**LEHIGH COUNTY AUTHORITY**

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

**Agendas & Minutes Posted:**
www.lehighcountyauthority.org

Published: June 6, 2022

# BOARD MEETING AGENDA – June 13, 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
   - *May 23, 2022 Board meeting minutes*
4. Public Comments
5. Action / Discussion Items:

   **FINANCE AND ADMINISTRATION**

   **WATER**
   - *SmartBall Inspection – 30" and 36" Transmission Main – East Side (Approval)* ***(green)*** (digital Board packet, pages 8-10)

   **WASTEWATER**
   - *KISS System Modeling – Capacity Problem Definition (Approval)* ***(blue)*** *(digital Board packet, pages 11-21)*
   - *Resolution 6-2022-1: Trexlertown Act 537 Special Study (Approval)* ***(tan)*** *(digital Board packet, pages 22-51)*
6. Monthly Project Updates / Information Items (1st Board meeting per month) (digital Board packet, pages 52-58) – **June report attached**
7. Monthly Financial Review (2nd Board meeting per month) (digital Board packet, pages)
8. Monthly System Operations Overview (2nd Board meeting per month) (digital Board packet, pages)

9. Staff Comments
10. Solicitor's Comments
11. Public Comments / Other Comments
12. Executive Sessions
13. Adjournment

| UPCOMING BOARD MEETINGS | | |
|---|---|---|
| June 27, 2022 | July 11, 2022 | July 25, 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**
**May 23, 2022**

*Notice of Preparation of Authority Meeting Minutes: Authority staff who are in attendance at each Authority Board meeting prepare a draft of the Minutes, which are subsequently distributed to all Board members for review. Board members may offer corrections prior to a vote of the full Board of Directors to approve the Minutes.*

The Regular Meeting of the Lehigh County Authority Board of Directors was called to order at 12:01 p.m. on Monday, May 23, 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, Scott Bieber, Norma Cusick, 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, Chuck Volk, Chris Moughan, Andrew Moore, Phil DePoe, Mark Bowen, Bryan Geissel and Lisa Miller.

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

Kevin Baker joined the meeting at 12:05 p.m.

Norma Cusick left the meeting at 12:05 p.m.

## REVIEW OF AGENDA

Liesel Gross announced that there are no changes or additions to the agenda and no Executive Session planned.

## APPROVAL OF MINUTES

### *May 9, 2022 Meeting Minutes*

On a motion by Linda Rosenfeld, seconded by Amir Famili, the Board approved the minutes of the May 9, 2022 Board meeting as presented (6-0).

## PUBLIC COMMENTS

None.

## ACTION AND DISCUSSION ITEMS

### *2023-2027 Suburban Division, Allentown Division, and Administration Capital Plans*

Liesel Gross gave a brief overview presentation summarizing the 2023-2027 Capital Plan for all divisions for Board consideration and approval and a summary of the public comments received during the 30-day public comment period. Ms. Gross clarified that approval of the Plan does not

indicate funding authorization for the Plan, which includes projects totaling approximately $124 million over the next five years. She noted a large portion of these projects are annual or reoccurring infrastructure rehabilitation or replacement projects.

Ted Lyons joined the meeting at 12:10 p.m.

Ms. Gross reviewed updates to the Plan since the last presentation, which were outlined in the materials presented. Two projects were updated, including a cost update for the Suburban Division SCADA Upgrade project, and the addition of the Upper System Water Storage Tank. In addition, language was added to clarify the City and Allentown's contribution of American Rescue Plan Act funding for specific water and sewer projects in the Allentown Division.

Ed Klein reviewed the sources of funding to support the Plan, noting that the majority of the Plan will be funded from current operating revenue and reserves.

Norma Cusick re-entered the meeting at 12:19 p.m.

Chuck Volk reviewed the comments received from the Lehigh Valley Planning Commission and the City of Allentown.

Ms. Gross recognized Mr. Volk, Mr. Klein and their teams for their work in developing the details of the Plan. Mr. Famili concurred.

On a motion by Linda Rosenfeld, seconded by Amir Famili, the Board approved the final draft of the 2023-2027 Capital Plan as presented (8-0).

