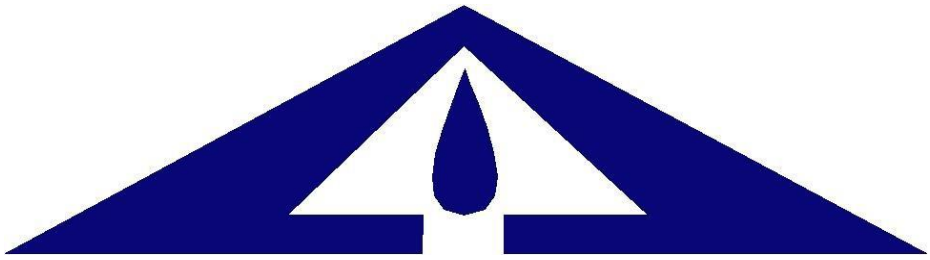

LEHIGH COUNTY AUTHORITY

ALLENTOWN, PA

FINAL 5-YEAR CAPITAL PLAN

SUBURBAN DIVISION

2023-2027

MAY 2022

LEHIGH COUNTY AUTHORITY
5-YEAR CAPITAL PLAN
2023-2027

TABLE OF CONTENTS

2023-2027 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	Sands Spring Division		X
UMD	Upper Milford Division	X	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
UW	Uncompleted Work [(1)]
S-7-MCI	Schedule-7 *(Lease Required)* Major Capital Improvement[(2)]
LCA-MCI	LCA Developed Major Capital Improvement[(2)]
COL	Change of Law[(3)]
Regular	A project that does not fit in any of the aforementioned special categories

(1) Uncompleted Work: City Projects that were supposed to be complete by the time of settlement. The City and LCA have reached an agreement for LCA to execute them.

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

(3) Change of Law: In accordance with the Change of Law Memorandum of Understanding

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
Master Plan	Master Plan
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

WATER

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION WATER
5-YEAR CAPITAL PLAN
2023–2027

CAPITAL FINANCING JUSTIFICATION

Capital additions to the Water System are justified by using six revenue sources: user charges, assessments or distribution tapping fees, supply tapping fees, contributions-in-aid of construction, reimbursements from the wastewater funds and grants. This would comprise the amount of cash available from operations for capital projects.

Beyond the operating cash available, remaining sources are project reserves from previous debt issuance and any new borrowing required.

The table below summarizes the capital project sourcing by year and each major financial sourcing category:

CAPITAL FINANCING SOURCES						
	2023	**2024**	**2025**	**2026**	**2027**	**TOTAL**
Project Costs	$4,402,000	$7,780,000	$7,130,000	$3,560,000	$3,400,000	$26,272,000
Sources of Funding:						
Current Cash Flows	$1,402,000	$3,325,000	$3,911,183	$3,560,000	$3,400,000	$15,598,183
Cash Reserves	-	-	$1,818,817	-	-	$1,818,817
New Borrowing	$3,000,000	$4,455,000	$1,400,000	-	-	$8,855,000
TOTAL FUNDING	**$4,402,000**	**$7,780,000**	**$7,130,000**	**$3,560,000**	**$3,400,000**	**$26,272,000**

Total spending on capital projects for the five-year period totals $26,272,000. Current cash flows and cash reserves over the period will provide $17,417,000 for capital projects. New borrowing for plan period projects will be in the amount of $8,855,000 over the five years for specific projects being executed each year.

The $8,855,000 borrowing is to fund non-annual projects in years 1, 2, and 3 of the plan period. To support the additional debt service worth $467k in year 5 on the $8,855,000 of total borrowing and annual inflation on operating expenses, a revenue increase of 5.50% will be required in year 1, 2, and 3.

CONDENSED CASH FLOW - SUBURBAN WATER					
US DOLLARS	**2023**	**2024**	**2025**	**2026**	**2027**
User Charges	16,123,016	17,009,782	17,945,320	18,304,226	18,670,311
Other Operating Revenues	38,724	38,724	38,724	38,724	38,724
Non-Operating Revenues	1,016,681	1,016,681	1,016,681	1,016,681	1,016,681
Operating expenses	(10,029,130)	(10,630,343)	(10,934,412)	(11,246,513)	(11,568,829)
Debt Service - Current Debt	(3,141,025)	(3,137,124)	(3,138,325)	(2,850,924)	(3,081,325)
Debt Service - NEW Debt	(148,461)	(390,685)	(466,805)	(466,805)	(466,805)
Investments Converting to Cash	-	-	-	-	-
Proceeds From NEW Debt	3,000,000	4,455,000	1,400,000	-	-
Capex	(4,985,750)	(8,336,250)	(7,680,000)	(3,778,750)	(3,487,500)
NET FUND FLOWS	**1,874,055**	**25,785**	**(1,818,817)**	**1,016,639**	**1,121,257**
Plan Volume Increase %	2.00%	2.00%	2.00%	2.00%	2.00%
User Charge Rate Increase %	3.50%	3.50%	3.50%	0.00%	0.00%
Total User Charge Revenue Increase	5.50%	5.50%	5.50%	2.00%	2.00%
Unrestricted Cash Balance	7,204,482	7,230,267	5,411,450	6,428,088	7,549,345
Unrestricted Investments	2,975,123	2,975,123	2,975,123	2,975,123	2,975,123
Total Unrestricted Balances	10,179,605	10,205,390	8,386,573	9,403,211	10,524,468
Days on Hand	262	248	181	209	238
DEBT SERVICE COVERAGE RATIO	2.17	2.11	2.24	2.45	2.30

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
2023-2027 CAPITAL PROGRAM
WATER

Project #	Name or Title of Proposal	Prj. Category	(1) Prj. Funding	Approval Stage (1)	Plan Total Cost*	This Capital Program							Prior Project Cost (2)	Future Project Cost (2)	Total Project Cost
						2022 *Budget Approved*	2023 Year 1	2024 Year 2	2025 Year 3	2026 Year 4	2027 Year 5	2023-2027 Total			
SD-W-A	Annual Projects	AM - Varies	LCA	A	$ 5,289,500	$ 662,500	$ 1,402,000	$ 825,000	$ 800,000	$ 800,000	$ 800,000	$ 4,627,000	$ -	$ -	$5,289,500
SD-W-12	Water Main Replacement Projects	AM - Varies	LCA	V	$ 15,100,000	$ 2,400,000	$ 2,500,000	$ 2,500,000	$ 2,500,000	$ 2,600,000	$ 2,600,000	$ 12,700,000	$ -	$ -	$15,100,000
SD-W-50	Fixed Base Meter Reading System	Sys Imp	LCA	P	$ 1,010,000	$ 100,000	$ 100,000	$ 350,000	$ 400,000	$ 60,000	$ -	$ 910,000	$ 45,000	$ -	$1,055,000
SD-W-55	Water Systems Master Planning	Sys Imp	LCA	A	$ 275,000	$ 100,000	$ 100,000	$ 75,000	$ -	$ -	$ -	$ 175,000	$ -	$ 100,000	$375,000
SD-W-56	Upper System Pump Station & Water Main Extension	Sys Imp	LCA	A	$ 250,000	$ 200,000	$ 50,000	$ -	$ -	$ -	$ -	$ 50,000	$ 60,000	$1,500,000	$1,810,000
SD-W-57	Water Meter Replacement Program	AM-Med	LCA	P	$ 2,660,000	450,000	50,000	30,000	2,030,000	100,000	-	2,210,000	$ -		$2,660,000
SD-W-58	Upper System Tank Installation Project	Sys Imp	LCA	P	$ 5,600,000	-	200,000	4,000,000	1,400,000	-	-	5,600,000			$5,600,000
	GRAND TOTAL				**$ 30,184,500**	**$ 3,912,500**	**$ 4,402,000**	**$ 7,780,000**	**$ 7,130,000**	**$ 3,560,000**	**$ 3,400,000**	**$ 26,272,000**	**$ 105,000**	**$ 1,600,000**	**$ 31,889,500**

(1) Reference Glossary of Acronyms & Terms found immediately after the Table of Contents. All projects are LCA funded
(2) If blank , cost is not applicable (annual project) or to be determined

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

Project Name	ANNUAL PROJECTS						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2022	**Project No.**	SD-W-A
Location	All LCA Suburban Divisions, Multiple Municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**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)	N/A	**Project inception date**	N/A
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	N/A
Will the Project Require Obtaining Land Rights	N/A		

Varies by system.

Detailed Project Description

This consolidated annual project is a collection of separate recurring small projects. This annual project includes the following: New Water Main Installation, Distribution Mains - Development & Service Connections, Distribution Mains - Upsizing/Contribution, Reservoir Rehabilitation/Maintenance, Water Company Acquisitions, Main Office/Operations Center Improvements, Mobile Equipment, Other Equipment, General Water System Improvements, Water Facilities Asset Management Improvements and New and Replacement Water Meters.

Project Drivers and Needs to be Met by the Project

The primary drivers for these projects are asset management, operational efficiency and revenue generation. Annual items help maintain the operation and satisfactory level of service for existing water supply, distribution, and support facilities in the Suburban Division, and accommodate water distribution needs due to growth.

