LCA Main Office:
1053 Spruce Road
Wescosville, PA 18106
610-398-2503

Agendas & Minutes Posted:
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LEHIGH COUNTY AUTHORITY

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BOARD MEETING AGENDA – August 14, 2023 – 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
   - *July 24, 2023 Board meeting minutes*
4. Public Comments
5. Action / Discussion Items:

   FINANCE AND ADMINISTRATION
   - *Allentown Division Preliminary 2024-2028 Capital Plan (Discussion) (digital Board packet, pages 6-74)*

   WATER
   - *North Whitehall Meter Replacement (Approval)* ***(purple)*** *(digital Board packet, pages 75-77)*

   WASTEWATER
   - *Sanitary Sewer Collection System: City of Allentown Manhole Inspections (Approval)* ***(salmon)*** *(digital Board packet, pages 78-84)*
   - *Heidelberg Heights Sanitary Sewer Consent Order & Agreement (Approval)* ***(gray)*** *(digital Board packet, pages 85-87)*
6. Monthly Project Updates / Information Items (1st Board meeting per month) *(digital Board packet, pages 88-95)* – **August 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		
August 28, 2023	September 11, 2023	September 18, 2023

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
July 24, 2023

The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:02 p.m. on Monday, July 24, 2023, Chairman Brian Nagle 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, Linda Rosenfeld, Norma Cusick, and Sean Ziller were present for Roll Call, and remained for the duration of the meeting. Kevin Baker entered the meeting at 12:21 p.m.

Attorney Rich Campbell of KingSpry, the Authority's Solicitor, was present along with Authority Staff, Ed Klein, Chris Moughan, Andrew Moore, Albert Capuzzi, Phil DePoe, Susan Sampson, and Lisa Miller.

Chairman Nagle announced that the Board received their electronic and hard copies of the Board packet in advance and asked if anyone did not receive their copy of the packet. A copy of the packet is also available online.

REVIEW OF AGENDA

Ed Klein announced that there are no changes or additions to the agenda, and no Executive Sessions planned.

APPROVAL OF MINUTES

July 10, 2023 Meeting Minutes

On a motion by Amir Famili, seconded Sean Ziller, the Board approved the minutes of the July 10, 2023, Board meeting as written (5-0).

PUBLIC COMMENTS

None.

Resolution No. 7-2023-1: Approval of Suburban Water Division & Suburban Wastewater Division Tapping Fees

David Busch from Keystone Alliance Consulting, who prepared the fee calculation documents, was present and reviewed the report that was submitted to the Board with the Resolution. Ed Klein commented that the process is identical to what has been done in the past and in accordance with state statute.

On a motion by Linda Rosenfeld, seconded by Norma Cusick, the Board approved Resolution No. 7-2023-1 that establishes the Suburban Water Division and Suburban Wastewater Division Tapping Fees (5-0).

Water Filtration Plant: PFAS Compliance Study

AJ Capuzzi gave an overview of the project to conduct a study to evaluate which approaches to polyfluoroalkyl substances (PFAS) compliance will most likely achieve the Authority's goals for water quality at a reasonable cost. As a result of the US Environmental Protection Agency proposing new regulatory limits of PFAS in drinking water, four water sources that supply the Allentown Division

water filtration plant need to be evaluated and treatment options and solutions investigated. There was Board discussion on sample collection and available testing data. Hazen & Sawyer offered an approach to conducting the study using artificial intelligence to evaluate a variety of water treatment and blending scenarios. Mr. Capuzzi explained this approach will allow for multiple different water qualities and treatment options to be studied simultaneously at a lower overall cost.

Chairman Nagle commented on the variation of consultant bids that were received. Mr. Capuzzi stated the breadth of cost proposals is due to the inclusion of alternative study methods. Hazen & Sawyer is the only firm that proposed the artificial intelligence method. The firm is well qualified to conduct the study that the Authority requires and has completed numerous related work for other utilities across the nation. There was additional discussion about the use of artificial intelligence for this kind of study. Mr. Capuzzi explained that this method has been reviewed by the Water Research Foundation and found to be effective.

Chairman Nagle inquired with Attorney Rich Campbell regarding the need to request updated bids from other firms to ensure a common approach within the proposals. Attorney Campbell explained that this authorization is for a professional service, which allows the Authority to use its discretion in selecting the consultant based on qualifications.

On a motion by Norma Cusick, seconded by Linda Rosenfeld, the Board approved the Professional Services Authorization to Hazen & Sawyer in the amount of $97,778.00 (5-0). Kevin Baker abstained.

Sand Spring WWTP: Treatment Process Modification

AJ Capuzzi provided an overview of the project for plant modifications to the Sand Spring Wastewater Treatment Plant to intensify the treatment process and allow for enhanced plant performance without expanding the footprint of the facility. Mr. Capuzzi introduced Jim McQuarrie from Tetra Tech, the engineering firm recommended for approval to complete this work. Tetra Tech recommends using an integrated fixed film activated sludge (IFAS) approach to enhance nitrification. This process involves adding a high-density polyethylene media to permit biological growth. These plant modifications have been studied and are expected to improve plant performance.

There was some Board discussion regarding the effectiveness of IFAS. Mr. McQuarrie commented that this process is well proven and there are many installations globally. However, the technology has not been used in a sequencing batch reactor (SBR) plant, which is the type of technology in use at the Sand Spring WWTP. Therefore, the project has been set up as a full-scale “demonstration” to ensure the effectiveness of IFAS in an SBR plant. In response to emailed questions submitted by Board member Jeff Morgan, who was not in attendance at today’s meeting, Mr. Capuzzi stated that the project will include modeling, design, procurement of the media, and the monitoring of the process. Tetra Tech will be managing all the engineering work required to complete the project. The balance of the project will include authorization to purchase the IFAS media and complete some minor plant upgrades, totaling approximately $130,000. If the demonstration is successful, the installation will remain in place, and a much larger plant upgrade or expansion could potentially be avoided.

On a motion by Norma Cusick, seconded by Sean Ziller, the Board approved the Capital Project Authorization for Design & Construction Phase Engineering Services in the amount of $192,981.00 which includes the Professional Services Authorization to Tetra Tech Inc. in the amount of $172,981.00 (6-0).

MONTHLY FINANCIAL REVIEW

Ed Klein gave an overview of the June 2023 financial statements, highlighting variances between actual expenses and budgeted or forecasted expenses. Mr. Klein reported that all three funds are better than forecast.

MONTHLY SYSTEM OPERATIONS OVERVIEW

Andrew Moore reviewed the June 2023 Operations report and noted highlights as outlined in the report.

There was some additional Board discussion about safety metrics including how non-recordable incidents and near misses are captured.

STAFF COMMENTS

None.

SOLICITOR'S COMMENTS

None.

PUBLIC COMMENTS / OTHER COMMENTS

None.

BOARD MEMBER COMMENTS

None.

EXECUTIVE SESSION

None.

ADJOURNMENT

There being no further business, the Chairman adjourned the meeting at 1:01 p.m.

Linda A. Rosenfeld
Secretary

LEHIGH COUNTY AUTHORITY

ALLENTOWN, PA

DRAFT 5-YEAR CAPITAL PLAN

ALLENTOWN DIVISION

2024-2028

AUGUST 2023

LEHIGH COUNTY AUTHORITY
5-YEAR CAPITAL PLAN
2024-2028

TABLE OF CONTENTS

2024-2028 Capital Plan

Glossary of Acronyms & Terms

The following is a listing of acronyms and terms used in the Capital Plan Summary and Project Detail Sheets.

LCA Water and/or Wastewater Divisions/Systems

LCA Water and/or Wastewater Divisions/Systems			
		Water	**Wastewater**
AD	Allentown Division	X	X
AWD	Arcadia West Division	X	X
BHD	Beverly Hills Division	X	
CLD	Central Lehigh Division	X	
CFD	Clear View Farms Division	X	
ECD	Emmaus Consecutive Division	X	
HHD	Heidelberg Heights Division	X	X
LLRI-1	Little Lehigh Relief Interceptor, Phase 1		X
LLRI-2	Little Lehigh Relief Interceptor, Phase 2		X
LTD	Lynn Township Division		X
MCD	Mill Creek Division	X	
MND	Madison Park Division	X	
NWD	North Whitehall Division	X	
PLD	Pine Lakes Division	X	
SSD	Sand Spring Division		X
UMD	Upper Milford Division		X
UMCD	Upper Central Milford Division (Buss Acres)	X	
WLI	Western Lehigh Interceptor		X
WTD	Washington Township Division	X	X
WWD	Wynnewood Division		X

Project Type

Project Type	Description
AO	Administrative Order
LCA-MCI	LCA Developed Major Capital Improvement[(1)]
Regular	A project that does not fit in any of the aforementioned special categories

(1) Major Capital Improvement: In accordance with the Lease, all Major Capital Improvements must be approved by the City.

Project Funding

Project Funding	Description
LCA	Funded by LCA
100% Reimb	All costs are 100% reimbursable by fees charged
Fees & LCA	Costs partly recovered through fees charged and partly funded by LCA
Allentown	Funded by the City of Allentown
CCRC	Capital Cost Recovery Charge[(1)]; Applies only to City approved MCI

(1) Capital Cost Recovery Charge: An on-going user fee that is above the rate caps set forth in the Lease to allow the recovery of the cost of an MCI. Rate payers are charged based upon usage.

Project Category

Projects have been categorized to identify the primary and secondary reasons for the need. In some cases there is no secondary reason that would be applicable.

Project Category	Description
Regulatory	Required to meet Regulatory requirements
New Cust	New Customers
CA/OS	Concession Lease/Operating Standards
AM - Low	Asset Management - Low Risk
AM - Med	Asset Management - Medium Risk
AM - High	Asset Management - High Risk
AM - Varies	Asset Management - Varies[(1)]
Efficiency	Efficiency
Sys Imp	System Improvement
Rev Opprt	Revenue Opportunity
Planning	Planning
N/A	Not Applicable

(1) Applies to Asset Management Projects, where there are multiple standalone sub-projects of varied levels of "risk".

Approval Stage

Approval Stage	Description
A	Annual Project, no approvals required
S	Study/Planning Phase
D	Design Phase
C	Construction/Implementation Phase
E	Entire Project
V	Various Phases
P	Pending Board approval

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION
CAPITAL PLAN
2024–2028

SUMMARY

The Allentown Division Capital Plan (Plan) is a five-year plan that covers the years 2024 through 2028. The Plan includes water and wastewater projects to ensure facility / infrastructure reliability and to comply with the Allentown Water & Sewer Lease (Lease) required projects. It also includes projects and studies deemed necessary by LCA, where the latter will identify and evaluate upgrades and improvements that will be incorporated in future Capital Plans. The Lease requires that LCA submit a 5-year Capital Plan to the City annually for review and approval.

The projects identified in the Plan fall into to two primary categories, those funded by LCA and those funded by the City in the form of grants or reimbursements. For this Plan, reimbursements from the City are restricted to those expenses related to developing the regional Act 537 Plan for the Kline's Island Sewer System, which is a requirement of the Pa. Department of Environmental Protection stemming from a prior Chapter 94 violation. Grants from the City are expected contributions provided from the City's allocation of American Rescue Plan Act funding, which the City has agreed to use a portion to offset ratepayer impacts of water system capital costs.

CAPITAL FUNDING 2024-2028					
Budget Area	**LCA**	**CITY**			**TOTALS**
		Grants	**Reimburse**	**Sub-Total**	
Water	$111,352,000	$6,200,000	$0	$6,200,000	$117,552,000
Wastewater	$72,529,500	$0	$600,000	$600,000	$73,129,500
Totals	**$183,881,500**	**$6,200,000**	**$600,000**	**$6,800,000**	**$190,681,500**

Water Projects: Focus on regulatory compliance, asset management, immediate and future needs at the Water Filtration Plant (WFP) and addressing the Lease operating standards. The recently completed WFP Master Plan identified capital improvements to address future regulatory requirements and/or operational needs. Lease requirements include the annual replacement of 1 mile of water mains through 2024, followed by a study and/or increase to 2 miles of water main replacement per year thereafter.

Wastewater Projects: Projects focus on regulatory compliance, asset management, immediate and future needs at the Wastewater Treatment Plant (WWTP) and addressing the Lease operating standards. Projects of note include the replacement of the solids process boiler and HVAC upgrade project and replacement of electrical substation no. 1. In addition, annual funding is included in the Plan for the rehabilitation of defective sewer mains and a City-wide manhole rehabilitation program to remove sources of inflow and infiltration.

Additional information regarding these and other projects can be found in the Plan's individual Project Detail Sheets.

Supplemental Revenues: Under the Concession Agreement, LCA is able to recover certain capital expenses through Capital Recovery Fees (Tapping Fees) applied to new customers and Capital Cost Recovery Charges applied to ratepayers. These charges will be applied to all Major Capital Improvements (MCI), which are defined as projects exceeding $1 million (indexed for inflation in the future) within the proposed Plan. Additional charges may be applied to recover costs for project driven by regulatory changes or other changes in law. The designation of certain projects for cost recovery through these mechanisms is noted in the Plan's individual Project Detail Sheets and on the summary sheets for each section of the Plan.

FINANCIAL JUSTIFICATION

LCA draft 2024-2028 Capital Plan is expected to be funded through a mix of operating revenues, project reserves, grants, and new borrowing, as outlined below. A more detailed cash-flow evaluation showing the impact of this funding approach is shown on the next page.

2024-2028 Capital Plan Allentown Division Funding Sources						
	LCA SOURCES			CITY SOURCES		
Budget Area	**Grants**	**Operating/Capital Reserves**	**New Borrowing**	**Grants**	**Reimb**	**Total Sources**
Water	$33,383,892	$40,412,600	$37,555,508	$6,200,000	$0	$117,552,000
Wastewater	$0	$54,729,500	$17,800,000	$0	$600,000	$73,129,500
Totals	**$33,383,892**	**$95,142,100**	**$55,355,508**	**$6,200,000**	**$600,000**	**$190,681,500**

SPECIAL NOTES

1. As noted above, the City and LCA are collaborating on the development of a regional Act 537 Plan, which will provide details for sewage facility plans and significant capital improvements in the Allentown Division to address sanitary sewer overflows and overall capacity challenges of the system. The Act 537 Plan is expected to be drafted in 2024 and completed in 2025, with projects commencing in 2025. However, due to the size and scope of this work, which will require separate detailed financial analysis, and the draft status of this Act 537 Plan, future project costs are not shown in this Capital Plan. The Act 537 Plan will be presented separately during 2024 and will be incorporated into future Capital Plan documents.

2. LCA has applied for (or will apply for) grants to support this Plan in the following areas:

    - I&I Source Reduction Plan – Grant application for $10,395,080 submitted in December 2022, awaiting decision.

- Lead Service Line Replacement Program – Grant of $3,383,892 awarded in July 2023. Additional grant applications of approximately $55,000,000 expected.

