**LEHIGH COUNTY AUTHORITY**

**LCA Main Office:**
1053 Spruce Road
Wescosville, PA 18106
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**Agendas & Minutes Posted:**
www.lehighcountyauthority.org

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# BOARD MEETING AGENDA – April 11, 2022 – 12:00 p.m.

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

1. Call to Order
   - NOTICE OF MEETING RECORDINGS

     Meetings of Lehigh County Authority's Board of Directors that are held at LCA's Main Office at 1053 Spruce Road, Wescosville, PA, may be recorded for viewing online at lehighcountauthority.org. Recordings of LCA meetings are for public convenience and internal use only and are not considered as minutes for the meeting being recorded, nor are they part of public record. Recordings may be retained or destroyed at LCA's discretion.
   - *Public Participation Sign-In Request*
2. Review of Agenda / Executive Sessions
   - Additions to Agenda (vote required if action will be taken)
3. Approval of Minutes
   - *March 28, 2022 Board meeting minutes*
4. Public Comments
5. Action / Discussion Items:

   **FINANCE AND ADMINISTRATION**
   - *LCA Enterprise Resource Planning (ERP) Needs Assessment & Roadmap (Approval)* ***(tan)*** *(digital Board packet, pages 8-25)*
   - *2023-2027 Capital Plan - Allentown Division - Preliminary Plan Presentation (Discussion) (digital Board packet, pages 26-80)*

   **WATER**
   - *Large Diameter Valve Prioritization Program (Approval)* ***(blue)*** *(digital Board packet, pages 81-84)*
   - *Suburban Division – Far View Farms Pump Station Demolition (Approval)* ***(yellow)*** *(digital Board packet, pages 85-87)*

   **WASTEWATER**
   - *City of Allentown: 2022 Nighttime Weiring (Approval)* ***(gray)*** *(digital Board packet, pages 88-95)*
6. Monthly Project Updates / Information Items (1st Board meeting per month) (digital Board packet, pages 96-103) – **April report attached**
7. Monthly Financial Review (2nd Board meeting per month)

8. Monthly System Operations Overview (2nd Board meeting per month)
9. Staff Comments
10. Solicitor's Comments
11. Public Comments / Other Comments
12. Executive Sessions
13. Adjournment

| UPCOMING BOARD MEETINGS | | |
|---|---|---|
| April 25, 2022 | May 9, 2022 | May 23, 2022 |

PUBLIC PARTICIPATION POLICY

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

**REGULAR MEETING MINUTES**
**March 28, 2022**

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The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:00 p.m. on Monday, March 28, 2022. Chairman Brian Nagle presiding. The meeting was hybrid via in-person and video and audio advanced communication technology ("ACT"), using the Zoom internet application, including telephone option. Each Board member and other attendees of the meeting were able to hear each other attendee and be heard by each other attendee. The public could also participate in the meeting in-person or via ACT, using the Zoom internet application, including telephone option. A Roll Call of Board members present was taken. Brian Nagle, Richard Bohner, Norma Cusick, Kevin Baker, Linda Rosenfeld, Jeff Morgan, and Amir Famili were present for the duration of the meeting.

Solicitor Michael Gaul of KingSpry was present along with Authority Staff, Liesel Gross, Ed Klein, Chris Moughan, Chuck Volk, Susan Sampson, Andrew Moore, Phil DePoe, Lisa Miller, Mark Bowen, Bryan Geissel, and Jason Gruber.

Ted Lyons entered the meeting at 12:02 p.m.

Chairman Nagle announced that the Board received their electronic and hard copies of the Board packet in advance and asked if anyone did not receive their copy of the packet. A copy of the packet is also available online. He also noted that there was an update to the paperwork sent regarding the item under Wastewater.

## REVIEW OF AGENDA

Liesel Gross announced that there are no changes to the agenda and no Executive Sessions planned.

## APPROVAL OF MINUTES

### *March 14, 2022 Meeting Minutes*

Richard Bohner noted some grammatical errors. On a motion by Richard Bohner, seconded by Amir Famili, the Board approved the minutes of the March 14, 2022, Board meeting as corrected (8-0).

## PUBLIC COMMENTS

None.

## ACTION AND DISCUSSION ITEMS

### *2023-2027 Capital Plan – Suburban Division & Administration – Preliminary Plan*

Liesel Gross explained that the Suburban Division and Administration draft plan would be presented today, followed by the City Division draft plan at the next meeting.

Chuck Volk reminded everyone of the Authority's capital planning and approval process, noting that the five-year capital plan is a conceptual plan detailing the work to be completed in the years ahead. Board approval of the capital plan does not indicate approval of any of the specific projects or associated costs. The 30-day comment period for the preliminary plans starts today. Final approval

of the plans is expected in May. Mr. Volk then gave a presentation highlighting the 2023-2027 Suburban Division and Administration preliminary draft Capital Plan.

Mr. Volk reviewed the Administration Capital plan noting there are no new projects in the plan. The largest project is the SCADA upgrade planned for all Suburban Division stations. The project will improve communications reliability, programming and hardware, and replace obsolete systems that create an operating risk. The project will also reduce compliance risk and provide for staff training on updated systems.

Mr. Volk then reviewed the 2023-2027 Suburban Division Water Capital Plan. The annual projects and the water main replacement projects are recurring projects. Under the annual projects, the larger projects are the Reservoir Rehabilitation & Maintenance project, Water Facility Asset Management Upgrades, and General Water System Maintenance. A map of Cycle 6 of the Suburban Water Main replacements and the five-year prioritization areas were shown. Prioritization for main replacements is based on breakage history and pipe material.

Ted Lyons asked if a pattern exists as to the type of pipe that experiences the highest rate of failure. Mr. Volk explained that the older cast-iron pipes are failing at a higher rate and are targeted for replacement. In addition, the pipe used in the North Whitehall Division is plastic and is targeted for replacement due to high leakage rates in this area.

The Suburban Division system improvement projects were reviewed along with projects that were removed from the Capital Plan for various reasons.

Ed Klein reviewed the financial analysis for Suburban Division water projects, noting that the Authority had planned to borrow $3 million for capital improvements in 2022, and an additional $3.2 million in new borrowing is needed in the 2023 to 2027 plan period to cover all project costs. Ted Lyons asked about the rate impact, and how growth and inflation are incorporated into the analysis. Mr. Klein said that he used a 3 percent annual cost inflation rate and a 2 percent annual volume growth rate in the model. This resulted in the need for user rates to increase by an additional 3 percent per year to cover all capital costs after borrowing. Amir Famili asked about the amount of cash being generated from operations, and whether it is necessary is to borrow additional funds to cover the expenses outlined in the plan. Mr. Klein explained that a significant rate increase was implemented in 2022, with the goal of providing a lower, steady increase in rates moving forward. The proposed borrowing in 2022 will help to achieve that goal. Kevin Baker commented that there appears to be a good balance in the financial analysis between funding recurring projects through operating revenues and reducing the borrowing needs for larger projects.

Chuck Volk then reviewed the 2023-2027 Suburban Division Wastewater Capital Plan. He highlighted the projects related to the Western Lehigh Interceptor and the Little Lehigh Relief Interceptor. These projects are needed to address the regional needs for treatment and conveyance capacity and address wet-weather issues. The satellite system projects and the annual / recurring projects were also reviewed. He noted that the WLI Trexlertown Area Wastewater Capacity Solution Alternative was discontinued in the Capital Plan because it was advanced into the Upper Western Lehigh Interceptor Pump Station and Force Main project. The Park Pump Station Force Main Rehabilitation project was also removed from the Plan because the investigation results indicated that no near-term rehabilitation is needed.

Ed Klein reviewed the Suburban Division Wastewater financial analysis, stating that all funding for the projects will come from operating revenues and reserves. Ted Lyons commented on the strong reserve balances and high debt service coverage ratio. He asked whether the financial performance

should be evaluated to determine whether it is stronger than necessary. Mr. Klein explained that the current strength of the Suburban Wastewater Division finances is only a near-term situation. Future projects resulting from the Act 537 planning process will require significant financial resources to complete. Liesel Gross added that the reserves in the Western Lehigh system are due to a planned approach by the Authority and the municipalities in the Western Lehigh service area to build reserves in advance of the future Act 537 projects, which will begin after the Act 537 plan is completed in March 2025.

Kevin Baker asked about the status of the Authority's capital project execution in the first quarter of 2022. Chuck Volk stated that supply chain disruptions have caused some delays in projects and especially long delays in equipment delivery. For example, the Park Pump Station generator project is delayed for approximately 36 to 50 weeks due to the delay in delivery of the generator. Mr. Baker also asked about the availability of labor. Mr. Volk said many projects were delayed during the COVID-19 pandemic because of employee illness, but this seems to be normalizing. Amir Famili asked if the Authority is seeing cost escalation on parts or materials. Mr. Volk said he is concerned about pipe availability. Jason Gruber added that there is a 40 to 50 percent cost increase on pipe and it is very difficult to procure pipe materials on a timely basis. Ted Lyons asked if there is some way to negotiate this within the Authority's construction contracts. Mr. Volk said there is an escalation clause in the contracts to address increasing materials costs. Ed Klein commented that the issues impacting capital project execution are exacerbated by the nearly two-year slowdown in project work resulting from the COVID-19 pandemic, resulting in a strong push by all utilities to resume this work. He also noted wage inflation appears to be impacting project costs. Liesel Gross added that the release of significant federal funding for infrastructure projects has also increased pressure on all utilities and contractors to move forward quickly on their capital projects.

Liesel Gross concluded that the Allentown Division draft plan will be presented at the April 11 meeting along with any changes to the Suburban Division plan. Final adoption of the plans is scheduled for May.

***Allentown Division – Kline's Island Wastewater Treatment Plant – Primary Digester No. 1 Cleaning***

Chuck Volk explained that the cleaning of the digester tanks is performed on a 5-year cycle at the Kline's Island Wastewater Treatment Plant and the Primary Digester No. 1 was last cleaned in 2017. The work will be performed by an outside contractor and the funding is from the Allentown Division. Mr. Volk introduced Bryan Geissel, Project Engineer, who will be managing this project. Mr. Geissel described the digester cleaning process and work scope for this contract, which includes replacement of the Pearth mixing system compressor and four sample lines that have reached the end of their useful life. Mr. Volk reviewed the bid results, noting that Spectraserv Inc. specializes in the transport and disposal of wastewater residuals and recommends awarding them the General Construction contract.

Amir Famili asked which contractor was used in the past. Chuck Volk said it was Denali. He also commented that the field of contractors able to perform this type of work is very limited.

On a motion by Linda Rosenfeld, seconded by Norma Cusick, the Board approved the Capital Project Authorization for the Construction Phase in the amount of $332, 964.00, which includes the award of the General Contract to Spectraserv inc. in the amount of $317,964.00 (8-0).

Jeff Morgan commented that he is in favor of the project. He stated that the Pearth mixing system is an older technology and asked how well the system is performing at the plant. Mr. Geissel said that

the Authority has reviewed alternative mixing systems, but the current configuration using the Pearth mixing system has been effective and is recommended to be maintained.

A roll call vote was taken with the following votes cast:

Brian Nagle – yes
Richard Bohner – yes
Norma Cusick – yes
Ted Lyons – yes
Kevin Baker – yes
Linda Rosenfeld – yes
Jeff Morgan – yes
Amir Famili – yes

**MONTHLY FINANCIAL REVIEW**

Ed Klein gave an overview of the February 2022 financial statements, highlighting variances between actual expenses and budgeted or forecasted expenses. There were no questions.

**MONTHLY SYSTEM OPERATIONS OVERVIEW**

Andrew Moore reviewed February 2022 report, noting that there is nothing out of the ordinary regarding water production or wastewater treatment. There were two sanitary sewer overflows (SSOs) in February. One SSO occurred on Dauphin Street in Allentown due to a blockage caused by a buildup of rags. The other SSO occurred at the Pretreatment Plant due to a power failure at the waste receiving station, which resulted in a discharge of 12,000 gallons of sludge onto the plant property. A bypass occurred at the Heidelberg Heights Wastewater Treatment Plant resulting from a storm producing 1.65 inches of rain.

Jason Gruber was present to discuss the results of the condition assessment of the 36-inch diameter transmission line known as the Huckleberry Line in Allentown. He reviewed the timeline of activities that was presented with the monthly operations report, beginning with two-line failures that occurred in 2020. Due to the critical nature of this transmission line, various studies have been conducted to determine the overall condition of the pipe. The most recent study was a soil study, which reviewed the corrosive properties of the stone and soil surrounding the pipe, and the impact on the pipe condition. The study indicated that the surrounding soil is moderately corrosive, which may be contributing to moderate loss of pipe wall thickness. Mr. Gruber also stated that the report discussed the impacts of stray electrical current and road salting procedures on the water main, both of which can contribute to accelerated corrosion of the pipe. The Authority has installed pressure sensors along the Huckleberry Line to collect real-time data on water pressure inside the pipe. Mr. Gruber stated he also plans to install permanent leak sensors on the line as an extra precaution and to increase the Authority's responsiveness in the event of additional line failures. This work is scheduled for the Fall of 2022. Mr. Gruber stated that the entire line may need to be replaced earlier than originally anticipated, noting that the pipeline was installed in 1983 and is considered to be relatively "young" in terms of remaining useful life.

There was some additional Board discussion about the soil sampling study and report. Mr. Gruber noted that the report could be shared with the Board if there is interest in reviewing the detailed information.

Andrew Moore reviewed the memo provided with the monthly operations report regarding updates to the Pretreatment Plant Hauled Waste Program. The program update was completed in response to earlier Board discussions regarding the discharge of 1,4 Dioxane into the wastewater system by an industrial waste hauler. Mr. Moore reviewed the changes that will be made in the Hauled Waste Program. Selected analytes will be based on PA DEP's Toxic Management Spreadsheet, which is used in the determination of NPDES permit monitoring. This change will result in expanding the list of monitoring requirements by approximately 50 compounds. Another change will be a requirement to disclose the five highest quantifiable compounds identified, regardless of whether the compound is specifically requested in the application. This approach will make the Authority aware of potential contaminants being introduced to the system, and allow the Authority to approach future regulations proactively. Lastly, applicants will also be required to disclose any pollutant that was not revealed on a laboratory report when it is reasonably expected to be present.

Amir Famili asked if the testing of samples is done by an independent laboratory, or can the applicants do the testing themselves. Mr. Moore said the industries complete their wastewater monitoring by using an independent certified state lab. Chairman Nagle asked if these changes would apply to existing waste haulers. Mr. Moore said that these changes will be applied to all existing haulers at the time of their permit renewal, which occurs annually.

Chairman Nagle asked for more detail on the 12,000 gallons of sludge discharged at the Pretreatment Plant in February. Mr. Moore explained that the discharge occurred when a power failure caused a tank level sensor to fail. A hauler was discharging waste into the system, but the location of the overflow was outside of the line of sight of the hauling station. He noted that the sludge that overflowed was fully contained on the plant property and was cleaned up within a few days. To prevent future events of this nature, an audible alarm was installed to notify plant personnel and the haulers when a power failure occurs that affects the waste receiving station.

**STAFF COMMENTS**

None.

**SOLICITOR'S COMMENTS**

None.

**PUBLIC COMMENTS / OTHER COMMENTS**

None.

**EXECUTIVE SESSION**

**ADJOURNMENT**

There being no further business, the Chairman adjourned the meeting at 1:44 p.m.

Richard Bohner
Secretary

# MEMORANDUM

**Date:** April 4, 2022

**To:** LCA Board of Directors

**From:** Liesel Gross, CEO

**Subject:** LCA Enterprise Resource Planning (ERP) Needs Assessment & Roadmap

**MOTIONS / APPROVALS REQUESTED:**

| No. | Item | Amount |
|---|---|---|
| 1 | Professional Services Authorization: Raftelis | $61,025 |

**AUTHORIZATION OVERVIEW:**
As outlined in LCA's 2022-2027 Strategic Plan, process improvement is a critical priority for the organization. Many of LCA's opportunities for process improvement lie in the administrative and financial areas of the organization, where manual processes and spreadsheet-based systems are used to "work around" deficiencies within the Enterprise Resource Planning (ERP) system currently in use, Munis by Tyler Technologies. It is unknown whether these deficiencies are a result of the configuration and use of the system, incomplete implementation of system features, or possibly a poor technology fit for the organization.

LCA staff proposes conducting a targeted ERP Needs Assessment & Roadmap to determine the next best steps to take to address the technology needs of the organization to support process improvement in the key areas of administration and finance.

**FINANCIAL:**
The project will be financed through LCA's Internal Services budget as a "Special Study." While this work was not originally included in the 2022 Budget, the expenses is offset by the elimination of the Process Improvement staff position that was included in the budget but will not be filled.

**CURRENT STATUS:**
Pending Board approval for professional consulting services to assist with this ERP Needs Assessment & Roadmap.

**THIS APPROVAL – ERP NEEDS ASSESSMENT & ROADMAP:**
Lehigh County Authority (LCA) intends to retain the services of a utility management consulting firm to provide these services. These services include, but are not limited to, the following:

| Professional Services |
|---|
| • Review of current ERP processes and documentation |
| • Evaluate effectiveness of current Munis solution & supporting technologies |
| • Evaluate current system interfaces, integrations, reporting, and data analytics capabilities |
| • Evaluate current system business workflows and performance gaps |
| • Identify "quick wins" for business process improvement |

| |
|---|
| • Identify near- and long-term ERP system needs |
| • Identify solutions and options for current process improvement, reconfiguration of existing ERP solution, and options for new technology selection process |
| • Prepare ERP roadmap |

**CONSULTANT SELECTION PROCESS:**
Based on qualifications and LCA staff's prior experience working with these firms, three consulting firms were selected to participate in the request for proposal process. Results of the proposal process are as follows:

| Consultant | Proposal Cost |
|---|---|
| Stantec | $55,000 |
| ***Raftelis (recommended for approval)*** | ***$61,025*** |
| GHD | $101,200 |

Raftelis's proposal is recommended for approval, and their proposal is attached for Board review if desired. LCA staff believe Raftelis's proposal is highly responsive to LCA's needs, and the project team offers an appropriate balance of technology and business / financial process expertise to the project. Raftelis has demonstrated familiarity with LCA's current financial systems and other available technologies, and the firm has worked effectively with LCA in prior engagements.

**SCHEDULE:**
This work is expected to be completed within 90 days of project kickoff.

**FUTURE AUTHORIZATIONS:**
Future authorizations may be requested to assist the Authority with moving forward on implementation of various phases of the ERP Roadmap.

RAFTELIS

# Lehigh County Authority (LCA): ERP Assessment and Roadmap

## Work Plan

### THE FOLLOWING DETAILS THE WORK PLAN FOR LCA'S ERP ASSESSMENT AND ROADMAP:

Raftelis is pleased to submit this proposal to provide business and technology consulting services to Lehigh County Authority (LCA). We understand that LCA has deployed and used its Munis enterprise resource planning (ERP) solution since 2007/2008 and has recently attempted an upgrade to v.11.3 scheduled for April 2022. However, the planned ERP upgrade has reportedly stalled and is currently on hold.