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

This is an annual project, therefore, 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	5.5000%
Term (Years)	30

Explanation if Necessary

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

Prior Project Cost		N/A
Estimated Project Costs:		**2022-2027**
LCA Staff	$	500,000
Land Acquisition	$	-
Construction/Equipment	$	4,142,000
Professional Services	$	400,000
Other	$	50,000
Contingencies	$	200,000
Total Project Cost	**$**	**5,292,000**

Requested in this Capital Program	**$**	**4,627,000**

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

		Need	**Phase of Work**
2022 Budget		$ 662,500	service contract, planning, design & construction
1st Year	2023	$ 1,402,000	service contract, planning, design & construction
2nd Year	2024	$ 825,000	service contract, planning, design & construction
3rd Year	2025	$ 800,000	service contract, planning, design & construction
4th Year	2026	$ 800,000	service contract, planning, design & construction
5th Year	2027	$ 800,000	service contract, planning, design & construction

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

Project Name	WATER MAIN REPLACEMENT PROJECTS						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2022	**Project No.**	SD-W-12
Location	Various LCA Divisions located in multiple municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**Preparer**		JMP

Purpose of Expenditure *(check all that apply)*			
X	New Facility		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		Other (explain):

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

Varies by system - Main Replacements are located in multiple systems.

Detailed Project Description

This project entails replacement of aging cast iron (CI) water mains in LCA Central Lehigh and satellite water systems. Scope of work is prioritized based on break history, geology (sinkholes), pipe condition, pipe age, and probability and consequence of failure. The Capital Plan reflects the replacement of approximately one-mile of water main per year, per annual prioritization efforts. Annual funding is provided in the Capital Plan for replacing mains that exhibit high failure rates.

Project Drivers and Needs to be Met by the Project

Replacing CI mains will reduce the frequency of breaks in the system thereby saving the Authority repair costs, customer outages and reducing the potential for damage which can occur to private property.

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

This is an annual project, therefore, 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	5.5000%
Term (Years)	30

Explanation if Necessary

Replacement of aged cast iron mains will reduce the number of main breaks, thereby saving repair costs and reducing the possibility of ground subsidence and property damage. Exact savings to be determined.

Project No.	SD-W-12
Project Name	WATER MAIN REPLACEMENT PROJECTS

Prior Project Cost		N/A
Estimated Project Costs:		**2022-2027**
LCA Staff	$	580,000
Land Acquisition	$	-
Construction/Equipment	$	12,500,000
Professional Services	$	1,400,000
Other	$	20,000
Contingencies	$	600,000
Total Project Cost	**$**	**15,100,000**

Requested in this Capital Program	**$**	**12,700,000**

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

		Need	**Phase of Work**
2022 Budget		$ 2,400,000	design & construction
1st Year	2023	$ 2,500,000	design & construction
2nd Year	2024	$ 2,500,000	design & construction
3rd Year	2025	$ 2,500,000	design & construction
4th Year	2026	$ 2,600,000	design & construction
5th Year	2027	$ 2,600,000	design & construction

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

Project Name	FIXED BASE METER READING SYSTEM						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2022	**Project No.**	SD-W-50
Location	CLD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
X	New Facility		Correct Known or Potential Safety Issue
	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**	2019
Approx. No. of Customers Benefitted	19,000		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	TBD		

Detailed Project Description

Development of a fixed base system for meter reading. A communication study by Sensus to evaluate the number and location of antenna towers for Suburban area coverage was performed in 2019 and updates to the study are performed as site locations are refined. Eight antennas are anticipated in order to provide adequate coverage of the Suburban system.

Project Drivers and Needs to be Met by the Project

The new system will allow for more efficient meter reading, consistent billing and faster dispute resolution. As meters are upgraded, the AMI system will allow us to monitor customer usage in real time and proactively address problems.

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

The radio transceiver units were upgraded in 2019/2020 and are now compatible with an AMI system. An Engineer was retained to optimize site locations to better refine installation costs. In 2022 a temporary tower/base station will be erected at two locations to demonstrate the capabilities of the system. Following an internal cost/benefit analysis, an engineer will prepare site plans and facilitate Township approvals for the antenna sites.

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

Project to commence in 2020.

Project No.	SD-W-50
Project Name	FIXED BASE METER READING SYSTEM

Prior Project Cost	$ 45,000
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 50,000
Land Acquisition	$ 50,000
Construction/Equipment	$ 700,000
Professional Services	$ 140,000
Other	$ 10,000
Contingencies	$ 60,000
Total Project Cost	**$ 1,055,000**

Requested in this Capital Program	**$ 910,000**

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

		Need	**Phase of Work**
2022 Budget		$ 100,000	Planning
1st Year	2023	$ 100,000	Design
2nd Year	2024	$ 350,000	Construction
3rd Year	2025	$ 400,000	Construction
4th Year	2026	$ 60,000	Construction
5th Year	2027	$ -	

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

Project Name	WATER SYSTEMS MASTER PLANNING						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2022	**Project No.**	SD-W-55
Location	CLD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Regulatory	**Preparer**		PD/AK

	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		Equipment/Infrastructure at End of Useful Life
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2022
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2024
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project involves the preparation of a preliminary water supply study for two major Suburban Water Systems. (Central Lehigh and North Whitehall Division). The study will review supply capacity requirements to meet current and future demands, and evaluate existing water sources, storage, and interconnections to ensure long-term supply needs can be met. From this study, additional engineering work will be initiated to develop water supply projects that enhance the region's water system resiliency and redundancy. This water supply study will serve as the backbone for future development of a Master Plan for the entire LCA Suburban Water System.

Project Drivers and Needs to be Met by the Project

The study aligns with LCA's Strategic Plan to identify and evaluate feasible means to address current and long-term water supply needs in the CLD and NWD. The study will identify potential additional sources to supplement flow should water demand increase due to development in the Western Lehigh service area or a potential large industrial user. The study will provide information which will allow us to prioritize and budget for the addition of the wells as sources of supply.

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

An Engineering consultant has been retained to complete the first phase of the study in 2022. Additional studies or capital projects recommended in the study are to be determined.

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

Project No.	SD-W-55
Project Name	WATER SYSTEMS MASTER PLANNING

Prior Project Cost		$	-
Estimated Project Costs:	**2022-2027**		
LCA Staff		$	30,000
Land Acquisition		$	-
Construction/Equipment		$	-
Professional Services		$	140,000
Other		$	-
Contingencies		$	30,000
Total Project Cost		**$**	**200,000**

Requested in this Capital Program	**$**	**175,000**

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

		Need	**Phase of Work**
2022 Budget		$ 100,000	Study
1st Year	2023	$ 100,000	Study
2nd Year	2024	$ 75,000	Study
3rd Year	2025	$ -	
4th Year	2026	$ -	
5th Year	2027	$ -	

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

Project Name	UPPER SYSTEM PUMP STATION AND WATER MAIN EXENSION						
Budget Area	Water	**Department**	Capital Works	**Date**	1/27/2022	**Project No.**	SD-W-56
Location	CLD			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		ELH

	Purpose of Expenditure *(check all that apply)*		
X	New Facility		Correct Known or Potential Safety Issue
	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): Provide capacity for future growth

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?	Yes	**Anticipated Project completion date**	TBD
Will the Project Require Obtaining Land Rights	Yes		

Detailed Project Description

The project consists of improvements to LCA's Western Lehigh water distribution system ("CLD Upper System") that is located north of I-78 and west of the village of Fogelsville. The first phase of the project consisted of water modeling and an engineering study that was completed in 2020 to evaluate future water demand scenarios and alternatives for system improvements to provide adequate water supply and pressure to future industrial customers. The study recommended an interconnection with the CLD Lower System. This consists of a water main extension under I-78 (via steel casing pipe acquired from Upper Macungie Township) and a new pump station on the north side of I-78 to provide adequate supply conditions for future customers.

Project Drivers and Needs to be Met by the Project

The project will meet the supply needs of potential large industrial water users in the CLD Upper System, located in western Lehigh County north of I-78. Additional water modeling may be required to size the waterline to the large user. The design and construction of improvements to convey water to a large user, including an offsite waterline and booster pumping station, will depend upon execution of a DWSA with the potential large user. We anticipate that these improvement costs will be the responsibility of the large user. LCA's objective is to be proactive and identify capital improvements required in order to provide adequate water service to meet future demands. The scope of the capital improvements is not known at this time and is dependent upon approved development(s) in the Upper System.

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

The engineering study to evaluate supply capacity and distribution piping needs in the Upper System was completed in 2020. Acquisition of the casing pipe owned by UMT across I-78 was completed in 2021 (Cap Ex $40,000). Design will begin in early 2022 on a capped PVC waterline to be installed through the casing pipe. Construction will follow later that year so the Penn DOT HOP can be closed (Estimated $70,000). The design phase of the pump station had been accelerated when a dairy proposed to be constructed within the next two years. However, in early January the developer decided to terminate its project. Nevertheless, design will continue through substantial completion of the mechanical design. Future distribution improvements schedule is dependent upon development timing and demand.