- PFAS Compliance Planning & Treatment Upgrades – Grant funding will be sought for the $10,250,000 in estimated costs included in this plan.

To present a realistic financial outlook, assuming a 100% grant award will not occur, LCA has captured approximately 42% of this potential grant funding source in this analysis. Project costs that are not covered via grants will be incorporated into the new project financing or eliminated.

CONDENSED CASH FLOW - CITY DIVISION

US DOLLARS	2024	2025	2026	2027	2028
User Charges	51,786,376	56,942,742	62,061,791	66,173,867	69,750,275
Other Operating Revenues	355,139	355,139	355,139	355,139	355,139
Non-Operating Revenues	2,725,365	2,125,365	2,125,365	2,125,365	2,125,365
Operating expenses	(22,052,042)	(22,713,604)	(23,395,012)	(24,096,862)	(24,819,767)
Annual Lease & Other Payments	(1,308,224)	(1,002,224)	(1,024,273)	(1,046,807)	(1,069,837)
Debt Service - Current Debt	(15,664,816)	(16,217,696)	(16,786,111)	(17,374,611)	(17,985,361)
Debt Service - NEW Debt	(595,581)	(2,143,805)	(3,568,432)	(3,639,988)	(3,639,988)
Investments Converting to Cash	-	-	-	-	-
Grants	8,733,892	10,850,000	10,000,000	10,000,000	-
Proceeds From NEW Debt	8,555,508	23,800,000	21,900,000	1,100,000	-
Capex	(32,358,500)	(51,928,500)	(51,411,000)	(33,363,000)	(23,068,000)
NET FUND FLOWS	**177,116**	**67,417**	**257,467**	**233,103**	**1,647,826**
Plan Volume Increase	0.00%	0.00%	0.00%	0.00%	0.00%
User Charge Revenue Increase %	4.70%	4.70%	4.70%	4.70%	4.70%
Total User Charge Revenue Increase	4.70%	4.70%	4.70%	4.70%	4.70%
Unrestricted Cash Balance	14,076,734	13,307,770	13,218,933	13,095,511	14,376,284
Unrestricted Investments	-	-	-	-	-
Total Unrestricted Balances	14,076,734	13,307,770	13,218,933	13,095,511	14,376,284
Days Cash on Hand	233	214	206	198	211
DEBT SERVICE COVERAGE RATIO	1.86	1.91	1.94	2.04	2.12

WATER

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION
2024-2028 CAPITAL PROGRAM
WATER

Project #	Name or Title of Proposal	Prj. Category	(1) Funding	Approval Stage (1)		This Capital Program					
					2023 *Budget Approved*	2024 Year 1	2025 Year 2	2026 Year 3	2027 Year 4	2028 Year 5	2024-2028 Total
	OPERATING/CAPITAL RESERVE FUNDS										
	ANNUAL PROJECTS										
AD-W-A	Annual Projects	AM - Varies	LCA	A	1,295,000	2,465,000	1,811,000	1,544,000	1,672,000	1,740,000	9,232,000
	Sub-total Annual				**$ 1,295,000**	**$ 2,465,000**	**$ 1,811,000**	**$ 1,544,000**	**$ 1,672,000**	**$ 1,740,000**	**$ 9,232,000**
	NON-CCRC PROJECTS										
AD-W-1	Indenture Report Improvements	AM-High	LCA	C	$ 200,000	$ 200,000	$ 200,000	$ 150,000	$ 150,000	$ 100,000	$ 800,000
AD-W-9	Master Plan Studies	CA/OS	LCA	S	$ 10,000	$ -	$ -	$ -	$ 170,000	$ -	$ 170,000
AD-W-24	WFP Redundant Power Supply	Regulatory	LCA	S	$ -	$ 80,000	$ 250,000	$ 400,000	$ -	$ -	$ 730,000
AD-W-25	Tank and Reservoir Rehabilitation	AM-High	LCA	V	$ 300,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 1,000,000
AD-W-26	Large Diameter Valve Replacement Project	AM-High	LCA	V	$ 250,000	$ 350,000	$ 500,000	$ 500,000	$ 300,000	$ 300,000	$ 1,950,000
	TOTAL NON-CCRC PROJECTS				**$ 760,000**	**$ 830,000**	**$ 1,150,000**	**$ 1,250,000**	**$ 820,000**	**$ 600,000**	**$ 4,650,000**
	Large Projects and CCRC Projects *(3)*										
AD-W-7	Annual Water Main Replacements	CA/OS	CCRC	C	$ 3,200,000	$ 4,800,000	$ 4,800,000	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 24,600,000
AD-W-12	PFAS Compliance Planning and Upgrades	Regulatory	Change of Law	S	$ -	$ 250,000	$ 1,000,000	$ 8,500,000	$ 500,000	$ -	$ 10,250,000
AD-W-15	WFP Influent Channel Modifications	Master Plan	CCRC (2)	P	$ -	$ -	$ -	$ 100,000	$ 1,000,000	$ 2,000,000	$ 3,100,000
AD-W-16	Meter Replacement Program	AM-High	CCRC (2)	C	$ 525,000	$ 800,000	$ 1,500,000	$ 100,000	$ -	$ -	$ 2,400,000
AD-W-21	Fixed-Base Meter Reading System	Efficiency	CCRC (2)	S	$ -	$ -	$ -	$ -	$ 850,000	$ 850,000	$ 1,700,000
AD-W-22	WFP Filter Upgrades	Master Plan	CCRC/City ARPA	D	$ 500,000	$ 2,350,000	$ 3,150,000	$ -	$ -	$ -	$ 5,500,000
AD-W-23	Big Lehigh Intake & Transmission Upgrades	Master Plan	CCRC (2)	S	$ -	$ 200,000	$ 400,000	$ 400,000	$ 120,000	$ -	$ 1,120,000
AD-W-27	Lead Service Line Replacement Program	AM-High	Change of Law	S	$ -	$ 5,000,000	$ 15,000,000	$ 15,000,000	$ 15,000,000	$ 5,000,000	$ 55,000,000
	TOTAL CCRC PROJECTS				**$ 4,225,000**	**$ 13,400,000**	**$ 25,850,000**	**$ 29,100,000**	**$ 22,470,000**	**$ 12,850,000**	**$103,670,000**
	GRAND TOTAL				**$ 6,280,000**	**$ 16,695,000**	**$ 28,811,000**	**$ 31,894,000**	**$ 24,962,000**	**$ 15,190,000**	**$117,552,000**

(1) Reference Glossary of Acronyms and Terms found after Table of Contents
(2) Project to be reviewed by the City for Major Capital Improvement/CCRC approval
(3) Includes projects that have not been reviewed by the City for MCI/CCRC approval

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ANNUAL PROJECTS						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-A
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CV

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2014
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	No		

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Detailed Project Description

This is an annual project that was previously identified as separate smaller projects. This annual project includes the following: New & Replacement Meter Installations, Distribution Mains - Development & Service Connections, Distribution Mains - Upsizing, Other Equipment, WFP General Improvements, PennDOT relocations, Mobile Equipment, reservoir rehab/maintenance, Indenture report preparation, General Water System Replacements/Improvements, Capital Management, and various water system studies. Major mobile equipment purchases within the capital plan include new fleet pickup trucks, new loader, new fork lifts, new dump truck, and new utility trucks.

Project Drivers and Needs to be Met by the Project

Primary project drivers are asset management (to maintain level of service and system longevity) and system improvement. Annual projects that help maintain the operation of the distribution system and the WFP.

Project Status - Describe what work, if any has been completed or underway for this project

This is an annual project.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-A
Project Name	ANNUAL PROJECTS

Prior Project Cost	N/A
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 500,000
Land Acquisition	
Construction/Equipment	$ 9,017,000
Professional Services	$ 500,000
Other	$ 10,000
Contingencies	$ 500,000
Total Project Cost	**$ 10,527,000**

Requested in this Capital Program	**$ 9,232,000**

	Project Estimate Level
	Conceptual Estimate
X	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 1,295,000	procurement, planning, design & construction
1st Year	2024	$ 2,465,000	procurement, planning, design & construction
2nd Year	2025	$ 1,811,000	procurement, planning, design & construction
3rd Year	2026	$ 1,544,000	procurement, planning, design & construction
4th Year	2027	$ 1,672,000	procurement, planning, design & construction
5th Year	2028	$ 1,740,000	procurement, planning, design & construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	INDENTURE REPORT IMPROVEMENTS						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-I
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	**2016**
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	No		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories are positively impacted.

Detailed Project Description

This project includes the following, but not limited to: **1)** General repairs on concrete, reinforcing steel and exposed wood; **2)** Pipe protection upgrades including preparation, painting and dehumidification particularly sub-grade sites; **3)** Structural upgrades including roofs; **4)** Water tank and reservoir upgrades; **5)** Security upgrades including fencing, lighting and vegetation control; **6)** Electrical upgrades.

Project Drivers and Needs to be Met by the Project

The primary project driver is asset management. This project addresses the deficiencies identified in the annual Indenture Report. Funding needed to address Indenture-related deficiencies is roughly split 50% between the sewer system and 50% between the water system.

Project Status - Describe what work, if any has been completed or underway for this project

A number of roofs were replaced prior to 2019 that were documented in annual Indenture reports. In addition, minor routine maintenance was performed in 2019 as it relates to Indenture projects. A larger Indenture upgrade project was completed in 2022 that focused on concrete repairs at the WFP. 2024 Indenture upgrade work will again include concrete repairs at the WFP and also concrete work at the South Mountain Reservoir.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-I
Project Name	INDENTURE REPORT IMPROVEMENTS

Prior Project Cost		$300,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	800,000
Professional Services	$	100,000
Other		
Contingencies	$	50,000
Total Project Cost	**$**	**1,300,000**

Requested in this Capital Program	**$**	**800,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 budget		$ 200,000	design & construction
1st Year	2024	$ 200,000	design & construction
2nd Year	2025	$ 200,000	design & construction
3rd Year	2026	$ 150,000	design & construction
4th Year	2027	$ 150,000	design & construction
5th Year	2028	$ 100,000	design & construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WATER MAIN REPLACEMENTS						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-7
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	CA/OS	**Secondary**	AM - High	**Preparer**		JMP

Purpose of Expenditure *(check all that apply)*			
X	New Facility (replacement)		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Lease requirement

Additional Information			
Expected Useful Life (Years)	100	**Project inception date**	2014
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2062
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

Through the original Operating Standards of the Lease Concession Agreement, LCA was required to replace 2 miles of aging spun cast or pit cast iron water mains per year, until such time as the City would deem it not necessary. LCA works closely with the City's Office of Compliance and Streets Department to coordinate the annual water main replacement projects, which are prioritized by LCA's engineer. The re-negotiated Lease and settlement with the City requires annual replacement of one mile of water main starting in 2021 up to and including 2024 (4 miles total). In 2024, a review of the program (including break history) will be performed by LCA and City to determine if greater than 1 mile, but no more than 2 miles, of water main replacement shall be required annually. The capital budget assumes 2 miles of annual water main replacement starting in 2025.

Project Drivers and Needs to be Met by the Project

Primary project drivers are lease requirements and asset management. Replacing cast iron mains will reduce the frequency of breaks in the system which create customer outages and unaccounted for water, and will reduce the potential for damage which can occur to private property from catastrophic pipe breaks.

Project Status - Describe what work, if any has been completed or underway for this project

As of the end of 2022, the replacement of 10.75 miles of water main was completed. In 2023 the design of the next two cycles of water main replacements (Cycles 7&8) was started, although no main was replaced that year. Cycles 7 & 8 main replacements will be completed in 2024.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

N/A

Project No.	AD-W-7
Project Name	WATER MAIN REPLACEMENTS

Prior Project Cost		$18,000,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	500,000
Land Acquisition	$	-
Construction/Equipment	$	24,900,000
Professional Services	$	2,000,000
Other	$	-
Contingencies	$	400,000
Total Project Cost	**$**	**45,800,000**

Requested in this Capital Program	**$**	**24,600,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 3,200,000	design & construction
1st Year	2024	$ 4,800,000	design & construction
2nd Year	2025	$ 4,800,000	design & construction
3rd Year	2026	$ 5,000,000	design & construction
4th Year	2027	$ 5,000,000	design & construction
5th Year	2028	$ 5,000,000	design & construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	MASTER PLAN STUDIES						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-9
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	CA/OS	**Secondary**	Planning	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	N/A	**Project inception date**	2016
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	TBD
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

As infrastructure ages and regulations become more stringent, there are periodic needs for professional services to study the feasibility of changes, upgrades, etc. This project generally consists of water facilities master planning. The Lease requires an update of the Master Plan every 5 years. This is a requirement of the Lease as some original components of the Allentown WFP are over 60 years. The next Master Plan is due for updating in 2027.

Project Drivers and Needs to be Met by the Project

Engineering studies are periodically required to address feasibility of implementing new programs or changing existing ones. The WFP Master Plan is a requirement of the Lease Agreement and is to be completed every 5 years.

Project Status - Describe what work, if any has been completed or underway for this project

The first Master Plan was completed in 2017 and the second installment was completed in 2022.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$** -

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-9
Project Name	MASTER PLAN STUDIES

Prior Project Cost		350,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	10,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	160,000
Other	$	-
Contingencies	$	10,000
Total Project Cost	**$**	**530,000**

Requested in this Capital Program	**$**	**170,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 10,000	Master Plan
1st Year	2024	$ -	
2nd Year	2025	$ -	
3rd Year	2026	$ -	
4th Year	2027	$ 170,000	Master Plan
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	PFAS COMPLIANCE PLANNING AND UPGRADES						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-12
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	Change of Law
Prj. Category	**Primary**	Change of Law	**Secondary**	Regulatory	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	30	**Project inception date**	2023
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2027
Will the Project Require Obtaining Land Rights	No		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

This project consists of water quality studies and facilities upgrade work to comply with evolving state and federal water quality standards and regulations regarding PFAS chemicals removal from drinking water. Project costs reflect a treatment system and related plant modifications for Crystal Spring.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory and public health protection. EPA and DEP have proposed limits for Per- and Polyfluoroalkyl substances, referred to as PFAS compounds. PFAS are a category of manufactured chemicals that have been used in industry and consumer products since the 1940s. PFAS tend to break down extremely slowly in the environment, and have been determined to cause health concerns. In March 2023, EPA announced proposed National Primary Drinking Water Regulation for six PFAS compounds. The rule is anticipated to be finalized by the end of 2023.