For this important effort, LCA wants objective, independent, and knowledgeable consulting advice on its viable ERP options. In initial discussions, several desired system improvements were discussed including enhanced customer self-service, mobile workforce management, business process optimization, effective system interfaces, departmental performance reporting, upgraded business analytics, and several others. Raftelis proposes to assess the current state of LCA's ERP solution and then develop a practical roadmap with strategies and accompanying action plans for system improvements and/or solution replacement. Our team will document and validate the current state of LCA's ERP's implementation and gaps. Based on our findings, we will help LCA determine whether to stay with the current Munis ERP solution and optimize its existing use/functionality, reconfigure and redeploy the Munis ERP solution with foundational enhancements, and/or seek an alternative best-fit ERP solution. Based on the findings, we will develop an ERP Roadmap with practical recommendations and guidance including analyzing the viable system options (i.e., optimization, redeployment, replacement, or combination thereof). Our recommendations will include planning-level costs, resources, timelines, benefits, and foreseeable risks. The recommendations also typically identify several 'Quick Wins' that LCA can implement almost immediately.

## Activity 1: Begin Engagement

In any technology evaluation, it is important to incorporate the feedback of multiple perspectives including the internal IT service function, the core system users, and senior leadership. As such, we utilize a highly interactive approach involving many organizational layers as detailed below. At the start of this engagement, we will request and review available background information, including information on the existing ERP solution, supporting technologies, pending updates, interfaces, system users, and performance reports, as well as other relevant data. Next, we will facilitate a Kickoff Meeting with select LCA management personnel to develop an initial understanding of the various users and current perspectives regarding the Munis ERP solution and what LCA specifically wishes to accomplish as an outcome from this process. Our team will then facilitate a Group Kickoff Workshop for a broader cross-section of LCA staff that will likely be engaged in the assessment activities during the project.

These initial steps are fundamental to ensure that all participants have a shared understanding regarding the project scope, objectives, process, and desired results. We will develop a brief project plan to guide the process and define the project schedule. Additionally, we will provide regular updates to LCA's Project Manager to monitor progress and make appropriate adjustments as necessary.

### DELIVERABLES:

- Kickoff meeting agenda

- Group kickoff meeting agenda
- Document request
- Project plan including schedule
- Monthly project status reports

## Activity 2: Assess Current State and Requirements

To understand the current use, effectiveness, and efficiency of the installed Munis ERP solution, our team will work with LCA's Project Manager to identify the core system users and other key stakeholders. We will then schedule and conduct individual and group interviews with these knowledgeable personnel to gain their perspectives and insights as to the implementation, functionality, user adoption, and effectiveness of the current Munis solution and supporting technologies at LCA. Our focus is on the complete ERP solution's functionality, user adoption, system interfaces, and overall effectiveness. The Munis ERP solution covers many functional areas, including:

- Financial management (i.e., general ledger, accounts payable, budgeting, capital assets)
- Human resource management (i.e., human resources, recruiting, timekeeping, payroll, benefits, expenses)
- Revenue management (i.e., utility billing, accounts receivable, cashiering, payment processing)
- Customer management (i.e., customer accounts, customer service, customer self-service, service orders, permits, mobile workforce)

Our focus is on the complete ERP solution's functionality, user adoption, system interfaces, and overall effectiveness. We will also evaluate the current system interfaces (i.e., ESRI GIS, Azteca Cityworks CMMS, Adaptive Insights, etc.) and Munis' reporting and analytic capabilities.

Raftelis will facilitate interactive discussions with LCA personnel that focus on both the existing successes and deficiencies within these functional areas and the effectiveness of interfaces with other LCA systems. The individual and group interviews will be designed to openly discuss the existing solution's current use, business workflows, user training, performance gaps, system integrations, and reporting limitations. This information will support the development of an independent and objective Current State Report accurately describing LCA's existing ERP solution status. We will send the draft report to LCA's Project Manager for review and comment to validate the factual accuracy of our findings.

**DELIVERABLES:**

- Up to a total of 12 individual / group interviews with core users and key stakeholders within 4 representative departments
- Draft Current State Report
- Review and validation session
- Final Current State Report
- Quick wins

## Activity 3: Solution Roadmap

Based on the prior discussions, our team will facilitate a series of two (2) Solution Roundtable Workshops with LCA's Project Manager and select personnel. These workshops will be designed to facilitate open discussions regarding the identified ERP business and technology gaps and LCA's finance and utility billing needs now and far into the future. We will present and discuss LCA's specific gaps, improvement opportunities, solution options, alternative providers, and our experiences from similar projects.

Based on the specific LCA findings, our team will lead interactive discussions regarding possible Munis enhancements, potential process improvements, new system interfaces, Munis reconfiguration, and/or Munis replacement options. These working sessions will include finance, technology, and Munis subject

matter experts (SMEs) from our team and knowledgeable LCA personnel to drive out the best-fit strategies and options.

Raftelis will combine the prioritized recommendations into a Draft ERP Roadmap with an integrated program schedule including prioritized action plans. The Draft ERP Roadmap will address, prioritize, and summarize the most beneficial strategies and recommendations for LCA's ERP improvement. Each action will include a detailed description, expected outcomes, planning-level cost estimates, anticipated schedule, benefits, and foreseeable risks.

We will summarize and present the Draft ERP Roadmap and action plans to LCA's Project Manager and other select personnel for feedback and adjustment. This is envisioned to be a 2-hour interactive workshop designed to solidify key stakeholder buy-in for the ERP Roadmap's implementation success. These deliverables are intended to provide LCA with practical strategies, recommendations and action plans for improved ERP technology and business practice effectiveness and efficiency gains far into the future.

**DELIVERABLES:**

- Draft ERP Roadmap
- Action plans to achieve identified improvements
- Roadmap workshop
- Final ERP Roadmap

## Project Team

Raftelis provides a highly experienced team of financial, technical, and Munis SMEs.

**Doug Spiers, P.E. – Project Manager, Lead Consultant**

Doug will serve as the main point of contact for LCA and will manage the day-to-day aspects (scope, budget, schedule, risk) and all project deliverables. He brings over 35 years of strategic planning, information technology, customer management, asset and maintenance management, and business work practice improvements to help many of the most forward-looking utilities in North America. He specializes in a variety of technology, business, and management consulting services to improve the utilities' overall efficiency, effectiveness, and levels of service.

Mr. Spiers has managed dozens of similar technology assessments, IT plans, and software selection & implementations. His recent software assessment and technology planning clients include Greater Cincinnati Water Works (OH), Polk County Utilities (FL), Sarasota County Utilities (FL), Hillsborough County (FL), El Dorado Irrigation District (CA), City of Pasadena (CA) and many others.

**Jonathan Ingram - Finance & Budget SME**

Jonathan will serve as our Finance and Budget SME for this project. He has over 16 years of experience in management consulting and local government management, most recently as the Budget Manager in the City of Cincinnati, Ohio, budget office. Before that, Jonathan served as a management consultant and worked in the city manager's office for the City of Highland Park, Illinois.

Jonathan has completed operations reviews for over 200 local governments and has helped to improve service delivery for a broad range of departments – from police to public works. Jonathan's areas of expertise are in local government budgeting and finance, operations analysis, project management, public safety staffing analysis, process improvement, and performance measurement. He is adept at quickly

assessing strengths and opportunities within a municipality, analyzing, and developing actionable recommendations for improvement, and communicating findings and next steps to a wide variety of audiences, including staff, elected officials, and the public.

**Rebekka Hoskins – Finance & Munis SME**

Rebekka brings over 16 years of direct service to local governments and 12 years of management consulting experience. She has performed assessments for a broad range of operating departments and offices in cities, counties, and special districts and has consulted for over 100 clients preparing actionable recommendations for improvement and communicating findings to a wide variety of audiences.

Prior to Raftelis, Rebekka served as the Finance Director for the City of La Cañada Flintridge, CA. She prepared the annual budget and financial audit, as well as managed daily accounts payable, accounts receivable, payroll, and financial planning functions. She managed the business licensing and payroll processing, coordinated acceptance of credit cards, and managed the implementation of a new financial software system.

Rebekka also served as the Budget Officer for the City of Simi Valley, CA. She prepared the City's annual budget, capital improvement program, and the City's cost allocation plan. She managed the budget and capital projects module training and setup for the Munis ERP system implementation across nine operating departments.

**Diane Wojdag – Utility Billing & Customer Service SME**

Diane's brings over 30 years of utility and technology consulting experience. Based on her previous job experiences, Diane provides insight from the vendor, client, and consultant perspectives. She is a resourceful business and technology consultant skilled in assessing the efficiency and effectiveness of existing customer information and utility billing applications, and their fit with current practices and the organization's future vision and business needs.

**The Raftelis team's full resumes are attached at the end of this document.*

# Project References

## Polk County FL

**Reference:** Charles Richards, Finance Manager
1011 Jim Keene Boulevard, Winter Haven, FL 33880
P: 863.298.4135 / E: charlesrichards@polk-county.net

The Polk County Public Utilities Division uses a variety of off-the-shelf and custom software applications and manual processes to plan and manage day-to-day operations, generate reports, create maintenance work orders, and track assets. PCU hired Westin (prior to joining Raftelis) to perform a Utilities Software Master Plan to identify improvement strategies and prioritized actions. The Utility Software Master Plan provided PCU with a 5-year technology roadmap for its budget and resource prioritization.

PCU reengaged the project team to help select and implement an effective customer information and utility billing solution that could catalyze significant business improvements. We then developed a software acquisition strategy for the successful selection of a modern CIS solution with improved customer self-

service, mobile work management, integration to CMMs for field service orders, and enhanced performance reporting.

## City of Tampa Utilities FL

**Reference:** Russel Haupert, Chief Technology Officer
411 N. Franklin Street, 6th Floor, Tampa, FL 33602
P: 813.274.8292 / E: russell.haupert@tampagov.net

The City of Tampa desired four new customer management applications including a new customer information system (CIS), mobile workforce management (MWM), customer relationship management (CRM) and business intelligence (BI) solution to replace the legacy MSS application. The City contracted with Westin (prior to joining Raftelis) to provide an acquisition strategy, system selection, and implementation services for the successful operation of new customer management solutions. We began by defining the City's software acquisition strategy including the requisite resource planning; clarifying the specific products, integrations, and services to be acquired; and clarifying the roles and decision processes. Our system selection efforts included process definition, requirements gathering, RFP development, vendor evaluation, and vendor contract negotiations for the four applications. Our implementation services for the new Cayenta CIS solution included project management, test management and organizational change management (OCM) services. Key interfaces to other City systems included financial, geographic information system (GIS), and the permitting system.

## City of Bothell WA

**Reference:**
Mathew Pruitt, HR Director
18415 101st Avenue NE, Bothell, WA 98011
P: 425.806.6201 / E: Mathew.pruitt@bothellwa.gov
**Project Team:** Michelle Ferguson, Mark Olson

The City of Bothell WA hired Raftelis to perform an Information Systems Department Review. This operational review addressed the organization, operations and structure of the Information Services Department. One key element of the assignment included a detailed review of their systems' support group and the services provided to the city through the Munis program (as well as other networked programs). Raftelis is currently addressing client comments to the draft report.

## City of Lawton OK

**Reference:**
Michael Cleghorn, City Manager
212 SW 9th Street, Lawton, OK 73501
P: 580.581.3301 / E: mcleghorn@lawtonok.gov

Raftelis conducted a city-wide review of all departments and functions including the Information Technology Services Department. Major recommendation involved securing project manager support to coordinate continuing Munis implementation and coordinate migration of services from seven legacy software platforms. Recommendations included: developing detailed project plan; developing governance process; identifying core business process requirements; identifying opportunities for process improvement;

communicating software customization and workflow requirements; ensuring appropriate ERP configuration; and staff training / deployment support.

### City of Austin TX

**Reference:**

Alyson Fultz, City of Austin - Office of Performance Management
301 W. 2nd Street, Room 3, Austin, TX 78701
P: 512.974.2954 / E: alyson.fultz@austintexas.gov

In March 2020, the City of Austin engaged Raftelis to conduct a series of continuous improvement initiative studies in consultation with the City's Office of Performance Management (OPM). The purpose of these studies was to identify specific strategies to improve the efficiency of municipal government operations and the value of government services delivered to the community. The project team and OPM developed a formal project work plan that identified the scope and key objectives for reviewing the value streams within each department, including service to customer departments, and recommending enhancements to improve operations and cost-effectiveness. Our report on the Communications and Technology Management (CTM) Department included recommendations to create the Department's strategic plan, develop a standardized portfolio of services to departments, expand specific highly successful programs, and fill key leadership positions.

## Schedule

This engagement is expected to be completed within three months (or approximately 90 days) from the project start.

## Fees

The total estimated fees to provide the scope of services described in this proposal is $61,025 and includes all professional fees and anticipated project expenses.

**Lehigh County ERP Roadmap**

| Task | SubTotal Hours | Subtotal Fees | Travel | Total |
|---|---|---|---|---|
| **Activity 1 - Begin Engagement** | | | | |
| Kickoff meeting | *8* | $ 2,250 | $ 1,600 | $ 3,850 |
| Document review | *4* | $ 1,125 | | $ 1,125 |
| Group Kickoff meeting | *4* | $ 1,125 | | $ 1,125 |
| Project plan | *6* | $ 1,750 | | $ 1,750 |
| Project reports | *4* | $ 1,175 | | $ 1,175 |
| *Activity 1 Summary* | *26* | *$ 7,425* | *$ 1,600* | *$ 9,025* |
| **Activity 2 - Assess Current State** | | | | |
| Interviews (12) | *36* | $ 9,900 | $ 1,600 | $ 11,500 |
| Current state report | *64* | $ 17,400 | | $ 17,400 |
| Review and validation meeting | *6* | $ 1,650 | | $ 1,650 |
| *Activity 2 Summary* | *106* | *$ 28,950* | *$ 1,600* | *$ 30,550* |
| **Activity 3 - Solution Roadmap** | | | | |
| Solution Roundtable Workshops (2) | *22* | $ 6,000 | | *$ 6,000* |
| Roadmap and Action Plans | *44* | $ 12,000 | | *$ 12,000* |
| Executive Presentation | *8* | $ 2,250 | *$ 1,200* | *$ 3,450* |
| *Activity 3 Summary* | *74* | *$ 20,250* | *$ 1,200* | *$ 21,450* |
| **Total** | *206* | *$ 56,625* | *$ 4,400* | ***$ 61,025*** |

# Douglas A. Spiers PE

**Vice President**

## ROLE

Project Manager / Lead Consultant

## PROFILE

Doug's brings over 35 years of experience in strategic planning, information technology, customer management, asset and maintenance management, organizational assessments, and business work practice improvements to help many of the most forward-looking utilities in North America. He specializes in a variety of business, technology, and management consulting services to improve the utilities' overall efficiency, effectiveness, and service level.

Doug works closely with utility executives to achieve optimal performance by aligning their organization, operations, business processes, work practices, information systems, and performance measures with their desired strategic business goals. Through Board and executive management visioning sessions, interactive manager and staff workshops, performance assessments, and extensive knowledge of industry best practices, Doug helps solve utilities' most complex business and technology issues.

## KEY PROJECT EXPERIENCE

### Sarasota County Public Utilities (FL)

Doug led the Utility Software Gap Analysis & Implementation Plan for Sarasota County Utilities. The resulting Implementation Roadmap prioritized the most beneficial software upgrades and business process improvements and defined the technology investments for the next five (5) years.

Doug also served as the Project Manager for an assessment of the County's Customer Service Center. Doug documented the baseline condition of the Service Center and provided a plan to improve the current business practices, use of the CIS software, and performance reporting.

### Polk County Utilities (FL)

Doug served as a subject matter expert for the Software Gap Analysis for Polk County Utilities. Doug and his team developed the Utilities' Business Technology Roadmap to define, guide, and prioritize their future technology initiatives and expenditures for the next five years. Based on the successful results from the Technology Roadmap, the County re-engaged Doug and his team to develop an RFP to select and procure a new CMMS solution.

### Specialties

- IT strategic plans
- Asset & maintenance assessments
  CMMS selection & implementation
- Business process optimization
- Performance management

### Professional History

- Raftelis: Vice President (2021-present)
- Westin Technology Solutions: Vice President (2017-2021)
- Westin Engineering: President (2015-2017); Executive Vice President (2003-2015)
- Malcolm Pirnie: Engineering Manager and Litigation Support (1997-2003)
- Arthur Andersen: Manager Environmental Services (1993 – 1997)
- CH2MHill: Senior Environmental Consultant (1992-1993)
- United Technologies: Environmental Engineer (1990-1992); Manager Rocket Motor Production (1986-1990)
- Exxon Idaho Nuclear: Manager Nuclear Waste Reprocessing
- (1983-1986)
- Flour Daniel: Process Engineer (1980-1983)

### Education

- Juris Doctorate – Santa Clara University (1992)
- Master of Science in Environmental Management - University of San Francisco (1995)
- Bachelor of Science in Chemical Engineering – Cal Poly Pomona (1980)

### Certifications

- CA State Bar #165762
- PE Chemical Engineer CA #4143

### Professional Memberships

- AWWA Chair of Strategic Management Practices Committee
- AWWA: CA/NV Section, Past Chair of Asset Management Committee
- AWWA: CA/NV Section, Past Chair of Information Technology

The County also engaged Doug and his team to develop an RFP to select, procure, and oversee the implementation of a new CIS solution aligned with the County's new customer management vision and best industry practices.

### Greater Cincinnati Water Works (OH)

Doug led the evaluation of Greater Cincinnati Water Works (GCWW) CIS Business & Technology Roadmap. GCWW wanted an independent evaluation of its customer management direction to either optimize and grow its service bureau business or adjust and change accordingly. Doug employed a collaborative approach in exploring the various options available and creating an agreed-upon Customer Management Roadmap. Doug also assisted GCWW in developing their 5-year Strategic Business Plan. He facilitated a series of interviews and strategic planning workshops with GCWW's management team and developed GCWW's initial suite of performance measures.

### Hillsborough County Utilities Department (FL)

Doug served as the Project Manager in the design of the Hillsborough County Utilities Department's (Department) Business Technology Roadmap. The Roadmap identified, defined, and prioritized the Department's numerous competing technology projects. Doug also led the subsequent Alternatives Analysis to evaluate the available computerized maintenance management systems (CMMS) in the market and acceptable for the County's departments to consider.

### El Dorado Irrigation District (CA)

Doug managed the transformation and upgrade of the CIS and CMMS solution for the El Dorado Irrigation District (District). This effort included conducting an initial gap analysis, development of an RFP, selection of a Solution Implementer, and transformation of the District's customer and asset management practices.

Doug also led the Comprehensive Management and Operations Assessment of the District's practices. The assessment covered the existing organizational structure, level of customer services, work practices, planning and scheduling, fleet management, legal fees, grants, document management, knowledge management, and use of information technology. He also helped EID in the development of their first Strategic Business Plan and their performance measure reporting program.