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

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

***LCA-South Whitehall Township Emergency Water System Interconnection Agreement***

Liesel Gross stated that the work to develop an Emergency Water System Interconnection between the Authority and South Whitehall Township has been a highly cooperative process. South Whitehall Township officials have been very helpful during the process, and an agreement has been drafted to keep the process moving forward so a regulatory permit application can be submitted in a timely manner. Phil DePoe and Andrew Moore have been working on the technical details with the Township to be sure the interconnection can be constructed prior to commencing work on the Authority's water storage tank later this summer. Solicitor Gaul reviewed the draft agreement and the suggested approval process.

On a motion by Jeff Morgan, seconded by Linda Rosenfeld, the Board approved the Emergency Interconnection Purchasing Agreement with South Whitehall Township in the substantial form presented, and authorized the Chief Executive Officer to execute the Agreement on behalf of the

Authority with such modifications as the Chief Executive Officer determines to be necessary, convenient, or appropriate, in consultation with the Solicitor (8-0)

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

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

***LCA-Lowhill Township Water Services Agreement, First Addendum***

Liesel Gross provided a map of the Authority's Central Lehigh Division, Upper System showing the existing water lines and a proposed extension to serve a new development in Lowhill Township. The Authority's existing Water Service Agreement with the Township is specific to the previously approved developments that the Authority serves. Therefore, an Addendum to the original Water Service Agreement is needed in order to approve the extension of service to the new development. She explained that Lowhill Township had voted in April to approve a slightly revised version of the initially drafted Addendum, and then sent an executed copy of the revised Addendum to the Authority prior to it being reviewed by the Authority Board. She stated this was a minor miscommunication, and Authority staff have reviewed the revised Addendum and are satisfied with the terms. Solicitor Gaul noted he has reviewed the revised Addendum and is also satisfied.

There was some general discussion about the Authority's Water Service Agreement with Lowhill Township and the Authority's obligations to serve new developments in cases where water infrastructure currently does not exist. Liesel Gross explained the planning process and the involvement of the municipality in the plan review, which occurs prior to the Authority committing to serve the development. The Authority does not determine when and where development occurs, and agreements to extend service to a new development are contingent upon municipal review and approval. She clarified that sewer service is not being extended to serve this development.

Chairman Nagle asked that the date of the proposed First Addendum to the Water Services Agreement reflect the date of the Authority's execution of the document, as opposed to the handwritten date inserted on the Township signed copy.

On a motion by Norma Cusick, seconded by Scott Bieber, the Board approved the First Addendum to Water Service Agreement with Lowhill Township in the form presented (without inclusion of inserted date) and to authorize the Chief Executive Officer to execute the agreement on behalf of the Authority (8-0).

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

Brian Nagle – yes
Scott Bieber – yes
Norma Cusick – yes
Ted Lyons – yes
Kevin Baker – yes

Linda Rosenfeld – yes
Jeff Morgan – yes
Amir Famili – yes

***Water Filtration Plant – 2022 Indenture Upgrades***

Chuck Volk provided background on the annual project that is generated by a report which documents the condition of the water and wastewater facilities to the Allentown Water and Sewer Lease Bond Trustee. Mr. Volk is requesting a two-year approval for this project in order to take advantage of economies of scale. Project Engineer Bryan Geissel added that this project will consist of a lot of concrete work at remote sites and also brick work. Mr. Volk added that he is hoping to catch up with this type of repair work and reduce the budget and scope of these projects in the future.

On a motion by Norma Cusick, seconded by Jeff Morgan, the Board approved the Capital Project Authorization for the Construction Phase in the amount of $527,604.00 which included the Professional Services Authorization to D'Huy Engineering in the amount of $21,000.00 and award of the General Construction Contract to Mar-Allen Concrete Products, Inc. in the amount of $476,604.00 (8-0).

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

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

***Kline's Island WWTP – 2022 Indenture Upgrades***

Chuck Volk said this project primarily addresses the structural deficiencies at the Kline's Island Wastewater Treatment Plant, with most of the work at the Plastic Media Trickling Filters. The work includes concrete crack repair and structural repairs related to vertical steel support anchors. Project Engineer Bryan Geissel added that the work will be completed by the same contractor who completed last year's phase of this work, Blooming Glen Contractors.

