Water Pennsylvania, Rabold WTP Upgrades, Mechanicsburg, PA. Project manager for major process upgrades to a 3 mgd drinking water treatment plant. Conventional sedimentation tanks replaced with plate settlers and modified conventional sand filtration replaced with membrane gravity filtration. Ancillary upgrades include vertical turbine pumps, blowers, chemical feed systems and a pre-manufactured steel building enclosing the pretreatment tank for algae concerns.

City of Bethlehem WWTP, Chemically Enhanced Primary Treatment Upgrades, Bethlehem, PA. Project engineer for the implementation of chemically enhanced primary treatment to increase effectiveness of primary sedimentation. Chemical containment areas, metering pumps, and rapid mixing is provided by the project. Also includes yard piping, electrical and instrumentation upgrades.

City of Bethlehem, Unaccounted-for Water Study, Bethlehem, PA. Project manager for data evaluation and hydraulic modeling to characterize approximately 30% non-revenue water observed by the City. Evaluated 8 years of historical flow and SCADA data. Utilized WaterGEMS to compare predicted flows and pressures with observed data. Evaluated metering and leak detection capabilities to provide higher resolution in future evaluations.

City of Millville WWTP, 3rd Clarifier Addition, Millville, NJ. Civil discipline lead for the addition of a third secondary clarifier. Led the design of new RAS and secondary effluent piping, a scum pump station and scum yard piping, miscellaneous site improvements, erosion and sediment control, and a Treatment Works Approval permit application.

City of Millville Wastewater Treatment Phase II Plant Upgrades, Millville, NJ. Project engineer for construction phase design services for the upgrading a 5 mgd wastewater treatment plant with UV disinfection and rotary press solids handling technologies. Performed civil design for yard piping and hydraulics.

Metropolitan Water Reclamation District of Greater Chicago, Stickney WRP, Chicago, IL. Performed liquid phase to air phase mass transfer modeling using Toxchem to predict odor generation at new preliminary and primary treatment facilities. Performed odor dispersion modeling using AERMOD to assess off-site odors. Generated comparisons of several levels of odor control.

NYCDEP, 26th Ward WWTP Pump Station and Primary Treatment Upgrades, New York, NY. Design of replacement high level sewage pumps for 85 mgd pump station. Calculated hydraulics and total discharge head for pump discharge piping and for temporary construction pump discharge piping and alignments. Performed detailed design of main sewage pump seal water system. Drafted technical specifications for new 30 mgd centrifugal pumps. Developed 3D Revit design drawings including creation of custom families.

Aqua New Jersey, Logan Township Conveyance Study, Logan Township, NJ. Project engineer for study to convey sanitary sewage from a new development through approximately 25,000 feet of sanitary forcemain. The study included hydraulics and cost estimates for 12 alternatives and flow scenarios. Evaluated pump station capacity for near-term and long-term development scenarios.

Chambersburg Water Allocation Permit, Chambersburg, PA. Prepared PADEP application for water allocation for the borough's 6 mgd public water supply. Analyzed historical data and developed future flow projections.

Bryan Sadowski, PE

PFAS Process Engineer

Bryan is a project engineer with experience in water and wastewater treatment processes, experimental design, statistical data analysis and drinking water treatment plant design. He has extensive experience in pilot and bench scale studies for a wide range of drinking water treatment processes. He performs a variety of engineering services from full-scale design and construction of drinking water treatment plants to development and implementation of bench scale treatability studies, including PFAS treatment systems.

Years of Experience

Total Years: 8

Education

MS, Environmental Engineering, Worcester Polytechnic Institute

BS, Environmental Engineering, Worcester Polytechnic Institute

Registrations, Certifications, Licenses, Special Training

Professional Engineer: CT, MA, RI, NH, ME, NY

Professional Affiliations

American Water Works Association

New England Water Works Association

Massachusetts Water Works Association

New Hampshire Water Works Association

Representative Experience

Town of Westborough, Oak Street Water Treatment Plant, Westborough, MA. Project engineer for conducting a treatment technology alternative analysis, process engineering during design, and construction services for the implementation of a PFAS removal technology at the Oak Street Water Treatment Plant as well as other various WTP improvements.

Chelmsford Water District PFAS Improvements, Chelmsford Water District, Chelmsford, MA. Project engineer for conducting a treatment technology alternative analysis and process engineering for the design of new PFAS treatment facilities at Crooked Spring WTP and Riverneck Water WTP and a new transmission main from Smith Street WTP to Crooked Spring WTP for PFAS treatment.

TriTown Regional Water Treatment Plant, TriTown Board of Commissioners, Braintree, MA. Process engineer during the design and construction phase of the project including conducting pilot scale experimentation for the in-process treatment and residuals management related to PFAS.

City of Orange, Chestnut Street Water Treatment Plant, Orange, NJ. Process engineer to evaluate several treatment alternatives for the permanent PFAS treatment facility as the Chestnut Street Pump Station and supported the project through detailed design.

City of Pittsfield, On-Call Water Services, Pittsfield, MA. Project engineer for the On-Call Engineering Services for Water Projects contract for the water system serving about 50,000 residents. These projects included:

- **Ashley Water Treatment Plant, Phase I Upgrade:** Project engineer for the construction and startup of a new chemical storage feed building at the treatment plant. Work also includes upgrades to the plant water system including a new skid mounted booster pump system and UV system for disinfection.
- **Ashley Water Treatment Plant Pilot Study:** Project engineer operating and evaluating the performance of the third generation Krofta Sandfloat Treatment System at the Ashley Water Treatment Plant.
- **Emergency Support:** Project engineer providing support in completing required evaluation and reporting in response to exceeding the Operational Evaluation Limit for Disinfection Byproducts in the distribution system.
- **Cleveland Water Treatment Plant Underdrain Replacement:** Project engineer providing support for the design and construction phase services for new underdrains for two Krofta units at the Cleveland Water Treatment Plant.

Springfield Water and Sewer Commission, Springfield, MA. Project engineer for several water contracts for a water system serving about 250,000 residents. These projects included:

- **West Parish Filters Pilot Study:** Project engineer on the design, construction, operation, and evaluation of several treatment technologies to improve the removal of disinfection byproducts precursors in the West Parish Filtration Plant source water. The conclusion of the pilot study informed the construction of a new water treatment plant.

Bryan Sadowski, PE

PFAS Process Engineer

(Continued)

- **Ferric Sulfate Half Plant Pilot Trial:** Project engineer on a full-scale demonstration study at the West Parish Filtration Plant using ferric sulfate versus the existing aluminum chlorohydrate coagulant to improve disinfection byproduct precursor removal.
- **Desktop Corrosion Control Study:** Project engineer working on the modeling of finished water chemistry and its effect on the distribution system once the new water treatment facility is brought online.
- **West Parish Filters Underdrain Replacement:** Project engineer involved with the design and construction of new filter underdrains in the existing filter boxes at the West Parish Filtration Plant. This design and replacement were completed after the underdrain systems failed.

Providence Water, Providence, RI. Project engineer for several water contracts for a water system serving the majority of the State of Rhode Island. These projects included:

- **Philip J Holton Purification Plant Pilot Study:** Project engineer on the design, construction, operation, and evaluation of numerous treatment technologies to improve the removal of disinfection byproducts precursors in the Philip J Holton Purification Plant source water.
- **Philip J Holton Purification Plant Clarification, Residual, and Service/Wash Water Process Upgrades Concept Design:** Project engineer for an alternative evaluation and conceptual design for upgrades to the clarification and residuals process at the Philip J. Holton Purification Plant.
- **Philip J Holton Purification Plant Evaluation:** Project engineer on the assessment of the Philip J Holton Purification Plant, a 144 mgd water treatment facility. The report outlined deficiencies in the physical building and process limitations. The report concluded with comparing the construction cost of upgrading the facility versus the construction of a new WTP.
- **Providence Water Facility Plan:** Project engineer for the creation a facility plan outlining the risk associated with various structures/elements of the Philip J Holton Purification Plant and prioritizing capital improvement projects for the foreseeable future.

Reservoir No. 6 WTP Underdrain Replacement, The Metropolitan District, Bloomfield, CT. Project engineer for the design and construction of a new underdrain system in the existing filer box at the Reservoir No. 6 WTP. This project was provided on an emergency basis after the existing underdrain system failed.

Water Treatment Plant Design-Build, City of Woonsocket, Woonsocket, RI. Project engineer providing start-up services once **AECOM** completed the construction of the new 7 mgd WTP which included optimizing pretreatment chemistry and dissolved air flotation operation as well as maintaining corrosion control. Mr. Sadowski provided on-going assistance in resolving operational issues that have occurred at the WTP since start-up.

Connecticut Water Company, Hunt Water Treatment Plant Pilot Study, East Windsor, CT. Pilot engineer on the design and construction of a pilot scale system for the evaluation of catalytic absorptive media in pressurized vessels for the removal of iron and manganese from the groundwater wells.

City of West Columbia, Lake Murray WTP Surface Water Improvements, West Columbia SC. Process engineer to conduct a bench and desktop evaluation to determine PFAS treatment approach at the Lake Murray and Riverside Water Treatment Plants. This included evaluation of GAC in the existing gravity filters downstream of ozone or treatment with post-filtration pressure vessel adsorbers.

Technical Approach 4

4. Technical Approach

Project Understanding

Lehigh County Authority (LCA) primary purpose is to provide water and wastewater services throughout portions of Lehigh County, Pennsylvania. LCA operates and maintains the water and wastewater systems of the City of Allentown under the terms of a lease agreement. LCA currently operates two raw water intakes to serve as potable water sources for the City of Allentown, the Little Lehigh Intake on the Little Lehigh Creek and the Big Lehigh Intake on the Lehigh River.

The Water Filtration Plant (WFP) can blend the surface water from the Little Lehigh and Big Lehigh with water from two springs, Crystal Spring and Schantz Spring. The spring sources are classified as groundwater and receive disinfection only. Schantz Spring is disinfected at the source and pumped directly into the system while Crystal Spring is disinfected and blended with the filtered water at the WFP.

Recent sampling efforts have identified Crystal Spring with levels of PFOA and PFOS that exceed the MCL, therefore treatment will be required to meet the new federal regulations. LCA identified Crystal Spring as a source requiring treatment for PFAS due to its exceedance of the current MCL and has requested proposals to implement treatment methods for this source in order to bring the levels within compliance with EPA's recently updated MCL. Various treatment options were evaluated and the recommended treatment method for Crystal Spring is to install a Granular Activated Carbon (GAC) treatment system along with the necessary ancillary components.

Project Approach

Risk Based Approach to Design

AECOM will develop our proposed design considering potential project risks in order to offer flexibility to LCA in the future and construct minimal essential design to reserve as much room at the WFP for future facility needs given the minimal available space and constraints associated with the mapped floodplain. Risks could include both construction and compliance related. Project risks will be captured and logged in a risk register that will evolve with the project as more understanding is achieved.

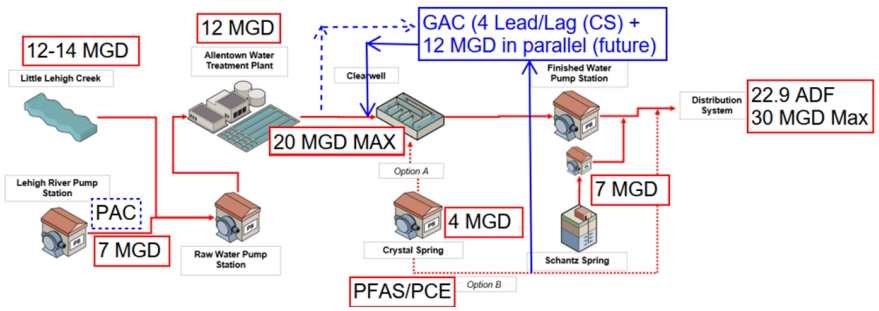
The compliance project risks could include additional supply sources rising above MCL thresholds or regulatory action on more PFAS criteria. Both conditions could impact this initial project as treating only Crystal Spring may not be sufficient for long term compliance. Designing to allow for future adaptability will enable LCA to pivot more readily in the future should the risks manifest into actual needs. For example, if PFAS concentrations in a particular source water that is not treated in a selected alternative are higher than the currently observed data, then there is a risk of exceedances in the finished water or accelerated media changeout intervals to maintain finished water compliance.

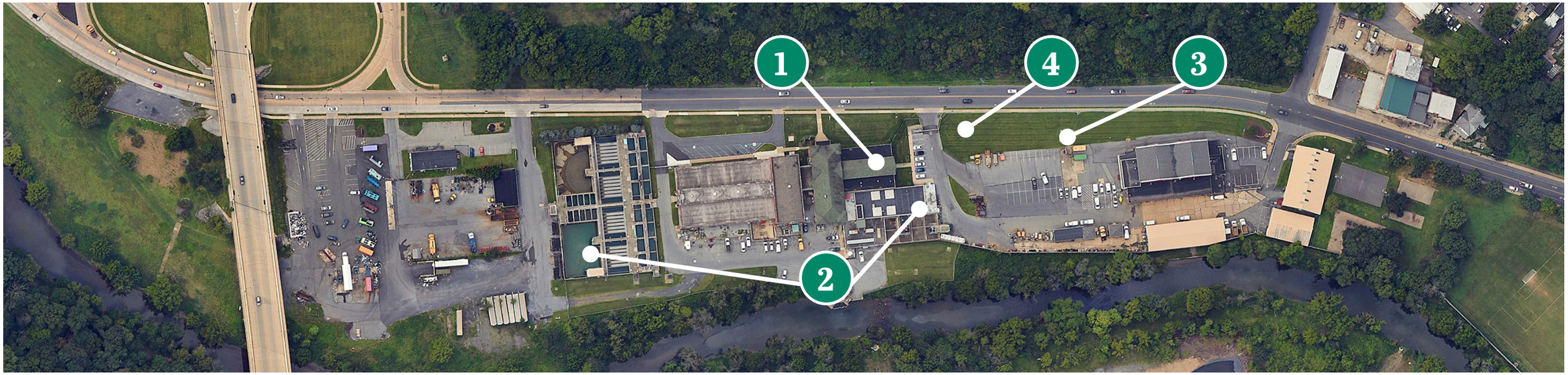
Process risk mitigation measures include the addition of powder activated carbon (PAC) for the Big Lehigh Intake that will address taste and odor concerns with the source but also enable some bulk reduction of PFAS should levels increase and if the source is relied on more heavily in the future.