### Boston Water and Sewer Commission (MA)

Doug served as the Principal-in-Charge for the Information Technology Strategic Plan (ITSP) for the Boston Water and Sewer Commission (Commission). Doug led the technology assessments of Commission's existing software applications and the recent roll-out of AMR and proprietary mobile software applications. He routinely interfaced with the Commission's executive team to ensure that the results of the ITSP were aligned with the business direction of the utility.

### City of Calgary Utilities and Environmental Protection (CAN)

Doug served as a subject matter expert in the development of an Information Technology Strategic Plan for the City of Calgary Utilities and Environmental Protection (UEP) Department. Doug led the evaluation of UEP's existing computerized maintenance management system (CMMS). He also performed an organizational assessment of the City's Information Technology Department to its services provided to UEP. Doug and his team identified areas for improvement and defined a new structure within UEP to more effectively create, manage, and maintain capital IT improvement projects.

### Santa Clara Valley Water District (CA)

Doug led the Operations and Management Review for the Santa Clara Valley Water District (District) to assess the current efficiency and effectiveness of the water operations. Doug and his team conducted a best practices assessment including asset management, field work practices, use of information technology, CIP management, water quality, water distribution, water treatment, meter shop, warehouses, and organizational alignment.

Doug also assisted the District in developing their Information Technology Master Plan. Doug facilitated interactive workshops on business process mapping to introduce the District staff on the benefits of business process reengineering and alignment. He facilitated a series of stakeholder workshops to identify the strengths, weaknesses for the District's core information systems. Doug and his team identified and documented the perceived strengths and weaknesses of the District's CMMS, ERP, WRIS, GIS, DMS and CIS systems.

### City of Arlington (TX)

Doug led an evaluation of the City of Arlington's Field Services Division. The Field Services Division is responsible for maintaining the City's water meters and managing new customer turn-ons and delinquent customer accounts. This evaluation resulted in significant improvement of maintaining existing meters, installing new meters, and enhanced coordination with the maintenance field crews.

### Toronto Water (ON)

Doug served as the Principal Consultant in developing Toronto Water's initial Strategic Business Plan. Doug facilitated a series of informational and educational workshops and executive team interviews to drive out their first Strategic Business Plan and associated top-level performance measures. The Strategic Business Plan provided Toronto Water with a solid road map of business strategies and goals for the next ten years. Doug also assisted Toronto Water in developing their performance management program with executive-level performance measures. Through a series of workshops and discussions, he developed a long list of Tier 1, 2, and 3 performance measures applicable to Toronto Water. Doug also helped Toronto Water fully develop their top 20 measures and associated performance management program.

### San Francisco Public Utilities Commission (CA)

Doug led the development of a CIP Strategic Plan to enable the requisite strategies and priorities needed to ensure a successful project improve the reliability of its water supply. Doug developed a strategy map for the General Manager and CIP Manager to guide the future direction and implementation of the CIP for the utility that included strategies for improving the SFPUC's practices.

### City of Austin Utilities (TX)

Doug led the Operations and Management Program Review of the City of Austin's Water and Wastewater Utility. The review included all aspects of the 1200+ person utility, including management vision and planning; asset management; utility and plant performance metrics; CIP budgeting and management; treatment systems technology; information technology and data management; operations and maintenance practices; engineering services; human resource policies; customer services; and finance and administration services.

## PROJECT LIST

- Boston Water and Sewer Commission (MA) – Information technology plan
- Cal Water Services (CA) – Information technology plan, CMMS implementation, and asset management planning
- City of Arlington (TX) – Customer services assessment
- City of Austin (TX) – Management & operations assessment and performance measures
- City of Calgary (AB) – Information technology plan, strategic business plan, and performance measures
- City of Clearwater Utilities (FL) – CMMS assessment and asset management services
- City of Folsom Utilities (CA) – Strategic business plan, performance measures, and solid waste assessment
- City of Fresno (CA) – Information technology plan and operations & organization assessment
- City of Irving Water Utility (TX) – Management & operations assessment
- City of Lubbock (TX) – Management & operations assessment
- City of Pasadena Water & Power (CA) – CMMS assessment & selection and asset management services
- City of Peoria (AZ) – Management & operations assessment
- City of Riverside Utilities (CA) – Asset management program development and CMMS implementation
- City of Round Rock (TX) – Asset management services
- City of Sacramento (CA) – Information technology plan
- City of San Diego Metropolitan Wastewater District (CA) – Performance measures
- City of Santa Barbara Utilities (CA) – AMI feasibility study
- City of Sparks Utilities (NV) – Management & operations assessment and asset management
- East Bay Municipal Utility District (CA) – CMMS assessment
- El Dorado Irrigation District (CA) – Operations assessment, strategic plan, performance measures, and CMMS and CIS upgrade
- Elsinore Valley Water District (CA) – Asset and maintenance management assessment
- Greater Cincinnati Water Works (OH) – Strategic business plan, performance measures, CIS strategy, and service bureau strategy
- Greenville Utility Commission (NC) – Information technology plan and performance management services
- Hi-Desert Water District (CA) – Strategic business plan, operations assessment, and organization assessment
- Hillsborough County (FL) – Information technology plan and CMMS implementation
- Joshua Basin Water District (CA) - Strategic business plan and organization assessment
- Los Angeles County Sanitation District (CA) – CMMS selection & implementation
- Long Island Power Authority (NJ) – Asset management and CMMS services
- Otay Water District (CA) – Strategic plan, management & operations assessment, asset management planning & implementation, and performance measures
- Pacific Gas & Electric (CA) – Maintenance and emergency response assessment
- Passaic Valley Water Commission (NJ) – CMMS assessment, selection and implementation and organizational assessment
- Polk County Utilities (FL) – Information technology plan, CMMS selection, and CIS selection & implementation
- Rancho California Water District (CA) – CMMS selection and implementation and asset management roadmap
- Region of Halton (ON) – Organizational repositioning
- Salt River Project (AZ) – Strategic business plan
- San Diego County Water Authority (CA) – Management & operations assessment and performance measures
- San Francisco Public Utility Commission (CA) – Strategic planning, management & operations assessment, and CIP strategy

- Santa Clara Valley Water District (CA) – Management & operations assessment and organization assessment
- Toronto Water (ON) – Strategic business plan and performance management services
- Union Sanitary District (CA) – CMMS selection & implementation and performance management services
- Western Municipal Water District (CA) – CMMS selection & implementation, asset management assessment, and asset management roadmap

## PUBLICATIONS

- "Driving Business and IT Alignment – The Smart Way to Integrate Business, Systems and Technologies", AWWA Journal, June 2012

## PRESENTATIONS

- "Combining M5 with EUM," Utility Management Conference, 2020
- "M5 Water Utility Management: What You Don't Know That You Should," ACE Conference, 2019
- "M5 Water Utility Management: What You Don't Know That You Should," Utility Management Conference, 2018
- "M5 Water Utility Management: What You Don't Know That You Should," ACE Conference, 2018
- "M5 Water Utility Management," ACE Conference, 2018
- "A 360° Perspective for Enabling EUM," Utility Management Conference, 2017
- "Why Utilities Need an Asset Management Program and How to Get One," Texas Municipal Utilities Association, 2015
- "IT All Starts with Planning – BWSC Case Study," ACE Conference, 2014
- "Enhance Customer Service and Service Order Management," ACE Conference, 2014
- "Performing Information System Aligned with Utility Business Strategy," Utility Management Conference, 2014
- "Avoiding Disaster: New Innovations," California Utility Executive Management Forum, 2013
- "Five Keys of EUM," AWWA CA/NV Fall Conference, 2012
- "Unlocking the 5 Keys of EUM," Utility Management Conference, 2012
- "Doing More with More," ACE Conference, 2011
- "Asset Management – Developing a Practical AM Program," CWEA Conference, 2011
- "Toronto Water's Strategic Plan Combines the Balanced Scorecard & EUM," Utility Management Conference, 2011
- "Plan for Success," San Diego Council of Utilities, 2011
- "Improving Performance through Effective Measures and Business Intelligence," Utility Management Conference, 2010
- "IT Organizational Design for Improved Business-IT Alignment," AWWA/WEF IMTech Conference, 2009
- "Linking Performance Management with Technology for Effective Business Intelligence and Decision Support," AWWA/WEF IMTech Conference, 2008
- "Integrating Business and IT Planning," Joint Management Conference, 2007
- "Effective Performance Measurement for Utilities," ACWA Conference, 2006
- "Asset Management Technology Workshop," AWWA/WEF IMTech Conference, 2005
- "Cost Effective Asset Management for Small and Mid-Sized Utilities," Joint Management Conference, 2004
- "CMOM Requirements for Utilities," WEF Hot Topics Seminar, 2002
- "Performance-Based Management Workshop," Joint Management Conference, 2002
- "Performance-Based Management Systems," National Forum for Black Public Administrators, 2001
- "SCVWD - In Pursuit of Excellence," Fall ACWA Conference, 2000

# Jonathan Ingram

## Senior Manager

### ROLE

Finance & Budget SME

### PROFILE

Jonathan has 16 years of experience in management consulting and local government management, most recently as budget manager in the City of Cincinnati, Ohio, budget office. Before that, Jonathan served as a management consultant and worked in the city manager's office for the City of Highland Park, Illinois.

Jonathan is a skilled financial analyst in the areas of budget and revenue analysis and has led our work with fiscally distressed communities, supporting their efforts to restore operational and financial sustainability. Additionally, he has extensive experience as a management and operations consultant to local governments in the United States and abroad.

As a consultant, Jonathan has completed operations reviews for over 200 local governments and has helped to improve service delivery for a broad range of departments – from police to public works. He has developed staffing and deployment plans for city operating departments, analyzed and facilitated intergovernmental consolidations, helped local governments develop custom performance management systems, and facilitated the development of long-term strategic plans and financial models.

### Specialties

- Staffing and operations assessment
- Public safety staffing and operations
- Financial management and planning
- Process improvement

### Professional History

- Raftelis: Senior Manager (2021-present) Manager (2020-2021); Senior Associate, The Novak Consulting Group (2012-2020)
- City of Cincinnati, Ohio: Budget Manager (2010-2012)
- Management Partners: Senior Management Advisor (2005-2010)

### Education

- Master of Public Administration - Northern Illinois University (2005)
- Bachelor of Arts in Political Science - Aurora University (2003)

### Professional Memberships

- International City/County Management Association (ICMA)
- Ohio City/County Management Association (OCMA)

Jonathan's areas of expertise are in local government budgeting and finance, operations analysis, project management, public safety staffing analysis, process improvement, and performance measurement. He is adept at quickly assessing strengths and opportunities within a municipality, analyzing and developing actionable recommendations for improvement, and communicating findings and next steps to a wide variety of audiences, including staff, elected officials, and the public.

During his tenure with the City of Cincinnati, Jonathan managed the development and administration of a $1 billion operating budget. He also conducted special analysis projects, served on the City's collective bargaining team, and co-managed the implementation of an enterprise budget system.

Jonathan earned a bachelor's degree in political science from Aurora University and a master's degree in public administration from Northern Illinois University. He is a member of the International City/County Management Association and the Ohio City/County Management Association.

# Rebekka G. Hosken

**Manager**

## ROLE

Finance and Munis SME

## PROFILE

Rebekka joined Raftelis in 2020 with 16 years of direct service to local governments and 10 years of management consulting experience. As an experienced consultant, Rebekka has led organizational assessments for a broad range of operating departments and offices in cities, counties, universities, and special districts, including community development, public works, police, administration, and city attorney departments. With direct operational experience in municipal administration, public works, and finance departments, Rebekka's breadth of knowledge makes her skillful in quickly identifying organizational strengths and opportunities, analyzing operations through creation of process maps and workflows, preparing actionable recommendations for improvement, and communicating findings to a wide variety of audiences. She has consulted for over 100 clients, including Boston, Massachusetts; Daly City, California; Surprise, Arizona; Shoreline, Washington; North Las Vegas, Nevada; and Long Beach, California.

Rebekka served as finance director for the City of La Cañada Flintridge, California, a contract city north of Los Angeles. She prepared the annual budget and financial audit, as well as managed daily accounts payable, accounts receivable, payroll, and financial planning functions. As the City's second finance director, she automated several previously manual operations, including business licensing and payroll processing, coordinated acceptance of credit cards from customers for the first time, and managed the implementation of a new financial software system. During her tenure, she identified and successfully obtained a State loan for the financing of the City's new city hall and played a key leadership role in successfully moving all operations and staff, as well as communicating all financial impacts of the project to management and City Council.

Previously, Rebekka was the budget officer for the City of Simi Valley, California, a full-service community in the Los Angeles region. She prepared the City's $196 million annual budget and $160 million capital improvement program, as well as the City's cost allocation plan. She managed the budget and capital projects module training and setup for a comprehensive citywide enterprise resource planning (ERP) system implementation across nine operating departments.

Rebekka earned a master's degree in Business Administration with a Certificate in Local Government and Non-Profit Management from Boston University, and a Bachelor of Arts from the University of Michigan – Ann Arbor. She has published articles in Public Management magazine and served as a trainer in sessions at International City/County Management Association (ICMA) conferences.

### Specialties

- Organizational assessment
- Budgeting and financial analysis
- Business process improvement
- Strategic planning
- Staffing analysis

### Professional History

- Raftelis: Manager (2020-present)
- City of La Cañada Flintridge, California; Finance Director (2017-2020)
- City of Simi Valley, California; Budget Officer (2012-2017)
- City of Burbank, California; Senior Management Analyst (2010-2012)
- Management Partners; Senior Consultant (1999-2010)
- Village of La Grange Park, Illinois; Assistant Village Manager (1996-1999)
- City of Appleton, Wisconsin; Assistant to the Mayor (1994-1996)
- Town of Lexington, Massachusetts; Management Intern (1992-1993)

### Education

- Master of Business Administration – Boston University (1993)
- Certificate in Local Government and Non-Profit Management – Boston University (1993)
- Bachelor of Arts in Russian Studies – University of Michigan (1989)

### Professional Memberships

- Government Finance Officers Association
- California Society of Municipal Finance Officers

# Diane Wojdag PMP, CSM, LSSGB

**Principal Consultant**

## ROLE

Customer Service & Utility Billing SME

## PROFILE

Diane's 30+ years of utility and project manager experience in both the information technology (IT) and business management operation areas provides insight from the vendor, client, and consultant perspective in managing projects. A resourceful certified PMP project manager skilled in executing and managing the Software Development Life Cycle (SDLC) including Project Initiation; Planning; Analysis; Design, Development, Testing, Implementation and Maintenance. Diane continuously displays the proven ability to successfully manage large and complex IT projects.

## KEY PROJECT EXPERIENCE

### Polk County (FL)

Diane worked with Polk County (County) on both the CIS Selection Project and CIS Implementation Projects. The objective was to select and implement the best Customer Information System (CIS) software application that will achieve all of Polk County's business requirements, objects and support the County's growth into the future.

### City of Tampa

Diane assisted the City of Tampa (City) on multiple projects to successfully achieve multiple operational objectives since 2016. These projects include the CIS Selection, CIS Implementation, and the Solid Waste Routing Software Selection projects. Diane helped the City with software selection including review of existing business processes; development of business requirements; financials, creation of the RFP, evaluation of vendor proposals, demonstrations, scoring and selection. She also assisted the City with all aspects of project management (vendor management, work plan, financials etc.) data conversion and testing of the new Cayenta CIS system.

### City of Garland

Worked with the City of Garland on the CIS selection process including review of Garland's business processes; development of business requirements; creation of the RFP document, evaluation of RFP proposals and scoring, vendor demonstrations, site visits and contract negotiations.

### Georgetown Utilities

Diane worked with Georgetown Utilities on the CIS selection process including review of the Georgetown's business processes (to-be and as-is) development of

### Specialties

- Utilities Expertise (Electric, Natural Gas, Steam Utilities, Water, Solid Waste)
- CIS (Oracle/CC&B; Itineris/UMAX, Cayenta CIS, Advanced/Infinity, Peace/Peace 8, IBM/CIS-DB2)
- Mobile (MDSI/Advantex, OSS, WDS; ServiceLink)
- Metering (AMI; ERT) Aclara (Energy Vision/EV, Customer Engagement/CE)
- Customer Care Applications

### Professional History

- Raftelis: Principal Consultant / Project Manager: (2021-Present)
- Westin Technology: Sr. Consultant/ Project Manager (2015-2021)
- Aclara: Senior. Project Manager (2011-2015
- Accenture: Manager (2010-2011)
- National Grid: Project Manager (2009-2010)
- Oracle: Consulting Project Technical Director (2006-2008)
- Peace Software: Project Manager (2005-2006)
- Eversource Energy (formerly NSTAR Electric); Project Manager (2004-2006)
- Eversource Energy (formerly Columbia Gas/Bay State Gas): IT Manager, System Analyst, Business Analyst, Operations Analyst; Tax, Insurance and Legal Administrator; Customer Service Rep (1982-2003)

### Education

- Northeastern University, Boston, MA
- Worcester State, Worcester, MA
- University of Phoenix, Phoenix, AZ

### Certifications

- Project Management Institute (PMP)
- Lean Six Sigma (LSSGB)
- Scrum Master (CSM)

business requirements, creation of the RFP document, evaluation of RFP proposals and scoring, vendor demonstrations, selection, site visits and contract negotiations.
Diane also assisted the Georgetown Utilities Project Manager with the implementation of the Itineris, UMAX, CIS application in the areas of project management (vendor management, financials, works plans); testing and change management.

### Con Edison

Diane was responsible for the project lifecycle and directing the implementation of Oracle's Customer Care & Billing CIS application and Business Intelligence (BI) module. Responsibilities included defining and managing project in terms of schedule, budget, and quality performance, managing and negotiating a Statement of Work (SOW, Consulting Service Agreement and change controls). Coordinated support activities for development of plug-ins, interface, data conversion, systems testing and user acceptance testing. Diane recruited, trained; organized, mentored, and managed a project team of 15 people across two countries, established rapport and maintained communication with stakeholders at multiple levels, and managed the transition from the implementation team to the support team.

### Direct Energy

Diane managed the implementation of the Peace 8 CIS application for Direct Energy. Responsibilities included all aspects of project management including planning; project schedule; quality management; communications management; human resource management; cost management; procurement management; risk/issue management; and change management. Mentored staff in project management methodology. Encouraged best practices in project management and project planning. Managed overall project resources (off-shore and on-shore) and project financial forecast.

### Eversource/NStar

Diane was responsible for managing the mobile data project (MDSI/Advantex) that included the creation of RFPs, vendor selection development and management of overall financial budget and forecasts, project timelines and implementation of new mobile work forces solution application. Provided business consulting knowledge expertise in strategic performance management methodologies, process assessment work and the application of technologies to business. Partnered effectively with the technical and operational areas and managed vendors, consultant, programmers, and analysts.

### Bay State Gas/Columbia Energy

Diane managed a team responsible for support of all customer care production applications, interfaces, Internet; Intranet; IVR Metering; Work Order Management Sales and Marketing; Compliance Management System; Demand Side Management; Mobile Data Application; Transportation Billing-Choice Program, all enhancements and new capital projects.