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

Project No.	SD-W-56
Project Name	UPPER SYSTEM PUMP STATION AND WATER MAIN EXENSION

Prior Project Cost		60,000
Estimated Project Costs:	**2022-2027**	
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	80,000
Professional Services	$	110,000
Other	$	5,000
Contingencies	$	25,000
Total Project Cost	**$**	**310,000**

Requested in this Capital Program	**$**	**50,000**

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

		Need	**Phase of Work**
2022 Budget		$ 200,000	Install waterline in casing. Permit level pump station design.
1st Year	2023	$ 50,000	Permitting and final pump station design
2nd Year	2024	$ -	
3rd Year	2025	$ -	
4th Year	2026	$ -	
5th Year	2027	$ -	

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

Project Name	WATER METER REPLACEMENT PROJECT						
Budget Area	Water	**Department**	Capital Works	**Date**	1/21/2022	**Project No.**	SD-W-57
Location	All Suburban Divisions, located in various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Med	**Secondary**	Efficiency	**Preparer**		ALK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		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)	20	**Project inception date**	2022
Approx. No. of Customers Benefitted	6,183		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

The Project includes the replacement of ~139 each 1-1/2" and 2" water meters (2022) and 6,044 each 5/8" and 1" meters (2025) that have reached the end of their useful lives. All new meters will have radio-read (RR) capability.

Project Drivers and Needs to be Met by the Project

The probability of inaccuracies in meter readings increase with age and usage of the meters. The accuracy of the new meters should have the potential to increase user revenues. Secondly, RR technology will increase meter reading accuracy and efficiency that will allow operators to focus efforts in other critical technical areas.

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

Aging meters are periodically replaced as part of an on-going program. The construction of the 2018 Water Meter Replacement project included the installation of approximately 3,000 new meters.

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

Revenue Impact	
Gain/(Loss) in Annual Revenue	$ 100,000
Assessment, Contribution in Aid-of-Construction	N/A
Other	

Borrowing Information	
Interest Rate	5.5000%
Term (Years)	30

Explanation if Necessary

An increase in revenue is anticipated as older meters are replaced. This is due to wear on internal parts that generally causes lower measurements. A 5% increase was assumed in the revenue gain reported above.

Project No.	SD-W-57
Project Name	WATER METER REPLACEMENT PROJECT

Prior Project Cost		$ 1,500,000
Estimated Project Costs:	**2022-2027**	
LCA Staff		$ 75,000
Land Acquisition		$ -
Construction/Equipment		$ 2,340,000
Professional Services		
Other		$ 10,000
Contingencies		$ 235,000
Total Project Cost		**$ 4,160,000**

Requested in this Capital Program	**$ 2,210,000**

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

		Need	**Phase of Work**
2022 Budget		$ 450,000	Construction
1st Year	2023	$ 50,000	Construction
2nd Year	2024	$ 30,000	Design
3rd Year	2025	$ 2,030,000	Design/Construction
4th Year	2026	$ 100,000	Construction
5th Year	2027	$ -	

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

Project Name	UPPER SYSTEM TANK INSTALLATION PROJECT						
Budget Area	Water	**Department**	Capital Works	**Date**	3/29/2022	**Project No.**	SD-W-58
Location	CLD Upper System, Upper Macungie Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		CEV

Purpose of Expenditure *(check all that apply)*			
X	New Facility		Correct Known or Potential Safety Issue
	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)	50	**Comments**
Approx. No. of Customers Benefitted	N/A	
Is this System part of a Common User Rate?	yes	
Will the Project Require Obtaining Land Rights	TBD	

Detailed Project Description

Reservoir No. 1, located just northwest of the village of Fogelsville, provides storage for the Central Lehigh Division Upper System ("Upper System"), which is generally located north of I-78 and west of Rt 309. The 2 million gallon steel tank was built in 1971 and will have structural repairs performed in 2022 to extend service life. Additional storage is needed in the Upper System to provide for long term system capacity needs, improve system resilience, and provide for system redundancy for maintenance. The conceptual project consists of a new 2 million gallon concrete storage tank and connecting transmission main to be erected adjacent to the existing Reservoir No. 1 tank or at a remote site to be determined during preliminary design.

Purpose and Needs to be Met by the Project

There is a significant vulnerability in the Upper System, as demonstrated by recent operations and maintanance issues, due to a single tank providing storage to a large service area. Although the existing tank volume is adequate for current needs, it is insuffient to support future storage needs in the Upper System from anticipated growth. Historical provisions were made to install a second tank to be located alongside the Reservoir No. 1 tank. The new storage facility will have a positive impact on reliability, fire flows, and operational flexibility in the Upper System.

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

An Upper System water supply evaluation was performed by Gannett Fleming in 2020 to determine system capacity and quantify current and future system demainds for supporting a new industrial user looking to develop in the Upper System, which included an evaluation of Upper System storage adequacy. A Water Supply Study is being performed in 2022 as part of the Water Systems Master Planning effort which will focus on future needs. The 2022 Study will address storage when evaluating new sources of water.

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.	SD-W-58
Project Name	UPPER SYSTEM TANK INSTALLATION PROJECT

Estimated Project Costs :		
LCA Staff	$	50,000
Land Acquisition	$	-
Construction/Equipment	$	5,000,000
Professional Services	$	250,000
Other	$	-
Contingencies	$	300,000
Total Project Cost	**$**	**5,600,000**

Requested in this Capital Program	**$**	**5,600,000**

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

Source of Funds						
		Need	**Source**			
			Operating Revenues	Borrowing	Assessment, Contr.-in-Aid	Reserves
2022						
1st Year	2023	$ 1,000,000				
2nd Year	2024	$ 4,000,000				
3rd Year	2025	$ 600,000				
4th Year	2026					
5th Year	2027					

WASTEWATER

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
WASTEWATER
5-YEAR CAPITAL PLAN
2023–2027

CAPITAL FINANCING JUSTIFICATION

Capital additions to the Wastewater System are justified by calculating the operating cash available based upon projections of revenues over the five-year period. Beyond the operating cash available, remaining sources are project reserves from previous debt issuance and any new borrowing required.

The table below summarizes the capital project sourcing by year and each major financial sourcing category:

CAPITAL FINANCING SOURCES						
	2023	**2024**	**2025**	**2026**	**2027**	**TOTAL**
Project Costs	$5,087,000	$5,092,000	$4,142,000	$1,972,000	$2,057,000	$18,350,000
Sources of Funding:						
Current Cash Flows	$5,017,953	$4,920,155	$4,142,000	$1,972,000	$2,057,000	$18,109,108
Cash Reserves	$69,047	$171,845	-	-	-	$240,892
New Borrowing	-	-	-	-	-	-
TOTAL FUNDING	**$5,087,000**	**$5,092,000**	**$4,142,000**	**$1,972,000**	**$2,057,000**	**$18,350,000**

Total spending on capital projects for the five-year period totals $18,350,000. Current cash flows and cash reserves over the period will provide $18,350,000 for capital projects. No new borrowing is required.

Revenue requirements will also be impacted by inflation for both the WLI group along with other users of the system. Signatory Revenue increases by year to support the capital plan are as follows:

Year 2022 1.3%

Year 2023 1.4%

Year 2024 1.4%

Year 2025 1.4%

Year 2026 1.4%

CONDENSED CASH FLOW - SUBURBAN WASTEWATER					
Dollars	**2023**	**2024**	**2025**	**2026**	**2027**
User Charges	19,033,749	19,292,998	19,560,024	19,835,061	20,118,349
Other Operating Revenues	-	-	-	-	-
Non-Operating Revenues	990,769	1,016,832	1,043,676	1,071,326	1,099,805
Operating expenses	(13,687,013)	(14,097,623)	(14,520,551)	(14,956,168)	(15,404,852)
Debt Service - Current Debt	(735,802)	(735,802)	(735,802)	(735,802)	(735,802)
Debt Service - NEW Debt	-	-	-	-	-
Investments Converting to Cash	-	-	-	-	-
Proceeds From NEW Debt	-	-	-	-	-
Capex	(5,670,750)	(5,648,250)	(4,692,000)	(2,190,750)	(2,144,500)
NET FUND FLOWS	**(69,047)**	**(171,845)**	**655,347**	**3,023,667**	**2,933,000**
User Charge Revenue Increase %	1.3%	1.4%	1.4%	1.4%	1.4%
Unrestricted Cash Balance	9,195,238	9,023,393	9,678,739	12,702,407	15,635,407
Unrestricted Investments	7,757,276	7,757,276	7,757,276	7,757,276	7,757,276
Total Unrestricted Balances	16,952,514	16,780,669	17,436,015	20,459,683	23,392,683
Unrestricted Cash - Days on Hand	245	234	243	310	370
DEBT SERVICE COVERAGE RATIO	8.61	8.44	8.27	8.09	7.90

Sourcing of Projects and Debt Service related to various systems is as follows:

BY SYSTEM	PROJECTS	TOTAL	CURRENT FLOWS	CASH RESERVES	NEW DEBT
Annual Projects	SA	$1,935,000	$1,935,000	-	-
Western Lehigh Interceptor	S3, S4, S7, S9, S24, S28	$8,650,000	$8,650,000	-	-
LCA Wastewater Treatment Plant	S22	$3,700,000	$3,700,000	-	-
Common Rate Collector Systems	S6, S10, S17, S18	$1,300,000	$1,059,108	$240,892	-
Arcadia West	S8	$365,000	$365,000	-	-
Lynn Township	S25, S26	$400,000	$400,000	-	-
Little Lehigh Relief Interceptor System	S15	$2,000,000	$2,000,000	-	-
	TOTAL	**$18,350,000**	**$18,109,108**	**$240,892**	**-**