Adaptability

In terms of an increased need for additional PFAS treatment beyond Crystal Spring, a future mitigation strategy could entail construction of the 4 MGD PFAS treatment facility now with a layout that lends itself to future expansion to 16 MGD in mind should treatment of other supplies be required. This would capture the present Little Lehigh Creek average daily supply, Crystal Spring and allow Schantz Spring to meet the 23 MGD demand condition. At larger facilities, regulatory agencies have been open to consider parallel flow trains so if the existing lead-lag vessels could be modified to parallel trains, the additional flow needs would include approximately six more vessels. A parallel arrangement could also be supported by operational data that illustrates specific throughput of the lead beds to achieve exhaustion. With a total of 12 vessels, the GAC vessels could be staggered such that all trains do not reach breakthrough at similar times so that the blended rolling annual average GAC filtered flow would be compliant with the MCLs. Given the low PFAS levels observed in the source water, confidence in a blended approach to achieving compliance would be high.

Alternate approaches could also be investigated including the addition of a PFAS novel adsorbent such as CETCO Fluorosorb® media layer within the existing filter boxes (use of Fluorosorb in the existing filter boxes would require a pilot

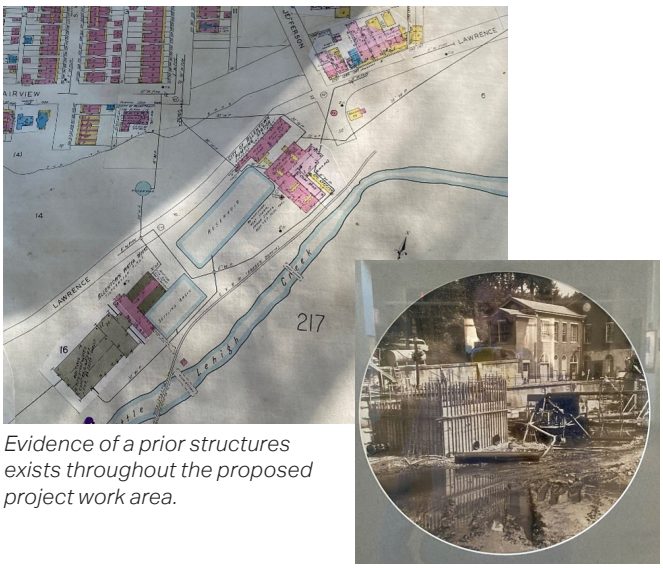




KEY	CHALLENGE	AECOM APPROACH	ADVANTAGES	STEPS TO VALIDATE
1	**Influent Pumping:** Pumping is a major concept-phase consideration to provide driving head through the pressure filters. Space and power requirements can be significant. The Crystal Spring currently flows by gravity. The PFAS Study was silent on pumping needs.	One approach could a pump station at the Crystal Spring Box and use that as the wet well. Alternatively, repurposing the existing Crystal Spring distribution pumps may be a more streamlined and cost-effective approach as power infrastructure is already in place and appears adequate for repurposing.	This opportunity eliminates the need for separate pumping infrastructure in the new PFAS Treatment Building or the spring box. It also eliminates potential for exceeding the power capacity of existing electrical distribution with new loads.	Evaluate pressure requirements and hydraulic profile and compare with existing pumps. Evaluate pump modifications to including impeller and/or motor resizing. Evaluate the operational impact of eliminating an entry point into distribution.
2	**Backwashing Systems:** Backwash water supply and discharge are two major considerations. Existing residuals handling is on the opposite end of the site and challenging to connect to due to underground obstructions and flood wall.	Utilize send out mains for backwash supply, which can provide the higher rates needed by the GAC contactors. Spent backwash water can be directed to two existing PAC slurry tanks slated for decommissioning for equalization and discharge to the interceptor through an existing sump and piping.	These opportunities eliminate the need for supply/holding tanks and pumping systems at the PFAS Treatment Building. It also avoids long pipelines to the opposite end of the site for tie-in with the existing infrastructure.	Evaluate volume and loading rate requirements and assess any impact to pressure and finished water chemistry in the distribution main.
3	**Chemical Systems:** The proposed chemical system to manage the calcium carbonate presents a constructability challenge with respect to storage space, building code compliance, fire protection, and life safety requirements.	Our experience with groundwater of similar hardness points to opportunities to manage precipitate formation with increased backwash frequency, addition of intermittent air scour provisions during backwash events, or use of less aggressive descaling agents instead of strong acids.	This opportunity eliminates the need to store sulfuric acid, which must be located in its own room and triggers many building code and life safety requirements. It designs-out a complex system and safety hazard that would otherwise be located in the mapped floodplain.	Evaluate the potential precipitation based on water chemistry data. Evaluate operational costs of more frequent backwashing and investigate chemical storage areas within the existing filtration building that could introduce chemicals after the PFAS influent pumps.
4	**Site Constraints:** The site available for PFAS treatment is small, within a FEMA flood zone, and is close to the public right of way. It is anticipated that review by City of Allentown zoning board will be necessary.	Through eliminating pumping, backwash storage, and chemical systems often required by PFAS Treatment Systems, we propose a streamlined layout that fits in the narrow plot of land proposed. Vessels laid out in a single row to better accommodate the dimensions of the available land.	This opportunity allows us to increase building setback and reduce impact to parking, while still having space for constructability, maintenance, and truck access for media changeouts. It also reduces overall footprint to mitigate potential significant dewatering and encountering subsurface foundations from the prior “Reservoir” located in the area of the proposed building.	Evaluate the required design flood elevation, which may be more stringent than local regulations depending on funding sources. Evaluate overall impact to parking. Investigate zoning limitations with regard to setbacks and building height.

study to understand the media's ability to remove turbidity and rate of headloss accumulation) or obtaining an alternate supply through the Bethlehem interconnects presently in design along the eastern boundary of the service area. This could offer a cost-effective approach to capture an additional 3 MGD of finished water as a bulk user when demand warrants. AECOM is currently working with LCA staff regarding enhancing these distribution interconnects with the City of Bethlehem. As a result, we have gained familiarity with the Allentown water distribution system while evaluating numerous interconnects with the City of Bethlehem for regional water resiliency. This effort includes simulations with both system's water models and use of the online GIS water distribution tool to evaluate necessary water main improvements on both sides. The evaluation was necessary to simulate water supply scenarios that facilitate major transfer of water in the event of an emergency as well as the specific engineering of the pumping, valving and metering improvements for activation.

The project risks could also be constructability considerations such as uncertainties with underground utilities, geotechnical properties beneath proposed structures including a former "Reservoir" indicated in historic mapping below, and extensive dewatering needs should a karst feature be intercepted during excavation leading to high groundwater flows into the excavation. The historic photo illustrates the Crystal Spring Box structure that replaced the former oval reservoir may have keyed into the perimeter concrete wall visible in the photo and from historic plans which may still remain beneath present grade. Significant utilities exist within MLK Boulevard currently, prior foundations have been encountered in area excavations from prior residential structures along MLK, and extensive dewatering needs have occurred in recent projects that need to be captured in the Contract Documents properly to reduce risk during construction to LCA.



Evidence of a prior structures exists throughout the proposed project work area.

Another project risk is project schedule associated with construction within the flood plain which may result in extended permitting requirements as well as pressure vessel and electrical gear fabrication timelines which both could cause implications on overall project schedule.

An approach to mitigate this risk is minimizing flood plain permitting needs and reducing the footprint of the proposed building within the flood plain. Some approaches include:

1. Repurposing of the existing Crystal Spring Pumps as PFAS feed pumps to reduce the proposed building envelope and reduce new electrical service at the proposed building. The pumps and/or motors could be replaced to meet the needs of the GAC feed as they pump from the raw spring channel before the clear well. If high service capacity is needed, additional pumps could be considered from this location as well. This approach uses electrical power within the existing building serving the Crystal pumps in lieu of running a new service to the proposed PFAS building or spring box area of the site that is presently not powered.

2. Adding provisions for air scour in the backwash can mitigate concerns of scale from the elevated hardness without the addition of an acid feed system should scale become an issue that could have an impact on the finished water and reduce pH in the distribution system where lead service lines are still in operation.
3. Elimination of the pre-filters is another consideration due to the exceptionally low turbidity observed in the spring source. GAC can be backwashed so we have found that the need for pre-filters is not always required in GAC applications where backwash may occur.

4. Repurposing the PAC slurry mix concrete tanks will offer GAC backwash waste and filter-to-waste equalization in lieu of constructing new tanks. This approach allows for any spent backwash or initial media rinses to be disposed to the Little Lehigh Interceptor in a controlled manner to reduce impact to the sewer system.
5. Identifying locations within the building for anti-scaling or pH suppression chemicals (if needed) should air scour backwash alone not address possible concerns of the spring's hardness.

Overall, these considerations will all enable a smaller building to be constructed within the floodplain and reserves the potential for future expansion while minimizing the impacts to the existing parking lot.

In addition, the proposed finished floor must be one foot above the 100-year flood plain elevation of 263.3 ft. Additionally, based on funding sources used, construction up to the 500-year flood plain may be required (approximately 269.5 ft). A proposed building arrangement to mitigate this need could include depressing the interior floor while setting the door elevations above the flood plain. The approach of depressing the vessels will help reduce overall building height and improve architectural site lines at the historic brick water filtration facility.

AECOM recently constructed a PFAS treatment facility in California that took this approach due to construction within a residential area so that the tall pressure vessels would not impede the surrounding viewshed.

AECOM recently constructed a PFAS treatment facility in California that took this approach due to construction within a residential area so that the tall pressure vessels would not impede the surrounding viewshed.

Water Quality Drivers

We recommend considering rapid small scale column testing (RSSCT) to enable a more refined projection of media performance on actual site water for the evaluation of life-cycle costs related to required media exchanges to comply with the PFAS MCLs. The bench testing also offers an opportunity to demonstrate potential impacts of hardness or solids to better assess needs for an acid feed system and/or prefilters. While not presently included in our scope, AECOM can perform these bench tests in our treatability lab if desired in approximately 4-6 weeks of turnaround time inclusive of analytical results. The testing would help evaluate any potential impact of hardness on any visual encrustation that develops and determine impact of PCE levels on the GAC bed life.

pH and Calcium Carbonate Formation

The existing data notes a range in pH around 7.5 for the Crystal Spring source. A pH over 8.0 (or even the high 7's) with the hardness indicated in the RFP of ~275 mg/l as CaCO3 could present potential concerns. Our experience has shown that without proper pH control or sequestration, water saturated with calcium carbonate has a higher risk of developing scaling within a carbon media bed. The scaling can encrust the media and reduce treatment efficiency, build-up head loss and the dense precipitate is difficult to remove once the granular media solidifies. Another pH related consideration is that virgin GAC will temporarily increase pH initially following a bed change-out. Depending on the resulting pH and alkalinity in the water, this phenomenon could create conditions for the precipitation of calcium carbonate as well although this is an infrequent and short duration occurrence. The addition of an acid could be challenging due to the building location in the flood plain. As an alternate, sourcing or double acid rinsed GAC, thermal reactivation of GAC to reduce reliance on virgin GAC, air scour provisions during more frequent backwashing (as needed) and close monitoring of pH can be alternates to prevent encrustation from developing over time. If pH adjustment is ultimately deemed a concern, connecting to the existing on-site carbon dioxide feed system may be a better approach than introducing a new corrosive acid within the proposed building.

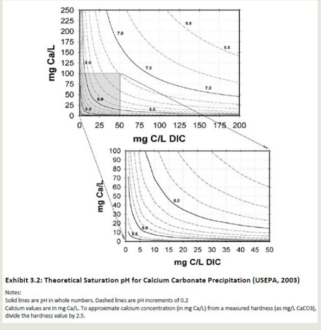


Exhibit 5.2: Theoretical Saturation pH for Calcium Carbonate Precipitation (USEPA, 2003)

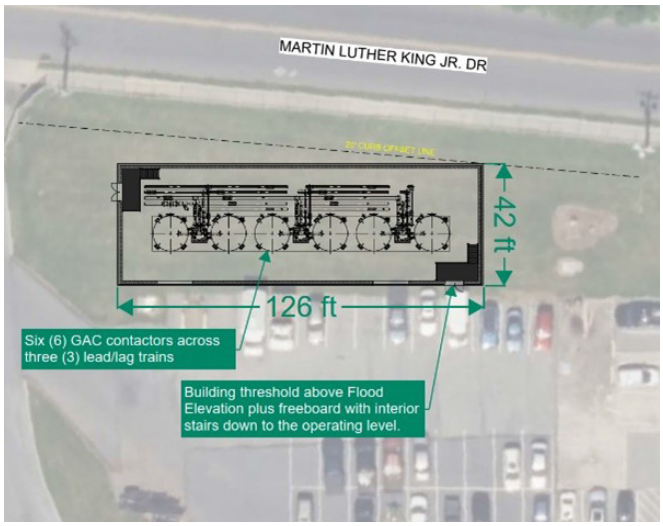
Figure 1: As pH increases, saturation concentrate of calcium species reduces the potential for scaling within pipes and PFAS media increases. *EPA Manual: Optimal Corrosion Control Treatment Evaluation Technical Recommendations for Primacy Agencies and Public Water Systems (2003)*

Figure 2: Scaling within a GAC vessel due to Calcium Carbonate Formation. Granular GAC has agglomerated into "soft ball" solid chunks which prevent full use of the adsorptive media surface area.

Integrating Constructability into the Facility Plan

AECOM has significant experience delivering both water and wastewater treatment facilities to our clients using both fixed-price and collaborative progressive Design-Build models. This direct experience provides a unique perspective that will be an integrated throughout the development of the design as LCA prepares to deliver the Plant improvements by providing sound constructability reviews of documents at critical periods of design development.