**Lehigh County Authority**

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

# PROFESSIONAL SERVICES AUTHORIZATION

**Professional:** Raftelis
227 W. Trade Street, Suite 1400
Charlotte, NC 28202

**Date:** April 11, 2022
**Requested By:** Liesel Gross

**Approvals**
**Department Head:** _____
**Chief Executive Officer:** _____

**LCA Enterprise Resource Planning (ERP) Needs Assessment & Roadmap**

As outlined in LCA's 2022-2027 Strategic Plan, process improvement is a critical priority for the organization. Many of LCA's opportunities for process improvement lie in the administrative and financial areas of the organization, where manual processes and spreadsheet-based systems are used to "work around" deficiencies within the Enterprise Resource Planning (ERP) system currently in use, Munis by Tyler Technologies. It is unknown whether these deficiencies are a result of the configuration and use of the system, incomplete implementation of system features, or possibly a poor technology fit for the organization. Raftelis has proposed a targeted ERP Needs Assessment & Roadmap approach that will assist LCA staff with determining the next best steps to take to address the technology needs of the organization to support process improvement in the key areas of administration and finance. These services include, but are not limited to, the following:

| Professional Services |
|---|
| • Review of current ERP processes and documentation |
| • Evaluate effectiveness of current Munis solution & supporting technologies |
| • Evaluate current system interfaces, integrations, reporting, and data analytics capabilities |
| • Evaluate current system business workflows and performance gaps |
| • Identify "quick wins" for business process improvement |
| • Identify near- and long-term ERP system needs |
| • Identify solutions and options for current process improvement, reconfiguration of existing ERP solution, and options for new technology selection process |
| • Prepare ERP roadmap |

(1) Please reference the cover Memo for additional information.

**Prior Approval:**
**Amount**: *$0*

**This Approval:**
**Amount**: *$61,025*

**Time Table and Completion Deadline:** Expected completion within 90 days of project kickoff.

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**(For Authority Use Only)**

**Authorization Completion:**

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

# LEHIGH COUNTY AUTHORITY

# ALLENTOWN, PA

DRAFT 5-YEAR CAPITAL PLAN

ALLENTOWN DIVISION

2023-2027

APRIL 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* | Prior Administrative Order/Current Regional Flow Management Strategy |
| *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*

*(4) Prior EPA Administrative Order was lifted and projects currently being implemented under DEP Regional Flow Management Strategy*

## 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 |
| *AO/CCRC TBD* | Funding to be determined in consultation with The City of Allentown |

*(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 Opt* | Revenue Opportunity |
| *Planning* | Planning |
| *N/A* | Not Applicable |

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

## Approval Stage

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

**LEHIGH COUNTY AUTHORITY**
**ALLENTOWN DIVISION**
**CAPITAL PLAN**
**2023–2027**

## SUMMARY

The Allentown Division Capital Plan (Plan) is a five-year plan that covers the years 2023 through 2027. The Plan includes water and wastewater projects to assure facility / infrastructure reliability and to comply with the Lease required projects. It also includes projects and studies deemed necessary by LCA, where the latter will identify and evaluate upgrades and improvements that will be incorporated in future Capital Plans. The Lease requires that LCA submit a 5-year Capital Plan to the City for review and approval.

The projects identified in the Plan fall into to two primary categories, those funded by LCA and those funded by the City, with the latter further categorized as Regional Flow Management Strategy (RFMS) projects and Uncompleted Work (UW).

*Regional Flow Management Strategy (RFMS) Projects*: This includes projects necessary to bring the City's wastewater system into compliance with the DEP-mandated Regional Flow Management Strategy (RFMS), which replaces the US Environmental Protection Agency (USEPA) Administrative Order to eliminate Sanitary Sewer Overflows / By-passes at Outfall 003 of the wastewater treatment plant with a comprehensive program to reduce inflow and infiltration into the Kline's Island Sanitary Sewer Service Area (KISS) wastewater systems. Pursuant to the Concession Lease Agreement (Lease), the City is responsible for making all decisions related to work to be performed on the City's infrastructure and for funding said work. LCA is responsible for the execution of the work.

*Uncompleted Work (UW) Projects:* This category includes projects that the City expected to be completed before the Lease began, but were not completed prior to the Lease start. The City and LCA reached an agreement providing that LCA will manage these projects but be reimbursed by the City for all project costs. Of these original projects (the WWTP Bar Rack, Sanitary Sewer Evaluation Study, WWTP SCADA Upgrades, WFP Chemical Building Roof Replacements, the alternate remedy for the Schantz Spring Chlorine Booster Station and Rehabilitation of the 28th Street Elevated Tank), all have been completed by LCA since the Lease inception.

Funding by Budget Area and category is as follows:

| **CAPITAL FUNDING 2023-2027** | | | | | |
|---|---|---|---|---|---|
| **Budget Area** | **LCA** | **CITY** | | | **TOTALS** |
| | | **UW** | **RFMS** | **Sub-Total** | |
| Water | $40,654,000 | $0 | $0 | $0 | $40,654,000 |
| Wastewater | $31,853,000 | $0 | $2,150,000 | $2,150,000 | $34,003,000 |
| **Totals** | **$72,507,000** | **$0** | **$2,150,000** | **$2,150,000** | **$74,657,000** |

*Water Projects:* Focus on regulatory compliance, asset management, immediate and future needs at the Water Filtration Plant (WFP) and addressing the Lease operating standards. The recently completed WFP Master Plan identified capital improvements to address future regulatory requirements and/or operational needs. Amended lease requirements include the annual replacement of 1-mile of aged and/or failing spun and pit cast water main.

*Wastewater Projects:* The Projects focus on regulatory compliance, asset management, immediate and future needs at the Wastewater Treatment Plant (WWTP) and addressing the Lease operating standards. Projects of note include the replacement of the solids process boiler and HVAC upgrade project and replacement of electrical substation no. 1. In addition, annual funding is available for the replacement and/or rehabilitation of defective sewer mains when warranted.

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

*Supplemental Revenues:* Under the Concession Agreement, LCA is able to charge Capital Cost Recovery Fees and Capital Recovery Fees to City customers. These charges will be applied to all Major Capital Improvements (MCI), which are defined as projects exceeding $1 million (indexed for inflation in the future) within the proposed Plan. The capital plan includes five (5) potential wastewater MCI project and five (5) potential water MCI projects (not including the annual water main replacement).

## FINANCIAL JUSTIFICATION

In 2023 and beyond, LCA anticipates that Capital Projects will be funded through operating revenues, contributions or grants and cash reserves.

| 2023-2027 Capital Plan Allentown Division Funding Sources | | | | | | |
|---|---|---|---|---|---|---|
| | LCA SOURCES | | | CITY SOURCES | | |
| **Budget Area** | **Contributions** | **Operating/Capital Reserves** | **New Borrowing** | **RFMS** | **UW** | **Total Sources** |
| Water | $4,150,000 | $36,504,000 | $0 | $0 | $0 | $40,654,000 |
| Wastewater | $0 | $31,853,000 | $0 | $2,150,000 | $0 | $34,003,000 |
| **Totals** | **$4,150,000** | **$68,357,000** | **$0** | **$2,150,000** | **$0** | **$74,657,000** |

| CONDENSED CASH FLOW - CITY DIVISION | | | | | |
|---|---|---|---|---|---|
| **US DOLLARS** | **2023** | **2024** | **2025** | **2026** | **2027** |
| User Charges | 48,249,218 | 53,109,689 | 56,442,812 | 60,454,513 | 63,542,442 |
| Other Operating Revenues | - | - | - | - | - |
| Non-Operating Revenues | 2,099,343 | 1,349,343 | 949,343 | 749,343 | 749,343 |
| Operating expenses | (21,698,486) | (22,349,440) | (23,019,924) | (23,710,522) | (24,421,837) |
| Annual Lease & Other Payments | (1,316,070) | (1,313,128) | (1,006,147) | (1,005,166) | (1,004,186) |
| Debt Service - Current Debt | (15,130,921) | (15,664,816) | (16,217,696) | (16,786,111) | (17,374,611) |
| Debt Service - NEW Debt | (63,218) | (63,218) | (63,218) | (63,218) | (63,218) |
| Investments Converting to Cash | - | - | - | - | - |
| Grants | 4,150,000 | - | - | - | - |
| Proceeds From NEW Debt | - | - | - | - | - |
| Capex | (12,887,000) | (14,049,500) | (16,466,000) | (20,838,000) | (10,786,500) |
| **NET FUND FLOWS** | **3,402,867** | **1,018,930** | **619,171** | **(1,199,161)** | **10,641,433** |
| | | | | | |
| Plan Volume Increase | 0.00% | 0.00% | 0.00% | 0.00% | 0.00% |
| User Charge Revenue Increase % | 5.50% | 5.20% | 5.10% | 5.00% | 4.90% |
| Total User Charge Revenue Increase | 5.50% | 5.20% | 5.10% | 5.00% | 4.90% |
| Unrestricted Cash Balance | 17,560,429 | 17,748,281 | 18,026,610 | 16,476,550 | 26,756,725 |
| Unrestricted Investments | - | - | - | - | - |
| Total Unrestricted Balances | 17,560,429 | 17,748,281 | 18,026,610 | 16,476,550 | 26,756,725 |
| Days Cash on Hand | 295 | 290 | 286 | 254 | 400 |
| DEBT SERVICE COVERAGE RATIO | 1.71 | 1.92 | 2.04 | 2.17 | 2.23 |

# WATER

**LEHIGH COUNTY AUTHORITY**
**ALLENTOWN DIVISION**
**2023-2027 CAPITAL PROGRAM**
**WATER**

| Project # | Name or Title of Proposal | Prj. Category | (1) Funding | Approval Stage (1) | Plan Total Cost | This Capital Program | | | | | | | Prior Project Cost (4) | Future Project Cost (4) | 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 PROJECTS*** | | | | | | | | | | | | | | |
| AD-W-A | Annual Projects | AM - Varies | LCA | A | $ 7,639,000 | 1,135,000 | 1,149,000 | 1,340,000 | 1,326,000 | 1,467,500 | 1,221,500 | $ 6,504,000 | $0 | | $7,639,000 |
| | | | | | | | | | | | | | | | |
| | **Sub-total Annual** | | | | **$ 7,639,000** | **$ 1,135,000** | **$ 1,149,000** | **$ 1,340,000** | **$ 1,326,000** | **$ 1,467,500** | **$ 1,221,500** | **$ 6,504,000** | **$ -** | **$ -** | **$ 7,639,000** |
| | | | | | | | | | | | | | | | |
| | ***NON-CCRC PROJECTS*** | | | | | | | | | | | | | | |
| AD-W-1 | Indenture Improvements | AM-high | LCA | C | $ 1,000,000 | $ 300,000 | $ 200,000 | $ 200,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 700,000 | $200,000 | | $1,200,000 |
| AD-W-25 | Tank and Reservoir Rehabilitation | AM-high | LCA | V | $ 1,050,000 | $ 300,000 | $ 250,000 | $ 200,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 750,000 | $0 | | $1,050,000 |
| AD-W-26 | Large Diameter Valve Replacement Project | AM-high | LCA | V | $ 2,550,000 | $ 100,000 | $ 750,000 | $ 700,000 | $ 500,000 | $ 250,000 | $ 250,000 | $ 2,450,000 | $0 | $500,000 | $3,050,000 |
| AD-W-9 | Various Water System Related Studies | CA/OS | LCA | S | $ 150,000 | $ - | $ - | $ - | $ - | $ 150,000 | $ - | $ 150,000 | $300,000 | | $450,000 |
| | **TOTAL NON-CCRC PROJECTS** | | | | **$ 4,750,000** | **$ 700,000** | **$ 1,200,000** | **$ 1,100,000** | **$ 700,000** | **$ 600,000** | **$ 450,000** | **$ 4,050,000** | **$ 500,000** | **$500,000** | **$ 5,750,000** |
| | | | | | | | | | | | | | | | |
| | ***Large Projects and CCRC Projects*** *(3)* | | | | | | | | | | | | | | |
| AD-W-7 | Annual Water Main Replacements | CA/OS | CCRC | C | $ 21,600,000 | 2,400,000 | 2,400,000 | 2,400,000 | 4,800,000 | 4,800,000 | 4,800,000 | $ 19,200,000 | $12,900,000 | | $34,500,000 |
| AD-W-16 | Water Meter Replacement Program | AM-High | CCRC (2) | P | $ 2,300,000 | $ - | $ - | $ - | $ 800,000 | $ 1,500,000 | $ - | $ 2,300,000 | $0 | | $2,300,000 |
| AD-W-21 | Fixed-Base Meter Reading System | Efficiency | CCRC (2) | P | $ 1,700,000 | $ - | $ - | $ - | $ 850,000 | $ 850,000 | $ - | $ 1,700,000 | $0 | $0 | $1,700,000 |
| AD-W-22 | Filter Upgrades | Master Plan | CCRC (2) | P | $ 5,700,000 | $ 200,000 | $ 2,350,000 | $ 2,850,000 | $ 300,000 | $ - | $ - | $ 5,500,000 | $50,000 | $0 | $5,750,000 |
| AD-W-23 | Intake Upgrades | Master Plan | CCRC (2) | P | $ 1,400,000 | $ - | $ - | $ - | $ 100,000 | $ 500,000 | $ 800,000 | $ 1,400,000 | $0 | $13,000,000 | $14,400,000 |
| | **TOTAL CCRC PROJECTS** | | | | **$ 32,700,000** | **$ 2,600,000** | **$ 4,750,000** | **$ 5,250,000** | **$ 6,850,000** | **$ 7,650,000** | **$ 5,600,000** | **$ 30,100,000** | **$ 12,950,000** | **$13,000,000** | **$ 58,650,000** |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | **GRAND TOTAL** | | | | **$ 45,089,000** | **$ 4,435,000** | **$ 7,099,000** | **$ 7,690,000** | **$ 8,876,000** | **$ 9,717,500** | **$ 7,271,500** | **$ 40,654,000** | **$ 13,450,000** | **$13,500,000** | **$ 72,039,000** |

(1) "Administrative Order" Projects as per the Agreement are to be Funded by the City and executed by LCA.
(2) Project to be reviewed by the City for Major Capital Improvement/CCRC approval
(3) Includes projects that have not been reviewed by the City for MCI/CCRC approval
(4) If blank future cost not applicable (annual/recurring cost) or to be determined

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | ANNUAL PROJECTS | | | | | | |
| **Budget Area** | Water | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-W-A |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | CV/JP |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | 40 | **Project inception date** | 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 | | |

\

**Detailed Project Description**

This annual project includes the following: New & Replacement Meter Installations, Distribution Mains - Development & Service Connections, Distribution Mains - Upsizing, Other Equipment, WFP General Improvements, PennDOT relocations, Mobile Equipment, reservoir rehab/maintenance, Indenture report preparation, General Water System Replacements/Improvements, Capital Management, and various water system studies. Major mobile equipment purchases within the capital plan include two new dump trucks, new fork lift, and new utility trucks.

**Project Drivers and Needs to be Met by the Project**

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

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

This is an annual project.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | N/A |
|---|---|
| **Estimated Project Costs:** | **2022-2027** |
| LCA Staff | $ 500,000 |
| Land Acquisition | |
| Construction/Equipment | $ 6,139,000 |
| Professional Services | $ 500,000 |
| Other | $ 100,000 |
| Contingencies | $ 400,000 |
| **Total Project Cost** | **$ 7,639,000** |

| | |
|---|---|
| **Requested in this Capital Program** | **$ 6,504,000** |

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| **X** | Preliminary Estimate |
| | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 1,135,000 | procurement, planning, design & construction |
| 1st Year | 2023 | $ 1,149,000 | procurement, planning, design & construction |
| 2nd Year | 2024 | $ 1,340,000 | procurement, planning, design & construction |
| 3rd Year | 2025 | $ 1,326,000 | procurement, planning, design & construction |
| 4th Year | 2026 | $ 1,467,500 | procurement, planning, design & construction |
| 5th Year | 2027 | $ 1,221,500 | procurement, planning, design & construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | INDENTURE REPORT IMPROVEMENTS | | | | | | |
| **Budget Area** | Water | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-W-I |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | TC |

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

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

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

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | $200,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 50,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 700,000 |
| Professional Services | $ | 150,000 |
| Other | | |
| Contingencies | $ | 100,000 |
| **Total Project Cost** | **$** | **1,200,000** |

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

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| x | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 budget | | $ 300,000 | design & construction |
| 1st Year | 2023 | $ 200,000 | design & construction |
| 2nd Year | 2024 | $ 200,000 | design & construction |
| 3rd Year | 2025 | $ 100,000 | design & construction |
| 4th Year | 2026 | $ 100,000 | design & construction |
| 5th Year | 2027 | $ 100,000 | design & construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | TANK AND RESERVOIR REHABILITATION | | | | | | |
| **Budget Area** | Water | **Department** | Operations | **Date** | 1/24/2022 | **Project No.** | AD-W-25 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | Master Plan | **Secondary** | Sys Imp | **Preparer** | | TC/BG |

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

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

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

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 50,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 750,000 |
| Professional Services | $ | 100,000 |
| Other | $ | 50,000 |
| Contingencies | $ | 100,000 |
| **Total Project Cost** | **$** | **1,050,000** |

| **Requested in this Capital Program** | **$** | **750,000** |
|---|---|---|

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 300,000 | construction |
| 1st Year | 2023 | $ 250,000 | construction |
| 2nd Year | 2024 | $ 200,000 | construction |
| 3rd Year | 2025 | $ 100,000 | construction |
| 4th Year | 2026 | $ 100,000 | construction |
| 5th Year | 2027 | $ 100,000 | construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | LARGE DIAMETER VALVE REPLACEMENT PROJECT | | | | | | |
| **Budget Area** | Water | **Department** | | **Date** | 1/24/2022 | **Project No.** | AD-W-26 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - High | **Secondary** | Sys Imp | **Preparer** | | CV/JG |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | 40 | project inception date | 2020 |
| Approx. No. of Customers Benefitted | * | | |
| Is this System part of a Common User Rate? | N/A | project completion date | 2022 |
| Will the Project Require Obtaining Land Rights | N/A | | |

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

**Detailed Project Description**

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

**Purpose and Needs to be Met by the Project**

The replacement of critical inoperable major water supply valves will allow for isolating of reservoirs and other areas of the distribution system in event of a water main break or other essential maintenance operations.