Project Status - Describe what work, if any has been completed or underway for this project

LCA is closely monitoring emerging water quality regulations has begun sampling various systems for the presence of PFAS.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-12
Project Name	PFAS COMPLIANCE PLANNING AND UPGRADES

Prior Project Cost		0
Estimated Project Costs:		**2023-2028**
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	9,300,000
Professional Services	$	400,000
Other	$	-
Contingencies	$	500,000
Total Project Cost	**$**	**10,250,000**

Requested in this Capital Program	**$**	**10,250,000**

Project Estimate Level	
X	Conceptual Estimate
	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 250,000	design & permitting
2nd Year	2025	$ 1,000,000	final design, bid & start construction
3rd Year	2026	$ 8,500,000	construction
4th Year	2027	$ 500,000	construction
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	INFLUENT CHANNEL MODIFICATIONS						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-15
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	Master Plan	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2022
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2028
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

The existing influent channel to the primary clarifiers too wide, resulting in sub-optimal velocity which causes solids settling prior to the clarifiers. Influent channel modifications in order to maintain adequate velocity through each channel will reduce solids accumulating and maintenance requirements for channel cleaning.

Project Drivers and Needs to be Met by the Project

This project appears as a short term (0-5 year window) need in the Master Plan. Project benefits include enhanced process reliability, improved operation and maintenance, improved safety by eliminating confined space entry channel cleaning operations.

Project Status - Describe what work, if any has been completed or underway for this project

No work has been done to date.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-15
Project Name	INFLUENT CHANNEL MODIFICATIONS

Prior Project Cost		0
Estimated Project Costs:		**2023-2028**
LCA Staff	$	20,000
Land Acquisition	$	-
Construction/Equipment	$	2,800,000
Professional Services	$	200,000
Other	$	-
Contingencies	$	80,000
Total Project Cost	**$**	**3,100,000**

Requested in this Capital Program	**$**	**3,100,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ -	
2nd Year	2025	$ -	
3rd Year	2026	$ 100,000	design & permitting
4th Year	2027	$ 1,000,000	construction
5th Year	2028	$ 2,000,000	construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	METER REPLACEMENT PROGRAM						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-16
Location	Allentown			**Prj. Type**	Regular	**PrjFunding**	LCA
Prj. Category	**Primary**	AM-varies	**Secondary**	rev oport	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2021
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

Detailed Project Description

The 2023 project consists of replacing large commercial meter chambers (3" and greater) that were installed prior to 2014. The batteries in these meters are at the end of their expected life span and have either failed or are showing signs of failure. There are 152 meters ranging in size from 3 to 8 inch. Replacements will carry over into 2024. There are approximately 4,300 badger water meters ranging in size from 5/8" to 2" that are currently being used to monitor water consumption in the city. These sites were not a part of the original City of Allentown AMR project in 2012/2013. The sites also have existing but outdated Encoder Receiver Transmitters (ERTs) which are now approaching the end of their useful lives. Should LCA decide to implement Project AD-W-21 (Fixed Base AMR), the outdated 40W/50W/60W ERTs will not be readable on the new system. Radio read capability is included on all meter exchanges, allowing for mobile read application. The badger meter replacement will begin in 2024.

Project Drivers and Needs to be Met by the Project

The Badger meters have an outdated style radio that is incorporated into the meter and cannot be replaced separately. The old style radio does not include data logging or tamper alarms. Replacement of meters that may not be registering all water usage or have faulty radios is expected to reduce the amount of non-revenue water. Analysis of metering data will allow for enhanced customer service including data-backed resolution of customer metering complaints, flow analysis and other useful functions. In addition, the data will be used in identifying and addressing customer metering issues.

Project Status - Describe what work, if any has been completed or underway for this project

Meter replacement work is on-going.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.50%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-16
Project Name	METER REPLACEMENT PROGRAM

Prior Project Cost	
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 40,000
Land Acquisition	$ -
Construction/Equipment	$ 2,775,000
Professional Services	$ 50,000
Other Contingencies	$ 60,000
Total Project Cost	**$ 2,925,000**

Requested in this Capital Program	**$ 2,400,000**

	Project Estimate Level
	Conceptual Estimate
x	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 525,000	procurement & construction
1st Year	2024	$ 800,000	procurement & construction
2nd Year	2025	$ 1,500,000	procurement & construction
3rd Year	2026	$ 100,000	construction
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	FIXED-BASE METER READING SYSTEM						
Budget Area	Water	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-W-21
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Efficiency	**Secondary**	Sys Imp	**Preparer**		BB/ALK

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

Detailed Project Description

The City of Allentown's original AMR project started in 2011 and ran until 2013. There were insufficient funds from the Pennvest Loan to cover all 33,000 water meters. The original AMR was installed as a hybrid system which is upgradeable to a fixed-base system. A fixed-base system provides instantaneous readings of any water meter via a radio signal sent directly to the customer care center through a series of transmitters (exact number is to be determined) and repeaters installed throughout the water system service area.

Project Drivers and Needs to be Met by the Project

The primary project drivers are efficiency and system improvement. A fixed-base system would allow for instantaneous readings (and monthly reads) on any account. In order to implement the fixed base system, data analytics software must be procured and installed to house the enormous volume of data that will accumulate. The data analytics software was an original component of the City's AMR project. This software was purchased under AD-W-15 in 2021.

Project Status - Describe what work, if any has been completed or underway for this project

No work has been done to date. Implementation is anticipated to begin in 2027.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-21
Project Name	FIXED-BASE METER READING SYSTEM

Prior Project Cost		0
Estimated Project Costs:	**2023-2028**	
LCA Staff	$	80,000
Land Acquisition	$	-
Construction/Equipment	$	1,200,000
Professional Services	$	120,000
Other	$	100,000
Contingencies	$	200,000
Total Project Cost	**$**	**1,700,000**

Requested in this Capital Program	**$**	**1,700,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ -	
2nd Year	2025	$ -	
3rd Year	2026		
4th Year	2027	$ 850,000	procurement & construction
5th Year	2028	$ 850,000	procurement & construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	FILTER UPGRADES						
Budget Area	Water	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-W-22
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC / City ARPA
Prj. Category	**Primary**	Master Plan	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	Varies	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

The filter underdrains are nearly 60 years old and have exceeded their service life. A recent inspection of the underdrain in Filter No. 6 determined that the underdrains are in poor condition and must soon be replaced. In addition, a number of filter components are obsolete, including the filter control valves and filter control panels. Also, there has been difficulty in obtaining spare parts. Properly functioning filter underdrains, coupled with optimized filter media and backwash routines, will be critical to maintaining regulatory compliance.

Project Drivers and Needs to be Met by the Project

The primary project drivers are asset management (Master Plan), system improvement, and regulatory compliance. Primary benefit will be enhanced regulatory compliance, improved operability and reduced maintenance. Secondary benefits include better asset management and process reliability. In addition, replacing the underdrains and rebuilding the filters allows for the addition of air scour backwash system and modified media configuration, which will improve reliability and performance of the filters.

Project Status - Describe what work, if any has been completed or underway for this project

The initial filter evaluation was completed in 2017 as part of the Water Filtration Plant Master Plan, and a follow-up detailed filter condition assessment and study was completed in 2020. The Capital Plan budget is based on performing a comprehensive rehabilitation of the filters recommended by the filter study. Upgrade work is to include replacement of the clay filter underdrains, replacement of filter media, installation of an air scour system, new control system with SCADA integration, and associated work. Design of the filter upgrade project commenced in late 2021 and was completed in 2023. Construction is anticipated to occur late 2023 - 2025.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-22
Project Name	FILTER UPGRADES

Prior Project Cost		100,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	100,000
Land Acquisition	$	-
Construction/Equipment	$	5,300,000
Professional Services	$	300,000
Other	$	-
Contingencies	$	300,000
Total Project Cost	**$**	**6,100,000**

Requested in this Capital Program	**$**	**5,500,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 500,000	final design, permitting, & commence construction
1st Year	2024	$ 2,350,000	construction
2nd Year	2025	$ 3,150,000	construction
3rd Year	2026		
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	BIG LEHIGH INTAKE AND TRANSMISSION UPGRADES						
Budget Area	Water	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-W-23
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	Master Plan	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	Varies	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	TBD
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

This project as described in the Master Plan includes multiple initiatives related to utilization of the Lehigh River source water: 1) Upgrade the Big Lehigh intake facility, which requires pump and VFD replacement for pump #2; 2) address taste and odor issues via chemical addition; 3) condition assessment and rehabilitation of the Big Lehigh raw water transmission main. These improvements are required prior to the Master Plan (6-10 year window) project to construct a new 30 MGD Little Lehigh intake structure.

Project Drivers and Needs to be Met by the Project

Asset management, regulatory compliance, enhanced redundancy, improved process reliability, improved operations and maintenance and improved water quality are the project drivers.

Project Status - Describe what work, if any has been completed or underway for this project

The intake evaluation was completed in 2017 as part of the Water Filtration Plant Master Plan project. Bench testing of taste and odor control chemicals for feasibility evaluation will commence in 2023.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-23
Project Name	BIG LEHIGH INTAKE AND TRANSMISSION UPGRADES

Prior Project Cost		0
Estimated Project Costs:		**2023-2028**
LCA Staff	$	20,000
Land Acquisition	$	-
Construction/Equipment	$	900,000
Professional Services	$	150,000
Other	$	-
Contingencies	$	50,000
Total Project Cost	**$**	**1,120,000**

Requested in this Capital Program	**$**	**1,120,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 200,000	design & permitting; force main condition assessment
2nd Year	2025	$ 400,000	construction
3rd Year	2026	$ 400,000	construction
4th Year	2027	$ 120,000	construction
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WFP REDUNDANT POWER SUPPLY						
Budget Area	Water	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-W-24
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA/Allentown
Prj. Category	**Primary**	Master Plan	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	Varies	**Project inception date**	2022
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

The 2022 Master Plan identified an Auxiliary Electrical Feed as a near term project need for the Water Filtration Plant (WFP). In 2022 LCA performed an assessment of alternatives to comply with DEP Chapter 109 "System Service and Auxiliary Power Requirements", and the study identified a new electrical feed from a separate substation as the recommended alternative to comply with the regulations. The new electrical feed would be an addition to the current dual feed system at the WFP (both existing feeds from the same PPL substation).

Project Drivers and Needs to be Met by the Project

Facility resilience and compliance with regulatory requirements are the primary drivers for this project.

Project Status - Describe what work, if any has been completed or underway for this project

An initial evaluation was completed in 2022 as part of the Water Filtration Plant Master Plan project. The project is anticipated to be constructed in 2025 - 2026.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-24
Project Name	WFP REDUNDANT POWER SUPPLY

Prior Project Cost		$0
Estimated Project Costs:		**2023-2028**
LCA Staff	$	10,000
Land Acquisition	$	-
Construction/Equipment	$	600,000
Professional Services	$	70,000
Other		
Contingencies	$	50,000
Total Project Cost	**$**	**730,000**

Requested in this Capital Program	**$**	**730,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 80,000	planning and design
2nd Year	2025	$ 250,000	construction
3rd Year	2026	$ 400,000	construction
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	TANK AND RESERVOIR REHABILITATION						
Budget Area	Water	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-W-25
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Master Plan	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	Varies	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	Ongoing
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

The project involves the mechanical upgrades, surface coatings and building rehabilitation and repair of the high-level pumping stations, concrete tanks, and concrete reservoirs: (a) Schantz Spring Reservoir, (b) Huckleberry Ridge Reservoir, (c) South Mountain Reservoir, (d) East Side Reservoir, (e) Wash Water Tank, (f) Halstead Pump Station. The majority of the work will be located on the exterior of the tanks, within the adjacent process piping systems, and on the building structures. This work will include replacement of process valves, actuators, painting, HVAC, building rehabilitation, electrical components, and mixing systems. It will also encompass work to the interior of the three large concrete reservoirs which is not currently covered under a service agreement.

Project Drivers and Needs to be Met by the Project

Enhanced process and physical redundancy, improved operations and maintenance, and asset management are the project drivers.

Project Status - Describe what work, if any has been completed or underway for this project

This project was identified as a near term project in the 2017 and 2022 Water System Master Plan. The Master Plan's scope for this project is also linked to AD-W-I (Indenture Report Improvements); therefore, a portion of this project is allocated to that capital number as well.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-W-25
Project Name	TANK AND RESERVOIR REHABILITATION

Prior Project Cost	
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 50,000
Land Acquisition	$ -
Construction/Equipment	$ 950,000
Professional Services	$ 200,000
Other	
Contingencies	$ 100,000
Total Project Cost	**$ 1,300,000**

Requested in this Capital Program	**$ 1,000,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 300,000	construction
1st Year	2024	$ 200,000	construction
2nd Year	2025	$ 200,000	construction
3rd Year	2026	$ 200,000	construction
4th Year	2027	$ 200,000	construction
5th Year	2028	$ 200,000	construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	LARGE DIAMETER VALVE REPLACEMENT PROJECT						
Budget Area	Water	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-W-26
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Sys Imp	**Preparer**		JMP

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	project inception date	2022
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	project completion date	TBD
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, Central Lehigh Division and bulk water sales to other municipalities.

Detailed Project Description

This is a multi-year project to identify critical large diameter inoperable valves and replace them. The existing 36-inch cast iron water main that supplies the city with water from the South Mountain Reservoir is nearly 100 years old and has numerous large diameter valves that are inoperable or no longer seal properly. The valves have manual or electrical actuators and the current condition does not allow for isolation of the Reservoir in event of main breakage or maintenance. There are other critical large diameter valves that supply the city and the LCA Suburban Division that are inoperable or do not seal properly that likely require replacement as well.

Purpose and Needs to be Met by the Project

The replacement of critical inoperable major water supply valves will allow for isolating of reservoirs and other areas of the distribution system in event of a water main break or other essential maintenance operations. The inoperable or otherwise poor condition of the valves discovered on the South Mountain transmission main and adjacent connecting mains justify the need to create a new project to investigate and replace critical transmission and distribution system valves.

Project Status - Describe what work, if any has been completed or underway for this project

The inception of this project is the result of a major break in the South Mountain transmission main that occurred in late 2020 and required emergency repair. Planning phase of this project commenced in 2022 to prioritize inoperable critical transmission and distribution system valves. Design phase for the cycle 1 project will be completed in 2023.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	
Assessment, Contribution in Aid-of-Construction	
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	AD-W-26
Project Name	LARGE DIAMETER VALVE REPLACEMENT PROJECT

Prior Project Cost		0
Estimated Project Costs:	**2023-2028**	
LCA Staff	$	50,000
Land Acquisition		
Construction/Equipment	$	1,800,000
Professional Services	$	250,000
Other		
Contingencies	$	100,000
Total Project Cost	**$**	**2,200,000**

Requested in this Capital Program	**$**	**1,950,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

Source of Funds			
		Need	**Phase of Work**
2023 Budget		$ 250,000	planning and design
1st Year	2024	$ 350,000	construction
2nd Year	2025	$ 500,000	construction
3rd Year	2026	$ 500,000	construction
4th Year	2027	$ 300,000	construction
5th Year	2028	$ 300,000	construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	LEAD SERVICE LINE REPLACEMENT PROGRAM						
Budget Area	Water	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-W-27
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	Allentown
Prj. Category	**Primary**	Change of Law	**Secondary**	Regulatory	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility	**X**	Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	project inception date	2023
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	project completion date	TBD
Will the Project Require Obtaining Land Rights	N/A		

* customers within the City of Allentown water distribution system; number TBD

Detailed Project Description

This is a multi-year project to replace public and private lead service lines in the City. The program starts with a comprehensive inventory of service line components, and then replacement areas are prioritized according to number/concentration of lead services in a given neighborhood and other ranking factors. PennVEST grant money is being pursued to fund this program.