Another approach that lends itself to the site space constraints is arranging the PFAS vessels in a line to facilitate media exchange access, minimize impacts to the adjacent parking lot, and allow for future expansion should a larger flow be required.



Site design must account for the large GAC trucks that will need to perform media exchanges and access the filtration plant from busy MLK Boulevard. Recent project experience has identified proper entrance turning radii when entering from a narrow road such as MLK.

Our experience and capabilities can be valuable to LCA, particularly:

1. AECOM's extensive experience with full-scale PFAS treatment systems as well as pioneering research with new innovative technologies.
2. The capabilities of an inhouse laboratory which has experience in evaluating GAC using RSSCT for treatment projects throughout the country.
3. Previous experience and existing relationships with numerous GAC suppliers working in the PFAS industry.

Our AECOM team offers LCA:

- Access to Industry leading technology evaluation tools to increase confidence in technology selection
- Flexibility in project delivery, to allow for schedule enhancement and cost savings
- The right long-term solution balancing the multiple water quality needs of LCA
- Adaptability should LCA wish to enhance the facility in the future to treat portions of the other sources or take advantage of advancements in novel adsorbents or other PFAS technologies
- Leveraging existing facilities to reduce capital expenses such as the existing Crystal Spring PS and the existing PAC blend tank for backwash waste equalization.

AECOM's Northeast Water Design Center is a recognized center of excellence within AECOM comprising all disciplines necessary to fully execute the project in-house with professionals that serve solely the water and wastewater industry. As a multi-disciplinary group with experience in both the engineering and architectural design for similar facilities, the professionals in the Design Center bring knowledge of both the unique requirements of PFAS treatment facilities and current best practices for the overall design. With their focus on water facilities – including the design and construction administration of numerous PFAS facilities throughout the United States, the team is familiar with construction constraints, pricing, and procurement issues which have plagued the construction industry for nearly the past five years.

The group utilizes Revit to develop design drawings, which relies on a 3D model of the facility. The use of a full 3D model allows for consideration of operator requirements

and preferences throughout the design phase and reduces the potential for changes during construction because of physical conflicts between elements. Supporting the 3D model development, the team utilizes both commercially available software as well as software developed within AECOM and refined over generations to produce an efficient and technically sound solution that meets the performance requirements of the system.

PENNVEST

AECOM's digital tool Fund Navigator can be applied to help LCA identify additional funding sources for the proposed project to reduce the overall burden on rate payers. Fund Navigator attributes include:

- AECOM proprietary software
- AI-enabled bot
- Identifies opportunities based on key words quickly
- Determines disadvantaged community status
- Focused on IIJA and IRA opportunities
- Cost efficient

Fund Navigator Interactive Interface

5

Scope of Work

5. Scope of Services

Technical Approach

We proposed starting the design phase with a Concept Development Phase, which will further study and validate the concept originally proposed in the PFAS Study and incorporate opportunities identified above in our Technical Approach which have potential to reduce impact to the site, improve constructability considerations, and provide potential construction cost savings.

These opportunities will be further studied and validated as part of the abovementioned Concept Development Continuation Phase and represent a significant reduction of impact to the site, improvement of constructability considerations, and potential construction cost savings.

We are also proposing a **Site Investigation Phase**, including geotechnical, topographic and utility surveys to aid and inform future design development. We will supplement subsurface boring information made available to us from prior projects with new borings in the location of the proposed building. Our topographic and utility survey intends to obtain detailed measurements and elevations of existing features, establish a surface elevation model for evaluation of earthwork and grading, and locate existing underground facilities to understand and avoid yard piping utility conflicts.

Following the site investigation phase, we will perform a **Preliminary Design Phase** to develop the design further. This phase aims to facilitate an early and specific definition of scope and concept development by memorializing a basis of design, to optimize quality and maximize compliance of budget and schedule from efficiency and minimization of changes. During this phase, we will bring in support from various engineering disciplines, including civil, geotechnical, structural, architectural, mechanical, HVAC, plumbing, fire protection, electrical, and instrumentation, to support our process team to develop a well-defined design concept. Under this phase, we will further refine the proposed improvements' process flow diagram and hydraulic profile and introduce a civil site plan, equipment lists, architectural concepts, structural systems design, and an initial HVAC, plumbing, and electrical system identification. After collaborating with LCA, we will advance the design and present our progress with a preliminary design report, preliminary drawings, specifications, estimate, and a design review meeting. Upon receiving additional input from LCA, the design team will be ready to proceed with the detailed design.

After the Preliminary Design Phase, we will continue design development under the **Detailed Design Phase** and work towards several design milestones where progress will be shared with LCA, and opportunities to review and provide input will be provided. We propose 60%, 90%, and 100% design milestones, including submitting drawings, specifications, an engineer's opinion of probable construction cost, and a design review meeting. During this phase, the structural systems will be fully detailed, architectural plans, elevations, and life safety plans will be developed, HVAC equipment will be selected and sized, plumbing and fire protection systems will be detailed, and the electrical and instrumentation design will be advanced. The civil design will include demolition, site earthwork and grading, identification of soil stockpile and laydown areas, yard piping layout, drainage, access driveways, and erosion and sedimentation control design, as required to meet land development regulations.

The **Permitting Phase** services will coincide with the detailed design phase. These services include coordinating with PADEP and local agencies, preparing permitting applications for Chapter 109 Public Water Supply permitting, Chapter 102 NPDES permitting (Stormwater & Industrial Wastewater Discharge associated with Water Treatment Plant), Chapter 105 Permitting (Waterway Encroachment Management), and local code compliance and zoning applications. Permitting services will include preparing permitting packages, Act 14 and Act 67 notifications, and any required calculations. After submission of the permit packages, we will coordinate with the permitting agencies to achieve approved permits ready for construction.

We will also perform **Bidding Phase** services including management of contract documents on the PennBidPennBID website, attendance at and facilitation of the pre-bid meeting, responding to bidders' questions, preparing and issuing any necessary addenda via PennBid, opening and posting of bid results on PennBid, and reviewing and evaluation of bid results to support the issue an award recommendation letter.

Our approach to Funding Assistance Services includes assisting LCA to secure funding from PENNVEST or other identified funding sources to support financing the project. We will assist LCA in preparing a funding application and incorporate PENNVEST requirements into the specifications, including Davis Bacon wage rates, BABA/AIS compliance, and DBE solicitation by the contractor.

To support the efficient delivery of this project, we will perform various project management activities, including regular status reporting, budget and schedule monitoring, contract management, subconsultant management, invoicing, and meeting with LCA regularly.

The following section presents AECOM's scope of services in detail.

Scope of Services

The specific tasks to be performed by AECOM are described below.

Task 1 – Conceptual Development Continuation Phase Services

Under this task, AECOM will update the conceptual design prepared under the alternative evaluation phase to incorporate updates to the design concept that have been made to incorporate feedback from LCA. We will hold a kick-off meeting with LCA to include, among other topics, a review of the design schedule.

Task 2 – Investigation Phase Services

The objective of the investigation phase services is to obtain information related to the subsurface conditions of the areas where improvements are proposed and perform a topographical and utility survey for the purpose of providing information that will be used in subsequent design phases.

2.1. Geotechnical Investigation

Conduct subsurface borings for a geotechnical investigation at the site to determine subsurface conditions in the area of the proposed improvements. The geotechnical program will consist of the performance of three (3) test borings. It is expected that a truck-mounted drill rig can conduct the borings as the site is accessible.

One (1) test boring is expected to be converted to monitoring wells up to 25 feet in depth in order to evaluate groundwater elevations for use in performing uplift calculations. AECOM will subcontract the drilling services and will provide an inspection of the services.

2.2. Topographical and Utility Survey

Provide a topographic and vertical survey of the approximately one-acre site for identification of topography and physical features. The survey will include one (1) foot contours over the entire property within the fenced site. Sanitary sewers and storm drainage structures will be provided with rim/grate and invert elevations with pipe sizes and material types noted where visible and accessible.

Existing property lines, as well as above-ground and below-ground utilities, will be located for use in establishing setbacks and separation distances to the new structure.

All survey work will be based on the Pennsylvania State Plane coordinate system:

- Horizontal Datum: Pennsylvania State Plane South NAD83 (Zone 3702)
- Vertical Datum: NAVD88 (Geoid 18)

We will process field data and perform computations and drafting to prepare topographic mapping of the subject area. This mapping will depict the following physical features as applicable:

1. Full topographic survey of the above-referenced sites – extending to the site limits when possible. To include:
   a. Locations of roadways and paved areas, including sidewalks, curbing, and paint markings.
   b. Locations of any evident man-made structures (i.e., buildings, walls, fences, retaining structures).
   c. Locations of any evident above-ground utility structures (i.e., vaults, cable and electric boxes, gate valves, utility poles).
   d. Locations of sanitary and storm drainage features. Obtain Invert elevations, pipe sizes, material, and orientation of pipes.
   e. Location of tree masses and vegetation.
2. Spot elevations will generally be taken at approximately thirty (30) foot intervals along grass areas, walls, fence lines, sidewalks, curbs, gutter lines, edges and centerlines of paved roadways, and edges of driveways within the project area.
3. The elevation of first-floor buildings will be provided if access is granted and where it is safe to obtain.
4. Benchmarks established during the field survey will be verified, located, and described on the mapping.

AECOM will prepare an Autodesk Civil 3D 2019 digital drawing file containing planimetric features, extraction of 3D breaklines, and surface grade elevations required to create a DTM and 1.0' contours.

The Subsurface Utility Engineering (SUE) investigation scope is as follows:

1. AECOM will conduct a Quality Level B investigation of subsurface utilities and their laterals to existing buildings in accordance with CI/ASCE 38-22 within the project limits. Select and apply appropriate geophysical method(s) to search for and detect subsurface utilities and, based on an interpretation of data, mark the utilities on the ground surface for subsequent location and depiction.
2. AECOM anticipates approximately 13,500 linear feet of utilities consisting of (a) natural gas, (b) water, (c) electric, (d) telecommunication, (e) cable TV (CTV), (f) possible abandoned utilities and the potential for multiple utilities

within those categories listed. Utilities identified as unresolved in size and type will be identified as unknown.

3. If reliable geophysical information is not obtained on the utilities within the scope, appropriate actions in accordance with CI/ASCE 38-22 will be taken to assign Quality Levels C & D to the utility line segments.

All survey work will be supervised by a Pennsylvania Licensed Surveyor.

Task 3 – Preliminary Design Phase Services

The objective of the preliminary design phase is to achieve consensus on the detailed design basis so that the final design can proceed with minimum risk after significant effort is expended to produce Contract Drawings and Specifications. The preliminary design will consist of the following subtasks.

3.1. Preliminary Process Design

AECOM will advance the process design of the proposed PFAS treatment system from the conceptual design to a basis of design level. The process design includes defining the requirements of pumps, the arrangement of the GAC contactors, the backwash supply and spent backwash water treatment systems, chemical feed and storage requirements, and other related components. AECOM will also validate the technical approach of PFAS adsorption with GAC and determine anticipated O&M costs using the results of the pilot study.

The plant hydraulic profile will also be further evaluated under this task to confirm pumping requirements. Construction staging and maintenance of operations will be considered during preliminary design.

Deliverables for this task will include a hydraulic profile, process layout, and flow diagram.

3.2. Preliminary Civil Design

The preliminary civil design will include earthwork, grading, and site preparation for the new structure. Yard piping and utilities will also be sized and laid out under the preliminary civil design task. Stormwater management and erosion and sedimentation control requirements will also be evaluated. The civil design also includes access driveways, pavement, drainage, and other exterior features.

Deliverables for this task will include a site plan, demolition plan, yard piping plan, lagoon detail plan, evaluation of PADEP Chapter 102 Erosion and Sediment Control requirements, and a specification list.

3.3. Preliminary Geotechnical Design

The preliminary geotechnical design will build on the geotechnical investigation performed in the previous phase. It will include the development of geotechnical design recommendations upon completion of the test borings, which consists of the selection of foundation systems and identification of temporary excavation support and dewatering.

Deliverables for this task include a geotechnical design report, boring logs, recommendations on foundation systems, normal and 100-year groundwater elevations, sheeting, dewatering, and rock excavation requirements.

3.4. Preliminary Structural Design

The preliminary structural design will consist of identifying and designing structural systems for the new buildings and water-bearing structures to be provided as part of the PFAS treatment upgrade. Preliminary selection of the gravity and lateral load-resisting system will be identified. New buildings are assumed to match existing namely steel truss flat roofs with parapet walls and block construction with brick veneer.

Deliverables for this task will include structural plan drawings and sections, preliminary framing plans, detailed load definition for dead, live, seismic, wind, snow, and other environmental loads, preliminary sizes and locations of major beans and columns, structural materials design criteria (concrete, masonry, steel, aluminum), and a specifications list.

3.5. Preliminary Architectural Design

The preliminary architectural design will consist of developing architectural design concepts, evaluating code compliance requirements (building code, ADA, fire protection), and a high-level selection of materials, finishes, and other architectural treatments. It is assumed that the architectural finishes will be selected to match existing.

Deliverables for this task will include floor plans, roof plans, code life safety plans, elevations, building sections, and a specifications list.

3.6. Preliminary Mechanical Design

AECOM will prepare a preliminary mechanical design with recommendations on the type of pumping systems, including the intermediate pump station and backwash supply pumps, PFAS treatment pressure vessels, and process piping systems.

Deliverables for this task will include an initial equipment list, basic design data, a process flow diagram, and a hydraulic profile. Mechanical arrangement drawings developed during the concept phase will be advanced to a preliminary basis of the design level.

3.7. Preliminary HVAC Design

The preliminary HVAC design will establish the concepts for the Heating, Ventilating, and Air Conditioning (HVAC) design for the proposed improvements, including heating and ventilation for the new process areas and air conditioning for new electrical rooms. Dehumidification requirements will be evaluated and presented to LCA for consideration.