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

The inception of this project is the result of a major break in the South Mountain transmission main that occurred in late 2020 and required emergency repair. The inoperable or otherwise poor condition of the valves discovered on this line and adjacent connecting mains justify the need to create a new project to replace critical transmission and distribution system valves.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

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

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs: 2022-2027** | | |
| LCA Staff | $ | 75,000 |
| Land Acquisition | | |
| Construction/Equipment | $ | 2,200,000 |
| Professional Services | $ | 175,000 |
| Other | | |
| Contingencies | $ | 100,000 |
| **Total Project Cost** | **$** | **2,550,000** |

| **Requested in this Capital Program** | **$** | **2,450,000** |
|---|---|---|

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| | Budget Estimate |
| | Definitive Estimate |

| **Source of Funds** | | | |
|---|---|---|---|
| | | **Need** | **Phase of Work** |
| 2022 Budget | | $ 100,000 | study |
| 1st Year | 2023 | $ 750,000 | construction |
| 2nd Year | 2024 | $ 700,000 | construction |
| 3rd Year | 2025 | $ 500,000 | construction |
| 4th Year | 2026 | $ 250,000 | construction |
| 5th Year | 2027 | $ 250,000 | construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | VARIOUS WATER SYSTEM RELATED STUDIES | | | | | | |
| **Budget Area** | Water | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-W-9 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | CA/OS | **Secondary** | Planning | **Preparer** | | TC |

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

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

**Detailed Project Description**

As infrastructure ages and regulations become more stringent, there are periodic needs for professional services to study the feasibility of changes, upgrades, etc. The following study is requested in 2022: (1) WFP Master Plan. This is a requirement of the Lease as some original components of the Allentown WFP are over 60 years.

**Project Drivers and Needs to be Met by the Project**

Engineering studies are periodically required to address feasibility of implementing new programs or changing existing ones. The WFP Master Plan is a requirement of the Lease Agreement and is to be completed every 5 years. The first Master Plan was completed in 2017 and the second installment will be completed in 2022.

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

The first Master Plan was completed in 2017.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

| | |
|---|---|
| **Project No.** | AD-W-9 |
| **Project Name** | VARIOUS WATER SYSTEM RELATED STUDIES |

| **Prior Project Cost** | | 300,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 25,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | - |
| Professional Services | $ | 120,000 |
| Other | $ | - |
| Contingencies | $ | 5,000 |
| **Total Project Cost** | **$** | **450,000** |

| **Requested in this Capital Program** | **$** | **150,000** |
|---|---|---|

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 150,000 | Master Plan |
| 1st Year | 2023 | $ - | |
| 2nd Year | 2024 | $ - | |
| 3rd Year | 2025 | $ - | |
| 4th Year | 2026 | $ - | |
| 5th Year | 2027 | $ 150,000 | Master Plan |

**LEHIGH COUNTY AUTHORITY**
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**PROJECT DETAIL SHEET**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | WATER MAIN REPLACEMENTS | | | | | | |
| **Budget Area** | Water | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-W-7 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | CCRC |
| **Prj. Category** | **Primary** | CA/OS | **Secondary** | AM - High | **Preparer** | | JMP |

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

As of the end of 2019, the replacement of 9.00 miles of water main was completed. In 2020 the design of the next phase of water main replacement (Cycle 5) was started, although no main was replaced that year. Cycle 5 main replacement will be completed in 2021, followed by the next annual cycles of prioritized water main replacement.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

N/A

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

| **Prior Project Cost** | | $12,900,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 500,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 19,000,000 |
| Professional Services | $ | 1,500,000 |
| Other | $ | - |
| Contingencies | $ | 600,000 |
| **Total Project Cost** | **$** | **34,500,000** |

| **Requested in this Capital Program** | **$** | **19,200,000** |
|---|---|---|

| | **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 | $ | 2,400,000 | design & construction |
| 2nd Year | 2024 | $ | 2,400,000 | design & construction |
| 3rd Year | 2025 | $ | 4,800,000 | design & construction |
| 4th Year | 2026 | $ | 4,800,000 | design & construction |
| 5th Year | 2027 | $ | 4,800,000 | design & construction |

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**PROJECT DETAIL SHEET**

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|---|---|---|---|---|---|---|---|
| **Project Name** | METER REPLACEMENT PROGRAM | | | | | | |
| **Budget Area** | Water | **Department** | Capital Works | **Date** | 1/24/2022 | **Project** | AD-W-16 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj.** | CCRC |
| **Prj. Category** | **Primary** | AM-varies | **Secondary** | rev oport | **Preparer** | | ALK |

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

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

**Detailed Project Description**

There are approximately 4,300 badger water meters ranging in size from 5/8" to 2" that are currently being used to monitor water consumption in the city. These sites were not a part of the original City of Allentown AMR project in 2012/2013. The sites also have existing but outdated Encoder Receiver Transmitters (ERTs) which are now approaching the end of their useful lives. Should LCA decide to implement Project AD-W-21 (Fixed Base AMR), the outdated 40W/50W/60W ERTs will not be readable on the new system. Radio read capability is included on all meter exchanges, allowing for mobile read application.

**Project Drivers and Needs to be Met by the Project**

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

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

No work to date.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.50% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | 0 |
|---|---|
| **Estimated Project Costs:** | **2022-2027** |
| LCA Staff | $40,000 |
| Land Acquisition | $ - |
| Construction/Equipment | $2,150,000 |
| Professional Services | $50,000 |
| Other Contingencies | $60,000 |
| **Total Project Cost** | **$2,300,000** |

| **Requested in this Capital Program** | **$ 2,300,000** |
|---|---|

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| **x** | Preliminary Estimate |
| | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | |
| 1st Year | 2023 | $ - | |
| 2nd Year | 2024 | $ - | |
| 3rd Year | 2025 | $ 800,000 | procurement & construction |
| 4th Year | 2026 | $ 1,500,000 | construction |
| 5th Year | 2027 | $ - | |

**LEHIGH COUNTY AUTHORITY**
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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | FIXED-BASE METER READING SYSTEM | | | | | | |
| **Budget Area** | Water | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-W-21 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | Efficiency | **Secondary** | Sys Imp | **Preparer** | | BB/ALK |

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

No work has been done to date. Implementation is anticipated to begin in 2025.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 80,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 1,200,000 |
| Professional Services | $ | 120,000 |
| Other | $ | 100,000 |
| Contingencies | $ | 200,000 |
| **Total Project Cost** | **$** | **1,700,000** |

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

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | |
| 1st Year | 2023 | $ - | |
| 2nd Year | 2024 | $ - | |
| 3rd Year | 2025 | $ 850,000 | procurement & construction |
| 4th Year | 2026 | $ 850,000 | procurement & construction |
| 5th Year | 2027 | $ - | |

**LEHIGH COUNTY AUTHORITY**
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**PROJECT DETAIL SHEET**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | FILTER UPGRADES | | | | | | |
| **Budget Area** | Water | **Department** | Operations | **Date** | 1/24/2022 | **Project No.** | AD-W-22 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | CCRC |
| **Prj. Category** | **Primary** | Master Plan | **Secondary** | Sys Imp | **Preparer** | | CEV/BG |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | Varies | **Project inception date** | 2018 |
| Approx. No. of Customers Benefitted | * | | |
| Is this System part of a Common User Rate? | N/A | **Anticipated Project completion date** | 2030 |
| Will the Project Require Obtaining Land Rights | N/A | | |

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

The initial evaluation was completed in 2017 as part of the Water Filtration Plant Master Plan, and a follow-up detailed filter condition assessment and study was completed in 2020. The Capital Plan budget is based on performing short term rehabilitation work recommended by the filter study in 2022 and 2023, which includes backwash valve replacement, verification of surface sweeps pressure, removal of top layer of filter meda fines, and repair of filter troughs. Design of the filter upgrade project commenced in late 2021 and will be completed in 2022. Construction is anticipated to occur 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**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | 50,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 150,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 5,000,000 |
| Professional Services | $ | 300,000 |
| Other | $ | 50,000 |
| Contingencies | $ | 200,000 |
| **Total Project Cost** | **$** | **5,750,000** |

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

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | | **Need** | **Phase of Work** |
|---|---|---|---|---|
| 2022 Budget | | $ | 200,000 | design & permitting |
| 1st Year | 2023 | $ | 2,350,000 | construction |
| 2nd Year | 2024 | $ | 2,850,000 | construction |
| 3rd Year | 2025 | $ | 300,000 | construction |
| 4th Year | 2026 | $ | - | |
| 5th Year | 2027 | $ | - | |

This project is unfunded.

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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | INTAKE UPGRADES | | | | | | |
| **Budget Area** | Water | **Department** | Operations | **Date** | 1/24/2022 | **Project No.** | AD-W-23 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | CCRC |
| **Prj. Category** | **Primary** | Master Plan | **Secondary** | Sys Imp | **Preparer** | | CEV/BG |

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

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

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

**Detailed Project Description**

This project as described in the Master Plan includes multiple upgrade phases: **1) R**eplace the existing travelling screen in the 1953 Little Lehigh screening building ***(this phase is within the 5-year Capital Plan)*** ; **2)** Upgrade the Big Lehigh intake facility, which is limited to 3 MGD due to taste and odor complaints, and requires manual cleaning of the existing bar screens. This phase of the project will include the installation of traveling screens and a new screenings handling facility at the Big Lehigh intake; **3)** Construct new 30 MGD Little Lehigh intake structure and screenings building including coarse screens, traveling screens and screenings handling facilities. In addition, new buried piping and tie-in connection to the existing raw water line will be included in this phase.

**Project Drivers and Needs to be Met by the Project**

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

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

The intake evaluation was completed in 2017 as part of the Water Filtration Plant Master Plan project. The first phase of this project, which is shown within this 5-year Capital Plan, consists of replacement of the existing Little Lehigh mechanical screen and associated upgrades. This is the short term recommendation in the Master Plan. The long term recommendation includes a second intake structure (see above), which is not included within this 5-year 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**

Annual cost impact to be determined as needed.

| | |
|---|---|
| **Project No.** | AD-W-23 |
| **Project Name** | INTAKE UPGRADES |

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 25,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 1,250,000 |
| Professional Services | $ | 75,000 |
| Other | $ | - |
| Contingencies | $ | 50,000 |
| **Total Project Cost** | **$** | **1,400,000** |

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

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| x | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | |
| 1st Year | 2023 | $ - | |
| 2nd Year | 2024 | $ - | |
| 3rd Year | 2025 | $ 100,000 | design & permitting |
| 4th Year | 2026 | $ 500,000 | construction |
| 5th Year | 2027 | $ 800,000 | construction |

# WASTEWATER

**LEHIGH COUNTY AUTHORITY**
**ALLENTOWN DIVISION**
**2023-2027 CAPITAL PROGRAM**
**WASTEWATER**

| Project # | Name or Title of Proposal | Prj. Category | (1) Funding | Approval Stage (1) | Plan Total Cost | This Capital Program 2022 *Budget Approved* | 2023 Year 1 | 2024 Year 2 | 2025 Year 3 | 2026 Year 4 | 2027 Year 5 | 2023-2027 Total | Prior Project Cost (4) | Future Project Cost (4) | Total Project Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Operating/Capital Reserve Funds** | | | | | | | | | | | | | | |
| | ***ANNUAL PROJECTS*** | | | | | | | | | | | | | | |
| AD-S-A | Annual Projects | AM - Varies | LCA | A | $ 9,963,000 | $ 1,460,000 | $ 1,998,000 | $ 1,622,000 | $ 1,665,000 | $ 1,858,000 | $ 1,360,000 | $ 8,503,000 | $0 | | $9,963,000 |
| | | | | | | | | | | | | | | | |
| | **Sub-total Annual** | | | | **$ 9,963,000** | **$ 1,460,000** | **$ 1,998,000** | **$ 1,622,000** | **$ 1,665,000** | **$ 1,858,000** | **$ 1,360,000** | **$ 8,503,000** | **$ -** | **$ -** | **$ 9,963,000** |
| | ***Non-CCRC Projects*** | | | | | | | | | | | | | | |
| AD-S-I | Indenture Report Improvements | AM - Varies | LCA | C | $ 1,400,000 | $ 300,000 | $ 400,000 | $ 200,000 | $ 200,000 | $ 200,000 | $ 100,000 | $ 1,100,000 | $200,000 | | $1,600,000 |
| AD-S-9 | Various Wastewater System Related Studies (Master Plan) | CA/OS | LCA | S | $ 150,000 | $ - | $ 150,000 | $ - | $ - | $ - | $ - | $ 150,000 | $150,000 | | $300,000 |
| AD-S-26 | Flow Characterization Study I&I Projects | Regulatory | LCA | V | $ 3,000,000 | $ - | $ - | $ 750,000 | $ 750,000 | $ 750,000 | $ 750,000 | $ 3,000,000 | $0 | $0 | $3,000,000 |
| | **Sub-total Allentown Division Wastewater Capital Funded by LCA** | | | | **$ 4,550,000** | **$ 300,000** | **$ 550,000** | **$ 950,000** | **$ 950,000** | **$ 950,000** | **$ 850,000** | **$ 4,250,000** | **$ 350,000** | **$ -** | **$ 4,900,000** |
| | | | | | | | | | | | | | | | |
| | ***Large Projects and CCRC Projects*** | | | | | | | | | | | | | | |
| AD-S-5 | WWTP Electrical Substation Replacement Phase 2 | AM - High | CCRC (3) | D | $ 3,750,000 | $ - | $ 400,000 | $ 2,000,000 | $ 1,200,000 | $ 150,000 | $ - | $ 3,750,000 | $2,450,000 | $0 | $6,200,000 |
| AD-S-19 | WWTP Main & Auxiliary Pump Station Improvements | AM - Varies | CCRC (3) | P | $ 6,650,000 | $ 150,000 | $ 100,000 | $ 200,000 | $ 2,000,000 | $ 4,000,000 | $ 200,000 | $ 6,500,000 | $0 | $0 | $6,650,000 |
| AD-S-20 | Boiler Replacement & Solids Process HVAC Upgrade Project | AM - Varies | CCRC | D | $ 2,800,000 | $ 800,000 | $ 1,200,000 | $ 800,000 | $ - | $ - | $ - | $ 2,000,000 | $40,000 | $0 | $2,840,000 |
| AD-S-21 | WWTP IPS Pump Station Upgrade & 480v MCC Replacement | AM - Varies | CCRC (3) | P | $ 6,000,000 | $ 100,000 | $ 100,000 | $ 100,000 | $ 1,500,000 | $ 4,000,000 | $ 200,000 | $ 5,900,000 | $0 | $0 | $6,000,000 |
| AD-S-22 | WWTP Final Clarifier 1-4 Rehabilitation | AM - Varies | CCRC (3) | P | $ 950,000 | $ - | $ - | $ - | $ - | $ 100,000 | $ 850,000 | $ 950,000 | $0 | $1,000,000 | $1,950,000 |
| | **Sub-total Allentown Division Wastewater Large & CCRC Projects** | | | | **$ 20,150,000** | **$ 1,050,000** | **$ 1,800,000** | **$ 3,100,000** | **$ 4,700,000** | **$ 8,250,000** | **$ 1,250,000** | **$ 19,100,000** | **$ 2,490,000** | **$ 1,000,000** | **$ 23,640,000** |
| | | | | | | | | | | | | | | | |
| | ***City Funded Projects*** | | | | | | | | | | | | | | |
| AD-S-11 | Regional Flow Management Strategy (2) | Regulatory | Allentown | S | $ 2,250,000 | $ 1,500,000 | $ 750,000 | $ - | $ - | $ - | $ - | $ 750,000 | $1,540,000 | $0 | $3,790,000 |
| AD-S-12 | Flow Characterization Study (2) | Regulatory | Allentown | S | $ 1,720,000 | $ 920,000 | $ 350,000 | $ 350,000 | $ 100,000 | $ - | $ - | $ 800,000 | $1,360,000 | $0 | $3,080,000 |
| AD-S-27 | Miscellaneous Act 537 Planning | Regulatory | Allentown | V | $ 850,000 | $ 250,000 | $ 250,000 | $ 250,000 | $ 100,000 | $ - | $ - | $ 600,000 | $0 | | $850,000 |
| | **Sub-total Allentown Division Wastewater Capital Funded by the City** | | | | **$ 4,820,000** | **$ 2,670,000** | **$ 1,350,000** | **$ 600,000** | **$ 200,000** | **$ -** | **$ -** | **$ 2,150,000** | **$2,900,000** | **$0** | **$ 7,720,000** |
| | | | | | | | | | | | | | | | |
| | **GRAND TOTAL** | | | | **$ 39,483,000** | **$ 5,480,000** | **$ 5,698,000** | **$ 6,272,000** | **$ 7,515,000** | **$ 11,058,000** | **$ 3,460,000** | **$ 34,003,000** | **$ 5,740,000** | **$ 1,000,000** | **$ 46,223,000** |

(1) Reference Glossary of Acronyms and Terms found after the Table of Contents"Administrative Order" .
(2) "Administrative Order" Projects as per the Agreement are to be Funded by the City and executed by LCA.
(3) Project to be reviewed by the City for Major Capital Improvement/CCRC approval
(4) If blank future cost not applicable (annual/recurring cost) or to be determined

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | ANNUAL PROJECTS | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-A |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | CV/BG/TC/JG |

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

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

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

**Detailed Project Description**

This is an annual project that has been previously listed as separate projects. This annual project includes the following: Collection System - Development and Service Connections, Other Equipment, WWTP General Improvements, Sanitary Sewer Main Replacements & Rehabilitation, Penn DOT relocations, Indenture Report, Capital Management, and Mobile Equipment. Major mobile equipment purchases within the capital plan include a new jet/vac truck, new flusher truck, and new loader.

**Project Drivers and Needs to be Met by the Project**

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

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

This is an annual project.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | N/A |
|---|---|
| **Estimated Project Costs:** | **2022-2027** |
| LCA Staff | $ 400,000 |
| Land Acquisition | $ - |
| Construction/Equipment | $ 7,063,000 |
| Professional Services | $ 600,000 |
| Other | $ 40,000 |
| Contingencies | $ 400,000 |
| **Total Project Cost** | **$ 9,963,000** |

| | |
|---|---|
| **Requested in this Capital Program** | **$ 8,503,000** |

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 1,460,000 | procurement & construction |
| 1st Year | 2023 | $ 1,998,000 | procurement & construction |
| 2nd Year | 2024 | $ 1,622,000 | procurement & construction |
| 3rd Year | 2025 | $ 1,665,000 | procurement & construction |
| 4th Year | 2026 | $ 1,858,000 | procurement & construction |
| 5th Year | 2027 | $ 1,360,000 | procurement & construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | INDENTURE REPORT IMPROVEMENTS | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-I |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | BG |

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

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

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

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | 200,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 100,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 1,000,000 |
| Professional Services | $ | 200,000 |
| Other | | |
| Contingencies | $ | 100,000 |
| **Total Project Cost** | **$** | **1,600,000** |

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

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 300,000 | construction |
| 1st Year | 2023 | $ 400,000 | construction |
| 2nd Year | 2024 | $ 200,000 | construction |
| 3rd Year | 2025 | $ 200,000 | construction |
| 4th Year | 2026 | $ 200,000 | construction |
| 5th Year | 2027 | $ 100,000 | construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | VARIOUS WASTEWATER SYSTEM RELATED STUDIES (MASTER PLAN) | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-9 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | CA/OS | **Secondary** | Planning | **Preparer** | | CEV/BG |

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

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

**Detailed Project Description**

As infrastructure ages and regulations become more stringent, there are periodic needs for professional services to study the feasibility of changes, upgrades, etc. The following study is requested in 2023: WWTP Master Plan. As some original components of the Allentown WWTP are about 90 years old, a periodic update of the Master Plan is important to monitor the condition and performance of plant processes. This is a requirement of the Lease.