Purpose and Needs to be Met by the Project

The replacement of water services containing lead components is a regulatory requirement, driven by EPA's Lead and Copper Rule Revisions, which requires an initial inventory of public and private water service lines to be performed by October 16, 2024. The service line inventory will facilitate and prioritize the multi-year replacement program for lead service lines.

Project Status - Describe what work, if any has been completed or underway for this project

The planning phase of this program began in early 2023 with the assistance of a consulting engineer, Gannett Fleming.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	
Assessment, Contribution in Aid-of-Construction	
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Project No.	AD-W-27
Project Name	LEAD SERVICE LINE REPLACEMENT PROGRAM

Prior Project Cost	0
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 800,000
Land Acquisition	
Construction/Equipment	$ 50,000,000
Professional Services	$ 1,700,000
Other	
Contingencies	$ 2,500,000
Total Project Cost	**$ 55,000,000**

Requested in this Capital Program	**$ 55,000,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
	Budget Estimate
	Definitive Estimate

Source of Funds			
		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 5,000,000	design & construction
2nd Year	2025	$ 15,000,000	design & construction
3rd Year	2026	$ 15,000,000	design & construction
4th Year	2027	$ 15,000,000	design & construction
5th Year	2028	$ 5,000,000	design & construction

WASTEWATER

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION
2024-2028 CAPITAL PROGRAM
WASTEWATER

Project #	Name or Title of Proposal	Prj. Category	(1) Funding	Approval Stage (1)	2023 *Budget Approved*	This Capital Program 2024 Year 1	2025 Year 2	2026 Year 3	2027 Year 4	2028 Year 5	2024-2028 Total
	Operating/Capital Reserve Funds										
	ANNUAL PROJECTS										
AD-S-A	Annual Projects	AM - Varies	LCA	A	$ 1,729,000	$ 2,706,000	$ 2,147,500	$ 2,067,000	$ 1,726,000	$ 1,553,000	$ 10,199,500
	Sub-total Annual				**$ 1,729,000**	**$ 2,706,000**	**$ 2,147,500**	**$ 2,067,000**	**$ 1,726,000**	**$ 1,553,000**	**$ 10,199,500**
	Non-CCRC Projects										
AD-S-I	Indenture Report Improvements	AM - Varies	LCA	C	$ 300,000	$ 300,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	$ 1,100,000
AD-S-9	KIWWTP Master Plan	CA/OS	LCA	S	$ -	$ 160,000	$ -	$ -	$ -	$ -	$ 160,000
AD-S-11	Manhole Inspection and Sealing Program	Regulatory	LCA	S	$ 300,000	$ 2,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 1,000,000	$ 6,000,000
AD-S-27	KIWWTP Redundant Power Supply	Efficiency	LCA	S	$ -	$ -	$ 120,000	$ 500,000	$ 150,000	$ -	$ 770,000
	Sub-total Allentown Division Wastewater Capital Funded by LCA				**$ 600,000**	**$ 2,460,000**	**$ 1,320,000**	**$ 1,700,000**	**$ 1,350,000**	**$ 1,200,000**	**$ 8,030,000**
	Large Projects and CCRC Projects										
AD-S-5	WWTP Electrical Substation No. 1 Replacement	AM - High	CCRC	D	$ 200,000	$ 2,200,000	$ 4,000,000	$ 600,000	$ -	$ -	$ 6,800,000
AD-S-19	WWTP Wet Weather Capacity Enhancement - Main & Auxiliary Pump Station Improvements	AM - Varies; Master Plan	CCRC (3)	D	$ 100,000	$ 400,000	$ 6,000,000	$ 6,000,000	$ 200,000	$ -	$ 12,600,000
AD-S-20	WWTP Boiler Replacement & Solids Process HVAC Upgrade Project	AM - Varies; Master Plan	CCRC	C	$ 2,800,000	$ 1,400,000	$ -	$ -	$ -	$ -	$ 1,400,000
AD-S-21	WWTP Wet Weather Capacity Enhancement - IPS Pump Station Upgrade & 480v MCC Replacement	AM - Varies; Master Plan	CCRC (3)	D	$ 100,000	$ 200,000	$ 1,700,000	$ 4,000,000	$ -	$ -	$ 5,900,000
AD-S-22	WWTP Final Clarifier 1-4 Rehabilitation	AM - Varies	LCA	C	$ -	$ 900,000	$ 900,000	$ -	$ -	$ -	$ 1,800,000
AD-S-23	WWTP Primary Sludge Digester Feed Line Replacement	AM - Varies	CCRC (3)	S	$ -	$ 600,000	$ 700,000	$ -	$ -	$ -	$ 1,300,000
AD-S-26	Source Reduction Plan - I/I Elimination Program	Regulatory	CCRC (2)	V	$ 800,000	$ 3,000,000	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 5,000,000	$ 23,000,000
AD-S-28	WWTP Wet Weather Capacity Enhancement Project - Tertiary Bypass	AM - Varies	CCRC (3)	D	$ -	$ 100,000	$ 1,000,000	$ -	$ -	$ -	$ 1,100,000
	Sub-total Allentown Division Wastewater Large & CCRC Projects				**$ 4,000,000**	**$ 8,800,000**	**$ 19,300,000**	**$ 15,600,000**	**$ 5,200,000**	**$ 5,000,000**	**$ 53,900,000**
	Act 537 Plan Development Projects										
AD-S-12	Act 537 Alternative Analyses	Regulatory	Allentown	S	$ 700,000	$ 600,000	$ 100,000	$ -	$ -	$ -	$ 700,000
AD-S-29	Miscellaneous Act 537 Planning, Financial and Legal Reviews	Regulatory	LCA	V	$ 1,250,000	$ 200,000	$ 100,000	$ -	$ -	$ -	$ 300,000
	Sub-total Allentown Division Wastewater Capital Funded by the City				**$ 1,950,000**	**$ 800,000**	**$ 200,000**	**$ -**	**$ -**	**$ -**	**$ 1,000,000**
	GRAND TOTAL				**$ 8,279,000**	**$ 14,766,000**	**$ 22,967,500**	**$ 19,367,000**	**$ 8,276,000**	**$ 7,753,000**	**$ 73,129,500**

(1) Reference Glossary of Acronyms and Terms found after the Table of Contents
(2) Per 2020 Lease Amendment related to sewer collection rehabilitation projects
(3) Project to be reviewed by the City for Major Capital Improvement/CCRC approval

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ANNUAL PROJECTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-A
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CV/BG

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2014
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	No		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories are positively impacted.

Detailed Project Description

This is an annual project that has been previously listed as separate smaller projects. This annual project includes the following: Collection System - Development and Service Connections, Other Equipment, WWTP General Improvements, Sanitary Sewer Main Replacements & Rehabilitation, Penn DOT relocations, Indenture Report, Mobile Equipment, and SCADA upgrades. Major mobile equipment purchases in this capital plan include utility truck replacements, new hydro excavator, new vac/jet truck, and new jetter truck.

Project Drivers and Needs to be Met by the Project

Asset management and system improvement are the primary drivers. Annual items help maintain the level of service for operation of the wastewater collection/conveyance system and the Kline's Island Wastewater Treatment Plant.

Project Status - Describe what work, if any has been completed or underway for this project

This is an annual project.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-A
Project Name	ANNUAL PROJECTS

Prior Project Cost		N/A
Estimated Project Costs:		**2023-2028**
LCA Staff	$	500,000
Land Acquisition	$	-
Construction/Equipment	$	8,659,500
Professional Services	$	500,000
Other	$	40,000
Contingencies	$	500,000
Total Project Cost	**$**	**11,928,500**

Requested in this Capital Program	**$**	**10,199,500**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 1,729,000	procurement, design, & construction
1st Year	2024	$ 2,706,000	procurement, design, & construction
2nd Year	2025	$ 2,147,500	procurement, design, & construction
3rd Year	2026	$ 2,067,000	procurement, design, & construction
4th Year	2027	$ 1,726,000	procurement, design, & construction
5th Year	2028	$ 1,553,000	procurement, design, & construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	INDENTURE REPORT IMPROVEMENTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-I
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CV

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2016
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project includes the following, but not limited to: **1)** General repairs on concrete, reinforcing steel and other exposed surfaces; **2)** Pipe protection upgrades including painting and dehumidification (particularly in sub-grade sites); **3)** Structural upgrades including roofs; **4)** Concrete tank upgrades; **5)** Security upgrades including fencing, lighting and vegetation control; **6)** Electrical upgrades.

Project Drivers and Needs to be Met by the Project

This project addresses the deficiencies identified in the annual Indenture Report, which identifies structural, coatings, security, electrical and other routine upgrades that are needed to maintain the assets.

Project Status - Describe what work, if any has been completed or underway for this project

The first large project to address indenture report improvements was completed in 2021, with annual projects to follow at KIWWTP.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-I
Project Name	INDENTURE REPORT IMPROVEMENTS

Prior Project Cost		500,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	1,000,000
Professional Services	$	250,000
Other		
Contingencies	$	100,000
Total Project Cost	**$**	**1,900,000**

Requested in this Capital Program	**$**	**1,100,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 300,000	construction
1st Year	2024	$ 300,000	construction
2nd Year	2025	$ 200,000	construction
3rd Year	2026	$ 200,000	construction
4th Year	2027	$ 200,000	construction
5th Year	2028	$ 200,000	construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WWTP ELECTRICAL SUBSTATION NO. 1 REPLACEMENT						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-5
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2016
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories are positively impacted.

Detailed Project Description

This project includes the replacement of existing electrical substation #1 and the 12.4 kV primary switchgear with a new electrical facilities at the Kline's Island Wastewater Treatment Plant. Substation #2 (Phase 1 project) was replaced in 2019. Final design of the Substation #1 and switchgear replacement was completed in 2023. The switchgear and Substation #1 (Phase 2 project) construction is scheduled to commence in 2024 and finish in 2025. The replacement equipment will have adequate capacity to serve additional plant loads related to future plant process upgrades.

Project Drivers and Needs to be Met by the Project

Asset management, efficiency and regulatory compliance are the project drivers. The WWTP contains 12.4kV switchgear and two substations (Substation Nos. 1 and 2). The electrical equipment was installed in the 1970s and has reached the end of its useful life. In addition, prior to its recent replacement, substation #2 was overloaded during high flow events. These are critical pieces of electrical equipment that must continue to function properly in order to power the facility. Replacement of the equipment will provide electrical reliability from PP&L for the next 40 years at the WWTP.

Project Status - Describe what work, if any has been completed or underway for this project

An engineering study for Substation Nos. 1 and 2 was completed in 2016, followed up by the completion of design for both substations replacement in 2018. The project was phased due to budget concerns, and Substation #2 replacement construction was completed in 2019 and Substation #1 and the primary switchgear replacement will be constructed in 2024 and 2025 (Phase 2).

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-5
Project Name	WWTP ELECTRICAL SUBSTATION NO. 1 REPLACEMENT

Prior Project Cost		100,000
Estimated Project Costs:	**2023-2028**	
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	6,200,000
Professional Services	$	250,000
Other	$	-
Contingencies	$	300,000
Total Project Cost	**$**	**6,900,000**

Requested in this Capital Program	**$**	**6,800,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 200,000	permitting, bidding, commence construction phase
1st Year	2024	$ 2,200,000	construction
2nd Year	2025	$ 4,000,000	construction
3rd Year	2026	$ 600,000	construction
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	KIWWTP MASTER PLAN						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-9
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	CA/OS	**Secondary**	Planning	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
X	Study	X	Other (explain): Lease requirement

Additional Information			
Expected Useful Life (Years)	N/A	**Project inception date**	2018
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	N/A		

Detailed Project Description

As infrastructure ages and regulations become more stringent, there are periodic needs for professional services to study the feasibility of changes, upgrades, etc. The following study is required in 2024 - WWTP Master Plan. As some original components of the Allentown WWTP are about 90 years old, regular updates of the Master Plan are essential to monitor the condition and performance of plant processes. This is a requirement of the Lease.

Project Drivers and Needs to be Met by the Project

The primary project driver is city lease requirement. Engineering studies are periodically required to address feasibility of implementing new programs or changing existing ones. The WWTP Master Plan is a requirement of the Lease Agreement and is to be completed every 5 years. The first Master Plan was completed in 2018 and the second installment was delayed one year by the City and will be completed in 2024.

Project Status - Describe what work, if any has been completed or underway for this project

The first Master Plan was completed in 2018.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-9
Project Name	KIWWTP MASTER PLAN

Prior Project Cost		$160,000
Estimated Project Costs:	**2023-2028**	
LCA Staff	$	5,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	150,000
Other	$	-
Contingencies	$	5,000
Total Project Cost	**$**	**320,000**

Requested in this Capital Program	**$**	**160,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 160,000	master planning
2nd Year	2025	$ -	
3rd Year	2026	$ -	
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	MANHOLE INSPECTION AND SEALING PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-11
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	CA/OS	**Preparer**		PMD

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2023
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2033
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project is a part of Act 537 driven I&I reduction efforts in the City to inspect and seal every manhole in the City sewer system, or approximately 700 manholes per year over a period of 10 years. Sealing of manholes is one part of the City of Allentown's Source Reduction Plan for the upcoming Act 537 Plan.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory. This project is a component of the Source Reduction Plan prepared by the City of Allentown and Lehigh County Authority. The entire KISS system suffers from extensive inflow issues during rain events and inspecting all of the manhole inventory is one step towards reducing this extraneous rainfall from entering.

Project Status - Describe what work, if any has been completed or underway for this project

The City's original I&I Source Reduction Plan (a five year plan) was submitted to the EPA in 2018. DEP is now in control of overseeing Act 537 plan process and thus the proposed I&I plab. The first batch of manhole inspections were authorized in December of 2022. All ~7,200 public manholes will be inspected in 2023 through 2032. Manholes will be rehabilitated in 2024 through 2033. Every year is following this assumption: ~$250K for inspections and ~$750K for rehabilitation. In addition, 2024 includes additional money for interceptor rehabiitation as a result of the 2023 "pop and peak" inspections.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed. This is funded by the LCA Allentown Division.