Deliverables for this task will include HVAC design criteria consisting of design temperatures by room, heat-loss/ heat- gain calculations, initial equipment selection, an HVAC plan indicating unit heaters, supply fans, exhaust fans, major ductwork, and a specification list.

3.8.Preliminary Plumbing and Fire Protection Design

The preliminary Plumbing and Fire Protection design will include the identification of plumbing systems, codes, and standards, plumbing fixture types (process water, hose bibbs, emergency eyewash/showers, floor drains), and identification of water source and backflow prevention requirements. It is assumed that no sanitary facilities will be installed in the new buildings. This task also includes the evaluation and selection of fire suppression systems as deemed required under the code requirements evaluation of the architectural task. It is anticipated that sprinklering is needed for the PFAS Treatment Building due to the overall square footage of the space.

Deliverables for this task will include plumbing and fire protection design criteria, plumbing plans and riser diagrams, selection of fire valves and pumps, and a specification list.

3.9. Preliminary Electrical Design

The preliminary electrical design will include identifying the power requirements of the new pumps and other equipment, the development of lighting criteria, and fire detection. The initial location and approximate sizing of switchgear, switchboards, transformers, motor control centers (MCCs), panelboards, and electrical equipment will be performed under this task.

Deliverables for this task will include a preliminary electrical one-line diagram, power plan, electrical design criteria, preliminary electrical load calculations, and a specifications list.

3.10. Preliminary Instrumentation and Control Design

The preliminary instrumentation and control (I&C) design will include the identification of control systems, selection of PLCs, HMIs, and I/O devices, and establishment of control logic.

Deliverables for this task will include P&IDs with equipment and instrumentation, a control network block diagram, a system architecture diagram, and a specification list.

3.11. Prepare Preliminary Cost Opinion

A preliminary construction cost estimate will be prepared based on equipment lists from all disciplines, concrete thicknesses/steel members from structure, dewatering, sheeting, piles, rock excavation from geotechnical, major civil utilities, mechanical equipment, major electrical equipment, I/O counts from instrumentation, and architectural/HVAC/Plumbing by building size.

Deliverables for this task include a Class 4 preliminary engineer's opinion of probable construction cost.

3.12. Prepare a Preliminary Design Report (PDR)

The work performed in the tasks above will be presented in a draft PDR, which will be comprised of the following sections:

- Introduction and Background
- Civil Design Basis
- Geotechnical Design Basis
- Structural Design Basis
- Architectural Design Basis
- Process Mechanical Design Basis
- HVAC Design Basis
- Plumbing and Fire Protection Design Basis
- Electrical Design Basis
- Instrumentation and Controls Design Basis
- Construction Staging / Maintenance of Plant Operations
- Preliminary Cost Opinion
- Drawings and Specifications List

The draft BODR will be provided electronically for LCA review. Following LCA's review, AECOM will attend an in-person 30% review meeting to receive comments and finalize the design. This submission will also be submitted to the City of Allentown for Major Capital Improvement (MCI) review, prior to advancing to final design. A final report will be provided to LCA incorporating all comments within two weeks of receiving final comments.

Task 4 – Detailed Design Phase Services

This task aims to build upon the basis of design produced under the Preliminary Design Phase and to prepare the Design Drawings and Specifications for the PFAS treatment improvements at the Allentown WFP.WTP. In addition to the 30% design review meeting held under the previous phase, additional review meetings will be held for the 60%, 90%, and 100% submissions.

4.1. Prepare 60% Design Drawings, Specifications, and Cost Estimate

60% complete Design Drawings based on the final PDR will be provided to LCA for review. Draft Specifications will also be provided to LCA for review at this milestone. The front end specifications will also incorporate PENNVESTPennVest requirements, including Davis Bacon wage rates, BABA/AIS compliance, and DBE solicitation by the contractor. A review at this point in the design will enable LCA to give any design modifications before the final design phase.

Drawings and specifications will be provided to LCA for review at the 60% completion milestone.

4.2. Prepare 90% Drawings, Specifications, and Cost Estimate

90% of drawings will be prepared in 3D CADD and produced by AECOM at a level of detail consistent with other projects designed for LCA. We estimate that a total of 90 drawings will be required.

Technical Specifications will be prepared using AECOM Water's Master Specifications edited to meet the specific needs of this project. The Specifications are prepared in the Construction Specifications Institute (CSI) format.

Specifications will be provided to LCA electronically for review at the 90% completion point concurrent with the draft Design Drawings. A Class 2 Opinion of Probable Construction Cost will also be prepared at this phase of design. An in-person meeting will be held with LCA to discuss its review comments on the draft Design Documents. We will also prepare for and attend a potential substantially complete design review meeting with the City of Allentown.An in-person meeting will be held with LCA to discuss its review comments on the draft Design Documents. AECOM will address and include these

4.3. Prepare 100% Design Drawings, Specifications, and Cost Estimate

Following LCA's review of the draft Design Drawings and Specifications and the incorporation of any comments as a result of this review, the Drawings and Specifications will be finalized. Final Design Drawings and Specifications will be provided electronically to LCA.

An in-person meeting will be held with LCA to discuss its review comments on the final design documents. AECOM will address these comments as appropriate.

Upon completion of the final Design Drawings and Specifications, AECOM will prepare a final cost opinion based on detailed material take-offs, vendor price quotes on significant equipment items, person-hour estimates for the various work activities, and current prevailing wages.

Task 5 – Permitting Services Phase

We will prepare permitting application packages for local township zoning and public water supply permitting. We will also evaluate the need for changes to NPDES Industrial Wastewater for Water Treatment Plant Discharges and the need for NPDES permitting associated with stormwater construction and will prepare permit applications should they be required.

Permit applications will be filled out, and supporting information will be prepared in a format that will accompany the application in accordance with the instructions and checklists of the respective permitting programs. We will also send Act 14 and 67 notification letters as appropriate. This task also includes submission and correspondence with the regulatory agencies. It is anticipated that the PWS permit application will be made after the 60% design submission.

Task 6 – Funding Assistance Phase Services

AECOM will assist LCA to prepare a funding application and facilitate its submission to PENNVEST and other identified funding sources.

Task 7 – Bidding Phase Services

AECOM will assist LCA with Bidding Phase Services, including posting bid documents on PennBid, attending and facilitating the pre-bid meeting, responding to bidders' questions, preparing and issuing any necessary bid addenda via PennBid, opening and posting of bid results on PennBid, reviewing and evaluating of the bid results, and issuing an award recommendation letter.

Schedule 6

6. Schedule

Milestone	Anticipated Duration from NTP (months)	Milestone Date
Revised Conceptual Design	1.5	1/15/2025
Field Investigation (Geotechnical and Survey)	3	2/23/2025
Preliminary Design Report and 30% Drawings and Specifications, and Estimate	4	3/23/2025
60% Drawings and Specifications	9	8/13/2025
90% Drawings and Specifications	10.5	9/21/2025
100% Drawings, Specifications and Estimate	12	11/2/2025
Bidding	15	2/2/2026

Assuming NTP by 12/1/2024

7

Fee Proposal

7. Fee Proposal

AECOM proposes to perform the scope of services described herein on a time and materials basis for a budget not to exceed $943,330, as per the terms of our current Master Services Agreement (MSA) with LCA. The proposed estimated fee will not be exceeded without written approval from LCA.

The proposed budget and total resource hours per task are presented in the following table

Task No.	Description	Role	Project Director	Project Manager	Technical Specialist	Lead Proj. Eng/Process	Project Engineer	Staff Engineer	Permitting Lead	Discipline Dept. Lead	Discipline Sr. Engineer	Discipline Jr. Engineer	CADD Support	Estimating	Geotech	Survey	Total Hours	Labor	Subs/ODCs	Total
		Name	C. Curran	B. Deatrich	B. Clunie	B. Sadowski	P. Duggan	J. Szymanski	K. Du	Various	Various	Various	Various	Various	Various	Various				
		Bill Rate Title	Project Director	Project Manager II	Tech Advisor /Specialist III	Senior Engineer II	Senior Engineer I	Staff Engineer I	Project Manager I	Tech Advisor /Specialist I	Senior Engineer II	Staff Engineer II	CADD/Tech Support III	Sr Tech Support I	Staff Engineer III	CADD/Tech Support II				
		Bill Rate	$280.00	$195.00	$275.00	$170.00	$155.00	$100.00	$180.00	$250.00	$170.00	$120.00	$145.00	$165.00	$145.00	$125.00				
1	Concept Development Phase		10	20	20	60	48	40					20				218	$ 36,740		$ 36,740
2	Site Investigation (Survey & Geotech)														82	174	256	$ 33,640	$ 32,300	$ 65,940
3	Preliminary Design Phase (30%)		28	140	50	140	180	270		190	512	304	50	70			1,934	$ 317,410	$ 1,400	$ 318,810
4	Final Design Phase (60%, 90%, Final)		20	198	20	70	250	390	40	282	764	450	60	120			2,664	$ 429,440	$ 1,000	$ 430,440
5	Permitting Services Phase		4	20			80	120	200								424	$ 65,420		$ 65,420
6	Funding Assistance Services		2	8				16	12								38	$ 5,880		$ 5,880
7	Bidding Services Phase			20			40	100									160	$ 20,100		$ 20,100
	Totals		**64**	**406**	**90**	**270**	**598**	**936**	**252**	**472**	**1276**	**754**	**130**	**190**	**82**	**174**	**5,694**	**$ 908,630**	**$ 34,700**	**$ 943,330**

Assumptions and Exclusions:

1. It is assumed that both Zoning and Planning approvals from the City of Allentown will be required. Based on the proposed proximity to the road, it is also assumed Zoning relief from the Zoning Hearing Board is required. AECOM will prepare for and attend up to two (2) pre-application meetings (one with Planning and one with Zoning), one (1) Zoning Hearing Board meeting, and one (1) Planning Commission Meeting. No public engagement meetings or activities are included.
2. It is assumed that the City of Allentown would require the architectural features to match that of the existing filtration plant building. Similar brick facade, roofline, and windows are assumed. No landscape architecture services are included
3. AECOM will provide assistance to obtain a PADEP Public Water Supply construction permit. AECOM will attend up to one (1) pre-application meeting with PADEP Northeast Regional Office. Based on existing information, no jurisdictional wetlands are known to exist on site. For the purposes of this scope of work, it is assumed that neither a US Army Corps of Engineers Section 404 permitting nor a PADEP waterway or wetland permitting will be required. PADEP Chapter 102 Stormwater Management is assumed to be not required as the anticipated limit of disturbance is less than 1 acre.
4. The proposed improvements are located in the jurisdictional mapped 100-year floodplain. AECOM has assumed that local jurisdiction will serve as the review authority for the application for construction of the improvements in the floodplain. It is assumed that no floodplain permitting will be required for PADEP or Federal Emergency Management Agency or any effort to obtain a Letter of Map Revision (LOMR). AECOM will attend up to one (1) pre-application meeting with the City of Allentown's Floodplain Manager. It is assumed that the regulatory elevation to which the improvements will be designed is the 100-year Floodplain.
5. The facility currently discharges process waste into the Little Lehigh Interceptor, which leads to the wastewater treatment plant. AECOM assumes that the existing system has capacity to accept additional backwash waste from the new process. It is assumed that no PADEP industrial wastewater NPDES permitting is required.
6. AECOM's concept includes repurposing the Crystal Spring distribution pumps as a measure to minimize impact at the site and provide a more cost-effective design. The effort involved includes a pump evaluation and specification of pumping system modifications, if required, but the design of a full standalone pump station is not included.
7. Our concept proposes no new chemical systems to address site impacts and hazards associated with floodplain permitting and instead proposes enhanced backwashing frequency and potential air scour to address precipitation concerns. Should it be decided that chemical pH adjustment is necessary, we recommend utilizing the existing carbon dioxide system and dose at the existing wet well within the treatment building. A new standalone chemical storage and feed system is not included.
8. Design of permanent or temporary sheeting, shoring, or retaining wall systems will not be included in the design.
9. AECOM assumes that the plant has sufficient electrical distribution capacity for the new loads associated with the PFAS Treatment Building.
10. The proposed improvements are anticipated to fit within the existing plant property. No property acquisition or easements are expected and services supporting these are excluded.
11. Design of permanent or temporary sheeting, shoring, or retaining wall systems will not be included in the design.
12. Any architectural services called for herein will be provided by AECOM Services of PA, Inc.
13. All necessary application fees will be paid directly by LCA.
14. All deliverables will be in electronic format and submitted electronically.
15. AECOM will assist LCA in securing funding via PENNVEST or other identified funding sources. It is assumed that AECOM will provide technical documentation to support this effort and that LCA will complete non-technical components and submit the applications. AECOM will attend up to one (1) pre-application meeting with the identified funding agency.
16. Construction phase services are excluded, but AECOM can submit a proposal for these services upon request.
17. AECOM will manage the project to the overall budget total and not specific task budgets (i.e., budgets may be shifted between tasks, but the overall budget will not be exceeded without authorization).
18. Geotechnical Assumptions: AECOM will be responsible for marking the boring locations at the Allentown WFP site. The selected geotechnical subcontractor shall be responsible for contacting "Pennsylvania One Call" and for obtaining all necessary permits for the geotechnical investigation.
19. Survey Assumptions: No property or boundary investigation work has been included within the survey scope of services. AECOM will complete the subsurface utility engineering scope of work in accordance with CI/ASCE 38-22 standards and guidelines. However, AECOM does not warrant all known or unknown utilities have been identified through this SUE investigation. Non-conductive utilities, utilities beneath other utilities, site soil conditions, utility composition, and utilities beyond the capabilities of the geophysical equipment and methods may be unable to be designated. Field markings placed on the ground are only for design purposes and not for construction. SUE Services do not relieve others from their responsibility to adhere to utility damage prevention laws or One Call requirements applicable to the state where the work is being performed. Confined space entry and de-watering of utility vaults or structures are excluded.