LEHIGH COUNTY AUTHORITY
SUBURBAN DIVISION
2023-2027 CAPITAL PROGRAM
WASTEWATER

Project #	Name or Title of Proposal	Prj. Category	Approval Stage (1)	Plan Total Cost	This Capital Program							Prior Project Cost (2)	Future Project Cost (2)	Total Project Cost
					2022 Budget Approved	2023 Year 1	2024 Year 2	2025 Year 3	2026 Year 4	2027 Year 5	2023-2027 Total			
	Operating/Capital Reserve Funds													
	Annual													
SD-S-A	Annual Projects	AM - Varies	A	$ 2,165,000	$ 230,000	$ 277,000	$ 302,000	$ 302,000	$ 327,000	$ 727,000	$ 1,935,000	$ -		$2,165,000
	Subtotal			**$ 2,165,000**	**$ 230,000**	**$ 277,000**	**$ 302,000**	**$ 302,000**	**$ 327,000**	**$ 727,000**	**$ 1,935,000**	**$ -**		**$2,165,000**
	Pretreatment Plant													
SD-S-22	Pretreatment Plant Improvements	AM - Varies	A	$ 4,400,000	$ 700,000	$ 700,000	$ 700,000	$ 700,000	$ 800,000	$ 800,000	$ 3,700,000	$ -		$4,400,000
	Subtotal			**$ 4,400,000**	**$ 700,000**	**$ 700,000**	**$ 700,000**	**$ 700,000**	**$ 800,000**	**$ 800,000**	**$ 3,700,000**			**$4,400,000**
	Western Lehigh Interceptor													
SD-S-3	Central Lehigh County WW Capacity Planning & Expansion	New Cust	V	$ 1,700,000	$ 400,000	$ 500,000	$ 500,000	$ 250,000	$ 50,000	$ -	$ 1,300,000	$ 600,000		$2,300,000
SD-S-4	Spring Creek Force Main Air/Vacuum Valve Replacements	Sys Imp	C	$ 140,000	$ 40,000	$ 50,000	$ 50,000	$ -	$ -	$ -	$ 100,000	$ 48,000	$0	$188,000
SD-S-7	WLI Major Rehabilitation and Repairs	Regulatory	P	$ 450,000	$ -	$ 100,000	$ 100,000	$ 100,000	$ 75,000	$ 75,000	$ 450,000	$ -	$250,000	
SD-S-9	Spring Creek Force Main Condition Assessment	AM-High	S	$ 350,000	$ -	$ -	$ 50,000	$ 250,000	$ 50,000	$ -	$ 350,000	$ -	$0	$350,000
SD-S-24	Signatory I & I Investigation & Remediation Program	Regulatory	V	$ 1,800,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 300,000	$ 1,500,000	$ -	$300,000	$2,100,000
SD-S-28	Upper Western Lehigh Interceptor & Force Main	Regulatory	A	$ 5,050,000	$ 100,000	$ 700,000	$ 2,000,000	$ 2,000,000	$ 250,000	$ -	$ 4,950,000	$ -	$0	$5,050,000
	Subtotal			**$ 9,490,000**	**$ 840,000**	**$ 1,650,000**	**$ 3,000,000**	**$ 2,900,000**	**$ 725,000**	**$ 375,000**	**$ 8,650,000**	**$ 648,000**	**$550,000**	**$9,988,000**
	Satellite Systems													
SD-S-6	Wynnewood I & I Investigation & Remediation Program	AM - Varies	V	$ 150,000	$ 25,000	$ 35,000	$ 40,000	$ 40,000	$ 5,000	$ 5,000	$ 125,000	$ 20,000	$25,000	$ 195,000
SD-S-8	Arcadia West WWTP Mechanical Screen	Efficiency	P	$ 415,000	$ 50,000	$ 100,000	$ 225,000	$ 40,000	$ -	$ -	$ 365,000	$ -	$0	$ 415,000
SD-S-10	SSES (Weisenberg, UMiT, Lowhill)	Regulatory	V	$ 100,000	25,000	25,000	25,000	25,000	-	-	$ 75,000	$ -	$0	$ 100,000
SD-S-17	Heidelberg Heights I & I Investigation & Remediation Program	AM - Varies	V	$ 900,000	$ 300,000	$ 300,000	$ 100,000	$ 100,000	$ 50,000	$ 50,000	$ 600,000	$ 850,000	$50,000	$ 1,800,000
SD-S-18	Heidelberg Heights WWTP Rehabilitation	AM - High	P	$ 550,000	$ 200,000	$ 250,000	$ 50,000	$ 10,000	$ 40,000	$ -	$ 350,000	$ 210,000		$ 760,000
SD-S-25	Lynn Township WWTP Upgrades & Expansion Design	AM - High	P	$ 225,000	$ 25,000	$ 100,000	$ 100,000	$ -	$ -	$ -	$ 200,000	$ 5,000		$ 230,000
SD-S-26	Lynn Township I & I Investigation & Remediation Program	AM - High	V	$ 225,000	$ 25,000	$ 75,000	$ 50,000	$ 25,000	$ 25,000	$ 25,000	$ 200,000	$ 170,000	$50,000	$ 445,000
	Subtotal			**$ 2,715,000**	**$ 650,000**	**$ 960,000**	**$ 590,000**	**$ 240,000**	**$ 120,000**	**$ 155,000**	**$ 2,065,000**	**$ 1,255,000**	**$125,000**	**$ 4,095,000**
	Little Lehigh Relief Interceptor System													
SD-S-15	Park Pump Station Rehabilitation/Improvements	AM - High	C	$ 2,400,000	$ 400,000	$ 1,500,000	$ 500,000	$ -	$ -	$ -	$ 2,000,000	$ 4,000,000	$0	$ 6,400,000
	Subtotal			**2,400,000**	**400,000**	**1,500,000**	**500,000**	**-**	**-**	**-**	**2,000,000**	**4,000,000**	**-**	**6,400,000**
	GRAND TOTAL WASTEWATER PROJECTS			**$ 21,170,000**	**$ 2,820,000**	**$ 5,087,000**	**$ 5,092,000**	**$ 4,142,000**	**$ 1,972,000**	**$ 2,057,000**	**$ 18,350,000**	**$ 5,903,000**	**$ 675,000**	**$ 27,048,000**

(1) Reference Glossary of Acronyms & Terms found immediately after the Table of Contents. All projects are LCA funded.
(2) If blank , cost is not applicable (annual project) or to be determined

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

Project Name	ANNUAL PROJECTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-A
Location	LCA WLI facilities located in various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Efficiency	**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)	N/A		**Project inception date**	N/A
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	No			

Detailed Project Description

This is a consolidated annual project that has been previously listed as separate smaller annual projects. This annual project includes the following: Mobile Equipment (a new jet/vac truck is proposed for 2027), Sewer Company Acquisitions, Other Equipment, Wastewater Facility Asset Management Upgrades, General Sewer System Improvements, and development related service connections and extensions.

Project Drivers and Needs to be Met by the Project

Asset management and efficiency are the primary project drivers. Annual improvements help maintain the operation and satisfactory level of service of various wastewater facilities in the Suburban Division.

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

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

Prior Project Cost	N/A
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 250,000
Land Acquisition	$ -
Construction/Equipment	$ 1,565,000
Professional Services	$ 200,000
Other	$ 50,000
Contingencies	$ 100,000
Total Project Cost	**$ 2,165,000**

Requested in this Capital Program	**$ 1,935,000**

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

		Need	**Phase of Work**
2022 Budget		$ 230,000	procurement, planning, design & construction
1st Year	2023	$ 277,000	procurement, planning, design & construction
2nd Year	2024	$ 302,000	procurement, planning, design & construction
3rd Year	2025	$ 302,000	procurement, planning, design & construction
4th Year	2026	$ 327,000	procurement, planning, design & construction
5th Year	2027	$ 727,000	procurement, planning, design & construction

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

Project Name	PRETREATMENT PLANT IMPROVEMENTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-22
Location	LCA Pretreatment Plant *(Industrial Blvd & Rt 100)*			**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		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)	20	**Project inception date**	N/A
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		

Provides pretreatment for industrial customers such as Boston Beer, Coca-Cola, Nestle Waters, Niagara, Ocean Spray, Bimbo and others.

Detailed Project Description

This capital project is a comprehensive on-going program to address the continued reliability and functionality of the LCA Wastewater Pre-treatment Plant. Planned projects include Phase 2 SCADA system implementation, security upgrades, belt filter press #1 and #4 rebuilds, air deck mixer replacements (multi-year), solids building HVAC system upgrade, primary clarifiers mechanical refurbish (multi-year), final clarifiers drive replacements (multi-year), annual pavement rehabilitation, cryogenic plant control center modernization, and miscellaneous mechanical and electrical upgrades/replacements.

Project Drivers and Needs to be Met by the Project

The primary project drivers are asset management and system improvements. This facility is critical to the local economy and growth in the Western Lehigh sewer service area. Capital improvements are needed annually to maintain the level of service for the pretreatment facility, which has been in continuous operation since 1990, with significant equipment exposed to corrosive &/or severe duty conditions. The increased industrial loading rates experienced since the plant was placed into service drives the need for repairs, replacements and process modifications/optimization. The Capital Plan intends to maintain the reliability, performance, and structural integrity of the physical plant while maintaining economic viability.

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

A semi-annual program to rebuild the belt filter presses was started in 2015. Annual pavement reconstruction projects are performed on the main access routes used by the waste hauler trucks within the plant site to replace failed and deteriorated asphalt pavement with concrete pavement. The SCADA system and grease station projects were completed in 2019. Replacement of the cryogenic plant "B-Mac" compressor was completed in 2019, along with other capital improvements to the cryogenic plant. In 2020 a project to modify the waste hauler station piping in order to pre-thicken the waste (prior to conveyance to the digesters) will be completed, along with mechanical upgrades of the 3 digesters, pavement rehabilitation, and influent pump station upgrade.