Project No.	AD-S-11
Project Name	MANHOLE INSPECTION AND SEALING PROGRAM

Prior Project Cost	$ -
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 100,000
Land Acquisition	$ -
Construction/Equipment	$ 3,600,000
Professional Services	$ 2,250,000
Other	$ -
Contingencies	$ 140,000
Total Project Cost	**$ 6,090,000**

Requested in this Capital Program	**$ 6,000,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 300,000	MH Inspection
1st Year	2024	$ 2,000,000	MH Inspection; MH rehab
2nd Year	2025	$ 1,000,000	MH Inspection; MH rehab
3rd Year	2026	$ 1,000,000	MH Inspection; MH rehab
4th Year	2027	$ 1,000,000	MH Inspection; MH rehab
5th Year	2028	$ 1,000,000	MH Inspection; MH rehab

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	ACT 537 ALTERNATIVE ANALYSES						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-12
Location	Allentown			**Prj. Type**	AO	**Prj. Funding**	Allentown
Prj. Category	**Primary**	Regulatory	**Secondary**	CA/OS	**Preparer**		PMD

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2020
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project consisted of the Flow Characterization Study (FCS) in 2021 (consists of ~70 temporary meters, ~25 permanent sewer billing meters, and ~11 permanent/non sewer billings). The FCS also consisted of QA/QC of the meter data and initial development of the Regional KISS sewer model. 2022 consisted of finalizing the development of the Regional KISS sewer model and beginning scenario planning and alternative analyses (i.e. the "Preliminary Screening of Alternatives" (PSOA). The PSOA concluded in Q2 of 2023 and the Final Alternatives Analysis (FAA) is underway. 2024 will entail the "Selection of Solution" phase and finalization of the Act 537 Plan. 2025 will involve the final Plan submission. Also included in this project is the Act 537 "Section 7" financial analysis.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory. This project is also a component of the Interim Act 537 Plan submitted to DEP in September 2020. The Final Act 537 Plan is due to DEP by March 2025.

Project Status - Describe what work, if any has been completed or underway for this project

The Interim Act 537 Plan was submitted to DEP on 9/4/20. As part of the Interim Plan, the KISS Region committed to performing a flow characterization study (FCS) in 2021. The FCS was completed in late 2021. The remainder of the work included model development and calibration which occurred in 2022, followed by specific model runs to determine a 537 solution that meets the needs of the Region. Modeling concluded in June of 2023 and final cost estimating is underway.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed. The project is funded by the City's AO bonds and cost is recovered through the existing Signatory agreements.

Project No.	AD-S-12
Project Name	ACT 537 ALTERNATIVE ANALYSES

Prior Project Cost		$ 1,360,000
Estimated Project Costs:		**2023-2028**
LCA Staff		$ 100,000
Land Acquisition		$ -
Construction/Equipment		$ -
Professional Services		$ 1,200,000
Other		$ -
Contingencies		$ 100,000
Total Project Cost		**$ 2,760,000**

Requested in this Capital Program	**$ 700,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 700,000	Preliminary and final screening of 537 alternatives
1st Year	2024	$ 600,000	FAA completion; selection of solution(s); Section 7; writing 537
2nd Year	2025	$ 100,000	Submit 537 Plan
3rd Year	2026	$ -	
4th Year	2027	$ -	
5th Year	2028	$ -	

(1)This is an Administrative Order (AO) Project that will be funded by the City of Allentown.

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WET WEATHER CAPACITY ENHANCEMENT - WWTP MAIN AND AUXILIARY PUMP STATION IMPROVEMENTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-19
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

The main headworks pump station at the Kline's Island Wastewater Treatment Plant is critical to plant performance and the ability to maximize wet-weather flow into the KIWWTP. The existing pumps are over 50 years old and approaching the end of their useful life. Valves and piping are corroded and predate the 1965 upgrade. Replacement of the valves and piping is required to allow maintenance to occur while simultaneously keeping the pumping station operational. The vacuum priming system is also problematic and in need of replacement. The Auxiliary Pump Station is critical to plant performance and the ability to accommodate wet weather flows. The pumps and mechanical equipment are approaching the end of their service life and require replacement to mitigate risk and consequence of failure.

Project Drivers and Needs to be Met by the Project

The project drivers are Master Plan, asset management, and regulatory. The main and auxiliary pump station improvement projects are listed in the Master Plan as project nos. 1 and 2, respectively, under "near term" projects. Pump and valve replacements will provide improved equipment reliability, reduced long-term maintenance costs, extension of service life and enhanced level of service. The upgrade project will also facilitate a wet weather pumping capacity of 100 mgd.

Project Status - Describe what work, if any has been completed or underway for this project

This project was identified in the 2018 Master Plan (Project Proposal Nos. 1 and 2). These pumps were also previously planned to be replaced as part of the defunct blending project improvements. Preliminary design commenced in 2022 and final design should be completed by early 2024, with construction anticipated to be substantially completed by the end of 2026.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-19
Project Name	WET WEATHER CAPACITY ENHANCEMENT - WWTP MAIN AND AUXILIARY PUMP STATION IMPROVEMENTS

Prior Project Cost		80,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	100,000
Land Acquisition	$	-
Construction/Equipment	$	12,000,000
Professional Services	$	400,000
Other		
Contingencies	$	200,000
Total Project Cost	**$**	**12,780,000**

Requested in this Capital Program	**$**	**12,600,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 100,000	preliminary design
1st Year	2024	$ 400,000	final design, permitting, bidding, commence construction
2nd Year	2025	$ 6,000,000	construction
3rd Year	2026	$ 6,000,000	construction
4th Year	2027	$ 200,000	construction
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WWTP BOILER REPLACEMENT AND SOLIDS PROCESS HVAC UPGRADE PROJECT						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-20
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	Sys Imp	**Secondary**	AM - Varies	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	30	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2023
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project involves the replacement of the 3 boiler system that is used to heat the digesters, the digester building, and the sludge dewatering area. The scope includes, but is not limited to, the following new equipment and modifications: 1) 2 each dual fuel digester boilers; 2) digester building addition to house new boilers; 3) new methane booster pumps and gas piping; 4) new hot water recirculation pumps with expansion tank and associated piping; 5) new hot water air handling units and circulators in digester building, boiler room, and dewatering room; 6) SCADA system integration; 7) sprinkler system extension into new building; 8) new boiler water treatment system; 9) demolition and removal of old boilers, piping and related abandoned mechanical equipment.

Project Drivers and Needs to be Met by the Project

Asset management is the primary project driver, as the equipment has reached the end of its useful life and this equipment is critical to the operation of the plant anaerobic digestion system. In addition, this project will reduce maintenance costs.

Project Status - Describe what work, if any has been completed or underway for this project

This project was identified in the 2018 Master Plan (Project No. 3). A conceptual engineering report (basis of design) was submitted to the City in early 2021 per Lease requirements for major capital improvement (MCI) project protocol. Design phase was completed in 2022, bids were awarded late 2022 and construction phase will be completed in 2024.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-20
Project Name	WWTP BOILER REPLACEMENT AND SOLIDS PROCESS HVAC UPGRADE PROJECT

Prior Project Cost		$200,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	40,000
Land Acquisition	$	-
Construction/Equipment	$	3,800,000
Professional Services	$	260,000
Other		
Contingencies	$	100,000
Total Project Cost	**$**	**4,400,000**

Requested in this Capital Program	**$**	**1,400,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 2,800,000	construction
1st Year	2024	$ 1,400,000	construction
2nd Year	2025		
3rd Year	2026	$ -	
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WET WEATHER CAPACITY ENHANCEMENT - WWTP IPS PUMP STATION UPGRADE AND 480V MCC REPLACEMENT						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-21
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project focuses on the Intermediate Pump Station (IPS), which conveys wastewater from the primary clarifiers to the Plastic Media Trickling Filters (PMTFs), and from the PMTFs to the Rock Media Trickling Filters (RMTFs). It includes new VFDs and electrical upgrades for Primary Effluent (PE) Pumps 9, 10, and 11 and PMTF Pumps 12, 14, and 16 with the objective of increasing wet weather capacity and reliability. Also, various 480v electrical motor control centers (MCCs) located at the IPS (and throughout the plant) have exceeded their useful service life and should be replaced, as a loss of power to any key critical processes would likely impact the ability to maintain treatment permit limits and DEP requirements relative to the prior Administrative Order (now RFMS).

Project Drivers and Needs to be Met by the Project

Replacement of VFDs and associated electrical equipment at the IPS will eliminate the problem of overheating electrical system components (including VFDs) at wet weather flows greater than 84 mgd. An increase in wet weather capacity and operational reliability would be realized with new VFDs, motor control centers and breakers. Also, a reduction in maintenance costs would result as older, failure prone equipment is replaced with newer equipment.

Project Status - Describe what work, if any has been completed or underway for this project

This project is part of a phased approach to a larger project that was identified in the 2018 Master Plan (Project No. 10) as a "near term" project. This project was split into to separate phases according to plant process areas and wet weather treatment capacity needs. Preliminary design was started in 2022 and final design is to be finished in in early 2024. The project is anticipated to be substantially completed in 2026.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-21
Project Name	WET WEATHER CAPACITY ENHANCEMENT - WWTP IPS PUMP STATION UPGRADE AND 480V MCC REPLACEMENT

Prior Project Cost		40,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	5,500,000
Professional Services	$	300,000
Other	$	-
Contingencies	$	150,000
Total Project Cost	**$**	**6,040,000**

Requested in this Capital Program	**$**	**5,900,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 100,000	preliminary design
1st Year	2024	$ 200,000	final design, permitting, bidding
2nd Year	2025	$ 1,700,000	construction
3rd Year	2026	$ 4,000,000	construction
4th Year	2027		
5th Year	2028		

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WWTP FINAL CLARIFIER 1-4 REHABILITATION						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-22
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility	**X**	Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade	**X**	Equipment Obsolete
X	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project includes the following, but not limited to: 1) scraper mechanism and drive replacement on all four clarifiers; 2) miscellaneous steel repairs and coatings; 3) concrete repairs to all four clarifiers.

Project Drivers and Needs to be Met by the Project

The primary project driver is asset management. This project addresses the deficiencies with the existing Final Clarifiers Nos. 1 - 4 as identified in the Master Plan (Project No. 14). The concrete tanks are from 1931 and the mechanical equipment is from the late 1960s and the units have operated continuously since that time.

Project Status - Describe what work, if any has been completed or underway for this project

This project was identified both in the 2018 Master Plan (Project No. 14) and in a 2016 concrete report by Corrosion Probe. This project scope consists of the replacement of the four each drive mechanisms, scraper mechanisms, center wells, and associated mechanical equipment. The work anticipated to begin construction in 2024 and finish in 2025.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-22
Project Name	WWTP FINAL CLARIFIER 1-4 REHABILITATION

Prior Project Cost	
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 40,000
Land Acquisition	$ -
Construction/Equipment	$ 1,600,000
Professional Services	$ 80,000
Other	
Contingencies	$ 80,000
Total Project Cost	**$ 1,800,000**

Requested in this Capital Program	**$ 1,800,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 900,000	
2nd Year	2025	$ 900,000	
3rd Year	2026		
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WWTP PRIMARY SLUDGE DIGESTER FEED LINE REPLACEMENT						
Budget Area	Wastewater	**Department**	Operations	**Date**	7/1/2023	**Project No.**	AD-S-23
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCRC
Prj. Category	**Primary**	AM - Varies	**Secondary**	Sys Imp	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): *Optimize operations*

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2018
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project involves the replacement of two parallel 6-inch diameter cast iron primary sludge lines, each 1,500 linear feet in length (3,000 LF total) with new 8-inch glass lined ductile iron pipe and cleanout structures. Glass lined pipe is typically utilized for conveyance of sludge, which requires low interior wall surface friction. The original cast iron pipe is in poor condition, experiences frequent blockages and limits the thickness of sludge that can be conveyed through this line.

Project Drivers and Needs to be Met by the Project

The primary project drivers for this project is system improvement and asset management. The existing primary sludge lines have experienced a history of failure due to blockages and continuous build up with grease, increasing line pressure on the primary sludge pumps resulting in the need to pump thinner sludge, which has an adverse impact on digester capacity. Replacement with new glass lined DIP and cleanout structures will reduce line pressure and enable a thicker sludge to be conveyed to the digesters, thereby optimizing digester operation/capacity.

Project Status - Describe what work, if any has been completed or underway for this project

This project was identified in the 2018 Master Plan as a component of Project Proposal No. 3. Preliminary engineering and design are being performed in 2023 with construction anticipated to commence in 2024.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-23
Project Name	WWTP PRIMARY SLUDGE DIGESTER FEED LINE REPLACEMENT

Prior Project Cost	0
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 10,000
Land Acquisition	$ -
Construction/Equipment	$ 1,100,000
Professional Services	$ 120,000
Other	
Contingencies	$ 70,000
Total Project Cost	**$ 1,300,000**

Requested in this Capital Program	**$ 1,300,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 600,000	final design, bidding, commence construction
2nd Year	2025	$ 700,000	construction
3rd Year	2026	$ -	
4th Year	2027	$ -	
5th Year	2028	$ -	

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	SOURCE REDUCTION PLAN - I/I ELIMINATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-26
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCCR
Prj. Category	**Primary**	Regulatory	**Secondary**	CA/OS	**Preparer**		PMD/JP

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2022
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2034
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

As part of the Act 537 planning effort, each Signatory was asked to prepare an inflow and infiltration plan (i.e. a "Source Reduction Plan" or "SRP"). Using the 2021 flow characterization study data, the City prepared a 10 year SRP in the Fall of 2022. The City's prior I&I commitment to the EPA concludes in late 2023, as the design of "Year 1" of the SRP plan commenced in Q2 of 2023. "Year 1" SRP project consists of a combination of internal pipe lining, internal pipe grouting, and potential dig-up repairs and construction will begin in 2024, along with the design of "Year 2". This pattern will continue through 10 years' worth of construction cycles.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory (project is a major proposed component of the Act 537 Plan to be submitted to DEP in March 2025). The project also is required by the 2020 Lease Concession Amendment with the City. LCA will contribute $650,000 per year toward this program. The remainder of the project costs can be recaptured via the CCRC mechanism of the Lease.

Project Status - Describe what work, if any has been completed or underway for this project

The Year 1 design is underway. City approval of the Year 1 design is anticipated on or before October 1, 2023.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed. The project is funded by the LCA Allentown Division per requirements of the 2020 Lease Amendment.

Project No.	AD-S-26
Project Name	SOURCE REDUCTION PLAN - I/I ELIMINATION PROGRAM

Prior Project Cost	$ -
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 200,000
Land Acquisition	$ -
Construction/Equipment	$ 21,000,000
Professional Services	$ 2,000,000
Other	$ -
Contingencies	$ 600,000
Total Project Cost	**$ 23,800,000**

Requested in this Capital Program	**$ 23,000,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 800,000	design
1st Year	2024	$ 3,000,000	design and construction
2nd Year	2025	$ 5,000,000	design and construction
3rd Year	2026	$ 5,000,000	design and construction
4th Year	2027	$ 5,000,000	design and construction
5th Year	2028	$ 5,000,000	design and construction

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	KIWWTP REDUNDANT POWER SUPPLY						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-27
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Regulatory	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	N/A	**Project inception date**	2023
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2028
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

The Kline's Island Wastewater Treatment Plant is provided electrical service from two 12.4KV power transmission line feeds from one PPL substation, located about one half mile north of the plant. For improved system resilience and to avoid plant overflows and compliance violations due to extended power outages, a third electrical feed from a separate PPL substation is needed.