AECOM
625 West Ridge Pike, Suite E100
Conshohocken, PA 19428

About AECOM

AECOM is the world's trusted infrastructure consulting firm, delivering professional services throughout the project lifecycle – from advisory, planning, design and engineering to program and construction management. On projects spanning transportation, buildings, water, new energy, and the environment, our public- and private-sector clients trust us to solve their most complex challenges. Our teams are driven by a common purpose to deliver a better world through our unrivaled technical and digital expertise, a culture of equity, diversity and inclusion, and a commitment to environmental, social and governance priorities. AECOM is a Fortune 500 firm and its Professional Services business had revenue of $14.4 billion in fiscal year 2023. See how we are delivering sustainable legacies for generations to come at aecom.com and @AECOM.

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Scope of Work for PFAS Treatability Tests Based on Adsorptive Media

Lehigh County Authority Proposal

Prepared by: Francisco Barajas, PhD

November 12, 2024

November 25, 2024 (revised by Chris Curran)

AECOM Process Technologies

9300 Amberglen Blvd. Suite D

Austin, TX, 78729

1.0 INTRODUCTION

This scope of work (SOW) describes the procedures for conducting a treatability study related to poly- and per-fluoroalkyl substances (PFAS) treatment via adsorptive media. This document provides the objectives for a Rapid Small-Scale Column Test (RSSCT) evaluation, provides details on the methodology approach to design and execute the RSSCT, and explains how the RSSCT results are interpreted.

2.0 RSSCT OBJECTIVES

The objectives of this RSSCT evaluation are:

1. Evaluate the relative performance for PFAS removal by two granular activated carbons (GACs) in impacted water under controlled laboratory conditions.
2. Evaluate the time to breakthrough for PFAS compounds in the media tested based on the recently promulgated maximum contaminant levels (MCLs) for PFAS compounds by the Environmental Protection Agency (EPA).
3. Evaluate the amount of water treated per mass of sorbent product (specific throughput).

The data from each objective, along with proper scaling parameters, can aid to inform the selection of the treatment system to proceed to a pilot-scale study.

3.0 TECHNICAL APPROACH

The main portions of a typical RSSCT evaluation include:

1. Baseline characterization of water quality parameters in as-received water
2. Treatability of PFAS via RSSCT evaluation.

The full characterization of the water quality parameters in untreated water may inform how optimum the water matrix is to the specific sorbent media to be tested.

3.1 Sample Collection

Water used to perform the bench-scale treatability study will be collected from a representative location at a site or treatment plant. For this study, **two RSSCTs will be evaluated**, requiring 30 gallons for both RSSCTs (assuming the smallest RSSCT size). The water sample will be collected from the site using six 5-gal high-density polyethylene (HDPE) carboys. The carboys should be clearly labelled with the location name, and date and time of collection, and it should match the labels in an accompanying chain of custody. The water will be shipped to the AECOM Process Technologies Laboratory in Austin, Texas, at the following address:

9300 Amberglen Blvd. Suite D
Austin, TX, 78729
Attn: John Currie

This scope of work does not include the shipping costs of the site water to the treatability laboratory. After receipt, the samples are inspected for leaks and entered the laboratory's logbook. All handling of the water samples involves PFAS-compatible materials and equipment.

3.2 Baseline Characterization

Following receipt of the water sample (raw water, as received), characterization of water constituents will be conducted in split duplicate baseline samples, for all the analytical parameters as shown in Table 1. The PFAS results from this characterization will be considered a baseline for the treatability experiments. Section 3.4 shows the analytical methods to be employed. PFAS, tetrachloroethylene (PCE), total organic carbon (TOC), total suspended solids (TSS), total dissolved solids (TDS), and other water chemistry parameters will be analyzed.

Table 1. Sampling plan for baseline water samples.

SAMPLE	PFAS	PCE	TOC	pH/ORP/EC/ Turbidity	TSS/TDS	Anions, Metals, Alkalinity, Hardness	PCE	PCE Screening
Baseline Duplicate A	1	1	1	1	1	1	1	1
Baseline Duplicate B	1	1	1	1	1	1	1	1
TOTAL	**2**	**2**	**2**	**2**	**2**	**2**	**2**	**2**

Notes:

Metals analysis will be limited to iron, manganese, calcium, and magnesium.

Anions analysis will be limited to chloride, nitrate, and sulfate.

PCE analyzed by EPA 8260 and PCE Screening analyzed by AECOM via GC-FID.

PCE will be measured in the raw water to determine the PCE concentration spike needed to reflect realistic operating conditions, with the aim of evaluating the PCE effect on the performance of the two GACs for PFAS removal. PCE will be analyzed by EPA 8260 to obtain definitive data, while AECOM will conduct in-house screening measurements of PCE using a gas chromatography instrument with flame ionization detector (GC-FID).

3.3 Rapid Small-Scale Column Tests

RSSCTs are commonly used to assess various sorbent products for contaminant removal in flow-through systems. Due to the employment of laboratory-scale small columns, RSSCTs allow for data collection in a fraction of the time needed in a pilot-scale test. Pilot-scale evaluations are recommended after RSSCT tests are completed to estimate sorbent media longevity more accurately.

3.3.1 Experimental Design – RSSCT

The design parameters for the small-scale columns are flowrate, empty bed contact time (EBCT), hydraulic loading rate (HLR), and small-scale particle size (mean particle diameter). These design parameters are obtained based on the simulated full-scale parameters, including the as-manufactured sorbent particle size and full-scale EBCT. Each RSSCT requires a minimum of 10-15 gal of test water to provide adequate probability of breakthrough for PFAS, although this number increases as the column dimensions increase. The final selection of adsorbent media is to be determined. The simulated EBCT will be 10 minutes, which is the standard recommended EBCT by most GAC vendors for PFAS removal. The experimental matrix for the RSSCT is shown in Table 2:

Table 2. Experimental matrix for RSSCT evaluation.

Test	Adsorbent	EBCT (min)	Effluent Samples
1	GAC 1	10	10
2	GAC 2	10	10

3.3.2 RSSCT Design Parameters

Design of the RSSCT test is based on the expected EBCT that would be implemented during full-scale treatment. Determination of this simulated large-scale EBCT is based on the expected flowrate treatment and sorbent vessel geometry. With the large-scale EBCT established, a scaling factor (SF) is determined for the RSSCT according to the standard methodology ASTM D6586 (ASTM, 2014). The typical volume of water that can be treated in an RSSCT is equivalent to a number of bed volumes between 100,000 and 200,000. Based on professional experience, **100,000 bed volumes** are a reasonable and conservative number to characterize breakthrough in GAC media (i.e., breakthrough will likely occur at a much lower bed volume). The number of days (and volume of water) needed to achieve the target 100,000 bed volumes are determined according to the RSSCT flowrate and the bed length. To simulate the desired large-scale EBCTs, the RSSCT scaling factor is applied according to this equation (ASTM, 2014):

$$SF = \left(\frac{EBCT_{Lp}}{EBCT_{Sp}}\right) = \left(\frac{d_{Lp}}{d_{Sp}}\right)^{2-x}$$

Where: $EBCT_{Lp}$ is the large-scale EBCT, $EBCT_{Sp}$ is the small-scale EBCT, d_{Lp} is the average particle size of the as-manufactured sorbent, d_{Sp} is the target particle size after grinding and sieving, and x is the value that defines whether a proportional or constant diffusivity model is used.

The reason to reduce the particle size to a d_{SP} value is to minimize short-channeling effects of the small column geometry (diameter) on the flow, and therefore promote proper contact between the sorbent and the water. For RSSCT columns with an internal diameter of 0.46 cm, the target small-scale particle size is approximately 100 µm.

The scaling factor is calculated based on the particle size of the as-produced sorbent (d_{Lp}) and the particle size after the grinding and sieving process (d_{Sp}). The scaling factor determines the EBCT for the small column. After establishing the small scale EBCTs, the bed length based on the selected flowrate can be determined. The flowrate is chosen to maintain a Reynolds number of 0.3 - 0.5 that allows for effluent sample collection within a reasonable timeframe and meets ASTM methodology criteria. Therefore, the bed length (or bed volume) is adjusted to achieve the desired small scale EBCT, based on a convenient flowrate. Before the RSSCTs are setup, these design parameters will be established for the sorbent media.

3.3.3 RSSCT Procedure

After initial characterization, the test water will be filtered with a 1-µm PES/polypropylene filter to remove any particles that may damage the RSSCT system. These filters and all materials used for this procedure have been previously used and tested for PFAS treatability experiments by AECOM and compatible with PFAS according to the 2018 *General PFAS Sampling Guidance* (Michigan Department of Environmental Quality, 2018).

PCE will be spiked to the influent water container for up to seven times during the course of the RSSCT to ensure adequate loading onto the GAC columns. Because PCE is volatile, PCE will be analyzed up to seven times in this influent using the screening GC-FID method.

The RSSCT procedure is based on the ASTM D6586 methodology, with slight variations such as the column length to optimize the test's duration. The RSSCT procedure steps are summarized as follows:

- Sorbent particle size reduction via ASTM D2862 method
- Measurement of ground particle size using a Microtrac® laser diffractor

- Assembly and packing of RSSCT columns (as shown on Figure 1)
- Effluent sampling and monitoring of flowrate
- Sample collection and shipping to analytical laboratory

Figure 1 shows a schematic of an RSSCT apparatus with the blue arrows indicating the flow of water through the system. The apparatus consists of a feed reservoir connected to a high-performance liquid chromatography (HPLC) pump by stainless-steel tubing. The pump sends the influent water to the inlet of the column. The water flow is distributed by a layer glass wool, then enters the sorbent bed. Before exiting the column, the water passes through another layer of glass wool. The effluent is discharged to a waste container using stainless-steel tubing. This effluent tube is switched to a brand-new HDPE bottle to collect water during sampling.

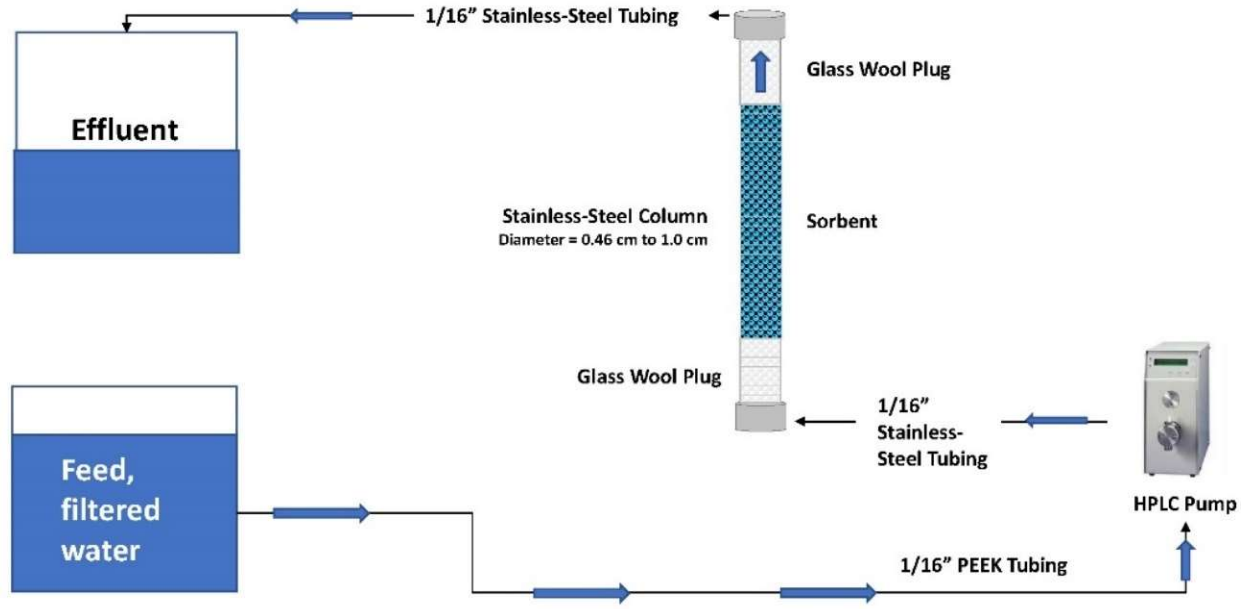

Figure 1. Schematic of an RSSCT apparatus.

3.4 Sampling and Analysis

As discussed in the prior Section**Error! Reference source not found.**, raw water samples will be analyzed for baseline characterization. These results will indicate the concentrations of PFAS and other constituents before any treatability testing begins. The baseline characterization will consist of split duplicate samples. The sampling plan for all samples is shown in Table 5.

The raw water will be filtered and used as influent feed for the RSSCTs. Influent samples will be collected from the influent container at time zero and endpoint. This will be useful to determine any potential variabilities in PFAS concentration in the influent. The sampling plan for the filtered influent samples is shown in Table 3.

Table 3. Sampling plan for influent samples.

SAMPLE	PFAS	TOC	pH/ORP/EC /Turbidity	TSS/TDS	Anions, Metals, Alkalinity, Hardness	PCE	PCE Screening
Untreated Inf-t0	1	1	1	1	1	1	1
Untreated Inf-mid	0	0	0	0	0	0	5
Untreated Inf-tend	1	1	1	1	1	1	1
Total	**2**	**2**	**2**	**2**	**2**	**2**	**7**

Notes:

Metals analysis will be limited to iron, manganese, calcium, and magnesium.

Anions analysis will be limited to chloride, nitrate, and sulfate.

PCE analyzed by EPA 8260 and PCE Screening analyzed by AECOM via GC-FID

The AECOM PTD Laboratory typically collects a large number of effluent samples during the RSSCTs with a select subset of samples submitted for analysis, whereas additional backup samples for PFAS analysis are stored in a refrigerator. If the analytical laboratory has issues with PFAS analysis, additional effluent samples may be selected from the backup stock and sent for analysis.

Due to the limited sample volume that can be collected from the columns' effluents within a reasonable time, samples are collected at select timepoints (i.e., s1 and s10) and shipped for laboratory analysis of water chemistry parameters such as TSS and TDS. For these sampling events, PFAS and TOC samples are collected first in an HDPE container, followed by collection of the other analytes (in a separate container). Table 4 indicates a typical sampling plan for an RSSCT column effluent.