**Project Drivers and Needs to be Met by the Project**

The primary project driver is city lease requirement. Engineering studies are periodically required to address feasibility of implementing new programs or changing existing ones. The WWTP Master Plan is a requirement of the Lease Agreement and is to be completed every 5 years. The first Master Plan was completed in 2018 and the second installment will be completed in 2023.

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

The first Master Plan was completed in 2018.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

| | |
|---|---|
| **Project No.** | AD-S-9 |
| **Project Name** | VARIOUS WASTEWATER SYSTEM RELATED STUDIES (MASTER PLAN) |

| **Prior Project Cost** | | $150,000 |
|---|---|---|
| **Estimated Project Costs:** | **2022-2027** | |
| LCA Staff | $ | 10,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | - |
| Professional Services | $ | 130,000 |
| Other | $ | - |
| Contingencies | $ | 10,000 |
| **Total Project Cost** | **$** | **300,000** |

| **Requested in this Capital Program** | **$** | **150,000** |
|---|---|---|

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | |
| 1st Year | 2023 | $ 150,000 | master planning |
| 2nd Year | 2024 | | |
| 3rd Year | 2025 | | |
| 4th Year | 2026 | $ - | |
| 5th Year | 2027 | $ - | |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | FLOW CHARACTERIZATION STUDY I&I PROJECTS | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-26 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | Regulatory | **Secondary** | CA/OS | **Preparer** | | PMD |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | 40 | **Project inception date** | 2024 |
| Approx. No. of Customers Benefitted | * | | |
| Is this System part of a Common User Rate? | N/A | **Anticipated Project completion date** | 2032 |
| Will the Project Require Obtaining Land Rights | N/A | | |

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

**Detailed Project Description**

The Years 5-8 I&I projects (2024 through 2027) will be determined by August 2022. As the data from the 2021 Flow Characterization Study continues to be analyzed, the specific I&I projects will be identified. A placeholder of $750,000 per year will be included in the Capital Plan.

**Project Drivers and Needs to be Met by the Project**

The primary project driver is regulatory (project is a component of the Interim Act 537 Plan submitted to DEP in September 2020). The 2020 Lease Amendment requires LCA to fund I&I projects beginning no earlier than 2024.

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

The Interim Act 537 Plan was submitted to DEP on 9/4/20. As part of the Interim Plan, the KISS Region committed to performing a flow characterization study (FCS) in 2021. The FCS started in March 2021 and was concluded in October 2021. I&I projects from 2024 through 2032 will be determined from the 2021 FCS 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**

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

| | |
|---|---|
| **Project No.** | AD-S-26 |
| **Project Name** | FLOW CHARACTERIZATION STUDY I&I PROJECTS |

| **Prior Project Cost** | $ - |
|---|---|
| **Estimated Project Costs:** | **2022-2027** |
| LCA Staff | $ 40,000 |
| Land Acquisition | $ - |
| Construction/Equipment | $ 2,600,000 |
| Professional Services | $ 320,000 |
| Other | $ - |
| Contingencies | $ 40,000 |
| **Total Project Cost** | **$ 3,000,000** |

| **Requested in this Capital Program** | **$ 3,000,000** |
|---|---|

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| x | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | See AD-S-11 |
| 1st Year | 2023 | $ - | See AD-S-11 |
| 2nd Year | 2024 | $ 750,000 | I&I Year 5 |
| 3rd Year | 2025 | $ 750,000 | I&I Year 6 |
| 4th Year | 2026 | $ 750,000 | I&I Year 7 |
| 5th Year | 2027 | $ 750,000 | I&I Year 8 |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | WWTP ELECTRICAL SUBSTATION REPLACEMENT | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-5 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | CCRC |
| **Prj. Category** | **Primary** | AM - High | **Secondary** | Efficiency | **Preparer** | | CEV |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | 40 | **Project inception date** | 2016 |
| Approx. No. of Customers Benefitted | * | | |
| Is this System part of a Common User Rate? | N/A | **Anticipated Project completion date** | 2024 |
| Will the Project Require Obtaining Land Rights | N/A | | |

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

**Detailed Project Description**

This project includes the replacement of existing electrical substation #1 with a new electrical substation at the Kline's Island Wastewater Treatment Plant. The existing 12.4kV switchgear will also be replaced. Substation #2 (Phase 1) was replaced in 2019. Final design of the Substation #1 and switchgear replacement will be completed in 2022. The switchgear and Substation #1 (Phase 2) construction is scheduled to commence in late 2023 and finish in 2025.

**Project Drivers and Needs to be Met by the Project**

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

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

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

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

| | |
|---|---|
| **Project No.** | AD-S-5 |
| **Project Name** | WWTP ELECTRICAL SUBSTATION REPLACEMENT |

| **Prior Project Cost** | | 2,450,000 |
|---|---|---|
| **Estimated Project Costs:** | **2022-2027** | |
| LCA Staff | $ | 100,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 3,200,000 |
| Professional Services | $ | 250,000 |
| Other | | |
| Contingencies | $ | 200,000 |
| **Total Project Cost** | **$** | **6,200,000** |

| **Requested in this Capital Program** | **$** | **3,750,000** |
|---|---|---|

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | |
| 1st Year | 2023 | $ 400,000 | permitting, bidding, commence construction phase |
| 2nd Year | 2024 | $ 2,000,000 | construction |
| 3rd Year | 2025 | $ 1,200,000 | construction |
| 4th Year | 2026 | $ 150,000 | construction |
| 5th Year | 2027 | $ - | |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | WWTP MAIN AND AUXILIARY PUMP STATION IMPROVEMENTS | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-19 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | CCRC |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | CEV/BG |

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

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

The project drivers are Master Plan and asset management. The main and auxiliary pump station improvements projects are listed in the Master Plan as project nos. 1 and 2, respectively, under "near term" projects. Pump and valve replacements will provide improved equipment reliability, reduced long-term maintenance costs, extension of service life and enhanced level of service.

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

This project was identified in the 2018 Master Plan (Projects 1 and 2). These pumps were also previously planned to be replaced as part of the blending project improvements (project on hold at 30% design). Preliminary design commenced in 2022 and the project should be substantially completed in 2026.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

| | |
|---|---|
| **Project No.** | AD-S-19 |
| **Project Name** | WWTP MAIN AND AUXILIARY PUMP STATION IMPROVEMENTS |

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 100,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 5,900,000 |
| Professional Services | $ | 350,000 |
| Other | | |
| Contingencies | $ | 150,000 |
| **Total Project Cost** | **$** | **6,500,000** |

| | | |
|---|---|---|
| **Requested in this Capital Program** | **$** | **6,500,000** |

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 150,000 | design |
| 1st Year | 2023 | $ 100,000 | design |
| 2nd Year | 2024 | $ 200,000 | final design, permitting, bidding |
| 3rd Year | 2025 | $ 2,000,000 | construction |
| 4th Year | 2026 | $ 4,000,000 | construction |
| 5th Year | 2027 | $ 200,000 | construction |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | WWTP BOILER REPLACEMENT AND SOLIDS PROCESS HVAC UPGRADE PROJECT | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-20 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | CCRC |
| **Prj. Category** | **Primary** | Sys Imp | **Secondary** | AM - Varies | **Preparer** | | CEV |

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

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

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

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

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

This project was identified in the 2018 Master Plan (Project 3). A conceptual engineering report (basis of design) was submitted to the City in early 2021 per Lease requirements for major capital improvement (MCI) project protocol. Design phase will be completed in 2022 and construction phase is anticipated to occur in 2022 into 2023.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | $40,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 60,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 2,200,000 |
| Professional Services | $ | 320,000 |
| Other | | |
| Contingencies | $ | 220,000 |
| **Total Project Cost** | **$** | **2,840,000** |

| **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 | | $ 800,000 | design & construction |
| 1st Year | 2023 | $ 1,200,000 | construction |
| 2nd Year | 2024 | $ 800,000 | construction |
| 3rd Year | 2025 | $ - | |
| 4th Year | 2026 | $ - | |
| 5th Year | 2027 | $ - | |

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

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|---|---|---|---|---|---|---|---|
| **Project Name** | WWTP IPS PUMP STATION UPGRADE AND 480V MCC REPLACEMENT | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-21 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | CEV/BG |

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

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

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

**Detailed Project Description**

Scope of near-term work in this Capital Plan focuses on the Intermediate Pump Station (IPS), and includes new VFDs and electrical upgrades for Primary Effluent (PE) Pumps 9, 10, and 11 and Plastic Media Trickling Filters (PMTF) Pumps 12, 14, and 16 with the objective of increasing wet weather capacity and reliabity. Also, various 480v electrical motor control centers (MCCs) located at the IPS and throughout the plant have exceeded their useful service life and should be replaced, as a loss of power to any key critical processes would likely impact the ability to maintain treatment permit limits and DEP requirements relative to the prior Administrative Order (now RFMS).

**Project Drivers and Needs to be Met by the Project**

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

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

This project is part of a phased approach to a larger project that was identified in the 2018 Master Plan (Project 10) as a "near term" project. This project was split into to separate phases according to plant process areas and wet weather treatment capacity needs. Preliminary design was started in 2022 and the project is anticipated to be substantially completed in 2026.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

| | |
|---|---|
| **Project No.** | AD-S-21 |
| **Project Name** | WWTP IPS PUMP STATION UPGRADE AND 480V MCC REPLACEMENT |

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 100,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 5,500,000 |
| Professional Services | $ | 300,000 |
| Other | $ | - |
| Contingencies | $ | 100,000 |
| **Total Project Cost** | **$** | **6,000,000** |

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

| **Project Estimate Level** | |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | | **Need** | **Phase of Work** |
|---|---|---|---|---|
| 2022 Budget | | $ | 100,000 | preliminary design |
| 1st Year | 2023 | $ | 100,000 | design |
| 2nd Year | 2024 | $ | 100,000 | final design, permitting, bidding |
| 3rd Year | 2025 | $ | 1,500,000 | construction |
| 4th Year | 2026 | $ | 4,000,000 | construction |
| 5th Year | 2027 | $ | 200,000 | construction |

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

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|---|---|---|---|---|---|---|---|
| **Project Name** | WWTP FINAL CLARIFIER 1-4 REHABILITATION | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-22 |
| **Location** | Allentown | | | **Prj. Type** | LCA-MCI | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | AM - Varies | **Secondary** | Sys Imp | **Preparer** | | CEV/BG |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | 40 | **Project inception date** | 2018 |
| Approx. No. of Customers Benefitted | * | | |
| Is this System part of a Common User Rate? | N/A | **Anticipated Project completion date** | 2027 |
| Will the Project Require Obtaining Land Rights | N/A | | |

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

**Detailed Project Description**

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

**Project Drivers and Needs to be Met by the Project**

The primary project driver is asset management. This project addresses the deficiencies with the existing Final Clarifiers Nos. 1 - 4 as identified in the Master Plan (Project 14). The concrete tanks are from 1931 and the mechanical equipment is from the late 1960s and has operated 24/7 since that time.

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

This project was identified both in the 2018 Master Plan (Project 14) and in a 2016 concrete report by Corrosion Probe. This project scope consists of the replacement of the four drive mechanisms and associated mechanical equipment. The work anticipated to begin construction in 2027 and finish in 2028.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed.

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

| **Prior Project Cost** | | 0 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | $ | 30,000 |
| Land Acquisition | $ | - |
| Construction/Equipment | $ | 800,000 |
| Professional Services | $ | 70,000 |
| Other | | |
| Contingencies | $ | 50,000 |
| **Total Project Cost** | **$** | **950,000** |

| **Requested in this Capital Program** | **$** | **950,000** |
|---|---|---|

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ - | |
| 1st Year | 2023 | $ - | |
| 2nd Year | 2024 | $ - | |
| 3rd Year | 2025 | $ - | |
| 4th Year | 2026 | $ 100,000 | design & permitting |
| 5th Year | 2027 | $ 850,000 | construction begin |

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | REGIONAL FLOW MANAGEMENT STRATEGY | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-11 |
| **Location** | Allentown | | | **Prj. Type** | AO | **Prj. Funding** | Allentown |
| **Prj. Category** | **Primary** | Regulatory | **Secondary** | CA/OS | **Preparer** | | PMD |

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

| **Additional Information** | | | |
|---|---|---|---|
| Expected Useful Life (Years) | 40 | **Project inception date** | 2019 |
| Approx. No. of Customers Benefitted | * | | |
| Is this System part of a Common User Rate? | N/A | **Anticipated Project completion date** | 2023 |
| Will the Project Require Obtaining Land Rights | N/A | | |

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

**Detailed Project Description**

The I&I Improvements include the following: Year 1 (2020) consists of a lining project for a 30" sewer section along MLK Drive; Year 2 (2021), Year 3 (2022), and Year 4 (2023) all consist of a combination of heavy cleaning, grouting, lining point repairs, excavating point repairs, and pipe lining.

**Project Drivers and Needs to be Met by the Project**

The primary project driver is regulatory. This project is a component of the work that will be necessary to comply with the submitted Regional Flow Management Strategy (RFMS) in accordance with DEP, which is focused on reducing inflow and infiltration into the wastewater collection system. The RFMS was initially required by EPA as part of compliance with the Administrative Order. Since Act 537 planning was mandated by DEP in late 2019, the projects listed in the original RFMS are still being implemented.

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

The City's I&I Source Reduction Plan (five year plan) was submitted to the EPA in 2018. DEP is now in control of overseeing the RFMS implementation and 537 development. Year 1 was completed in 2020, Year 2 was completed in early 2022, Year 3 will be completed by the Q4 of 2022, and Year 4 will be completed by Q4 of 2023. The Year 5 project has been absorbed by the prior years' projects.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed. This is an Administrative Order (AO) Project that will be funded by the City of Allentown in 2022 and 2023 (and was funded by the City of Allentown in 2020 and 2021). Funding source switches to LCA in 2024 and beyond as dictated in the 2020 Lease Amendment (See Project AD-S-26).

| | |
|---|---|
| **Project No.** | AD-S-11 |
| **Project Name** | REGIONAL FLOW MANAGEMENT STRATEGY |

| **Prior Project Cost** | $ 1,540,000 |
|---|---|
| **Estimated Project Costs:** | **2022-2027** |
| LCA Staff | $ 20,000 |
| Land Acquisition | $ - |
| Construction/Equipment | $ 2,010,000 |
| Professional Services | $ 200,000 |
| Other | $ - |
| Contingencies | $ 20,000 |
| **Total Project Cost** | **$ 3,790,000** |

| **Requested in this Capital Program** | **$ 750,000** |
|---|---|

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| x | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 1,500,000 | I&I Year 3 |
| 1st Year | 2023 | $ 750,000 | I&I Year 4 |
| 2nd Year | 2024 | $ - | |
| 3rd Year | 2025 | $ - | |
| 4th Year | 2026 | $ - | |
| 5th Year | 2027 | $ - | |

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

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | FLOW CHARACTERIZATION STUDY/ACT 537 | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-12 |
| **Location** | Allentown | | | **Prj. Type** | AO | **Prj. Funding** | Allentown |
| **Prj. Category** | **Primary** | Regulatory | **Secondary** | CA/OS | **Preparer** | | PMD |

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

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

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

**Detailed Project Description**

The Flow Characterization Study (FCS) include the following: Year 1 (2021) consists of 65 temporary meters, 24 permanent sewer billing meters, and 11 permanent/non sewer billings. Year 1 also consists of QA/QC of the meter data and initial development of the Regional KISS sewer model; Year 2 (2022) consists of finalizing the development of the Regional KISS sewer model and beginning scenario planning and alternative analyses; Year 3 (2023) consists of additional 537 scenario planning and alternative analyses as needed.

**Project Drivers and Needs to be Met by the Project**

The primary project driver is regulatory. This project is a component of the work that will be necessary to comply with the submitted (August 2018) Regional Flow Management Strategy (RFMS) in accordance with DEP, which is focused on reducing inflow and infiltration into the wastewater collection system. This project is also a component of the Interim Act 537 Plan submitted to DEP in September 2020.

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

The Interim Act 537 Plan was submitted to DEP on 9/4/20. As part of the Interim Plan, the KISS Region committed to performing a flow characterization study (FCS) in 2021. The FCS is underway as of early January 2021 and will conclude by late 2021. The remainder of the work includes model development in late 2021 through 2022. After the model is calibrated in 2022, specific models run will be needed to determine a 537 solution that meets the needs of the Region.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

Annual cost impact to be determined as needed. The project is funded by the City.

| | |
|---|---|
| **Project No.** | AD-S-12 |
| **Project Name** | FLOW CHARACTERIZATION STUDY/ACT 537 |

| **Prior Project Cost** | | $ 1,360,000 |
|---|---|---|
| **Estimated Project Costs:** | | **2022-2027** |
| LCA Staff | | $ 120,000 |
| Land Acquisition | | $ - |
| Construction/Equipment | | $ - |
| Professional Services | | $ 1,500,000 |
| Other | | $ - |
| Contingencies | | $ 100,000 |
| **Total Project Cost** | | **$ 3,080,000** |

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

| | **Project Estimate Level** |
|---|---|
| | Conceptual Estimate |
| | Preliminary Estimate |
| **x** | Budget Estimate |
| | Definitive Estimate |

| | | **Need** | **Phase of Work** |
|---|---|---|---|
| 2022 Budget | | $ 920,000 | Begin model development; preliminary alternative screening |
| 1st Year | 2023 | $ 350,000 | Preliminary screening of 537 alternatives |
| 2nd Year | 2024 | $ 350,000 | Final screening of 537 alternatives; select projects |
| 3rd Year | 2025 | $ 100,000 | Submit 537 Plan |
| 4th Year | 2026 | $ - | |
| 5th Year | 2027 | $ - | |

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

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

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Project Name** | MISCELLANEOUS ACT 537 PLANNING | | | | | | |
| **Budget Area** | Wastewater | **Department** | Capital Works | **Date** | 1/24/2022 | **Project No.** | AD-S-27 |
| **Location** | Allentown | | | **Prj. Type** | Regular | **Prj. Funding** | LCA |
| **Prj. Category** | **Primary** | Regulatory | **Secondary** | CA/OS | **Preparer** | | PMD |

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

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

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

**Detailed Project Description**

This project is a new detail sheet related to Act 537 planning items funded by the LCA Allentown Division.

**Project Drivers and Needs to be Met by the Project**

Regional Act 537 Planning requirements may dictate planning items funded from the LCA Allentown Division.

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

The 2022 budget included a placeholder amount for a potential wet weather pilot study at KIWWTP. The years 2023 and 2024 will include a placeholder for future 537 planning items.