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

Exact costs to be determined.

Project No.	SD-S-22
Project Name	PRETREATMENT PLANT IMPROVEMENTS

Prior Project Cost	N/A
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 50,000
Land Acquisition	$ -
Construction/Equipment	$ 4,000,000
Professional Services	$ 250,000
Other	$ -
Contingencies	$ 100,000
Total Project Cost	**$ 4,400,000**

Requested in this Capital Program	**$ 3,700,000**

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

		Need	**Phase of Work**
2022 Budget		$ 700,000	planning, design & construction
1st Year	2023	$ 700,000	planning, design & construction
2nd Year	2024	$ 700,000	planning, design & construction
3rd Year	2025	$ 700,000	planning, design & construction
4th Year	2026	$ 800,000	planning, design & construction
5th Year	2027	$ 800,000	planning, design & construction

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

Project Name	CENTRAL LEHIGH COUNTY WASTEWATER CAPACITY PLANNING & EXPANSION						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-3
Location	Western Lehigh LCA Service Area tributary to the AD WWTP			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Rev Opprt	**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
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): SD-Future Wastewater Treatment Capacity

Additional Information			
Expected Useful Life (Years)	30	**Project inception date**	2009
Approx. No. of Customers Benefitted	N/A		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

Scope involves planning for additional treatment capacity for WLI service area. This planning project is needed for future wastewater treatment capacity and covers either expanding the Kline's Island Wastewater Treatment Plant (KIWWTP) or converting the Pretreatment Plant to a full treatment facility, which includes discharge pumping and piping. This project is also needed for planning additional conveyance capacity for the WLI area (including the potential Regional Park PS in the future, if needed). Completion of the Regional Act 537 Plan is set for March 2025 and design/construction of the yet to be selected options are assumed to begin in 2026 under future projects.

Project Drivers and Needs to be Met by the Project

The City's Kline's Island WWTP does not currently have enough available wastewater treatment allocation to meet LCA's future needs through 2050. To meet wastewater treatment needs, the best available options (expand KIWWTP or upgrade the Pretreatment Plant (PTP) to a direct discharge facility) must be investigated. Although some recovery of capacity will occur through inflow and infiltration removal, there is no wastewater allocation remaining for sale. Updating the 537 Plan is the primary cost factor for planning. Capital costs will be recovered through a combination of increased user fees and capital recovery fees to new customers. The risk consequence of not doing this project includes regulatory action against the signatory group.

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

In 2013, ARRO, Inc. and AECOM were retained to prepare an Act 537 Plan (LCA focused, with City partner) to evaluate the alternatives for an additional 4 MGD of wastewater treatment capacity. The project was put on hold by DEP in 2016, with an emphasis on managing wet weather and removing I&I. In 2019, per regulatory action by DEP, preliminary work on the Act 537 Plan (Regional) was restarted. The full Act 537 Plan (Regional) due is now due by March 2025. An Interim Act 537 Plan (Regional) was submitted to DEP in September 2020 and included flow projections through 2025. Proposed work from 2022-2025 will be focused on alternative analyses as it specifically relates to the WLI service area and the subsequent impact on the entire sewer system. 2022 also includes Master Plan preparation for the PTP.

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

Project No.	SD-S-3
Project Name	CENTRAL LEHIGH COUNTY WASTEWATER CAPACITY PLANNING & EXPANSION

Prior Project Cost		$	600,000
Estimated Project Costs:	**2022-2027**		
LCA Staff		$	150,000
Land Acquisition		$	-
Construction/Equipment		$	-
Professional Services		$	1,450,000
Other		$	-
Contingencies		$	100,000
Total Project Cost		**$**	**2,300,000**

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

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

		Need	**Phase of Work**
2022 Budget		$ 400,000	537 Planning
1st Year	2023	$ 500,000	537 Planning
2nd Year	2024	$ 500,000	537 Planning
3rd Year	2025	$ 250,000	537 Planning
4th Year	2026	$ 50,000	537 Planning
5th Year	2027	$ -	

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

Project Name	SPRING CREEK FORCEMAIN AIR/VACUUM VALVE REPLACEMENTS						
Budget Area	Wastewater	**Department**	Operations	**Date**	1/12/2022	**Project No.**	SD-S-4
Location	WLI, various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Sys Imp	**Secondary**	Efficiency	**Preparer**		AK

	Purpose of Expenditure *(check all that apply)*		
	New Facility		Correct Known or Potential Safety Issue
	Existing Facility - Rehabilitation/Upgrade		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)	20	**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	No		

**= The Spring Creek Pump Station & Force Main provides service to 7 WL signatories.

Detailed Project Description

Replacement of inoperable and/or badly corroded original air release or combination air/vacuum release valves (ARV's) on the existing Spring Creek Pump Station force main.

Project Drivers and Needs to be Met by the Project

Inoperable air release valves contribute to both poor hydraulics and wasted pump energy created by allowing air to either accumulate at high points along the force main, or to not provide proper vacuum release. Replacing the air valves should improve the pump station and force main performance. The odor control canisters at various ARVs will be replaced as part of construction.

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

Design work was completed in 2018. Project to be implemented as an annual upgrade with 2 or 3 ARVs replaced per year, starting in 2022. Construction schedule is dependent upon ability to take Spring Creek Pump Station off-line for a day to drain the impacted section of force main to facilitate replacement of an ARV.

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

Replacement of the air valves should improve pump efficiency and hydraulic performance per the original design intent, which may yield a nominal reduction in pump horsepower required to convey wastewater and therefore realize a nominal savings in electricity costs.

Project No.	SD-S-4
Project Name	SPRING CREEK FORCEMAIN AIR/VACUUM VALVE REPLACEMENTS

Prior Project Cost		$ 48,000
Estimated Project Costs:	**2022-2027**	
LCA Staff		$ 20,000
Land Acquisition		$ -
Construction/Equipment		$ 80,000
Professional Services		$ 30,000
Other		$ -
Contingencies		$ 10,000
Total Project Cost		**$ 188,000**

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

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

		Need	**Phase of Work**
2022 Budget		$ 40,000	Construction
1st Year	2023	$ 50,000	Construction
2nd Year	2024	$ 50,000	Construction
3rd Year	2025	$ -	
4th Year	2026	$ -	
5th Year	2027	$ -	

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

Project Name	WESTERN LEHIGH INTERCEPTOR REHABILIATION AND REPAIRS						
Budget Area	Wastewate	**Department**	Capital Works	**Date**	2/8/2021	**Project No.**	SD-S-7
Location	Western Lehigh LCA Service Area tributary to the AD WWTP			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	AM - High	**Preparer**		CV/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 Lif
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2022
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	No		

Detailed Project Description

This project is a result of continued planning and investigatory work in the Western Lehigh Interceptor (WLI) service area. The project scope includes inflow and infiltration investigation and remediation of sanitary sewer manholes and interceptor main line, in order to extend service life and seal the system from wet weather I/I, with the ultimate objective of demonstrating additional conveyance capacity for the WLI area. The work includes testing and sealing pipe joints, internal lining of damaged sewer main line, flood-proofing manholes, replacing manhole frames and covers, structural manhole repairs, and sealing of manhole interiors.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory. The in-progress regional Act 537 planning required by DEP has mandated implementation of I/I source removal work to mitigate Trexlertown area capacity problems. Repairing and sealing leaky sewerage system components will not only service to comply with the I/I reduction mandate, but also align with LCA's strategic plan for implementing a comprehensive asset management program.

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

A "Test & Seal" project was performed in the WLI service area in 2016 and 2017 to investigate and mitigate leaking interceptor pipe joints. Follow-up CCTV inspection was conducted in 2018 to identify problems following peak weather events. Repair of leaking end seals was completed in 2018, for interceptor sections that were previously lined in sections that experienced liner separation at manholes. In 2020 and 2021, annual manhole flood proofing and related repairs was performed. In 2022 a third phase of manhole flood proofing will be conducted. Subsequent rehabilitation work will be prioritized based on continued inspection and investigation efforts.

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

Reducing inflow and infiltration in the WLI sewer area is a regulatory requirement to eliminate dry and wet weather overflows

Project No.	SD-S-7
Project Name	WESTERN LEHIGH INTERCEPTOR REHABILIATION AND REPAIRS

Prior Project Cost	$0
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 40,000
Land Acquisition	$ -
Construction/Equipment	$ 320,000
Professional Services	$ 60,000
Other	
Contingencies	$ 30,000
Total Project Cost	**$ 450,000**

Requested in this Capital Program	**$ 450,000**

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

		Need	**Phase of Work**
2022 Budget		$ -	
1st Year	2023	$ 100,000	planning & construction
2nd Year	2024	$ 100,000	planning & construction
3rd Year	2025	$ 100,000	planning & construction
4th Year	2026	$ 75,000	planning & construction
5th Year	2027	$ 75,000	planning & construction

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

Project Name	SPRING CREEK FORCE MAIN CONDITION ASSESSMENT						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-9
Location	WLI, various municipalities			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM High	**Secondary**	Sys Imp	**Preparer**		ALK

	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
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	TBD	**Project inception date**	2019
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	No		

**= The Spring Creek Force Main provides service to 7 WL signatories.

Detailed Project Description

The Spring Creek force Main was installed in two phases. The first section was installed in 1995 and an extension was installed in 2004. A PURE SmartBall investigation will be performed as part of the condition assessment to identify the location of gas pockets and leaks. A broadband electromagnetic (BEM) test will then be conducted at locations where gas pockets are found to determine remaining wall thickness and assess the remaining useful life of the force main before scoping a repair, rehabilitation, or replacement project. Pipeline rehabilitation is not included in this project as the scope of that work is not known at this time.