Table 4. Sampling plan for RSSCTs effluent samples, per column.

SAMPLE	PFAS	TOC	pH/ORP/EC/ Turbidity	TSS/TDS	Anions, Metals, Alkalinity, Hardness	PCE
s1	1	1	1	1	-	1
s2	1	1	-	-	-	-
s3	1	1	-	-	-	1
s4	1	1	-	-	-	-
s5	1	1	-	-	-	1
s6	1	1	-	-	-	-
s7	1	1	-	-	-	1
S8	1	1	-	-	-	-
S9	1	1	-	-	-	-
S10	1	1	1	1	1	1
TOTAL	**10**	**10**	**2**	**2**	**1**	**5**

Notes:

Metals analysis will be limited to iron, manganese, calcium, and magnesium.

Anions analysis will be limited to chloride, nitrate, and sulfate.

PCE analyzed by EPA 8260.

The total number of samples collected during the treatability study are shown in Table 5. These samples include baseline characterization of the raw water, influent, and effluent samples, as well as 10% of samples submitted as split duplicates for quality assurance/quality control (QA/QC) purposes.

Table 5. Number of samples for each analytical parameter to be collected during the treatability study.

Sample	PFAS	PCE	TOC	PCE Screening	pH/ORP/EC/Turb	TSS/TDS	Anions, Metals, Alkalinity, Hardness
Baseline	2	2	2	2	2	2	2
Influents (filtered)	2	2	2	7	2	2	2
Effluents	20	10	20	0	4	4	0
QA/QC (split duplicates)	3	2	3	1	1	1	1
TOTAL	**27**	**16**	**27**	**10**	**9**	**9**	**7**

Notes:

Metals analysis will be limited to iron, manganese, calcium, and magnesium.

Anions analysis will be limited to chloride, nitrate, and sulfate.

PFAS, TOC, metals, anions, alkalinity, and hardness will be analyzed by a third-party, commercial analytical laboratory. PCE will be analyzed in select samples via EPA 8260 method by the third-party commercial analytical lab. AECOM will screen for PCE concentrations using its in-house GC-FID methodology to quickly determine if the PCE levels in the influent container are appropriate (within 25% of the target level). AECOM will conduct measurements of pH, ORP, EC, turbidity, TDS, and TSS using the AECOM PTD Laboratory's in-house capabilities. Information about these analytical methods is presented in Table 6.

Table 6. Analytical methods proposed for the treatability study.

Analyte	Method	Total	Performed by
PFAS	EPA 537	27	Analytical Lab
TOC	9060A	27	Analytical Lab
PCE	8260	16	Analytical Lab
Alkalinity	2320B	7	Analytical Lab
Hardness	2340	7	Analytical Lab
Total Metals (iron, manganese, calcium, magnesium)	6020B	7	Analytical Lab
Anions (chloride, nitrate, sulfate)	9056A	7	Analytical Lab
pH	Hach® Benchtop Meter HQ 430d	9	AECOM
ORP	Hach® Benchtop Meter HQ 430d	9	AECOM
EC	Hach® Benchtop Meter HQ 430d	9	AECOM
Turbidity	Hach® Ratio Turbidimeter 18900	9	AECOM
TSS	2540C	9	AECOM
TDS	2540D	9	AECOM
PCE	GC-FID	10	AECOM

3.5 Data Analysis and Interpretation

The success of the treatability study relies on the comparative evaluation of baseline/pre-test PFAS concentrations and the post-test results. The main indicator of adsorbent performance will be breakthrough of PFAS compounds under flowthrough conditions (RSSCT). For the RSSCT tests, influent and effluent concentration data for PFAS analysis is captured. The data can be arranged on a time basis but can also be presented based on the volume of water treated.

According to RSSCT ASTM methodology, the following metrics are obtained to evaluate performance of the adsorbent media:

- RSSCT bed life = time to specified breakthrough level
- Treatable bed volumes = RSSCT bed life / RSSCT EBCT
- Total volume of water fed to RSSCT until breakthrough = RSSCT bed life by water flowrate
- Specific throughput = total volume fed to RSSCT/sorbent mass
- Sorbent usage rate = 1/specific throughput

While a bench trial can be successful and demonstrate that a technology removes PFAS and other groundwater constituents, a pilot-scale implementation will increase the degree of scalability of the adsorbent treatment parameters for full-scale treatment. The bigger picture evaluation of technology applicability for treatment must also consider the net benefit from a sorbent longevity and cost-analysis point of view.

4.0 REPORTING

The AECOM Process Technologies Laboratory will prepare a **brief internal technical memorandum** summarizing the objectives and results of the treatability study which will consist of breakthrough plots and the ASTM metrics described in Section 3.5. This will be provided to the AECOM Project Manager to include all or portions of project reporting requirements per the contract. **What will be provided is not a final report to the client**. If the AECOM team requires a thorough revised document or response to comments, additional labor hours will be provided by the project manager (not included in this SOW).

5.0 SCHEDULE AND BUDGET

Table 7 presents the typical schedule for conducting laboratory studies and reporting activities. We provide this schedule to communicate our expected timeline to complete the work, but schedule delays may arise due to analytical delays, vendor or supplier delays, or other unforeseen events. For a focused RSSCT evaluation, nine weeks is needed to conduct all activities. Most RSSCTs operations can be conducted within two weeks, however, preliminary laboratory activities such as adsorbent media preparation and water filtration must be conducted before starting the RSSCT, and turnaround times from commercial analytical laboratories might extend the time frame for a deliverable.

We recommend LCA budget $38,000 for the two proposed RSSCT columns inclusive of labor and materials to run the bench study and analytical results described herein.

Table 7. Typical Schedule for a focused RSSCT Study.

	WEEKS								
TASK	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Preliminary activities and lab mobilization	X	X							
Receipt of bulk water samples		X							
Water characterization (includes analytical TAT)*		X	X	X					
RSSCTs			X	X					
Last sample batch analytical TAT*					X	X	X		
Treatability Tech Memo								X	X

*Assumes a TAT of 15 business days.

6.0 ASSUMPTIONS AND EXCEPTIONS

Major assumptions regarding this scope of work for treatability testing include the following:

- Costs for the bulk water samples shipping from the site to Austin PTD Laboratory are not included.
- Two RSSCT scenarios with 20 effluent samples.
- Analytical pricing is assumed based on recent pricing for PFAS, PCE, TOC, and other analytes provided by a third-party lab. Final pricing will need to be adjusted if the project is executed after the expiration date of the analytical lab's quote.
- A waste disposal fee will be charged by the AECOM PTD Laboratory to dispose of treatability waste. The waste disposal fee assumes waste will be non-hazardous.
- The AECOM PTD Laboratory fee is based on lab space and equipment usage.
- The price for this scope of work is based on the schedule described in Section 5.0. This schedule is limited to the laboratory treatability tasks and it is not reflective of the overall project schedule. Any delays or extensions would result in additional cost.

7.0 REFERENCES

ASTM. (2014). Standard Practice for the Prediction of Contaminant Adsorption On GAC In Aqueous Systems Using Rapid Small-Scale Column Tests. In *ASTM D6586* (Vol. 03, pp. 1–6). ASTM International. https://doi.org/10.1520/D6586-03R14.2

Michigan Department of Environmental Quality. (2018). *General PFAS Sampling Guidance* (p. 24).

LCA Allentown Filtration Plant PFAS Design

Field Column Pilot to Assess Scale Formation

11.22.24

11.25.24 (rev)

AECOM recommends consideration of a polyphosphate sequestering agent or acid to address concerns with scale formation due to the total hardness present in the Crystal Spring supply. The formation of scale could impact the operation of GAC adsorption vessels by coating the media and/or creating mounds of media which would increase the headloss across the media bed as well as reduce the availability of adsorption sites. While backwashing provisions and air scouring could and should be provided with the full-scale design, the scaling could be so severe that backwashing would not resolve the issue.

A field trial is the most appropriate means to assess scale formation. A field test would be conducted over time using the specific source water and the proposed GAC media. AECOM proposes a 4-month period to allow sufficient time for the potential of scale formation. This approach may not have the same Empty Bed Contact Time (EBCT) anticipated for PFAS removal, but would focus on the likelihood of scale development under a few scenarios. The field test will demonstrate performance of a polyphosphate approach compared to adjusting the pH with an acid and weighing performance against the resulting capital cost for construction and operational costs of the different approaches. These two approaches will be compared with a control column where no pretreatment is performed should scale not be problematic during testing.

AECOM has obtained pricing from BlueLeaf Incorporated (Charlton, MA) to provide a 3 column unit on uni-strut along with a column feed pump, flow meters, valves and appurtenances, and two chemical feed systems to evaluate the alternate approaches of scale control versus a control column. BlueLeaf will assemble the field column pilot in the filter gallery and provide instruction to LCA operators for maintenance of operations during the testing.

As part of the study, AECOM will visually inspect the GAC media for scale and weigh the GAC before and after testing (after drying) to quantify any differences in scale formation between the 3 columns. AECOM will also send off media samples (3) for microscopy analyses to further assess any fouling of the media.

In addition, AECOM includes submitting 1 raw and 3 effluent samples for PFAS (PFOA + PFOS species) from each column (at the same Bed Volume) to evaluate any relative differences in PFAS levels in the effluent. The purpose would to be to identify any

differences in media performance relative to pre-treatment approaches and not to develop actual PFAS breakthrough curves for the media. We would recommend collection of four additional periodic samples from each column by LCA for storing should later PFAS analysis be desired for any particular column to further assess PFAS in the column effluent.

AECOM will prepare a summary of the results of the study and incorporate the findings into a recommendation on pretreatment for the GAC vessels.

Assumptions:

- Assume Pilot labor by LCA to confirm operation, record pressure and flow readings and provide daily check-ins.
- LCA will collect samples for PFAS analysis and ship to a lab for analysis.
- Periodic check-in by AECOM (4 visits).
- Duration of field column pilot is 4 months and will run parallel to preliminary and 60% design tasks.
- Field column pilot units will be located indoors.

Proposed Budget:

Blue Leaf Pilot Unit Rental (3 columns) - $52,000

AECOM Labor - $23,000

Analytical and Microscopy budget - $3,500

Total Field Column Pilot - $78,500

Additional Chemical Feed Design Effort - $10,000

We recommend increasing the design budget by $10,000 to develop the detailed design for the addition of a chemical feed system for the selected approach.

Total – $88,500

MEMORANDUM

Date: December 9, 2024

To: LCA Board of Directors

From: Charles Volk, PE, Chief Capital Works Officer; Rich Campbell, Esq., King Spry

Subject: Design Phase Agreement Access Rising Sun - Wynnewood Wastewater Treatment Plant Expansion

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Design Phase Agreement with Access Rising Sun Associates, LLC – Wynnewood WWTP Expansion	N/A

BACKGROUND:

The Wynnewood Wastewater Treatment Plant ("WWTP") is located in North Whitehall Township ("NWT") and has a design capacity of 60,000 gallons per day. The Wynnewood sewer system provides wastewater collection and treatment service to 219 residential and commercial properties in the Wynnewood Terrace development in NWT. The system was acquired by LCA in 2003, and the original WWTP was replaced by LCA in 2020 with a new Sequencing Batch Reactor process facility..

Access Rising Sun Associates, LLC ("Developer") desires to undertake a residential development in NWT along Rising Sun Road consisting of one hundred and ten (110) single family dwellings on a parcel adjacent to the Wynnewood WWTP service area (the "Project"). The Developer has determined that it will need one hundred and ten (110) equivalent dwelling units ("EDUs") of sewage capacity at the WWTP to complete the Project. The Developer desires to have wastewater treatment for the Project provided by the Wynnewood WWTP. The Authority is supportive of expanding the Wynnewood WWTP in order to service the Project.

STATUS OF WWTP CAPACITY

Wynnewood WWTP currently has capacity for an additional fifty (50) EDUs, as determined by LCA Operations and a third-party engineering consultant. As such, the WWTP does not currently have available capacity to treat all of the developer's EDUs (60 each additonal) required for the Project and the facility would need to be expanded to accept the additional flow from the Project.

DEVELOPER CORRESPONDENCE AND AGREEMENT

On November 9, 2023, the Developer and the Authority entered into a Cost Reimbursement Agreement pursuant to which Developer paid for the cost of the Authority's professional consultant, Tetra Tech, to complete a Process Expansion

Analysis ("PEA") to determine the available plant capacity, quantify the scope of capacity expansion required, and estimate the conceptual cost of the WWTP expansion necessary to service the Project. The PEA was completed in late 2023.

The developer now requests that Developer's professional consultant, Ebert Engineering, Inc., undertake certain design work to determine all design elements required to expand the Wynnewood WWTP (the "Expansion Design Work"). The developer is willing to fund the entire cost of the Expansion Design Work and any additional design work determined by LCA to be ancillary or necessary. In addition, the Developer is willing to fund LCA's administrative, legal and engineering costs incurred in pursuit of the Project ("LCA Fees").

SCOPE OF PROPOSED EXPANSION DESIGN

The Developer's engineer, Ebert and Associates, is proposing to add a third 30.000-gallon Sequencing Batch Reactor (SBR) tank as part of the core design. This approach is preferred by LCA, in that it will facilitate even flow distribution with the other two 30,000-gallon SBR tanks. Other associated improvements will include additional SBR aeration blowers to be housed within the existing storage building, upgrades to the exiting storage building, emergency generator evaluation and upsize (if required), new larger sludge holding tank/aerobic digester (if required), and headworks modifications to accommodate a dedicated force main from the development (all flow proposed to be pumped to the WWTP). LCA has approved the conceptual design and will be providing review comments to the Developer's engineer throughout the design phase to insure that the final design complies with LCA standards and meets regulatory requirements.