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

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

| **Borrowing Information** | |
|---|---|
| Interest Rate | 5.5000% |
| Term (Years) | 30 |

**Explanation if Necessary**

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

| | |
|---|---|
| **Project No.** | AD-S-27 |
| **Project Name** | MISCELLANEOUS ACT 537 PLANNING |

| **Prior Project Cost** | $ - |
|---|---|
| **Estimated Project Costs:** | **2022-2027** |
| LCA Staff | $ 30,000 |
| Land Acquisition | $ - |
| Construction/Equipment | $ - |
| Professional Services | $ 800,000 |
| Other | $ - |
| Contingencies | $ 20,000 |
| **Total Project Cost** | **$ 850,000** |

| **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 | | $ 250,000 | Miscellaneous Act 537 planning items |
| 1st Year | 2023 | $ 250,000 | Miscellaneous Act 537 planning items |
| 2nd Year | 2024 | $ 250,000 | Miscellaneous Act 537 planning items |
| 3rd Year | 2025 | $ 100,000 | Miscellaneous Act 537 planning items |
| 4th Year | 2026 | $ - | |
| 5th Year | 2027 | $ - | |

# MEMORANDUM

**Date:** April 11, 2022

**To:** LCA Board of Directors
**From:** Christopher Moughan
**Subject:** Allentown Water System – Large Diameter Valve Prioritization Program

**MOTIONS / APPROVALS REQUESTED:**

| No. | Item | Amount |
|---|---|---|
| 1 | Capital Project Authorization | $78,600 |
| 2 | Professional Services Authorization – Gannett Fleming (*) | $58,600 |

**Included in the Capital Project Authorization*

**PROJECT OVERVIEW:**
Within the recently adopted 2022-2027 Strategic Plan, Lehigh County Authority has identified the need to develop a prioritization plan to guide the maintenance, replacement, and renewals of water system valves sized 16-inch and greater within the Allentown Division water system. The result of the plan can be used to establish budgeting needs to implement an annual large diameter valve maintenance and replacement program as well as optimize the investments in that program.

The implementation of the program will provide benefits by proactively addressing the operation of critical valves to minimize: (a) customer service outages and (b) reactive maintenance costs when these valves are needed for routine and emergency use. The proposed large diameter valve program is considered a component of LCA's ongoing asset management program and the results and implementation will be coordinated as such.

**FINANCIAL:**
This project funded by the Allentown Division and is listed in the 2022 Allentown Division capital budget.

**PROJECT STATUS:**
Pending Board approval.

**THIS APPROVAL:**
LCA intends to retain the services of an engineering consultant to provide these planning services. If needed, approval for the design and construction related engineering services will be requested in the future. The following table summarizes the professional services to be performed under this approval:

| Professional Services |
|---|
| 1. Review condition of large valves based on available GIS and maintenance records. |
| 2. Complete a correlation evaluation to identify trends in valve failure to assess likelihood of failure. |
| 3. Establish weighted criteria based on results of correlation assessment |

| |
|---|
| 4. Establish draft recommendations for implementation of an annual large diameter valve maintenance and replacement program based on results. |
| 5. Provide final valve prioritization for LCA review |

**CONSULTANT SELECTION PROCESS:**

The proposed consulting engineer has intimate knowledge of the Allentown Division. Gannett Fleming recently developed a comprehensive hydraulic model of the Allentown water system and is actively used to this date. Gannett Fleming also serves as LCA's water consultant for purposes of developing the prioritized water main replacement programs for both the Suburban and Allentown divisions.

**PROJECT SCHEDULE:**

Pending Board approval, project is anticipated to begin in April of 2022 and be completed by October of 2022.

**FUTURE AUTHORIZATIONS:**

Future design and construction services as needed.

# CAPITAL PROJECT AUTHORIZATION

**PROJECT NO.:** AD-W-22-1 **BUDGET FUND:** Allentown Water

**PROJECT TITLE:** Allentown Division- Large Valve Prioritization Program

**PROJECT TYPE:**

- ☐ Construction
- ☐ Engineering Design
- ☒ Engineering Study
- ☐ Amendment

**THIS AUTHORIZATION:** **$ 78,600**
**TO DATE (W/ ABOVE)** **$ 78,600**

**DESCRIPTION AND BENEFITS:**

Within the recently adopted 2022-2027 Strategic Plan, LCA has identified the need to develop a prioritization plan to guide the maintenance, replacement, and renewals of water system valves sized 16-inch and greater within the Allentown Division water system. The result of the plan can be used to establish budgeting needs to implement an annual large diameter valve maintenance and replacement program as well as optimize the investments in that program. LCA has retained the services of an engineering consultant, Gannet Fleming, Inc., to provide these planning services. If needed, approval for the design and construction related engineering services will be requested in the future.

| Previous Authorizations | |
|---|---|
| none | |

| **REQUESTED THIS AUTHORIZATION** | |
|---|---|
| **Pre-Design Study Phase** | |
| **Staff** | **$10,000** |
| **Professional Services:** | |
| **Gannett Fleming** | **$58,600** |
| **Contingency** | **$10,000** |
| | |
| **Total This Authorization** | **$78,600** |

| Future Authorization | |
|---|---|
| *Design Phase* | TBD |

**REVIEW AND APPROVALS:**

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

Lehigh County Authority

1053 Spruce Road * P.O. Box 3348 * Allentown, PA 18106-0348
(610)398-2503 * FAX (610)398-8413

# PROFESSIONAL SERVICES AUTHORIZATION

**Professional:** Gannett Fleming, Inc.
207 Senate Avenue
Camp Hill, PA 17011

**Date:** April 11, 2022
**Requested By:** Christopher Moughan
**Approvals**
**Department Head:** _____
**Chief Executive Officer:** _____

**Allentown Division- Large Valve Prioritization Program**

*Previous Authorizations- None*

**This Authorization** - $58,600

Gannet Fleming, Inc will provide engineering related services for the aforementioned project. Within the recently adopted 2022-2027 Strategic Plan, LCA has identified the need to develop a prioritization plan to guide the maintenance, replacement, and renewals of water system valves sized 16-inch and greater within the Allentown Division water system. The result of the plan can be used to establish budgeting needs to implement an annual large diameter valve maintenance and replacement program as well as optimize the investments in that program. LCA has retained the services of an engineering consultant to provide these planning services. If needed, approval for the design and construction related engineering services will be requested in the future.

| Professional Services |
|---|
| 1. Attend kick off meeting |
| 2. Review condition of large valves based on available GIS and maintenance records. |
| 3. Complete a correlation evaluation to identify trends in valve failure to assess likelihood of failure. |
| 4. Establish weighted criteria based on results of correlation assessment |
| 5. Provide final valve prioritization for LCA review |
| 6. Establish draft recommendations for implementation of an annual large valve program based on results from above steps. |

**Cost Estimate** (not to be exceeded without further authorization): **$ 58,600**

**Time Table and Completion Deadline**: As required to meet design timeline requirements

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**(For Authority Use Only)**

**Authorization Completion:**

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

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

# MEMORANDUM

**Date:** March 29, 2022

**To:** Lehigh County Authority Board
**From:** Edward Hoyle, Jr.
**Subject:** Far View Farms (WL-18/WL-19) Well Station Demolition Project - Construction Phase

**MOTIONS /APPROVALS REQUESTED:**

| No. | Item | Amount |
|---|---|---|
| 1 | Capital Project Authorization: Construction Phase | $143,500 |
| 2 | Contract Awards: Construction Phase<br>• General Construction: *BrightFields, Inc.* | $115,500 |
| 3<br>* | Professional Services Authorizations: Construction Phase<br>• None requested | $0 |

*(*) Included in the Capital Project Authorization*

**PROJECT OVERVIEW**

When the Kohler Tract Pumping Station Project was presented to the Board back in 2016, it was envisioned that the Far View Farms (WL-18/WL-19) Well Station located in Upper Milford Township would be abandoned. Now that the Kohler Tract Pumping Station is providing service to the area, we are moving forward with the demolition of the two wells, building, underground water storage tanks, piping, and associated instrumentation at the Far View Farms station to allow the parcel to be sold by LCA. The existing emergency generator will be repurposed for use at another location. The project is estimated to take 60 days to reach substantial completion.

**PROJECT STATUS**

The project was advertised through the PennBid system, an electronic document and bid management program, on February 22, 2022. Bids were opened on March 15, 2022.

**THIS APPROVAL: CONSTRUCTION PHASE**

**A. BIDDING SUMMARY - CONSTRUCTION CONTRACTS**

This project requires a General Construction contract. The bidding results are as follows:

| General Construction | |
|---|---|
| **Bidder** | **Amount** |
| *BrightFields, Inc.* | ***$115,500*** |

While only one bid was received, the price was well below the $143,000 low-end of the Engineer's estimate.

A check of references determined the contractor was very responsive in providing updates on the ongoing work, submitted paperwork in a timely manner, was able to anticipate problems and participate in finding solutions, and in general, performed acceptable work on past projects. There were no issues identified in the submitted bid package. Therefore, we recommend awarding the General Construction contract to BrightFields, Inc., located in Wilmington, DE, subject to the receipt of the executed Agreements, bonds, insurance, and other required documentation.

**B. PROFESSIONAL SERVICES**

None requested. LCA will perform construction inspection and manage the project. There should not be the need for any specialized engineering, geotechnical, or other testing services during the construction phase of the project.

**SCHEDULE**

We anticipate construction starting within two months, with 60 days to reach Substantial Completion.

**FUTURE AUTHORIZATIONS**

Board authorization for the sale of the property at 4475 Far View Court to the highest responsible bidder will be requested in the future.

# CAPITAL PROJECT AUTHORIZATION

| | | | |
|---|---|---|---|
| **PROJECT NO.:** | SD-W-21-3 | **BUDGET FUND:** | Suburban Div\Water\Capital |
| **PROJECT TITLE:** | Far View Farms (WL-18/WL-19) Well Station Demolition Project | **PROJECT TYPE:** | |
| | | ☒ | Construction |
| | | ☐ | Engineering Design |
| **THIS AUTHORIZATION:** | **$143,500** | ☐ | Equipment Purchase |
| **TO DATE (W/ ABOVE)** | **$143,500** | ☐ | Amendment |

**DESCRIPTION AND BENEFITS:**

**Well Station Demolition – Construction Contract:**

This project consists of a general construction contract for the demolition of LCA's existing Far View Farms (WL-18/WL-19) well station, located at 4475 Far View Court in Upper Milford Township, Lehigh County, PA. The two wells, underground storage tanks and pump station are no longer needed, as service to the area is now provided by the recently constructed Kohler Tract Pumping Station and Water Main Extension.

The objective of the project is to remove the existing water supply facilities from the site and to repurpose the property to allow the parcel to be sold by LCA. The project is estimated to take 3 months to complete.

| Previous Authorizations | |
|---|---|
| Design/Bid Phase | $20,000 |

| **REQUESTED THIS AUTHORIZATION** | |
|---|---|
| **Construction Phase** | |
| **General Construction – BrightFields, Inc.** | **$115,500** |
| **Staff** | **$10,000** |
| **Miscellaneous** | **$5,000** |
| **Contingency** | **$13,000** |
| | |
| **Total This Authorization** | **$143,500** |

| Future Authorization | |
|---|---|
| None | |

| | |
|---|---|
| Total Authorizations | $163,500 |

**REVIEW AND APPROVALS:**

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

# MEMORANDUM

**Date:** April 11, 2022

**To:** LCA Board of Directors
Liesel Gross, CEO

**From:** Phil DePoe, Senior Planning Engineer

**Subject:** Allentown Division – City of Allentown: 2022 Nighttime Weiring

**MOTIONS / APPROVALS REQUESTED:**

| No. | Item | Amount |
|---|---|---|
| 1 | Capital Project Authorization: Allentown Division – City of Allentown: Nighttime Weiring | $241,000 |
| 1A* | Professional Services Authorization: Arcadis – 2022 Nighttime Weiring | $211,000 |

**Included in the Capital Project Authorization*

## 1. Allentown Division – City of Allentown: 2022 Nighttime Weiring

**AUTHORIZATION OVERVIEW:**
As the City of Allentown continues to work on inflow and infiltration source removal as part of the approved Interim Act 537 Plan, Arcadis will conduct a nighttime weiring study for approximately 180 miles of sanitary sewer pipe. This study will build upon the recently collected 2021 flow characterization data and will help identify specific neighborhoods contributing to high levels of groundwater infiltration. The study will occur in the Spring of 2022, providing a short window to prepare the necessary Source Reduction Plans (SRPs) by August of 2022
See attached proposal for more detailed information.

**FINANCIAL:**
The project is an Administrative Order (AO) Project and it will be funded by the City. The terms of the concession lease agreement between LCA and the City specify that the City will directly fund projects associated with the AO, and LCA will collect fees from City customers to pay any associated debt service for these projects. The City determines the projects to be completed and directs LCA to complete the projects in the manner desired by the City.

**CURRENT STATUS:**
Pending Board approval for these 2022 nighttime weiring services.

**THIS APPROVAL – 2022 NIGHTTIME WEIRING:**
Lehigh County Authority (LCA) intends to retain the services of an engineering consulting firm to provide these nighttime weiring services. These services include, but are not limited to, the following:

| Professional Services |
|---|
| • Preparation of a detailed workplan and health and safety plan |
| • Primary weir location selection for areas to be measured |
| • Nighttime weiring activities |
| • Preparation of a weiring results spreadsheet and various GIS figures |
| • Miscellaneous LCA and City meetings |

- Delivery of a single written report of findings and recommendations

**CONSULTANT SELECTION PROCESS:**

In addition to serving as LCA's engineering consultant for annual ongoing sewer program support services, Arcadis has worked with the City since the 2009 Administrative Order. They are also a critical Act 537 Partner and are developing crucial elements related to the Plan's development. In March 2022, the LCA Board also authorized Arcadis to perform these services in the Western Lehigh Sewer Partnership basins.

**SCHEDULE:**

The weiring work occur in the Spring of 2022 and the analysis will be concluded by late June 2022. The SRPs per municipality are due by August 15, 2022.

**FUTURE AUTHORIZATIONS:**

None anticipated.

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

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

Brian Chamberlain
City of Allentown
641 South 10th Street
Allentown, PA 18103

Subject:
Scope and Budget for 2022 Nighttime Weiring

Date:
March 28, 2022

Contact:

Jim Shelton

Phone:

302.723.1450

Email:

James.Shelton@arcadis.com

Dear Sirs:

Arcadis is pleased to provide the City of Allentown and Lehigh County Authority with this scope and budget for nighttime weiring investigations of the priority 1 and 1a meter basins' collector sewers located within the City of Allentown. 180 miles of collector sewer pipes located in 14 Priority 1 meter basins and 14 Priority 1a meter basins will be included in this investigation, as shown below.

## OBJECTIVES

Groundwater infiltration is a major contributor of flow in the sanitary sewers of the City of Allentown. Properly conducted and with wet ground conditions, nighttime weiring is a highly effective way to locate neighborhoods most impacted by RII.

As the majority of residential water usage stops during overnight hours (1:00 AM to 5:15 AM), flow measurements obtained during these hours represent groundwater infiltration. When conducted during high groundwater periods (i.e., during wet springs or the day(s) after rainfall), the sewer and lateral pipe bedding is flooded with percolating rainwater and the places it leaks into the system can be measured at a resolution of hundreds of feet rather than the10-25 miles of pipe resolution provided by flow monitoring. Conducted during appropriate weather conditions, the rate of infiltration observed (per foot of mainline pipe) indicates how leaky the collection system is in that monitored area. The measurements are accomplished by entering a manhole and measuring the instantaneous flow (for a period of

approximately 5 to 10 minutes per location) using a compound notched sharp-crested weir. Weir capacities generally limit this technique to pipe diameters 15" or less.

For the purposes of this scope and budget, we assume that 180 miles of sanitary sewer pipe will be part of the nighttime weiring study, with approximately 160 manholes entered and more than 320 individual pipe runs being measured, providing an average resolution of less than a ½ mile of sewer main for prioritizing source reduction program work. There will be approximately five weeks of field work. Weather permitting, the work will be completed in the spring of 2022, with the analysis available late spring 2022.

## SCOPE OF WORK

### Task 1 – Preparatory Work

Arcadis will prepare a detailed workplan and a health and safety plan, including confined space entry plan.

Arcadis will conduct primary weir location selection for the areas to be measured. Primary weir location selection will be based on:

- Immediately upstream of pump stations.
- Pipe diameters equal to or less than 15-inches.
- Manholes with two (2) or three (3) influent pipes are preferable to those with only one (1).

Primary weir locations will be given unique IDs. As part of the prep work, a weiring analysis spreadsheet will be created along with GIS-based field maps.

All primary weir locations will be field verified during the day to:

- Locate and open the manhole
- Confirm that all pipes are weirable (i.e., no controlled inside drops or lined pipe)
- Verify flow directions
- Confirm atmospheric conditions
- Traffic Control Situation

### Task 2 – Nighttime Weiring

Arcadis will conduct nighttime weiring when the pipe bedding is thought to be filled with water. Arcadis will perform work Monday through Friday from 0000 to 0600, with weiring being conducted between 0045 and 0515. Arcadis will provide three-person weiring teams of confined space entry trained staff to perform confined space entries into approximately 160 weir locations. Each weir location will be entered a minimum of two times and on different days. If flow measurements are not within 10% of each other, the weir location

will be entered a third time on a subsequent night. The nighttime weiring work should take approximately two weeks to perform. Arcadis will provide all required confined space entry equipment, along with Thel-Mar portable volumetric weirs in sizes 15" or less. Work will not be performed when more than .5 inches of rain occurs within 12 hour of planned weiring, if more than 1" of rain has fallen within 24 hours of planned weiring, or if more than 2" of rain has fallen within 36 hours of planned weiring as recent significant rainfall skews weiring results. Arcadis will perform a tailgate health and safety meeting every evening prior to starting work for the night.

**Task 3 – Weiring Results**

The weiring data collected in the field will be entered into the weiring results spreadsheet. Infiltration in gallons per day per linear foot of sewer main will be calculated for each weiring segment and the data linked to GIS-based map reports.

## DELIVERABLES

Arcadis will deliver the weiring analysis in the form of a spreadsheet and GIS figures and will meet with City of Allentown staff to present the results and recommendations. Arcadis will provide a single written report of our findings and recommendations.

## BUDGET ESTIMATE

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

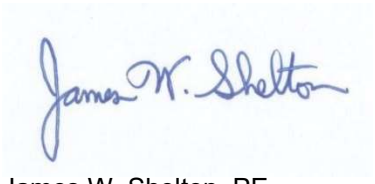
| Task | Hours | Cost |
|---|---|---|
| **Task 1 – Planning and Prep** | | $36,000 |
| **Task 2 – Nighttime Weiring** | | $161,000 |
| **Task 3 – Weiring Analysis** | | $14,000 |
| **Total** | | $211,000 |

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

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

Sincerely,

ARCADIS U.S., Inc.