Project Drivers and Needs to be Met by the Project

Asset management is the primary driver for this project. The Spring Creek Pump Station and Force Main is an integral part of the Western Lehigh service area. It is essential to perform necessary rehabilitation of the force main to extend the service life of the infrastructure, restore level of service, and mitigate the risk of a catastrophic failure.

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

Project will 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

Exact costs to be determined.

Project No.	SD-S-9
Project Name	SPRING CREEK FORCE MAIN CONDITION ASSESSMENT

Prior Project Cost		0
Estimated Project Costs:	**2022-2027**	
LCA Staff	$	40,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	270,000
Other	$	-
Contingencies	$	40,000
Total Project Cost	**$**	**350,000**

Requested in this Capital Program	**$**	**350,000**

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

		Need	**Phase of Work**
2022 Budget		$ -	
1st Year	2023	$ -	
2nd Year	2024	$ 50,000	planning
3rd Year	2025	$ 250,000	Study/investigation
4th Year	2026	$ 50,000	Study/investigation
5th Year	2027	$ -	

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

Project Name	SIGNATORY INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-24
Location	LCA WLI Sewer Service Area			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Sys Imp	**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)	NA	**Project inception date**	2009
Approx. No. of Customers Benefitted	WLI		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2026
Will the Project Require Obtaining Land Rights	No		

Provides service to 7 WLI signatories, the Borough of Emmaus & others.

Detailed Project Description

LCA provides the leadership, technical expertise and administration for coordinating the projects located within the Signatory sewer systems. The project included two major components: (1) Investigatory/planning work such as flow monitoring, the SCARP development, SSES, Level of Service Determination, Alternatives Analysis, etc., that are necessary to develop the best course of action to reduce I&I within the system(s). Much of this work has been completed. Part (2) - Design, permitting and the construction for rehabilitation of infrastructure that will be necessary to comply with recent PA DEP 537 directives - has not been completed yet. Between 2022-2027, annual WLI I&I projects are slated for completion in accordance with Interim Act 537 commitments. Annual engineering assistance for the Western Lehigh Sewer group is also included within this project.

Project Drivers and Needs to be Met by the Project

Throughout the 2010s, SSES work, flow monitoring and preliminary modeling work was completed to define the characteristics of the sewer basins and identify the leakiest basins with the Western Lehigh Sewer group. Now that DEP has re-engaged the Region, Act 537 Planning has restarted and efforts have been realigned. Recalibration of the WLI model was completed in mid-2020. The model assists in determining the effectiveness of the source removal work completed to date and design of the Trexlertown capacity problems. In 2022, the WLI model will be joined with the remaining KISS model currently under development. Risk of not doing this project include regulatory action against the region.

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

From 2013-2016, investigation and preliminary alternatives analysis work was completed under the guidelines of Act 537. Flow monitoring and analysis also occurred in 2017, 2019 and 2020. The WLI model recalibration was completed in 2020 and an annual program to rehab WLI manholes was started in 2020. Items for 2022-2027 include SSES work, sewer modeling, and additional MH rehab work along the WLI (per the LCA commitment identified in the Interim Act 537 Plan). All of these efforts will help shape the decisions that will be made under the Regional Act 537 Plan that is due in March 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

Exact costs to be determined.

Project No.	SD-S-24
Project Name	SIGNATORY INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost	**$**	**-**
Estimated Project Costs:	**2022-2027**	
LCA Staff	$	100,000
Land Acquisition	$	-
Construction/Equipment	$	800,000
Professional Services	$	800,000
Other	$	-
Contingencies	$	100,000
Total Project Cost	**$**	**1,800,000**

Requested in this Capital Program	**$**	**1,500,000**

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

		Need	**Phase of Work**
2022 Budget		$ 300,000	Planning/Construction
1st Year	2023	$ 300,000	Planning/Construction
2nd Year	2024	$ 300,000	Planning/Construction
3rd Year	2025	$ 300,000	Planning/Construction
4th Year	2026	$ 300,000	Planning/Construction
5th Year	2027	$ 300,000	Planning/Construction

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

Project Name	UPPER WESTERN LEHIGH INTERCEPTOR PUMP STATION & FORCE MAIN						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-28
Location	WLI, Upper and Lower Macungie Townships			**Prj. Type**	AO	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Sys Imp	**Preparer**		AK

Purpose of Expenditure *(check all that apply)*			
X	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	**X**	Other (explain): Provide capacity for future growth.

Additional Information			
Expected Useful Life (Years)	100	**Project inception date**	2021
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	Yes		

**=The WLI system provides service to 7 WLI signatories.

Detailed Project Description

As identified in the Interim Act 537 plan approved by DEP in June 2021, conveyance capacity in the Trexlertown area of the Western Lehigh Interceptor was assigned a high priority due to sanitary surcharging and overflows in the vicinity. In late 2019, a study commenced to look at the possible solutions in this area: parallel interceptors, underground storage pipe, and an above ground storage tank. These alternatives indicated downstream impacts and long construction times. A third alternative was developed which includes bypass pumping from a location at the Industrial Pretreatment Plant to a location in the Upper Macungie Township interceptor which has capacity for the additional flows. The alternatives are documented in a Special Act 537 Study being prepared at the request of DEP.

Project Drivers and Needs to be Met by the Project

The primary drivers for the project are regulatory and system improvement. Per the DEP approved Interim 537 Plan, action is required to alleviate the current sanitary sewer interceptor system bottleneck in the Trexlertown area. This project is intended to address dry-day surcharging and overflows, and allow for future growth.

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

A Special Act 537 Study is being prepared as part of the Trexlertown Area Capacity Solution Alternatives project. This project is the recommended alternative identified in that study.

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

Exact costs to be determined.

Project No.	SD-S-28
Project Name	UPPER WESTERN LEHIGH INTERCEPTOR PUMP STATION & FORCE MAIN

Prior Project Cost	
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 150,000
Land Acquisition	$ 100,000
Construction/Equipment	$ 4,000,000
Professional Services	$ 350,000
Other	$ 50,000
Contingencies	$ 400,000
Total Project Cost	**$ 5,050,000**

Requested in this Capital Program	**$ 4,950,000**

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

		Need	**Phase of Work**
2022 Budget		$ 100,000	Planning/Design
1st Year	2023	$ 700,000	Permitting/Construction
2nd Year	2024	$ 2,000,000	Construction
3rd Year	2025	$ 2,000,000	Construction
4th Year	2026	$ 250,000	Construction
5th Year	2027	$ -	

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

Project Name	WYNNEWOOD INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-6
Location	WWD, North Whitehall Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - Varies	**Secondary**	Regulatory	**Preparer**		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**	2019
Approx. No. of Customers Benefitted	219		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

In 2020, LCA completed updated CCTV inspection condition assessment of the sanitary sewer collection system. This data was used in identifying problem areas, and LCA will begin implementing annual repair/remediation measures to eliminate excess wet weather flow into the Wynnewood Terrace sanitary sewer system, located in North Whitehall Township.

Project Drivers and Needs to be Met by the Project

The primary drivers for the project are: maintain the level of service, avoid regulatory violations due to peak wet weather flows, and reduce system operation cost. During wet-weather events, excess flows create capacity problems at the wastewater treatment plant and drive operating costs higher. Removal of wet weather I/I will reduce treatment costs, avoid hydraulic overloads, and reclaim capacity for utilization by potential new customers.

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

A "Test & Seal" project was completed in the Wynnewood Terrace sanitary sewer system in 2016, however, wet weather flows have remained a problem. An updated system-wide CCTV inspection condition assessment was completed in 2020 that was used to identify problem locations and scope out necessary repairs. Capital plan cost is to perform system spot repairs. Periodic CCTV inspection updates are required as a follow up in later years to track system condition and identify problems.

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

Reducing inflow and infiltration should result in electrical savings by reducing volume of wastewater to pump. However, it is difficult to quantify the amount of flow reduction and therefore electrical savings. Exact costs to be determined.

Project No.	SD-S-6
Project Name	WYNNEWOOD INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost		$20,000
Estimated Project Costs:	**2022-2027**	
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	110,000
Professional Services	$	-
Other		
Contingencies	$	10,000
Total Project Cost	**$**	**150,000**

Requested in this Capital Program	**$**	**125,000**

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

		Need	**Phase of Work**
2022 Budget		$ 25,000	planning & construction
1st Year	2023	$ 35,000	planning & construction
2nd Year	2024	$ 40,000	planning & construction
3rd Year	2025	$ 40,000	planning & construction
4th Year	2026	$ 5,000	study/investigation
5th Year	2027	$ 5,000	study/investigation

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

Project Name	ARCADIA WEST WWTP MECHANICAL SCREEN						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-8
Location	AWD, Weisenberg Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Efficiency	**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		Comply with Regulatory Requirements
X	Improved Service		Equipment/Infrastructure at End of Useful Life
	Study	**X**	Other (explain): Operational Efficiency, safety

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	22		
Is this System part of a Common User Rate?	No	**Anticipated Project completion date**	2024
Will the Project Require Obtaining Land Rights	No		

Serves Arcadia West Industrial Park, West Hills Business Center, NW Lehigh SD Elementary School.