THIS AUTHORIZATION

Before the Board is a Design Phase Agreement memorializing Developer's agreement to fund the Expansion Design Work and the LCA Fees. The scope of the Design Phase Agreement is limited to the Expansion Design Work, as detailed in Exhibit "A" of the Agreement. Any expansion of the Wynnewood WWTP at the request of the Developer, and funding of same, would be accomplished subject to future agreements between the parties.

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DESIGN PHASE AGREEMENT

THIS DESIGN PHASE AGREEMENT (this "**Agreement**") is made as of the date of last execution below (the "**Effective Date**"), by and between LEHIGH COUNTY AUTHORITY, a municipal authority pursuant to the Pennsylvania Municipality Authorities Act ("**MAA**"), with its principal office at 1053 Spruce Road, Allentown, Pennsylvania (the "**Authority**") and ACCESS RISING SUN ASSOCIATES, LLC, a Pennsylvania limited liability company, having an address of 251 Hillcrest Avenue, Conshohocken, PA 19428 (the "**Developer**").

BACKGROUND

A. The Authority is the owner of a wastewater treatment plant ("**WWTP**") known as the Wynnewood WWTP located in North Whitehall Township ("**NWT**"), Lehigh County, Pennsylvania.

B. The Wynnewood WWTP provides wastewater collection and treatment service to residential and commercial properties in the Wynnewood Terrace development in NWT.

C. Developer desires to undertake a residential development in NWT consisting of approximately one hundred and ten (110) single family dwellings on a parcel in or adjacent to the Wynnewood WWTP service area (the "**Project**") and has determined that it will need one hundred and ten (110) equivalent dwelling units ("**EDUs**") of sewage service to complete the Project.

D. Developer desires to have wastewater treatment at the Project provided by the Wynnewood WWTP.

E. As of the Effective Date, the Wynnewood WWTP currently only has capacity for an additional fifty (50) EDUs. As such, the Wynnewood WWTP does not currently have available capacity to treat all of the additional EDUs required for the Project and would have to be expanded to accept the additional flow from the Project.

F. On November 9, 2023, Developer and the Authority entered into a Cost Reimbursement Agreement pursuant to which Developer paid for the cost of the Authority's professional consultant, Tetra Tech, to complete a process expansion analysis ("**PEA**") to determine the estimated costs of the Wynnewood WWTP expansion necessary to service the Project. As of the date of this Agreement, the PEA has been completed.

G. The Authority is supportive of expanding the Wynnewood WWTP in order to service the Project.

H. Developer now requests that Developer's professional consultant, Ebert Engineering, Inc. ("**EEI**"), undertake certain design work to determine all design elements required to expand the Wynnewood WWTP (the "**Expansion Design Work**"), with said Expansion Design Work incorporated into a proposal prepared by EEI dated _____, a copy of which is attached hereto and incorporated herein as **Exhibit "A"** (the "**Proposal**"). Any reference made in this Agreement to the Proposal expressly incorporates the entire Proposal attached hereto

and any additional design work determined to be ancillary to or necessary to the satisfactory completion of the Proposal.

I. Developer is willing to fund the entire cost of the Expansion Design Work as set forth in the Proposal and any additional design work determined to be ancillary to or necessary to the satisfactory completion of the Proposal and approved by Developer.

NOW, THEREFORE, INTENDING TO BE LEGALLY BOUND HEREBY, the parties hereby agree as follows:

Agreement

1. The Background provisions set forth above are hereby incorporated herein by reference.

2. Developer agrees to (a) fund the entire cost of the Expansion Design Work as set forth in the Proposal and pay all costs, expenses, and charges related to the Proposal, and (b) fund any additional design work reasonably determined by LCA to be ancillary to or necessary to the satisfactory completion of the Proposal and approved by Developer (collectively the "**Funding Amount**"). Developer shall not be obligated to pay any funds over and above the Funding Amount in connection with the Expansion Design Work.

3. Developer agrees to provide design progress plans and specifications related to the Expansion Design Work to LCA at 60% and 90% design completion so that LCA can review and comment in a timely manner.

4. This Agreement does not create any contractual relationship between the Developer's professional consultant and LCA. If deemed necessary in LCA's sole discretion, Developer acknowledges that LCA may engage its own professionals to undertake additional review of the Expansion Design Work pursuant to the MAA.

5. The Developer shall share with the LCA the proposed Expansion Design Work promptly following completion. Following Authority's final approval of the Expansion Design Work, which approval is not to be unreasonably withheld, the Authority agrees, as the permittee of the Wynnewood WWTP, to work with Developer to obtain the necessary approvals and permits in the name of the Authority to expand the Wynnewood WWTP to provide the necessary capacity for the Project. LCA and Developer agree to work in a cooperative manner, where feasible, in accordance with the flow chart attached as **Exhibit "B"**.

6. Developer agrees to share with LCA all paperwork related to permitting the Wynnewood WWTP expansion and rerate, and any other paperwork or documentation required by LCA as part of the approval and/or permitting process.

7. Developer agrees that the scope of this Agreement is limited to the express provisions herein and that any expansion of the Wynnewood WWTP at the request of the Developer, and funding of same, would be accomplished subject to future agreements between the parties.

8. Developer acknowledges and understands that any future expansion of the Wynnewood WWTP would be dependent on all necessary government approvals, including without limitation NWT revision of its Act 537 Plan and Department of Environmental Protection ("**DEP**") approval of same, all necessary NPDES wastewater discharge permits, DRBC docket approval, water quality management permits, and all local land use approvals.

9. In addition to, and separate from funding the Expansion Design Work, Developer agrees to pay, in accordance with the requirements of the MAA: (1) all reasonable administrative, legal and engineering costs incurred by the Authority related to this Agreement and the Expansion Design Work; and (2) all reasonable administrative, legal and engineering costs incurred by the Authority related to the Wynnewood WWTP expansion from the Effective Date until a future funding agreement between the Parties is entered into (collectively the "Fees").

10. Developer has deposited with the Authority the sum of Twenty-Five Thousand and 00/100 Dollars ($25,000.00) (the "**Fee Deposit**"), which is an estimate of the Fees. Developer agrees to reimburse the Authority for all costs incurred should the Fees be greater than the Fee Deposit. If the costs are less than the Fee Deposit, the Authority will refund any excess monies to Developer within forty-five (45) days.

11. Developer shall be invoiced periodically during periods of activity (which invoices shall be in accordance with the requirements of the MAA), which invoice shall reflect any deduction made to the Fee Deposit or may reflect an amount due if the costs exceed the Fee Deposit. If Developer fails to pay said invoice where an amount is due within thirty (30) days of the date of such invoice, the Authority shall discontinue all activity associated with the Design Phase Agreement and any additional work in furtherance of future agreements and the Wynnewood WWTP expansion. Notwithstanding the foregoing, Developer shall have the right to dispute fees in accordance with the MAA.

12. This Agreement shall be governed by and construed under the laws of the Commonwealth of Pennsylvania. Developer and the Authority hereby consent to the exclusive jurisdiction of the Court of Common Pleas of Lehigh County, Pennsylvania regarding any dispute arising out of or in connection with this Agreement.

13. If any provision of this Agreement is determined by a court of competent jurisdiction to be illegal, invalid, unenforceable, unconstitutional, or void, for any reason, only that provision shall be illegal, invalid, unenforceable, unconstitutional, or void and the remainder of this Agreement shall be in full force and effect.

14. This Agreement constitutes the entire agreement of the parties with respect to the subject matter hereof, and supersedes all prior and contemporaneous representations, agreements and understandings, whether written or oral.

15. This Agreement may be executed in any number of counterparts, each of which when so executed and delivered shall be deemed to be an original without the production of any other counterpart. Any signature hereto delivered by a party by electronic transmission (e.g., DocuSign), legible facsimile transmission or pdf by email shall be deemed to be an original

signature hereto, but the failure to deliver a manually executed counterpart shall not affect the delivery, enforceability or binding effect of this Agreement.

[Signature page follows]

INTENDING TO BE LEGALLY BOUND HEREBY, the parties have executed this Agreement the date and year set beside their place for signature.

ATTEST:

By:_____
Name:
Title:

Dated:_____

LEHIGH COUNTY AUTHORITY

By:_____
Liesel M. Gross
Chief Executive Officer

ATTEST:

By:_____
Name:
Title:

Dated:_____

ACCESS RISING SUN ASSOCIATES, LLC

By:_____
Steven Munz
Managing Member

EXHIBIT "A"

EEI Proposal

[attached]

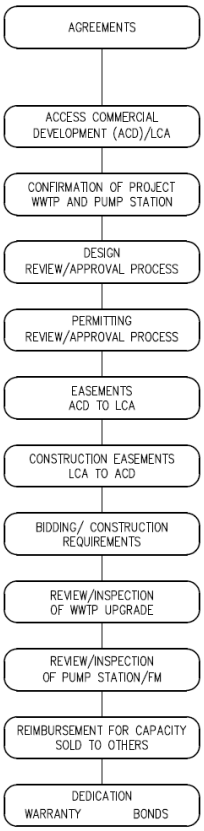
EXHIBIT "B"

Flow Charts

[attached]

WYNNEWOOD TERRACE WWTP UPGRADE
OVERALL PROCESS FLOW CHART
AUGUST 5, 2024

AGREEMENT FLOW CHART



NOTE:
SEE PAGE 3 FOR DESIGN AND PERMITTING FLOW CHART.

Z:\026-360 - Wynnewood Terrace WWTP\Current\026-360 Flow Charts.dwg - Model

Number	Description	Date

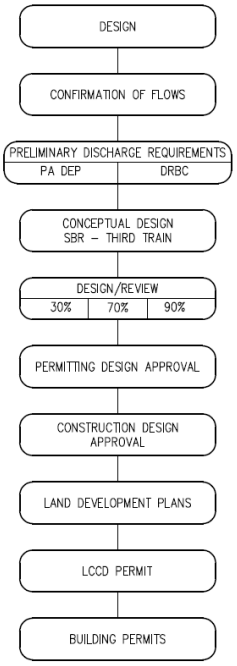
AGREEMENT FLOW CHART
FOR THE
WYNNEWOOD TERRACE WWTP UPGRADE
PREPARED FOR
ACCESS COMMERCIAL DEVELOPMENT

Ebert Engineering, Inc.
Water and Wastewater Engineering
PO Box 540
4397 Skippack Pike
Skippack, PA 19474
Phone (610) 584 6701
Fax (610) 584 6704
E-mail febert@ebertengineering.com

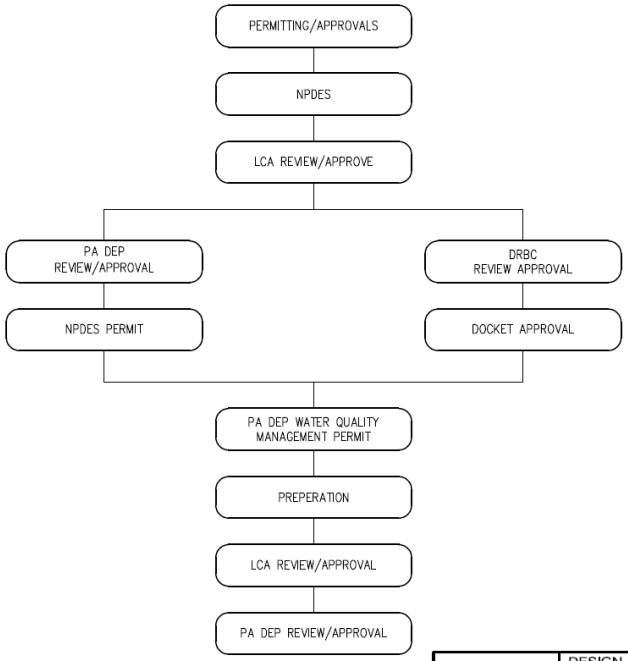
Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
EMK	FEE	FEE	NOT TO SCALE	026-360	08/05/24	2 OF 5

WYNNEWOOD TERRACE WWTP UPGRADE
OVERALL PROCESS FLOW CHART
AUGUST 5, 2024

DESIGN FLOW CHART



PERMITTING FLOW CHART



NOTE:
SEE PAGE 4 FOR BIDDING/CONSTRUCTION FLOW CHART.