Project Drivers and Needs to be Met by the Project

Facility resilience and compliance with regulatory requirements are the primary drivers for this project.

Project Status - Describe what work, if any has been completed or underway for this project

No work has been done to date.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed. Project funding is LCA.

Project No.	AD-S-27
Project Name	KIWWTP REDUNDANT POWER SUPPLY

Prior Project Cost	$ -
Estimated Project Costs:	**2023-2028**
LCA Staff	$ 20,000
Land Acquisition	$ -
Construction/Equipment	$ 600,000
Professional Services	$ 100,000
Other	$ -
Contingencies	$ 50,000
Total Project Cost	**$ 770,000**

Requested in this Capital Program	**$ 770,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ -	
2nd Year	2025	$ 120,000	Preliminary planning and design
3rd Year	2026	$ 500,000	Construction
4th Year	2027	$ 150,000	Construction
5th Year	2028		

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	WWTP WET WEATHER CAPACITY ENHANCEMENT - TERTIARY BYPASS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-28
Location	Allentown			**Prj. Type**	LCA-MCI	**Prj. Funding**	CCCR
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		CEV

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Regulatory

Additional Information			
Expected Useful Life (Years)	50	**Project inception date**	2022
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

The purpose of this project (Phase 1) is to facilitate an increase in wet weather capacity of the plastic media trickling filter (PMTF) effluent pump station by resolving a hydraulic bottleneck between the Intermediate Settling Tanks (ISTs) and the Rock Media Trickling Filters (RMTFs). In a hydraulic capacity study performed by Kleinfelder Engineering, the capacity of the PMTF effluent pump station is limited to 70 mgd due to the gravity flow limitation of 70 mgd between the ISTs and the RMTFs. Removing this bottleneck will allow the PMTF effluent pump station to convey 100 mgd of flow. Phase 1 project consists of construction of a diversion pipe to be operated during peak weather events to route a portion of PMTF effluent flow directly to the final clarifiers (instead of the ISTs) for final settling prior to disinfection.

Project Drivers and Needs to be Met by the Project

The project drivers are Regulatory and Efficiency. The Phase 1 improvements will facilitate a wet weather treatment capacity increase to 100 MGD. Future Phase 2 project will involve a treatment capacity expansion to 120 MGD. The design of the 120 MGD expansion must be completed by 2028.

Project Status - Describe what work, if any has been completed or underway for this project

Preliminary design commenced in 2022 and final design will be completed in 2023. Construction is anticipated to be completed in 2025, in parallel with the Main and Auxiliary Pump Station Improvements.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed.

Project No.	AD-S-28
Project Name	WWTP WET WEATHER CAPACITY ENHANCEMENT - TERTIARY BYPASS

Prior Project Cost		40,000
Estimated Project Costs:		**2023-2028**
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	1,100,000
Professional Services	$	200,000
Other		
Contingencies	$	150,000
Total Project Cost	**$**	**1,540,000**

Requested in this Capital Program	**$**	**1,100,000**

Project Estimate Level	
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ -	
1st Year	2024	$ 100,000	Final design, permitting, bidding
2nd Year	2025	$ 1,000,000	construction
3rd Year	2026		
4th Year	2027		
5th Year	2028		

LEHIGH COUNTY AUTHORITY
ALLENTOWN DIVISION - CAPITAL IMPROVEMENTS PLAN
PROJECT DETAIL SHEET

Project Name	MISCELLANEOUS ACT 537 PLANNING, FINANCIAL AND LEGAL REVIEWS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	7/1/2023	**Project No.**	AD-S-29
Location	Allentown			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	CA/OS	**Preparer**		PMD

Purpose of Expenditure *(check all that apply)*			
	New Facility		Correct Known or Potential Safety Issue
X	Existing Facility - Rehabilitation/Upgrade		Equipment Obsolete
	Scheduled Replacement	**X**	Comply with Regulatory Requirements
	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	40	**Project inception date**	2022
Approx. No. of Customers Benefitted	*		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	N/A		

*All customers of the City of Allentown, City signatories and Western Lehigh signatories.

Detailed Project Description

This project is related to miscellaneous Act 537 planning items funded by the LCA Allentown Division. The exact nature of legal reviews related to the Act 537 Plan are currently unknown but will captured under this project detail sheet. Miscellaneous engineering items not paid by the City's AO fund will be captured here.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory. This project is also a component of the Interim Act 537 Plan submitted to DEP in September 2020. The Final Act 537 Plan is due to DEP by March 2025.

Project Status - Describe what work, if any has been completed or underway for this project

The 2023 budget included the following projects funded by the LCA Allentown Division: (1) wet weather pilot study at KIWWTP; (2) City of Allentown interceptor inspections; (3) miscellaneous engineering services. 2024 and 2025 will include miscellaneous engineering services related to the completion of the Act 537 Plan.

Annual Cost Impact	
Operating - *Increase/(Decrease)*	N/A
Debt Service	$ -
Net	**$ -**

Revenue Impact	
Gain/(Loss) in Annual Revenue	N/A
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

Annual cost impact to be determined as needed. The project is funded by the LCA Allentown Division.

Project No.	AD-S-29
Project Name	MISCELLANEOUS ACT 537 PLANNING, FINANCIAL AND LEGAL REVIEWS

Prior Project Cost	$	-
Estimated Project Costs:		**2023-2028**
LCA Staff	$	200,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	1,250,000
Other	$	-
Contingencies	$	100,000
Total Project Cost	**$**	**1,550,000**

Requested in this Capital Program	**$**	**300,000**

	Project Estimate Level
	Conceptual Estimate
	Preliminary Estimate
x	Budget Estimate
	Definitive Estimate

		Need	**Phase of Work**
2023 Budget		$ 1,250,000	Miscellaneous Act 537 planning items
1st Year	2024	$ 200,000	Miscellaneous Act 537 planning items
2nd Year	2025	$ 100,000	Miscellaneous Act 537 planning items
3rd Year	2026	$ -	
4th Year	2027	$ -	
5th Year	2028	$ -	

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**

MEMORANDUM

Date: August 14, 2023

To: Lehigh County Authority Board of Directors

From: Amy Kunkel, Capital Works Project Engineer

Subject: Suburban Division – North Whitehall Meter Replacement Project

MOTIONS /APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – North Whitehall Meter Replacement Project – **Construction Phase**	$283,905
1a	Contract Award – North Whitehall Meter Replacement Project: **Core & Main, LP Professional Service Contract** *(included in Capital Project Authorization)*	$243,905

PROJECT OVERVIEW:
The project consists of the replacement of residential water meters in the North Whitehall Division that have either reached the end of their useful life or have been compromised from the buildup of manganese that originated in public well sources. The wells have been abandoned and eliminated as sources of water due to that reason. The water source for North Whitehall is now exclusively through an interconnection with Northampton Borough Municipal Authority. Lehigh County Authority (LCA) uses the iPerl model of Sensus brand water meters for residential metering. This type of meter does not have any internal moving parts so any residual manganese in the system will not affect the meter's operation and accuracy.

PROJECT OBJECTIVE:
The project objective is to replace and upgrade older and non-functioning meter reading equipment within the Suburban Division to increase meter reading accuracy and efficiency.

FUNDING:
The project will be funded by the LCA Suburban Division.

PROJECT STATUS:
Project scope, design, and specifications were developed in-house. Meters were purchased separately due to supply chain issues and long lead times. Board approval is requested for the Construction Phase.

THIS APPROVAL – CONSTRUCTION PHASE & CONTRACT AWARD – NORTH WHITEHALL METER REPLACEMENT PROJECT:

Core and Main, LP, is the authorized distributor for Sensus, which is the meter manufacturer used exclusively in LCA's Suburban Division for residential and commercial meters. They have acted as the general contractor on the last two-meter replacement/upgrade projects in the Suburban Division and for the current project in the Allentown Division. They are now listed on COSTARS as an approved service provider for meter equipment installation. It is through the COSTARS program that we have received this proposal. Both the firm and its subcontractor's qualifications and experience statements indicate numerous projects of similar scope and type. The contract documents are in order and the company appears well qualified to perform the work. The proposal submitted is within the budgeted amount for this project.

SCHEDULE:

Based on contract award following the August 14, 2023 Board meeting, we anticipate construction to begin by October 2023, and substantial completion in the second quarter of 2024.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.: SD-W-23-1 **BUDGET FUND:** Suburban Div\Water\Capital

PROJECT TITLE: Suburban Division
North Whitehall Meter Replacement Project –
Construction Phase -

PROJECT TYPE:

☒ Construction
☐ Engineering Study
☐ Equipment Purchase
☐ Amendment

THIS AUTHORIZATION: **$283,905**
TO DATE (W/ ABOVE) **$378,817.22**

DESCRIPTION AND BENEFITS:

This Authorization is for the replacement of approximately 616 5/8" through 1" water meters and miscellaneous incidental equipment. This authorization takes the project through construction phase.

Previous Authorizations	
COSTARS Purchase of Equipment	$94,912.22

REQUESTED THIS AUTHORIZATION	
Construction Phase	
Contract 1-General Construction	**$243,905**
Staff	**$20,000**
Contingency	**$20,000**
Total This Authorization	**$283,905**

Future Authorization	
None	

Total Estimated Project	*$378,817.22*

REVIEW AND APPROVALS:

Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date

MEMORANDUM

Date: August 14, 2023

To: LCA Board of Directors
Liesel Gross, CEO

From: Phil DePoe, Senior Planning Engineer

Subject: Allentown Division – 2023 Manhole Inspections (Trout Creek Interceptor Basin)

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization: Allentown Division – 2023 Manhole Inspections (Trout Creek Interceptor Basin)	$292,000
1A*	Professional Services Authorization: Arcadis – Inspection Services	$267,000

**Included in the Capital Project Authorization*

1. Allentown Division – 2023 Manhole Inspections (Trout Creek Interceptor Basin)

AUTHORIZATION OVERVIEW:
As Lehigh County Authority (LCA) kicks off the next phase of inflow and infiltration (I&I) removal in the City of Allentown system, the first major initiatives was to create a sanitary sewer manhole (MH) rehabilitation program (the "Program"). This ten-year Program will involve the inspection of all ~7,200 public sanitary sewer manholes with the subsequent rehabilitation projects starting in 2024. The first round of manhole inspections commenced in Q2 of 2023 and will be completed in Q4 of 2023. These inspections will result in the first manhole rehabilitation project of the Program, scheduled to be bid in early 2024. This Program is a key component of the I&I Source Reduction Plan that will be included in the Kline's Island Sewer System (KISS) Act 537 Plan, to be submitted to the Pa. Department of Environmental Protection in 2025.

Through discussion with the engineering team and the City of Allentown, LCA has determined it would be beneficial to accelerate the manhole inspection program to address near-term goals related to the Trout Creek Interceptor in the City. This interceptor has been identified as being undersized and subject to future sanitary sewer overflows during peak wet-weather events if I&I issues are not addressed. The flow characterization study and resulting system hydraulic modeling work has identified rainwater inflow via manholes as a likely driver for the challenges faced by this interceptor. Therefore, LCA proposes to add ~1,800 manholes to the current inspection program to be completed in the near term. These manholes will cover the entire Trout Creek Interceptor drainage basin. Upon completion of these inspections, a targeted rehab project will be developed.

These additional inspections will occur throughout the remainder of 2023 and into the first quarter of 2024. See attached proposal for further details.

FINANCIAL:
This Program will be funded by the LCA Allentown Division.

CURRENT STATUS:

Pending Board approval for these additional 2023 manhole inspections. See below for manhole inspection summary table to date:

Table 1. August 2023 Manhole Inspection Summary*

	Number of Manholes	Price/MH inspection	Area
Authorization #1 (12/12/22)	~900 (500 completed)	~$180	Various Interceptor Basins
Authorization #2 (requested)	~1,800	~$140	Trout Creek Interceptor Basin
TOTAL	~2,700		

*INSPECTION TOTALS ARE ESTIMATES AND WILL BE RECONCILED UPON AUTHORIZATION COMPLETION

THIS APPROVAL – 2023 MANHOLE INSPECTIONS (TROUT CREEK INTERCEPTOR BASIN):
LCA intends to retain the services of an engineering consulting firm to provide these additional manhole inspection services. These services include, but are not limited to, the following:

Professional Services
• MH Inspections – Field Work
• MH Basis of Rehab Assessments
• MH Rehab Recommendation Table

CONSULTANT SELECTION PROCESS:
In addition to serving as LCA's engineering consultant for annual ongoing sewer program support services, Arcadis has worked with the City since the 2009 EPA Administrative Order (AO). They are also a critical Act 537 Partner and are developing crucial elements related to the Plan's development. Recent work performed since the commencement of the mandated Act 537 planning include:

- Sewer Billing Meter (SBM) investigations
- 2021 Flow Characterization Study
- 2021 Rain Derived Inflow and Infiltration (RDII) analysis
- 2021 KISS Model Development
- 2022 Nighttime Weiring investigations
- 2022 Capacity Problem Definition
- 2022 Preliminary Screening of Alternatives (PSOA)
- 2023 Manhole Inspections
- 2023 Interceptor Inspections
- 2023 Final Alternatives Analysis (FAA)

SCHEDULE:
These additional inspections will start in September 2023 and will conclude in the early Spring of 2024.

FUTURE AUTHORIZATIONS:
Additional manhole inspections for 2024 will be requested in the first quarter of next year. It is anticipated that the repair work for the first-round of 2023 manhole inspections will be requested in December of 2023.

Arcadis U.S., Inc.
1600 Market Street
Suite 1810
Philadelphia
Pennsylvania 19103
Tel 215 625 0850
www.arcadis.com

Mr. Philip DePoe
Planning Manager
Lehigh County Authority
1053 Spruce Road
Allentown, PA 18106-0348

Subject:
City of Allentown Trout Creek Basin Manhole Assessments
Scope and Budget

Date:
July 11, 2023

Contact:
Jim Shelton
Phone:
302.723.1450
Email:
James.Shelton@arcadis.com

Dear Mr. DePoe:

Arcadis is pleased to provide LCA and City of Allentown (City) with this scope and budget for detailed, focused assessment of the 1,860 manholes in the City of Allentown's five Trout Creek sewer basins for the purposes of developing rehabilitation scopes of work that achieve the inflow reduction goals anticipated in the City's Source Reduction Program.

OBJECTIVES

Experience and flow data indicate the City's inventory of manholes suffers significant inflow during large storms and that manholes in stream beds and floodplains (ala the Trout Creek Interceptor) are often under inches or feet of water, or the exposed cones are surrounded by water. This work is being done to significantly reduce inflow into these flood-prone manholes while compiling relevant information on infiltration and structural related conditions as well.