Detailed Project Description

The project involves the design and installation of an automatic mechanical screen and associated components at the influent end (headworks) of the Arcadia West Industrial Park Wastewater Treatment Plant, located in Weisenberg Township.

Project Drivers and Needs to be Met by the Project

The primary drivers for the project are: increased operational efficiency, system improvement and reduce operation costs. There is currently no means to automatically remove the inorganic debris (rags, wipes, plastics, etc.) from the facility's influent waste stream. This bulky material clogs pumps and periodically accumulates on and fouls downstream process equipment (such as pump floats, piping, and air diffusers). Removal of this material requires manual effort (often in difficult access locations) or complete tank draining (which increases operational costs). A mechanical screen will improve facility operation by removing the rags and other inorganic debris from the influent plant flow and may reduce operations cost.

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

An internal investigation was performed to determine if the comminutor performance can be optimized to decrease the debris accumulation. Rags and wipes have been plaguing the plant for years, likely from one or more of the connected industries, and should be removed from the waste stream. The preferred alternative to removing the rags and resolving the problem is a mechanical screen. The screen project will be designed in 2022 and constructed in 2023 and 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

The mechanical screen will increase operational costs marginally mainly due to electrical power and debris disposal. However, the increase in operational costs will be offset by a decrease in staff costs associated with not having to remove rags and inorganic debris that currently are not screened from the waste stream and clog downstream pumps and accumulate on mechanical and instrumentation equipment. Exact costs to be determined.

Project No.	SD-S-8
Project Name	ARCADIA WEST WWTP MECHANICAL SCREEN

Prior Project Cost		0
Estimated Project Costs:	**2022-2027**	
LCA Staff	$	20,000
Land Acquisition	$	-
Construction/Equipment	$	300,000
Professional Services	$	75,000
Other	$	-
Contingencies	$	20,000
Total Project Cost	**$**	**415,000**

Requested in this Capital Program	**$**	**365,000**

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

		Need	**Phase of Work**
2022 Budget		$ 50,000	design
1st Year	2023	$ 100,000	permitting & construction
2nd Year	2024	$ 225,000	construction
3rd Year	2025	$ 40,000	construction
4th Year	2026	$ -	
5th Year	2027	$ -	

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

Project Name	WEISENBERG, LOWHILL, UMiT TOWNSHIP SSES/REHAB						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-10
Location	Weisenberg, Lowhill, and Upper Milford Townships			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	Sys Imp	**Preparer**		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
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**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	No		

** Includes customers in the Weisenberg, Lowhill and Upper Milford systems.

Detailed Project Description

This project involves the preparation of a Sanitary Sewer Evaluation Study (SSES) to identify primary areas of concern and prioritize future sewer system improvements in the Weisenberg, Lowhill, and Upper Milford sanitary sewer systems. Components of the SSES may include manhole inspections, CCTV inspections, and flow monitoring. A remediation project to address problem areas and mitigate inflow and infiltration (I/I) will be part of a future project with scope to be determined.

Project Drivers and Needs to be Met by the Project

The primary driver for this project is regulatory. These three systems ultimately tie in to the Western Lehigh Interceptor (WLI). Managing inflow and infiltration in these systems will in turn help manage flows in the WLI. Annual progress reporting for mitigating I/I is required by DEP for each system connecting to the WLI.

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

A Sanitary Sewer Evaluation Study was done for these systems in the early 2010s as part of the overall SCARP program (Sewer Capacity Assurance Rehabilitation Program). Information from this previous study will be used to help determine any increase in I/I.

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

Exact costs to be determined.

Project No.	SD-S-10
Project Name	WEISENBERG, LOWHILL, UMiT TOWNSHIP SSES/REHAB

Prior Project Cost		0
Estimated Project Costs:		**2022-2027**
LCA Staff	$	20,000
Land Acquisition	$	-
Construction/Equipment	$	-
Professional Services	$	70,000
Other	$	-
Contingencies	$	10,000
Total Project Cost	**$**	**100,000**

Requested in this Capital Program	**$**	**75,000**

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

		Need	**Phase of Work**
2022 Budget		$ 25,000	Study/investigation
1st Year	2023	$ 25,000	Study/investigation
2nd Year	2024	$ 25,000	Study/investigation
3rd Year	2025	$ 25,000	Study/investigation
4th Year	2026	$ -	
5th Year	2027	$ -	

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

Project Name	HEIDELBERG HEIGHTS INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	3/14/2019	**Project No.**	SD-S-17
Location	HHD, Heidelberg Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	AM-high	**Preparer**		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
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2016
Approx. No. of Customers Benefitted	145		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2027
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project includes investigative and rehabilitative work to address wet weather inflow and infiltration (I/I), and is part of the Corrective Action Plan implementation within the DEP Consent Order and Agreement. Rehabilitative work includes replacement of all original vitrified clay pipe (VCP) sewer main, VCP sewer lateral replacement, manhole replacement, manhole sealing, cleanout installation on laterals, and private side investigation. It is assumed that the annual construction projects will be designed, managed and bid in-house.

Project Drivers and Needs to be Met by the Project

The primary driver for this project is regulatory. The goal of this multi-year project is to eliminate DEP violations from wet weather overflows, bypasses, and treatment plant effluent limit exceedance events. Historical flows into the wastewater treatment plant have been 3 to 4 times the plant capacity during peak weather events. Mitigation of the compliance issues requires elimination of excess inflow and infiltration into the sewage collection system.

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

Updated CCTV system inspection was performed in 2017 to document I/I problem areas. In 2018 the replacement of 54 laterals and 1,070 linear-feet of sewer main was completed on Glen Court. In 2019 the replacement of 25 laterals and 1,100 linear feet of sewer main was completed along Heidelberg Heights Road. In 2020 the replacement of 18 laterals and 850 linear feet of sewer main was completed along Lake View Street. In 2021 the replacement of 18 laterals and 700 linear feet of sewer main was completed along Thompson St. The remaining sections of original VCP sewer mains and laterals will be replaced in 2022 and 2023. Rehabilitation work beyond 2023 will focus private lateral inspection and rehabilitation and follow-up flow monitoring work.

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

Reducing excess inflow/infiltration will reduce occurrence of overflows/bypasses at the wastewater treatment plant, facilitate continued compliance with PaDEP, and save staff time and money. It is difficult to quantify potential savings with varying intensity storms and fluctuating groundwater levels.

Project No.	SD-S-17
Project Name	HEIDELBERG HEIGHTS INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost		850,000
Estimated Project Costs:		**2022-2027**
LCA Staff	$	80,000
Land Acquisition	$	-
Construction/Equipment	$	600,000
Professional Services	$	170,000
Other	$	-
Contingencies	$	50,000
Total Project Cost	**$**	**1,750,000**

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

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

		Need	**Phase of Work**
2022 Budget		$ 300,000	construction
1st Year	2023	$ 300,000	construction
2nd Year	2024	$ 100,000	private side investigation, administration & construction
3rd Year	2025	$ 100,000	private side investigation, administration & construction
4th Year	2026	$ 50,000	private side investigation, administration & construction
5th Year	2027	$ 50,000	private side investigation, administration & construction

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

Project Name	HEIDELBERG HEIGHTS WWTP REHABILITATION						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-18
Location	HHD, Heidelberg Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**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
	Improved Service	**X**	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	145		
Is this System part of a Common User Rate?	Yes	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This is a multi-year project to provide needed upgrades at the Heidelberg Heights wastewater treatment plant. The partitioned steel equalization/sludge holding tank is part of the original plant from the 1970s and was rehabilitated in 2019 into 2020. Future projects include installation of a mechanical screen at the headworks of the plant (2022 installation) to remove rags and other inorganic material, installation of an expanded catwalk grating system above the elevated SBR tanks in order to improve maintenance access, and miscellaneous equipment upgrade/replacement.

Project Drivers and Needs to be Met by the Project

The primary project drivers are efficiency, asset management and safety. An expanded catwalk grating system above the SBR tanks will improve maintenance access and operator safety. A mechanical screen will remove bulky inorganics and rags from the influent waste stream and thereby extend downstream pump life and reduce maintenance problems caused by accumulation of rags and debris.

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

Rehabilitation of the 40+ year old EQ tank rehabilitation was completed early 2019. Design of the mechanical screen project will be completed in 2022 and construction will be completed 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

Exact costs to be determined.