James W. Shelton, PE
Vice President – Buried Infrastructure

Cc: Emily Sadowsky, ANA
Tony Dill, ANA

# CAPITAL PROJECT AUTHORIZATION

| | | | |
|---|---|---|---|
| **PROJECT NO.:** | AD-S-12 | **BUDGET FUND:** | Allentown Div\Wastewater\Capital |
| **PROJECT TITLE:** | Allentown Division – City of Allentown: 2022 Nighttime Weiring | **PROJECT TYPE:** | |
| | | ☐ | Construction |
| | | ☒ | Engineering Study |
| **THIS AUTHORIZATION:** | **$241,000** | ☐ | Equipment Purchase |
| **TO DATE (W/ ABOVE)** | **$241,000** | ☐ | **Amendment** |

**DESCRIPTION AND BENEFITS:**

As the City of Allentown continues to work on inflow and infiltration source removal as part of the approved Interim Act 537 Plan, Arcadis will conduct a nighttime weiring study for approximately 180 miles of sanitary sewer pipe. This study will build upon the recently collected 2021 flow characterization data and will help identify specific neighborhoods contributing to high levels of groundwater infiltration. The study will occur in the Spring of 2022, providing a short window to prepare the necessary Source Reduction Plans (SRPs) by August of 2022.

**Prior Authorization:** Miscellaneous Sanitary Sewer Evaluation Surveys (SSES) have occurred in the City. This will be first time the City has authorized a nighttime weiring project.

**This Authorization:** 2022 nighttime weiring. This work will occur in the Spring of 2022.

See attached Board Memo for further project details.

**Authorization Status:**

| **Requested This Authorization (2022 Nighttime Weiring)** | |
|---|---|
| ***Planning Phase*** | |
| **Staff** | **$20,000** |
| **Contractor** | **$0** |
| **Engineering Consultant** | **$211,000** |
| **Contingency** | **$10,000** |
| **Total This Authorization** | **$241,000** |

| | |
|---|---|
| Prior Authorizations | $0 |
| **Subtotal** | **$241,000** |
| *Future Authorizations* | *$0* |

**REVIEW AND APPROVALS:**

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

**Lehigh County Authority**

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

# PROFESSIONAL SERVICES AUTHORIZATION

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

**Date:** April 11, 2022
**Requested By:** Phil DePoe

**Approvals**
**Department Head:** _____
**Chief Executive Officer:** _____

**Allentown Division – City of Allentown: 2022 Nighttime Weiring**

As the City of Allentown continues to work on inflow and infiltration source removal as part of the approved Interim Act 537 Plan, Arcadis will conduct a nighttime weiring study for approximately 180 miles of sanitary sewer pipe. This study will build upon the recently collected 2021 flow characterization data and will help identify specific neighborhoods contributing to high levels of groundwater infiltration. The study will occur in the Spring of 2022, providing a short window to prepare the necessary Source Reduction Plans (SRPs) by August of 2022. These services include, but are not limited to, the following:

| **Professional Services** (1) |
|---|
| 1. Preparation of a detailed workplan and health and safety plan |
| 2. Primary weir location selection for areas to be measured |
| 3. Nighttime weiring activities |
| 4. Preparation of a weiring results spreadsheet and various GIS figures |
| 5. Miscellaneous LCA and City meetings |
| 6. Delivery of a single written report of findings and recommendations |

(1) Please reference the cover Memo for additional information.

**Prior Approval:**
**Amount**: *$0*

**This Approval:**
**Amount**: *$211,000*

**New Amended Amount (not to be exceeded without further authorization):** *$211,000*

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

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**(For Authority Use Only)**

**Authorization Completion:**

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

# Lehigh County Authority – Monthly Report to Board of Directors

Upcoming Board Agenda Items & Project Updates – April 2022

Published: April 4, 2022

## *PART 1 – Upcoming Agenda Items – Action & Discussion Items*

### FINANCE & ADMINISTRATION

**Project Title: 2023-2027 Capital Plan - Allentown Division - Preliminary Plan Presentation**
Division / Funding: Allentown Division
Board Action Date: 4/11/2022
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: The preliminary 2023-2027 Allentown Division Capital Plan will be presented and distributed to the Board for review and comment. The preliminary plans for the Suburban Division, Allentown Division, and Administration will be out for public comment until mid-May, and Board approval will be requested at the 5/23/2022 meeting. Staff Responsibility: Chuck Volk & Ed Klein

**Project Title: LCA Enterprise Resource Planning (ERP) Needs Assessment & Roadmap**
Division / Funding: Internal Services
Board Action Date: 4/11/2022
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: Within the recently adopted 2022-2027 Strategic Plan, LCA has identified the need to improve its administrative and financial processes to eliminate paper-based and spreadsheet-based processes, improve reporting accuracy and efficiency, and provide greater opportunity for process optimization, automation and self-service access for employees and customers. A key component of this initiative is to evaluate the configuration and use of the Enterprise Resource Planning (ERP) system currently in place to determine if the system can meet LCA's needs. At the April 11, 2022 Board meeting, approval a professional services authorization will be requested to bring a consultant on board to assist with this evaluation and needs analysis. Staff Responsibility: Liesel Gross

**Project Title: Monthly Financial Review**
Division / Funding: n/a
Board Action Date: 4/25/2022
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: March 2022 monthly financial report will be presented. Staff Responsibility: Ed Klein

**Project Title: Resolution 4-2022-1: Destruction of Authority Documents**
Division / Funding: n/a
Board Action Date: 4/25/2022
Status or Action Desired: Approval
Project Phase: n/a

Project Notes: Board approval is required to allow for destruction of official Authority documents, in accordance with LCA's document retention program and the Pennsylvania Municipal Records Act. Staff Responsibility: Chris Moughan

**Project Title: LCA Strategic Plan - Quarterly Progress Report**
Division / Funding: n/a
Board Action Date: 4/25/2022
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: A quarterly report of staff progress on key initiatives outlined in LCA's Strategic Plan will be presented for Board review and discussion. Staff Responsibility: Liesel Gross

## SYSTEM OPERATIONS

**Project Title: Wastewater System Easement Clearing & Maintenance**
Division / Funding: Allentown & Suburban Divisions
Board Action Date: 4/25/2022
Status or Action Desired: Approval
Project Phase: Construction Phase

Project Notes: This project focuses on the clearing and ongoing maintenance of LCA's easements in the Allentown and Suburban Divisions. Annual maintenance on the easements is required for vehicular access to collection and distribution system assets. This project also focuses on the routine flood dike maintenance at Kline's Island Wastewater Treatment Plant, as required by the Army Corps of Engineers. The Board will be asked to authoriize the award of contract on 4/25/2022. Staff Responsibility: Andrew Moore

**Project Title: Large Diameter Valve Prioritization Program**
Division / Funding: Allentown Division
Board Action Date: 4/11/2022
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: Within the recently adopted 2022-2027 Strategic Plan, LCA has identified the need to develop a prioritization plan to guide the maintenance, replacement, and renewals of water system valves sized 16-inch and greater within the Allentown Division water system. The result of the plan can be used to establish budgeting needs to implement an annual large diameter valve maintenance and replacement program as well as optimize the investments in that program. At the April 11, 2022 Board meeting, approval a capital project authorization to begin the planning phase of this work will be requested. Staff Responsibility: Chris Moughan

**Project Title: Monthly Operations Report**
Division / Funding: n/a
Board Action Date: 4/25/2022
Status or Action Desired: Discussion
Project Phase: n/a

Project Notes: March 2022 monthly operations report will be presented. Staff Responsibility: Andrew Moore & Chris Moughan

## WATER PROJECTS

**Project Title: Far View Farms Pump Station Demolition**
Division / Funding: Suburban Division
Board Action Date: 4/11/2022
Status or Action Desired: Approval
Project Phase: Construction Phase

Project Notes: This project consists of the demolition of the well station, two wells, two underground water storage tanks and buried piping that once served the Far View Farms and Mink Estates developments, along with regrading and restoration of the site in Upper Milford Township, now that the Kohler Tract pumping station is providing domestic service as well as fire protection from the Central Lehigh Division to these developments. Design was completed earlier this year and the bid phase commenced in February 2022. Bids were opened on March 15, 2022. The Board will be requested to authorize award of the contract at its 4/11/22 meeting. Authorization to proceed with the sale of the property will be requested following completion of the demolition project. Staff Responsibility: Ed Hoyle

## WASTEWATER PROJECTS

**Project Title: City of Allentown: 2022 Nighttime Weiring**
Division / Funding: City of Allentown (AO)
Board Action Date: 4/11/2022
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: As part of the Final Act 537 Plan that is due to DEP by March 2025, all KISS signatories will have the opporunity in 2022 to prepare inflow and infiltration Source Reduction Plans (SRPs) for inclusion into the sewer model. These SRPs, if the municipality wishes to complete in 2022, are due by August 15, 2022. At that time, specific locations of future I&I remediation work need to be clearly identified for inclusion. Using the data from the recently completed 2021 flow characterization study, the City of Allentown is going to undertake this nighttime weiring activity in order to identify sources of groundwater infiltration. The field work will start in the Spring of 2022 and will take approximately three months to complete. Board approval will be requested at the April 11, 2022 Board Meeting. This project is considered an AO expense under terms of the Lease and is City funded. Staff Responsibility: Phil DePoe

## WATER PROJECTS – SUBURBAN DIVISION

**Project Title: Arcadia West Water Storage Tank Replacement**
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: Updated
Project Phase: Construction Phase

Project Notes: The Arcadia West water storage tank has had several leaks in recent years and the coating system has reached the end of its useful life. A condition assessment study was done in 2019 which determined that the most cost-effective solution is to replace the aging tank with a new concrete tank. This project is for the replacement of the existing steel tank with a new tank of the same size, demolition of the existing tank, and miscellaneous yard piping and site work. Entech Engineering completed design in March 2021, the project was advertised for bid in late March 2021, and bids were opened on April 22, 2021. A Notice of Award was issued to the contractor following approval at the May 10, 2021 LCA Board meeting and the Notice to Proceed was issued in June 2021. Construction began in mid-August and is approximately 90% complete. The new tank is in operation and the old tank was removed. The contractor is working on building modifications and site improvements. Staff Responsibility: Amy Kunkel

**Project Title: Fixed Base Meter Reading Stations**
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: Updated
Project Phase: Planning Phase

Project Notes: The project focuses on securing land development and zoning approvals to construct eight fixed base water meter reading stations located throughout the Suburban Division water service area. The land development and zoning approvals will allow for the future construction of the stations as part a program to transition to a centralized advanced metering infrastructure system which will provide more consistent, timely and accurate billing to the customers. LCA will conduct additional investigatory work to refine construction costs and identify all zoning restrictions and limitations with the prospective tower sites, and present that information to the Board at a future date. A temporary base station was erected at the main office in March and is currently at the Pre-Treatment Plant as a pilot study to demonstrate the capabilities of Advanced Metering Infrastructure. Staff Responsibility: Amy Kunkel

**Project Title: 2022 Commercial Meter Replacement Project**
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: NEW
Project Phase: Design Phase

Project Notes: This project consists of the replacement of approximately 145 1-1/2" and 2" commercial and industrial meters within the Suburban Division. The project will be administered as a service contract with Core and Main who is our Sensus meter representative and has performed previous metering contracts with us. Staff Responsibility: Amy Kunkel

**Project Title: Water Main Replacement Program Cycle 6**
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: Updated
Project Phase: Design Phase

Project Notes: The project is for the annual replacement of 1 mile of aged and/or failing water mains in multiple locations throughout the Suburban Division, based on the design engineer's risk prioritization protocol. The design engineer (Gannett Fleming) has finished the prioritization of the Cycle 6 main replacements recieving approval from LCA staff. currently the design engineer has begun survey and design efforts with an anticipation of construction phase Authorization at the June 2022 Board meeting. Staff Responsibility: Jason Peters

## WATER PROJECTS – ALLENTOWN DIVISION

**Project Title: Water Main Replacement Program Cycle 6**
Division / Funding: Allentown Division
Board Action Date: n/a
Status or Action Desired: Updated
Project Phase: Design Phase

Project Notes: The project is for the annual replacement of aged and/or failing cast iron water mains in multiple locations throughout the City, in accordance with the new amended lease requirements (one mile per year), based on the design engineer's risk prioritization protocol. As of December 2021, LCA has received conceptual plan approval from the City and began the process of negotiations of a cost sharing agreement for road surface restoration just as conducted in the Cycle 5 program. LCA anticipates formally submitting substantially complete plans and specifications to the City for approval by early April 2022. Staff Responsibility: Jason Peters

## WASTEWATER PROJECTS – KLINE'S ISLAND SEWER SYSTEM (KISS) ACT 537 PLANNING

Project Title: Upper Western Lehigh Pump Station and Force Main
Division / Funding: Suburban Division
Board Action Date: n/a
Status or Action Desired: Updated
Project Phase: Design Phase

Project Notes: Per the DEP-approved Interim 537 Plan, action is required to alleviate the current sanitary sewer interceptor system bottleneck in the Trexlertown area. The Upper Western Lehigh Pump Station and Force Main is the recommended alternative identified in the Special Act 537 Study being prepared as part of the Trexlertown Area Capacity Solution Alternatives project. The selection of this alternative is also supported by both Upper and Lower Macungie townships. Design phase initiation is needed in order to meet the compliance timeline in the Interim Act 537 Plan. Design phase authorization for Engineering Design services was granted at the February 14, 2022 Board meeting. A design kickoff meeting was held on March 29, 2022. Staff Responsibility: Amy Kunkel

## WASTEWATER PROJECTS – ALLENTOWN DIVISION

**Project Title: Kline's Island WWTP: Decholorination System Pilot Program**

Division / Funding: Allentown Division

Board Action Date: n/a

Status or Action Desired: Updated

Project Phase: Preliminary Design

Project Notes: Preliminary results from a Computational Fluid Dynamics (CFD) modeling program indicate that dechlorination of disinfected plant effluent will assist with balancing fecal coliform kill and seasonal residual chlorine effluent limits, which has been a challenge with plant operations, particularly during monthly tank cleaning. Plant operations staff are currently utilizing the new hypochlorite disinfection installed in 2020 and 2021; however, they have recommended delay of demolition of the old gaseous chlorination system (under the sodium hypochlorite project) until a permanent dechlorination system is in place. This is further necessitated by stricter residual chlorine effluent limits proposed in the draft KIWWTP NPDES permit, which is anticipated to become effective in a few years following DEP approval of the long-term Act 537 Plan. DEP was consulted concerning performing a full-scale temporary dechlorination system pilot program to test the effectiveness of chemical addition in removing free and combined chlorine residuals from the plant effluent, and the pilot program was approved to proceed. Sodium Bisulfite will be used, which is a common chemical utilized at many WWTPs to achieve dechlorination. Installation of the temporary bisulfite system for full-scale pilot testing is anticipated to be completed by late winter and will run for about 4 months. Final design and DEP permitting of a permanent dechlorination system will follow completion of a successful pilot program. Demolition of the gaseous chlorine system will follow installation of the permanent dechlorination system. The DEP Part 2 permit application for installation of a dechlorination system was submitted on 3/25/2022. Staff Responsibility: Bryan Geissel

## *PART 3 – Open Project List – No Updates*

| | | | | |
|---|---|---|---|---|
| System Operations | Watershed Monitoring Program | Suburban Division | Ongoing | Andrew Moore |
| System Operations | Lynn Township Corrective Action Plan | Suburban Division | Ongoing | Jason Peters |
| System Operations | Heidelberg Heights Consent Order & Agreement | Suburban Division | Ongoing | Chuck Volk |
| Water - Suburban | Upper System Pump Station and Main Extension | Suburban Division | Design Phase | Ed Hoyle |
| Water - Suburban | Central Lehigh and North Whitehall Systems – Water Supply Study | Suburban Division | Planning Phase | Phil DePoe |
| Water - Allentown | Water Filtration Plant: Filter Upgrade Project | Allentown Division | Preliminary Design | Chuck Volk |
| Water - Allentown | Water Filtration Plant: High Lift Pump VFD Replacements | Allentown Division | Construction Phase | Chuck Volk |
| Water - Allentown | Water Filtration Plant: 2021 Indenture Upgrades | Allentown Division | Construction Phase | Bryan Geissel |
| Water - Allentown | Water Filtration Plant & System Master Plan | Allentown Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | KISS System Modeling - Rain Derived Inflow and Infiltration (RDII) Analysis | Allentown Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Sanitary Sewer Collection System: Rain Derived Inflow and Infiltration (RDII) Analysis | City of Allentown (AO) | Planning Phase | Phil DePoe |
| Sewer - Act 537 | KIWWTP - Wet Weather Treatment Options | City of Allentown (AO) | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Regional Sewer Capacity & Wet-Weather Planning - Regional Act 537 Plan Preparation | City of Allentown (AO) | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Kline's Island WWTP: Phase 1 AO Design Improvements | City of Allentown (AO) | On Hold | Phil DePoe |
| Sewer - Act 537 | KISS System Modeling - Sewage Billing Meter QA/QC Data Analytics and 2021 Flow Metering Preparation | City of Allentown (AO) | Planning Phase | Phil DePoe |

| | | | | |
|---|---|---|---|---|
| Sewer - Act 537 | KISS System Modeling - 2021 Model Expansion and Calibration | City of Allentown (AO) | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Western Lehigh Service Area: 2022 Nighttime Weiring & Budget Amendment | Suburban Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Regional Sewer Capacity & Wet-Weather Planning: Engineering & Program Support | Suburban Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Western Lehigh Service Area: 2020 Sewer Modeling | Suburban Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Western Lehigh Service Area - Engineering & Program Support | Suburban Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Industrial Pretreatment Plant Master Plan | Suburban Division | Planning Phase | Phil DePoe |
| Sewer - Suburban | Western Lehigh Manhole Rehabilitation Project - Phase 3 | Suburban Division | Design Phase | Jason Peters |
| Sewer - Suburban | Park Pump Station Phase 2 Upgrade | Suburban Division | Design Phase | Chuck Volk |
| Sewer - Suburban | Heidelberg Heights 2021 and 2022 Sanitary Sewer Replacement Project | Suburban Division | Construction Phase | Jason Peters |
| Sewer - Allentown | KIWWTP Primary Digester No. 1 Cleaning | Allentown Division | Construction Phase | Bryan Geissel |
| Sewer - Allentown | Kline's Island WWTP: Sludge Thickener Tank No. 3 Mechanical Upgrade | Allentown Division | Construction Phase | Bryan Geissel |
| Sewer - Allentown | Kline's Island WWTP: Main and Auxiliary Pump Station Improvements | Allentown Division | Preliminary Design | Chuck Volk |
| Sewer - Allentown | Kline's Island WWTP: Intermediate Pump Station Improvements | Allentown Division | Preliminary Design | Chuck Volk |
| Sewer - Allentown | Kline's Island WWTP: Solids Process Boiler and HVAC System Upgrade Project | Allentown Division | Design Phase | Bryan Geissel |
| Sewer - Allentown | Kline's Island WWTP: 2021 Indenture Upgrades | Allentown Division | Construction Phase | Bryan Geissel |
| Sewer - Allentown | Lehigh Street (Rte. 145) Water and Sewer Main Relocation Project | Allentown Division | Construction Phase | Jason Peters |