This work will assess all accessible manholes within the above cohort of the City's manhole inventory. For purposes of this scope and budget, we assume ~160 are off-road, 100 require moderate traffic control (two vehicles with cones), and ~1600 require limited traffic control.

This proposal and its contents shall not be duplicated, used or disclosed — in whole or in part — for any purpose other than to evaluate the proposal. This proposal is not intended to be binding or form the terms of a contract. The scope and price of this proposal will be superseded by the contract. If this proposal is accepted and a contract is awarded to Arcadis as a result of — or in connection with — the submission of this proposal, Arcadis and/or the client shall have the right to make appropriate revisions of its terms, including scope and price, for purposes of the contract. Further, client shall have the right to duplicate, use or disclose the data contained in this proposal only to the extent provided in the resulting contract.

SCOPE OF WORK

Task 1 – Manhole Inspections- Field Work

Arcadis will provide vehicles and equipment necessary to perform assessments, including manhole access and measurement tools, PPE, and routine limited traffic control equipment. For manholes that are difficult to locate or open (buried, under pavement, unable to be located, or welded/seized shut), Arcadis will coordinate with an LCA City Division staff to locate and open these manholes. Arcadis will open and close all bolted covers.

This work will be performed using the KISS OYB Fulcrum App that includes the LCA-specific Manhole Assessment Protocol developed during the first round of manhole inspection work to ensure subsequent manhole rehabilitation rapidly, significantly and permanently reduces inflow into the sanitary sewer through manhole lids.

Pre-inspection meetings will be held each morning to reinforce the H&S plan and confirm all PPE and equipment is present.

There will be unanticipated field conditions. Arcadis field teams will review the findings daily with Arcadis senior engineers to ensure found field conditions are considered immediately so that program RDII reduction goals are achieved. Any changes necessary to the KISS OYB Fulcrum App, Basis of Rehabilitation tree logic, or Field Guide will be communicated to the LCA and Arcadis team for immediate upgrade to ensure collected data meet the program needs. All field data will be uploaded to both the LCA manhole assessment interface and to Arcadis' Fulcrum database site.

Task 2 – Manhole Basis of Rehabilitation (BOR) Assessments

Arcadis will set up and populate a Manhole BOR Tracker.

Arcadis' engineering staff will review assessment findings to recommend rehabilitation for appropriate manholes. If applicable, one or more may be prescribed to structurally rehabilitate and prevent leakage from entering the manhole. While primary objectives are to eliminate inflow, all aspects of leakage and structural integrity will be considered. Additionally, the sealing of specific manholes to prevent them from overflowing will be considered in the BOR evaluation.

Task 3 – Manhole Rehabilitation Recommendations

Upon finalizing all manhole BOR assessments, Arcadis will provide a table summarizing significant findings from the manhole data spreadsheet and prioritizing future rehabilitation work. We have included 3 meetings with City and LCA staff to review recommendations and consider implementation pathways.

DELIVERABLES AND SCHEDULE

Arcadis will deliver the resultant basis of rehabilitation for each manhole in tabular form and will summarize findings in a technical recommendation memorandum. Work is scheduled to start Fall 2023 and be completed by the end of 2024.

BUDGET ESTIMATE

We estimate the cost and level of effort of this work as shown in the below table.

	Task	Hours	Cost
1	**MH Inspections - Field Work**	1380	$ 239,000
2	**MH BOR Assessments**	125	$ 19,000
3	**MH Rehab Recommendation Table**	40	$ 9,000
	Total	**1545**	**$ 267,000**

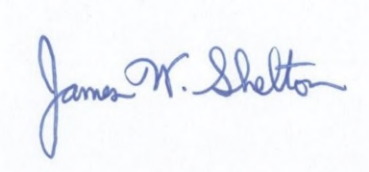
The cost of assessments and recommendations, including meetings, breaks down to **$138 per manhole**.

We propose to complete these services on a time and materials basis in accordance with the Agreement between LCA and Arcadis and the current Summary of Standard Charges for Lehigh County Authority. Arcadis will track the costs associated with this work and report them to LCA monthly throughout the project; we will not exceed the authorized budget without written professional services authorization from LCA. Payment for services will be based upon the actual labor and expenses incurred. Invoicing will be completed monthly. The invoice will include the defined contract tasks listing the day-by-day personnel performing the task with hourly rate and hours worked. The invoice will provide total billed for month. Support documents will be provided if there are any expenses incurred.

Please contact me with your authorization to proceed if this scope and budget are acceptable to you. If you have any questions, please do not hesitate to call me.

Sincerely,

ARCADIS U.S., Inc.



James W. Shelton, PE
Vice President

Cc: Tony Dill, Brian Chamberlain

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.:	AD-S-11	**BUDGET FUND:**	Allentown Div\Wastewater\Capital
PROJECT TITLE:	Allentown Division – City of Allentown: 2023 Manhole Inspections (Trout Creek Interceptor Basin)	**PROJECT TYPE:**	
		☐	Construction
		☒	Engineering Study
THIS AUTHORIZATION:	**$292,000**	☐	Equipment Purchase
TO DATE (W/ ABOVE)	**$538,700**	☐	**Amendment**

DESCRIPTION AND BENEFITS:

As Lehigh County Authority (LCA) kicks off the next phase of inflow and infiltration (I&I) removal in the City of Allentown system, the first major initiatives was to create a sanitary sewer manhole (MH) rehabilitation program (the "Program"). This ten-year Program will involve the inspection of all ~7,200 public sanitary sewer manholes with the subsequent rehabilitation projects starting in 2024. LCA has determined it would be beneficial to accelerate the manhole inspection program to address near-term goals related to the Trout Creek Interceptor in the City, adding ~1,800 manholes to the current inspection program. These additional inspections will occur throughout the remainder of 2023 and into the first quarter of 2024.

Prior Authorization: 12/12/22 (first manhole inspection authorization; ~900 manholes); 3/27/23 (Amendment No. 1 = creation of a tablet-based inspection form)
This Authorization: 8/14/23 (Amendment No. 2 = second manhole inspection authorization requested; ~1800 additional manholes). *See attached Board Memo for further project details.*

Authorization Status:

Requested This Authorization (MH Inspection Program Amendment No. 2)	
Planning Phase	
Staff	**$15,000**
Contractor	**$0**
Engineering Consultant	**$267,000**
Contingency	**$10,000**
Total This Authorization	**$292,000**

Prior Authorizations	$246,700
Subtotal	**$538,700**
Future Authorizations	*2024 and beyond (~$250K/year)*

REVIEW AND APPROVALS:

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 AMENDMENT NO. 2

Professional: ARCADIS U.S., INC.
1600 Market Street, Suite 1810
Philadelphia, PA 19103

Date: August 14, 2023
Requested By: Phil DePoe

Approvals
Department Head: _____
Chief Executive Officer: _____

Description of Services (Work Scope, Steps, Check Points, etc.):

Allentown Division – 2023 Manhole Inspections (Trout Creek Interceptor Basin)
As Lehigh County Authority (LCA) kicks off the next phase of inflow and infiltration (I&I) removal in the City of Allentown system, the first major initiatives was to create a sanitary sewer manhole (MH) rehabilitation program (the "Program"). This ten-year Program will involve the inspection of all ~7,200 public sanitary sewer manholes with the subsequent rehabilitation projects starting in 2024. LCA has determined it would be beneficial to accelerate the manhole inspection program to address near-term goals related to the Trout Creek Interceptor in the City, adding ~1,800 manholes to the current inspection program. These additional inspections will occur throughout the remainder of 2023 and into the first quarter of 2024.The specific services of the proposal include, but are not limited to, the following:

Professional Services (1)
• MH Inspections – Field Work
• MH Basis of Rehab Assessments
• MH Rehab Recommendation Table

(1) Please reference the cover Memo for additional information

Prior Approval (12/12/22): $199,000
Prior Approval Amendment No. 1 (3/27/23): $7,700
This Approval Amendment No. 2: *$267,000*

New Amended Amount (not to be exceeded without further authorization): *$473,700*

Time Table and Completion Deadline: As required to meet various critical deadlines as set forth in the proposal.

(For Authority Use Only)

Authorization Completion:

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

MEMORANDUM

Date: August 14, 2023

To: Lehigh County Authority Board of Directors

From: Jason Peters, Linear Asset Project Manager

Subject: Suburban Division – Heidelberg Heights Sanitary Sewer Rehabilitation Project (Phase 5) – Construction Phase

MOTIONS / APPROVALS REQUESTED:

No.	Item	Amount
1	Capital Project Authorization – Construction Phase	$471,750
2	Construction Contract: Barrasso Excavation, Inc.	$393,750
3	Professional Services Authorization – Keystone Consulting Engineers	$48,000

BACKGROUND

This project is a requirement of the Heidelberg Heights DEP Consent Order and Agreement (dated 3/3/2020), which includes a Sanitary Sewer System Corrective Action Plan ("CAP") that commits Lehigh County Authority (LCA) to eliminating hydraulic overloads and bypasses at the Heidelberg Heights Wastewater Treatment Plant caused by wet weather inflow and infiltration into the sanitary sewage collection system. The CAP includes the replacement of all original vitrified clay pipe (VCP) sewer main and sewer laterals in the system (public side of sewer system). The CAP implementation schedule reflects the replacement of the original sewer main and lateral pipe be performed in phases as annual projects to be completed by the end of 2024.

PROJECT OVERVIEW

This is the fifth and final annual sewer main and lateral replacement project and involves the replacement of approximately 1,300 feet of 8-inch VCP sewer main and 10 residential sewer laterals in the Heidelberg Heights sanitary sewage system. Sewer laterals will be replaced to the property line with a cleanout assembly installed on each one. Existing manhole structures will be re-used and new frames and covers retrofitted, watertight manhole chimney wrap will be installed, and new watertight gaskets will be installed at manhole pipe connections. The contractor will be responsible for temporary measures, including bypass pumping, in order to minimize sanitary sewer service disruption. Roadway and lawn area restoration is included.

FUNDING

The project will be funded by the LCA Suburban Division.

PROJECT STATUS

Board authorization of construction phase.

THIS APPROVAL – CONSTRUCTION PHASE:

BIDDING SUMMARY

This project consists of one contract. The project was advertised for bid via PennBid in July 2023 and bids were opened on July 21, 2023. Bids results are follows:

General Construction	
Bidder	**Bid Amount**
Barrasso Excavation Inc.	**$393,750**
Wexcon, Inc.	**$427,300**
Anrich, Inc.	**$427,510**
Passerini and Sons Inc.	**$428,400**
J.Phillips Excavating & Hauling, LLC	**$528,677**
JOAO & Bradley Construction Co., Inc.	**$646,200**
R-III Construction Inc.	**$843,900**

Barrasso Excavation, Inc. (Barrasso) from Oley, PA is low bidder for the contract. Barrasso specializes in site work and installation of water, sanitary sewer and storm sewer systems and has successfully completed numerous municipal utility projects in eastern Pennsylvania. The firm completed the 2022 Phase 4 Heidelberg Heights sanitary sewer replacement project and the 2022 I-78 waterline crossing project (in Upper Macungie Township) and their performance was very good. The bid documents are in order and the firm appears qualified to perform the work for the contract. LCA staff recommend award of the construction contract to Barrasso.

PROFESSIONAL SERVICES

LCA staff will perform construction phase project management and administration duties. Keystone Consulting Engineers will provide the following construction phase services:

- Provide full time construction inspection services
- Prepare daily inspection reports
- Verify daily job quantities
- Document installation (post construction photos)
- Attend progress meetings as required
- Prepare and verify punchlist completion
- Perform final inspection

PROJECT SCHEDULE

Based on Board authorization at the August 14, 2023 meeting, construction will be completed by the end of the year.

FUTURE AUTHORIZATIONS

Private side sewer corrective rehabilitations – TBD.

CAPITAL PROJECT AUTHORIZATION

PROJECT NO.: SD-S-1 **BUDGET FUND:** Suburban Div\Wastewater\Capital

PROJECT TITLE: Suburban Division – Heidelberg Heights Sanitary Sewer Rehabilitation Project (Phase 5)

PROJECT TYPE:

- ☒ Construction
- ☐ Engineering Study
- ☐ Equipment Purchase
- ☐ Amendment

THIS AUTHORIZATION: **$471,750**
TO DATE (W/ ABOVE) **$471,750**

DESCRIPTION AND BENEFITS:

Sanitary Sewer Rehabilitation Project Contract:
This is the final annual public sewer main and lateral rehabilitation project in the Heidelberg Heights sanitary sewer system in accordance with the DEP Consent Order and Corrective Action Plan. The General construction contract consists of the replacement of approximately 1300 feet of 8-inch sewer main pipe, replacement of 10 residential sewer laterals to the property line, lateral cleanout assembly installations, rehabilitation of 4 manholes, and final paving restoration.