Project No.	SD-S-18
Project Name	HEIDELBERG HEIGHTS WWTP REHABILITATION

Prior Project Cost		210,000
Estimated Project Costs:		**2022-2027**
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	390,000
Professional Services	$	80,000
Other		
Contingencies	$	50,000
Total Project Cost	**$**	**760,000**

Requested in this Capital Program	**$**	**350,000**

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

		Need	
2022 Budget		$ 200,000	design, permitting, commence construction
1st Year	2023	$ 250,000	construction
2nd Year	2024	$ 50,000	construction
3rd Year	2025	$ 10,000	planning & design
4th Year	2026	$ 40,000	construction
5th Year	2027	$ -	

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

Project Name	LYNN TOWNSHIP WWTP EXPANSION DESIGN						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/27/2022	**Project No.**	SD-S-25
Location	Lynn Township			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Efficiency	**Preparer**		ELH

Purpose of Expenditure *(check all that apply)*			
	New Facility	**X**	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)	35	**Project inception date**	2015
Approx. No. of Customers Benefitted	381		
Is this System part of a Common User Rate?	No	**Anticipated Project completion date**	TBD
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

The inception of this facility expansion project pre-dates LCA's acquisition of the Lynn Township sewer system and was originally planned by the Lynn Township Sewer Authority (LTSA) in accordance with the Lynn Township Act 537 Sewage Facilities Plan. The project involved the expansion of the WWTP capacity from 80,000 GPD to 160,000 GPD, in order to accommodate significant growth that was anticipated. Since that time the significant growth pressure has subsided, and Lynn Township was directed by DEP to update their Act 537 Plan to include current growth projections. The updated growth projection numbers in the upcoming Act 537 Plan update by Lynn Township will be used to assess the urgency and quantify the magnitude of a future expansion project. The capital plan reflects design phase only at this time.

Project Drivers and Needs to be Met by the Project

Asset management and efficiency are the primary project drivers. The WWTP expansion, as originally designed and addressed in the Township's Act 537 Plan (2007) at the time, was driven by projected growth and system inflow and infiltration (I/I) issues. Timing of the WWTP expansion construction will be dependent upon short and long term capacity needs. The purpose of this project is to update the design in accordance with updated Act 537 population growth projections, and obtain DEP permitting in the event that development needs necessitate plant expansion.

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

Growth projections will be re-examined when completed in 2022 as part of the Township's work to update the Act 537 Sewage Facilities Plan, to ensure the plant is properly sized. Design will begin in 2023. Construction phase timing will be a function of development pressure and contingent upon developer capacity charges. therefore, conceptual construction phase costs are not reflected in the Capital 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

Exact costs to be determined.

Project No.	SD-S-25
Project Name	LYNN TOWNSHIP WWTP EXPANSION DESIGN

Prior Project Cost	$ 5,000
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 35,000
Land Acquisition	$ -
Construction/Equipment	$ -
Professional Services	$ 160,000
Other	
Contingencies	$ 30,000
Total Project Cost	**$ 230,000**

Requested in this Capital Program	**$ 200,000**

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

		Need	**Phase of Work**
2022 Budget		$ 25,000	planning
1st Year	2023	$ 100,000	design
2nd Year	2024	$ 100,000	design & permitting
3rd Year	2025	$ -	
4th Year	2026	$ -	
5th Year	2027	$ -	

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

Project Name	LYNN TOWNSHIP INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM						
Budget Area	Wastewater	**Department**		**Date**	1/12/2022	**Project No.**	SD-S-26
Location	LTD, Lynn Township Division			**Prj. Type**	Regular	**Prj. Funding**	LCA
Prj. Category	**Primary**	Regulatory	**Secondary**	AM-high	**Preparer**		JMP

	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
X	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2018
Approx. No. of Customers Benefitted	381		
Is this System part of a Common User Rate?	No	**Anticipated Project completion date**	2025
Will the Project Require Obtaining Land Rights	No		

Detailed Project Description

This project is part of a DEP mandated Corrective Action Plan, and is intended to mitigate inflow and infiltration into the collection system during and after peak weather events and eliminate system overflows and treatment plant bypasses. Updated internal CCTV inspection of the sewage collection system and inspection of manholes were performed in 2019 and the data was used to identify and target and repair locations in the Lynn Township sewage collection system. Capital rehabilitation projects are planned starting in 2020 and include a comprehensive manhole rehabilitation, collection system repairs, and investigation and enforcement of illegal connections on the private side.

Project Drivers and Needs to be Met by the Project

The primary project driver is regulatory, as the work is part of the DEP-mandated Corrective Action Plan to reduce occurrence and magnitude of wet weather peak flows at the WWTP that cause hydraulic overloads. The purpose of the project is to mitigate extraneous flow into the system, maintain DEP compliance, and obtain additional sewer allocations for growth within Township sewer service area.

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

In 2017 a flow meter study was conducted throughout the system providing data on the areas contributing to excess wet weather flows. In 2018 a manhole inspection program was developed and implemented, along with smoke testing at the Northwestern Lehigh School District campus. In 2019 repairs to the on-site sanitary sewer system were performed by the school district, and LCA performed numerous collection system spot repairs to abate significant system leaks. In 2019 an updated internal CCTV inspection of the entire sewage collection system was performed, along with easement stabilization. In 2020 a manhole rehabilitation project repaired approx 180 structures in the system. Public and private lateral inspections and investigations will be performed in 2022, and starting in 2023 public and private side rehabilitation and repair projects will further address inflow and infiltration based on investigation findings.

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

Reducing I/I flow should result in a reduction of treatment plant operating costs by reducing volume of wastewater that must be conveyed through the plant processes. It is difficult to quantify amount of extraneous flow to be removed, and therefore quantifying cost savings is difficult. Exact costs to be determined.

Project No.	SD-S-26
Project Name	LYNN TOWNSHIP INFLOW & INFILTRATION INVESTIGATION & REMEDIATION PROGRAM

Prior Project Cost		170,000
Estimated Project Costs:	**2022-2027**	
LCA Staff	$	30,000
Land Acquisition	$	-
Construction/Equipment	$	135,000
Professional Services	$	50,000
Other	$	-
Contingencies	$	10,000
Total Project Cost	**$**	**395,000**

Requested in this Capital Program	**$**	**200,000**

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

		Need	**Phase of Work**
2022 Budget		$ 25,000	design
1st Year	2023	$ 75,000	investigation & construction
2nd Year	2024	$ 50,000	investigation & construction
3rd Year	2025	$ 25,000	investigation & construction
4th Year	2026	$ 25,000	study/investigation
5th Year	2027	$ 25,000	study/investigation

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

Project Name	PARK PUMP STATION REHABILITATION/IMPROVEMENTS						
Budget Area	Wastewater	**Department**	Capital Works	**Date**	1/12/2022	**Project No.**	SD-S-15
Location	LLRI-1, City of Allentown			**Prj. Type**	AO	**Prj. Funding**	LCA
Prj. Category	**Primary**	AM - High	**Secondary**	Regulatory	**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	**X**	Comply with Regulatory Requirements
X	Improved Service	**X**	Equipment/Infrastructure at End of Useful Life
	Study		Other (explain):

Additional Information			
Expected Useful Life (Years)	20	**Project inception date**	2016
Approx. No. of Customers Benefitted	**		
Is this System part of a Common User Rate?	N/A	**Anticipated Project completion date**	2024
Will the Project Require Obtaining Land Rights	No		

**= The Park Pump Station provides service to 7 WLI signatories and 3 of City signatories.

Detailed Project Description

Phase 1 improvements to the pump station included replacement of the existing pumps, suction and discharge side valves, pump speed controllers, motor control center (MCC) panel, SCADA system, wet well level instrumentation, building roof and force main drain valve. Also included are miscellaneous structural, HVAC and other improvements as outlined in Option 3 of the March 21, 2016 Park Pump Station Evaluation Technical Memorandum prepared by Arcadis. Construction of Phase 1 was completed in early 2020. Phase 2 of the station upgrade consists of replacement of the original backup diesel generator, which is nearing the end of its service life and slightly undersized for the upgraded station. The replacement unit with be natural gas powered, which will eliminate the need for diesel fuel storage in the environmentally sensitive area.

Project Drivers and Needs to be Met by the Project

Asset management is the primary driver for this project. Park Pump Station is a critical component of the sewerage infrastructure network in the region, serving ten municipalities. Its operation is critical to conveying wet weather flows and normal day flows, and significantly impacts the operation of Allentown's wastewater treatment plant at Kline's Island. The improvements are needed to restore the station to its design capacity, maintain level of service and extend service life into the foreseeable future.

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

An Evaluation Technical Memorandum was prepared by Arcadis which assessed various options for continued operation of the pump station. The recommendations outlined in Option 3 of the Memorandum were selected to improve the reliability and capacity of the pump station through 2025. The Phase 1 upgrade design was completed in late 2017, the project was bid in early 2018, construction phase commenced in mid-2018 and the project was completed in early 2020. Design of the replacement generator is to be completed in mid-2022, with construction phase anticipated to commence later in late 2022 and be completed in early 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

A new generator will insure station operation reliability and enhance resiliency in event of a catastrophic event that results in an extended period of electrical power outage. The long term cost of ownership of a natural gas versus a deisel generator is comparable and a triple bottom line analysis revealed that natural gas is preferable.

Project No.	SD-S-15
Project Name	PARK PUMP STATION REHABILITATION/IMPROVEMENTS

Prior Project Cost	4,000,000
Estimated Project Costs:	**2022-2027**
LCA Staff	$ 50,000
Land Acquisition	$ -
Construction/Equipment	$ 1,800,000
Professional Services	$ 200,000
Other	$ 100,000
Contingencies	$ 250,000
Total Project Cost	**$ 6,400,000**

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

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

		Need	**Phase of Work**
2022 Budget		$ 400,000	design, permitting, & begin construction phase 2 upgrade
1st Year	2023	$ 1,500,000	construction
2nd Year	2024	$ 500,000	construction
3rd Year	2025		
4th Year	2026	$ -	
5th Year	2027	$ -	