Number	Description	Date

DESIGN AND PERMITTING FLOW CHART
FOR THE
WYNNEWOOD TERRACE WWTP UPGRADE
PREPARED FOR
ACCESS COMMERCIAL DEVELOPMENT

Ebert Engineering, Inc.
Water and Wastewater Engineering
PO Box 540
4397 Skippack Pike
Skippack, PA 19474
Phone (610) 584 6701
Fax (610) 584 6704
E-mail febert@ebertengineering.com

Drawn By	Project Engr.	Checked By	Scale	Job No.	Date	Drawing No.
EMK	FEE	FEE	NOT TO SCALE	026-360	08/05/24	3 OF 5

Lehigh County Authority – Monthly Report to Board of Directors

Upcoming Board Agenda Items & Project Updates – December 2024

Published: December 2, 2024

PART 1 – Upcoming Agenda Items – Action & Discussion Items

FINANCE & ADMINISTRATION

Project Title: Resolution 12-2024-1: Adoption of 2024 Lehigh Valley Hazard Mitigation Plan
Division / Funding: n/a
Board Action Date: 12/9/2024
Status or Action Desired: Approval
Project Phase: n/a

Project Notes: Resolution No. 12-2024-1 is presented for Board consideration to adopt the 2024 Lehigh Valley Hazard Mitigation Plan (Plan). In the most recent update to this two-county Plan, LCA participated in the review process and included its five-year capital plan as an annex to the Plan. Inclusion of projects in the regional Plan will allow LCA to apply for certain grants and other funding sources designated for infrastructure resiliency and sustainability projects through federal and state emergency management agencies. Each participating municipality and authority is required to approve the Plan by Resolution in order to be eligible to submit grant applications via these agency funding programs. Staff Responsibility: Liesel Gross

Project Title: Resolution 12-2024-2: Customer Facility Fees & Connection Fees
Division / Funding: n/a
Board Action Date: 12/9/2024
Status or Action Desired: Approval
Project Phase: n/a

Project Notes: Resolution No. 12-2024-2 is presented for Board consideration to update certain tapping fees including customer facilities and connection fees. The 2025 Customer Facilities Fees and Connection Fees reflect actual costs for LCA purchase and installation of required metering equipment and other installation details for each connection size for water and sewer service. Staff Responsibility: Liesel Gross

Project Title: Capital Program Management Services
Division / Funding: All Divisions
Board Action Date: 12/9/2024
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: Lehigh County Authority (LCA) staff have identified the need for assistance to standardize project scheduling and provide real time tracking of projects in the Capital Plan. This will enhance the process of major capital improvement submissions to the City and provide a vehicle for actively tracking all phases of all capital projects for schedule compliance. Authorization to retain the services of Envision Consultants will be requested at the 12/9/24 LCA Board meeting. Staff Responsibility: Chuck Volk

Project Title: Monthly Financial Review
Division / Funding: n/a
Board Action Date: n/a - report to be submitted
Status or Action Desired: Information
Project Phase: n/a

Project Notes: The November 2024 monthly financial report will be presented. Staff Responsibility: Ed Klein

SYSTEM OPERATIONS

Project Title: Monthly Operations Report

Division / Funding: n/a

Board Action Date: n/a - report to be submitted

Status or Action Desired: Information

Project Phase: n/a

Project Notes: The November 2024 monthly operations report will be presented. Staff Responsibility: Andrew Moore & Chris Moughan

WATER PROJECTS – ALLENTOWN DIVISION

Project Title: Water Filtration Plant: PFAS Treatment

Division / Funding: Allentown Division

Board Action Date: 12/9/2024

Status or Action Desired: Approval

Project Phase: Design Phase

Project Notes: The U.S. Environmental Protection Agency recently published new national drinking water standards for six per- and polyfluoroalkyl substances (PFAS). A study was performed by Hazen & Sawyer which recommended treatment of Crystal Spring, due to its excedence of the newly imposed maximum contaminant level (MCL) for PFAS. A request for proposal was distributed on 9/26/2024 with proposals being received on 11/1/2024. This project is to prepare detailed design and bidding documents as well as provide funding application assistance for PFAS treatment of Crystal Spring. Design phase approval is to be requested at the 12/9/2024 LCA Board meeting. Staff Responsibility: Amy Rohrbach

WATER PROJECTS – SUBURBAN DIVISION

Project Title: Emmaus Interconnect

Division / Funding: Suburban Division

Board Action Date: 12/9/2024

Status or Action Desired: Discussion

Project Phase: Planning Phase

Project Notes: The U.S. Environmental Protection Agency recently published new national drinking water standards for six per- and polyfluoroalkyl substances (PFAS), requiring the Borough of Emmaus to install treatment by mid-2026. Since 2006, LCA and Emmaus have been working under an Agreement that states the following: there are approximately 470 customers falling outside of the Emmaus municipal boundary that utilize the Borough's drinking water supply; and the Agreement transferred these customers to LCA due to PUC regulations. With the recent completion of the LCA Kohler Tract Booster Pumping Station, there now exists an opportunity to remove approximately 80 of these customers from the Emmaus water supply and bring them over to the LCA Central Lehigh Division water supply. A discussion will occur at the December 9, 2024 Board Meeting on a potential interconnect location to facilitate this transfer. Staff Responsibility: Phil DePoe & Andrew Moore

WASTEWATER PROJECTS – SUBURBAN DIVISION

Project Title: Wynnewood Terrace WWTP Expansion - Developer Cost-Sharing Agreement

Division / Funding: Suburban Division

Board Action Date: 12/9/2024

Status or Action Desired: Approval

Project Phase: Planning Phase

Project Notes: In June 2024, North Whitehall Township granted Condition Use approval for a 110 unit residential subdivision, Rising Sun Development, to be located adjacent to Wynnewood Terrace, which is served by LCA's Wynnewood WWTP. The developer, Access Rising Sun Associates, LLC, approached LCA in late 2022 to request connecting to the Wynnewood WWTP to serve the development. LCA performed a feasibility study in 2023 to identify existing reserve capacity and evaluate conceptual plant improvements required to accomodate the development. The existing WWTP has current capacity to accomodate a portion of the development (50 EDUs). However, a plant capacity re-rate and process improvements are required to accomodate the build-out of the subdivision. The developer has offered to fund design, permitting, and construction of all necessary improvements to the Wynnewood WWTP. An agreement is required to be drawn up and executed by LCA and the developer to facilitate this process, which includes a scope of design that is to be reviewed and approved by LCA. Execution of the agreement will be recommended at the 12/9/24 Board meeting, which will include a basis of design approved by LCA staff. Pending agreement execution, the plant expansion is anticipated to be completed by the end of 2026. Staff Responsibility: Chuck Volk

WATER PROJECTS – ALLENTOWN DIVISION

Project Title: Lehigh River Pump Station Upgrades

Division / Funding: Allentown Division

Board Action Date: 1/27/2025

Status or Action Desired: NEW

Project Phase: Design Phase

Project Notes: The Lehigh River Pump Station is infrequently utilized due to taste and odor concerns as well as operations issues with the existing pumps and intake screens. This preliminary engineering evaluation identified treatment plans for taste and odor control as well as pump upgrades and intake screening modifications. The goal is to be able to utilize the Lehigh River source fully in the event the Little Lehigh Creek intake has to be taken out of service for any reason. A request for proposal was distributed to four firms on 1/23/2024 and proposals are scheduled to be received 2/21/2024. Board authorization was granted at the March 25, 2024 meeting. A Basis of Design Report was received from HDR on 11/15/24 and will be presented to the City of Allentown for Major Capital Improvement consideration. HDR provided a final design proposal and Captial Project Authorization for final design and bidding phase services is anticipated to be requested at the 1/27/2025 Board meeting. Staff Responsibility: Amy Rohrbach

PART 3 – Open Project List – No Updates

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Finance & Administration	LCA Main Office Parking Lot Expansion	All Divisions	Construction Phase	Chuck Volk
Finance & Administration	Project Management / Construction Management Software Installation & Setup	All Divisions	Planning Phase	Jason Peters
Finance & Administration	LCA Strategic Plan - Progress Reporting	All Divisions	n/a	Liesel Gross
Finance & Administration	LCA Munis ERP System Planning & Re-Implementation	All Divisions	Planning Phase	Chris Moughan & Brooke Neve
Finance & Administration	Draft Omnibus Resolution: Delegation of Board Duties	n/a	n/a	Liesel Gross
Finance & Administration	LCA Building Optimization Study & Master Plan	Suburban Division	Planning Phase	Stephen Boone
System Operations	Suburban Water Facilities - SCADA System Upgrade	Suburban Division	Construction Phase	Chris Moughan
System Operations	Watershed Monitoring Program	Suburban Division	Planning Phase	Andrew Moore
Water - Suburban	Water Main Replacement Program Cycle 7	Suburban Division	Construction Phase	Jason Peters
Water - Suburban	Suburban Division Lead Service Line Inventory Program & Compliance Planning	Suburban Division	Planning Phase	Albert Capuzzi
Water - Suburban	2024 Meter Replacements	Suburban Division	Construction Phase	Amy Kunkel
Water - Suburban	Central Lehigh and North Whitehall Systems – Water Supply Study	Suburban Division	Planning Phase	Phil DePoe
Water - Suburban	Upper System Pump Station and Main Extension	Suburban Division	Design Phase	Amy Kunkel
Water - Suburban	Water Main Replacement Program Cycle 8	Suburban Division	Design Phase	Jason Peters
Water - Allentown	Allentown Division Lead Service Line Inventory Program & Compliance Planning	Allentown Division	Planning Phase	Albert Capuzzi

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Water - Allentown	Badger Meter Replacements	Allentown Division	Construction Phase	Amy Kunkel
Water - Allentown	Lead Service Line Replacement Project Cycle 2	Allentown Division	Design Phase	Albert Capuzzi
Water - Allentown	Lead Service Line Replacement Project Cycle 1	Allentown Division	Construction Phase	Jason Peters
Water - Allentown	Water Filtration Plant: Fluoride System Upgrades	Allentown Division	Design Phase	Amy Rohrbach
Water - Allentown	Water Filtration Plant: HVAC Upgrades - Phase 1	Allentown Division	Construction Phase	Amy Rohrbach
Water - Allentown	Water Filtration Plant: Emergency Power Design	Allentown Division	Design Phase	Amy Rohrbach
Water - Allentown	Water Main Replacement Program Cycles 7 & 8	Allentown Division	Construction	Jason Peters
Water - Allentown	Water Main Replacement Program Cycles 9 - 11	Allentown Division	Design Phase	Jason Peters
Water - Allentown	Water Filtration Plant: Filter Upgrade Project	Allentown Division	Construction Phase	Amy Rohrbach
Water - Allentown	30" & 36" East Side Transmission Main Repair Project	Allentown Division	Design Phase	Jason Peters
Water - Allentown	Water Filtration Plant: 2022-2023 Indenture Upgrades	Allentown Division	Construction Phase	Chuck Volk
Water - Allentown	Large Diameter Valve Rehabilitation & Replacement Program	Allentown Division	Construction Phase	Chuck Volk
Sewer - Act 537	Sanitary Sewer Collection System: City of Allentown Manhole Inspections	Allentown Division	Planning Phase	Phil DePoe
Sewer - Act 537	Sanitary Sewer Collection System: City of Allentown Manhole Rehabilitation	Allentown Division	Construction Phase	Jason Peters
Sewer - Act 537	Sanitary Sewer Collection System: City of Allentown Interceptor Inspections	Allentown Division	Planning Phase	Phil DePoe
Sewer - Act 537	Regional Sewer Capacity & Wet-Weather Planning - Regional Act 537 Plan Preparation	City of Allentown (AO)	Planning Phase	Phil DePoe

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Sewer - Act 537	KISS Act 537 Planning - Financial & Institutional Evaluation, Phase 3	City of Allentown (AO)	Planning Phase	Liesel Gross
Sewer - Act 537	Legal Services: Development of New Intermunicipal Agreement(s)	City of Allentown (AO)	Planning Phase	Liesel Gross
Sewer - Act 537	KISS System Modeling - Sewage Billing Meter QA/QC Data Analytics and 2021 Flow Metering Preparation	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	KISS Act 537 Planning - Selection of Solution (SOS) Phase	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	Industrial Pretreatment Plant Master Plan	Suburban Division	Planning Phase	Liesel Gross & Albert Capuzzi
Sewer - Act 537	Spring Creek Force Main Condition Assessment	Suburban Division	Planning Phase	Amy Kunkel
Sewer - Act 537	Upper Western Lehigh Pump Station & Force Main	Suburban Division	Construction Phase	Amy Kunkel
Sewer - Act 537	Regional Sewer Capacity & Wet-Weather Planning: Engineering & Program Support	Suburban Division	Planning Phase	Phil DePoe
Sewer - Act 537	KISS Relief Interceptor Pre-Design Study	Suburban Division	Planning Phase	Phil DePoe
Sewer - Act 537	Western Lehigh Interceptor Municipalities Test & Seal Lateral Grouting Project	Suburban Division	Construction Phase	Jason Peters
Sewer - Act 537	Western Lehigh Service Area - Engineering & Program Support	Suburban Division	Planning Phase	Phil DePoe
Sewer - Suburban	Heidelberg Heights Sanitary Sewer Consent Order & Agreement	Suburban Division	Planning Phase	Chuck Volk
Sewer- Suburban	Pretreatment Plant - Critical Upgrades	Suburban Division	Construction Phase	Chuck Volk
Sewer - Suburban	Lynn Township WWTP Final Clarifier Project	Suburban Division	Construction Phase	Chuck Volk
Sewer - Suburban	Spring Creek Force Main Relocation - PA Turnpike Commission	Suburban Division	Design Phase	Amy Kunkel
Sewer - Suburban	Spring Creek Pump Station Upgrades	Suburban Division	Construction Phase	Amy Kunkel

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Sewer - Suburban	Park Pump Station Phase 2 Upgrade	Suburban Division	Construction Phase	Amy Kunkel
Sewer - Suburban	Arcadia WWTP Screening System Project	Suburban Division	Design Phase	Chuck Volk
Sewer - Suburban	North Whitehall Township Act 537 Plan	Suburban Division	Planning Phase	Phil DePoe
Sewer - Suburban	Pretreatment Plant (PTP) Electrical Study	Suburban Division	Planning Phase	Chuck Volk
Sewer - Suburban	Lynn Township Corrective Action Plan	Suburban Division	Planning Phase	Jason Peters
Sewer - Suburban	Sand Spring WWTP: Treatment Process Modification	Suburban Division	Design Phase	Chuck Volk
Sewer - Suburban	LCA Meter Stations 1 and 2 Upgrades	Suburban Division	Design Phase	Phil DePoe
Sewer - Allentown	Kline's Island WWTP: Chemically Enhanced Primary Treatment Study	Allentown Division	Planning Phase	Stephen Boone
Sewer - Allentown	Sanitary Sewer Collection System: I&I Source Reduction Program (LCA Year 2)	Allentown Division	Planning Phase	Jason Peters
Sewer- Allentown	Kline's Island WWTP - Wet Weather Improvements - Phase 1	Allentown Division	Design Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: Master Plan	Allentown Division	Planning Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP - Septage Receiving and Vacuum Truck Unloading Modifications	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: Substation No. 1 and Switchgear Replacement	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: 2023-2024 Architectural and Structural Upgrades	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Kline's Island WWTP: Solids Process Boiler and HVAC System Upgrade Project	Allentown Division	Construction Phase	Chuck Volk
Sewer- Allentown	Kline's Island WWTP - Primary Sludge System Upgrades	Allentown Division	Construction Phase	Amy Rohrbach

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Sewer - Allentown	Kline's Island WWTP - Final Settling Tanks 1-4 Upgrades	Allentown Division	Construction Phase	Amy Rohrbach
Sewer - Allentown	Sanitary Sewer Collection System: I&I Source Reduction Program (LCA Year 1)	Allentown Division	Construction Phase	Jason Peters