REQUESTED THIS AUTHORIZATION	
Construction Phase	
General Construction Contract - Barrasso Excavation Inc.	$393,750
Construction Inspection Services – Keystone Consulting Engineers	$48,000
Staff	$10,000
Contingency	$20,000
Total This Authorization	**$471,750**

Future Authorization	
Annual sewage collection system rehabilitation projects	TBD

REVIEW AND APPROVALS:

Project Manager	Date	Chief Executive Officer	Date
Chief Capital Works Officer	Date	Chairman	Date

Lehigh County Authority – Monthly Report to Board of Directors

Upcoming Board Agenda Items & Project Updates – August 2023

Published: August 7, 2023

PART 1 – Upcoming Agenda Items – Action & Discussion Items

FINANCE & ADMINISTRATION

Project Title: 2024-2028 Capital Plan - Preliminary Plan Presentations
Division / Funding: All Divisions
Board Action Date: 8/14/2023 & 8/28/2023
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: The preliminary 2024-2028 Allentown Division Capital Plan will be presented to the Board for review and comment at the August 14, 2023 meeting. The preliminary 2024-2028 Suburban Division and Administration Capital Plans will be presented at the August 28, 2023 meeting. Following these Board presentations, the Capital Plans will be distributed for public comment until mid-September, and Board approval will be requested at the October 9, 2023 meeting. Staff Responsibility: Chuck Volk & Ed Klein

Project Title: Resolution 8-2023-1: Specifying Authorized Persons to Perform Financial Transactions
Division / Funding: n/a
Board Action Date: 8/28/2023
Status or Action Desired: Approval
Project Phase: n/a

Project Notes: The Board has routinely passed Resolutions appointing particular management staff to be Authorized Persons for signing financial transactions conducted with banks and other financial institutions. The last such resolution was approved in 2016. Due to staff turnover that has occurred since that time, staff recommends the Board pass an updated Resolution reflecting current staff positions. Staff Responsibility: Liesel Gross

Project Title: Monthly Financial Review
Division / Funding: n/a
Board Action Date: 8/28/2023
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: The July 2023 monthly financial report will be presented. Staff Responsibility: Ed Klein

SYSTEM OPERATIONS

Project Title: Monthly Operations Report
Division / Funding: n/a
Board Action Date: 8/28/2023
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: The July 2023 monthly operations report will be presented. Staff Responsibility: Andrew Moore & Chris Moughan

WATER PROJECTS – SUBURBAN DIVISION

Project Title: North Whitehall Meter Replacement
Division / Funding: Suburban Division
Board Action Date: 8/14/2023
Status or Action Desired: Approval
Project Phase: Construction Phase

Project Notes: This project involves the replacement of 616 residential meters in the North Whitehall Division that have either reached the end of their useful life or have been compromised by the buildup of manganese from our well sources. Meters have been purchased through a COSTARS contract. Construction phase authorization will be requested at the 8/14/23 Board meeting for the installation of the meters. Staff Responsibility: Amy Kunkel

WASTEWATER PROJECTS – KISS ACT 537

Project Title: Sanitary Sewer Collection System: City of Allentown Manhole Inspections
Division / Funding: Allentown Division
Board Action Date: 8/14/2023
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: As part of the Act 537 planning process, a rainfall derived inflow and infiltration (RDII) analysis was performed in the first quarter of 2022 for the City of Allentown system. This analysis shows the overall system suffers from inflow problems. Some of the existing manholes in the City system have inflow dishes and some have been previously inspected. However, due to the critical nature of Act 537 planning, all the manholes need to be inspected. The inspections and subsequent rehabilitation work will be phased over the next 10 years. The Phase 1 inspection commenced in the second quarter of 2023 and the Phase 2 inspections (and Phase 1 rehab work) will be completed in 2024. The Program will continue until all manholes in the City system have been inspected and rehabilitated as necessary. Board authorization for the Phase 1 inspection work was granted at the December 12, 2022 meeting. As 537 planning progressed in the first half of 2023, the City's Trout Creek Interceptor Basin was identified as being undersized for future peak flow events. In order to expedite the elimination of inflow in this area, an amendment to the December 2022 manhole inspection authorization is being requested at the August 14, 2023 Board meeting. Staff Responsibility: Phil DePoe

Project Title: KISS System Modeling - Final Alternatives Analysis (FAA)
Division / Funding: City of Allentown (AO)
Board Action Date: 8/28/2023
Status or Action Desired: Discussion
Project Phase: Planning Phase

Project Notes: The Kline's Island Sewer System (KISS) hydraulic model calibration to current flow characteristics was completed in June 2022 and will aid in the identification and evaluation of regional alternatives for both treatment and conveyance improvements through the year 2050, which is the current Act 537 planning horizon. The model is a comprehensive, calibrated sewer model for the entire KISS system using 2021 temporary meter flow data and rainfall data. Arcadis provided a brief overview of the model's strengths and weaknesses at the August 8, 2022 Board meeting, and the Capacity Problem Definition work was completed in November 2022. A Preliminary Screening of Alternatives (PSOA) phase was authorized at the October 10, 2022 Board Meeting. This work includes the narrowing down of all the potential storage, gravity conveyance, pumped conveyance, source reductions, and treatment options into manageable and realistic options for modeling purposes. The PSOA phase concluded in April of 2023 and the next major Act 537 planning phase is the Final Alternatives Analysis (FAA). Authorization of the FAA was granted at the April 24, 2023 Board meeting. This FAA modeling work will further refine the PSOA work and is anticipated to conclude by the end of October 2023. This will allow the region to start selecting solutions in late 2023 and into early 2024. An update on the FAA will be provided at the August 28, 2023 Board meeting. Staff Responsibility: Phil DePoe

WASTEWATER PROJECTS – SUBURBAN DIVISION

Project Title: Heidelberg Heights Sanitary Sewer Consent Order & Agreement

Division / Funding: Suburban Division

Board Action Date: 8/14/2023

Status or Action Desired: Approval

Project Phase: Construction Phase

Project Notes: In accordance with the Consent Order and Agreement (CO&A) executed by LCA and DEP in 2020, LCA is required to complete annual sanitary sewer system inflow and infiltration mitigation projects to eliminate hydraulic overloads and bypass at the Heidelberg Heights wastewater treatment plant. The Corrective Action Plan, which is incorporated into the CO&A, includes an implementation schedule that requires all original VCP sewer main and public laterals to be replaced by the end of 2024, followed by the investigation of private-side sewer components and removal/disconnection of all prohibited connections (basement drains, sump pumps, roof leaders, etc.). For the inspection program, LCA notified all system sewer customers in early 2022, and secured services from Keystone Engineering to perform third-party inspections. Data from this planning effort will be used in the following years to develop individual repair projects for residences with prohibited connections in order to comply with the Heidelberg Township Sewer System Rules and Regulations Ordinance (#2019-1). As of the end of 2022, approximately 27% of residences granted permission to perform a private-side sewer inspection. This effort will continue in 2023. Regarding the requirement replacement of all VCP sewer mains and public laterals in the system, the final phase of this sewer replacement project was bid in July 2023 and will be constructed by the end of 2023. Construction phase authorization will be requested at the August 14, 2023 Board meeting. This project will be funded in part by a $75,000 grant awarded to LCA through the Local Share Account program administered by the Commonwealth Financing Authority. Staff Responsibility: Jason Peters

WASTEWATER PROJECTS – KISS ACT 537

Project Title: Kline's Island WWTP - High-Rate Wet-Weather Treatment Pilot Study
Division / Funding: Allentown Division
Board Action Date: n/a
Status or Action Desired: Updated
Project Phase: Planning Phase

Project Notes: As part of the final Act 537 Plan that is due to DEP by March 2025, three separate alternatives are being evaluated to address current and future wet-weather events at the Kline's Island WWTP. One alternative involves construction of flow equalization tanks to store wet-weather flow. The second alternative involves constructing internal plumbing modifications and control systems to temporarily run plant treatment systems in parallel (vs. sequentially) during wet-weather scenarios. These first two alternatives are well understood and can be evaluated and costs estimated without further testing. The third alternative involves the construction of a high-rate wet-weather treatment system known as "BioActiflo," which is expected to be similar or lower in cost to other options being explored. Due to this being a newer technology, three rounds of bench scale testing for BioActiflo occurred in 2021 for proof-of-concept validation. The next step to determine if BioActiflo is a viable alternative is a full-scale pilot project, which would be required for permitting in the future if this option is selected. An authorization request for this pilot was granted at the November 14, 2022 Board meeting. The equipment arrived on site in late April of 2023 and the pilot study concluded in mid-July. Full results will available by late August 2023. Staff Responsibility: Phil DePoe

WASTEWATER PROJECTS – SUBURBAN DIVISION

Project Title: Lynn Township WWTP Final Clarifier Project
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: NEW
Project Phase: Design Phase

Project Notes: The Lynn Township wastewater treatment plant was constructed in the mid-1970s and acquired by LCA in 2012. The existing activated sludge plant has a single 20-foot diameter final clarifier, which was constructed in 2001 with provisions to add a future second clarifier. The existing clarifier has been in continuous service since 2001 and is in need of rehabilitation. The unit was undersized with respect to current plant flows, and redudancy is needed to facilitate maintenance and improve effluent quality. Design phase authorization is anticipated to be requested in the third quarter of 2023. Staff Responsibility: Chuck Volk

Project Title: Western Lehigh Manhole Rehabilitation Project - Phase 4
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: NEW
Project Phase: Design Phase

Project Notes: This project involves the rehabilitation of key manholes in the Western Lehigh Interceptor Service Area. The project includes flood-proofing and exterior concrete work and sealing of manholes, particularly those manholes in close proximity to the floodway, which experience floodwater inundation. The purpose of the project is to eliminate floodwater inflow into the system. The project scope for Phases 1 - 3 included approximately 150 manholes that were rehabilitated over the past 3 years. Design of Phase 4 of this project commenced with investigation efforts in fall 2022, and construction phase authorization is expected to be requested later in 2023. This project will be funded in part by a $200,000 grant awarded to LCA through the Local Share Account program administered by the Commonwealth Financing Authority. Staff Responsibility: Jason Peters

WASTEWATER PROJECTS – ALLENTOWN DIVISION

Project Title: Kline's Island WWTP: Substation No. 1 and Switchgear Replacement

Division / Funding: Allentown Division

Board Action Date: n/a

Status or Action Desired: Updated

Project Phase: Design Phase

Project Notes: The KIWWTP electrical service is supplied by two 12.4 kV power feeds from PPL, which enter Substation No. 1 and connect to the 12.4 kV switchgear, which distributes the 12.4 kV power to 480v Substation No. 1 and Substation No. 2. The substations distribute power to the various MCCs and loads throughout the plant. Per prior electrical condition assessments performed by consultants, the substations and primary switchgear (which are from the 1970s) are at the end of their useful life and in need of replacement. Substation No. 2 was replaced in 2019. This project will replace Substation No. 1 with a new 480v, 3,000 KVA walk-in type enclosure and replace the switchgear with new vacuum breaker technology equipment with automatic transfer capability designed to accommodate future plant upgrade loads. The preliminary basis of design was submitted to the City of Allentown as part of Major Capital Improvement approval process, with approval received in October 2022. Design phase approval was authorized at the 11/14/2022 Board meeting, and the project will be bid in Q3 of 2023. The Substantially Complete Design package was submitted to the City of Allentown on 7/13/2023 for review and comment. Staff Responsibility: Chuck Volk

PART 3 – Open Project List – No Updates

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Finance & Administration	LCA Strategic Plan - 2023 Quarterly Progress Reporting	All Divisions	n/a	Liesel Gross
Finance & Administration	Asset Management Roadmap & Strategic Asset Management Plan (SAMP)	All Divisions	Planning Phase	Albert Capuzzi
Finance & Administration	LCA Munis ERP System Planning & Re-Implementation	All Divisions	Planning Phase	Brooke Neve
System Operations	Suburban Water Facilities - SCADA System Upgrade	Suburban Division	Construction Phase	Chris Moughan
System Operations	Watershed Monitoring Program	Suburban Division	Ongoing	Andrew Moore
Water - Suburban	Central Lehigh and North Whitehall Systems – Water Supply Study	Suburban Division	Planning Phase	Phil DePoe
Water - Suburban	2022 Commercial Meter Replacement Project	Suburban Division	Construction Phase	Amy Kunkel
Water - Suburban	Water Main Replacement Program Cycle 6	Suburban Division	Construction Phase	Jason Peters
Water - Suburban	Fixed Base Meter Reading Stations	Suburban Division	Planning Phase	Amy Kunkel
Water - Suburban	Upper System Pump Station and Main Extension	Suburban Division	Design Phase	Amy Kunkel
Water - Suburban	Water Main Replacement Program Cycle 7 & 8	Suburban Division	Design Phase	Jason Peters
Water - Allentown	Large Meter Chamber Replacement	Allentown Division	Construction Phase	Amy Kunkel
Water - Allentown	Water Filtration Plant: PFAS Compliance Study	Allentown Division	Planning Phase	Albert Capuzzi
Water - Allentown	Water Main Replacement Program Cycles 7 & 8	Allentown Division	Design Phase	Jason Peters
Water - Allentown	Large Diameter Valve Rehabilitation & Replacement Program	Allentown Division	Design Phase	Chuck Volk

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Water - Allentown	Lead Service Line Replacement Program Planning	Allentown Division	Planning Phase	Andrew Moore
Water - Allentown	Water Main Replacement Program Cycle 6	Allentown Division	Construction Phase	Jason Peters
Water - Allentown	Water Filtration Plant: Filter Upgrade Project	Allentown Division	Design Phase	Chuck Volk
Water - Allentown	Water Filtration Plant: 2022-2023 Indenture Upgrades	Allentown Division	Construction Phase	Chuck Volk
Sewer - Act 537	KISS Act 537 Planning - Financial & Institutional Evaluation, Phase 2	City of Allentown (AO)	Planning Phase	Liesel Gross
Sewer - Act 537	KISS System Modeling - Preliminary Screening of Alternatives (PSOA)	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	Sanitary Sewer Collection System: City of Allentown Interceptor Inspections	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	KISS Act 537 Planning - Financial & Institutional Evaluation, Phase 1	City of Allentown (AO)	Project Closeout	Liesel Gross
Sewer - Act 537	Regional Sewer Capacity & Wet-Weather Planning - Regional Act 537 Plan Preparation	City of Allentown (AO)	Planning Phase	Phil DePoe
Sewer - Act 537	Kline's Island WWTP: Phase 1 AO Design Improvements	City of Allentown (AO)	On Hold	Phil DePoe
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	Regional Sewer Capacity & Wet-Weather Planning: Engineering & Program Support	Suburban Division	Planning Phase	Phil DePoe
Sewer - Act 537	Industrial Pretreatment Plant Master Plan	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	Upper Western Lehigh Pump Station and Force Main	Suburban Division	Design Phase	Amy Kunkel
Sewer - Act 537	Western Lehigh Service Area - Engineering & Program Support	Suburban Division	Planning Phase	Phil DePoe

Project Category	Project Title	Division / Funding	Project Phase	Staff Responsibility
Sewer - Suburban	Spring Creek Pump Station Upgrades	Suburban Division	Design Phase	Amy Kunkel
Sewer - Suburban	Pretreatment Plant (PTP) Electrical Study	Suburban Division	Planning Phase	Albert Capuzzi
Sewer - Suburban	Heidelberg Heights Wastewater Treatment Plant - Mechanical Screen 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	Lynn Township Corrective Action Plan	Suburban Division	Ongoing	Jason Peters
Sewer - Suburban	Park Pump Station Phase 2 Upgrade	Suburban Division	Construction Phase	Amy Kunkel
Sewer - Allentown	Kline's Island WWTP: Main and Auxiliary Pump Station Improvements	Allentown Division	Preliminary Design	Chuck Volk
Sewer - Allentown	Kline's Island WWTP: Primary Digester No. 2 Cleaning and Rehabilitation Project	Allentown Division	Construction Phase	Chuck Volk
Sewer - Allentown	Sanitary Sewer Collection System: I&I Source Reduction Program (LCA Year 1)	Allentown Division	Design Phase	Albert Capuzzi
Sewer - Allentown	Kline's Island WWTP: Effluent Disinfection and Dechlorination System Improvements	Allentown Division	Construction Phase	Chuck Volk
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: Wet Weather Capacity Enhancements	Allentown Division	Preliminary Design	Chuck Volk
Sewer - Allentown	Kline's Island WWTP: Intermediate Pump Station Improvements	Allentown Division	Preliminary Design	Chuck Volk
Sewer - Allentown	Lehigh Street (Rte. 145) Water and Sewer Main Relocation Project	Allentown Division	Construction Phase	Jason Peters
Sewer - Allentown	Sanitary Sewer Collection System: I&I Source Reduction Program (City Year 4)	City of Allentown (AO)	Construction Phase	Phil DePoe