On a motion by Norma Cusick, seconded by Amir Famili, the Board approved the Capital Project Authorization for the Construction Phase in the amount of $309,341.00 which includes the Professional Services Authorization to D'Huy Engineering in the amount of $14,500.00, and the General Contract Award to Blooming Glen Contractors in the amount of $274,841.00 (8-0).

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

Brian Nagle – yes
Scott Bieber – 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 April 2022 financial statements, highlighting variances between actual expenses and budgeted or forecasted expenses. There was some discussion regarding the sewer signatory year-end reconciliation process.

**MONTHLY SYSTEM OPERATIONS OVERVIEW**

Andrew Moore reviewed highlights of the April 2022 report, noting that there was an increase in water withdrawals from Schantz Spring along with increased sewer flows in all service areas due to over 5.5 inches of rain received in April. He also reviewed the sanitary sewer overflows and bypasses that occurred in Heidelberg Township, Lynn Township, and the City of Allentown. Chris Moughan reported that the Authority continues to receive customer input regarding the 2022 rate increases, and a copy of a recent letter was attached to the report. He also followed up on a question at the last Board meeting regarding call volumes, explaining that there has been a reduction in customer call volume due to process improvements made in the water termination procedures. These changes allow customer service representatives to be more responsive to the incoming calls and reduce overall call volume. Chairman Nagle congratulated the team for thinking outside the box and addressing this issue.

**STAFF COMMENTS**

None.

**SOLICITOR'S COMMENTS**

None.

**PUBLIC COMMENTS / OTHER COMMENTS**

None.

**EXECUTIVE SESSION**

None.

**ADJOURNMENT**

There being no further business, the Chairman adjourned the meeting at 1:34 p.m.

Norma Cusick
Assistant Secretary

# MEMORANDUM

**Date:** June 6, 2022

**To:** LCA Board of Directors
**From:** Christopher Moughan, Director of Service & Technology
**Subject:** Allentown Water System – SmartBall Inspection - 30" and 36" Transmission Main - East Side

**MOTIONS / APPROVALS REQUESTED:**

| No. | Item | Amount |
|---|---|---|
| 1 | Professional Services Authorization | $70,500 |

**PROJECT OVERVIEW:**
In 2022, LCA staff have planned to conduct a SmartBall internal acoustic leak and air pocket detection survey of the 30- and 36-inch East Side Transmission Main. The inspection will begin at the Water Filtration Plant and end at the connection to the 20-inch transmission line that conveys water to the East Side Reservoir. The purpose of this project is to perform acoustic leak detection survey to identify and locate leaks along the pipeline. The total length of inspection is approximately three miles of steel pipe conveying water to the eastern portions of the Allentown Division water distribution system. Results of this study will be used to inform LCA's pipeline prioritization program for ongoing water main replacements.

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

**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 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. Project Planning |
| 2. Mobilization |
| 3. SmartBall Inspection |
| 4. Final Deliverable – Inspection report / presentation |

**CONSULTANT SELECTION PROCESS:**
The proposed consulting engineer has intimate knowledge of the Allentown Division, and specifically this line, they were the company that had previously surveyed this line in 2016. At that time, they were successful in identifying leaks, which were addressed. Pure Technologies, a Xylem brand, is a world leader in providing non-destructive testing, monitoring technologies, and engineering services to improve management of critical pipelines. They have 15 years of experience using SmartBall technology, surveying over 7,000 miles of pipeline in that time.

**PROJECT SCHEDULE:**
Pending Board approval, project is anticipated to begin in August of 2022 and be completed by October of 2022.

**FUTURE AUTHORIZATIONS:**
Future design and construction services as needed.

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:** Pure Technologies, a Xylem Brand
3040 Route 22 W
Suite 130
Branchburg NJ, 08876

**Date:** June 6, 2022

**Requested By:** Chris Moughan

**Approvals**

**Department Head:** _____

**Chief Executive Officer:** _____

**Allentown Division-** SmartBall Inspection - 30" and 36" Transmission Main - East Side

*Previous Authorizations- None*

**This Authorization – Engineering Study: $70,500**

In 2022, LCA staff have planned to conduct a SmartBall internal acoustic leak and air pocket detection survey of the 30- and 36-inch East Side Transmission Main. The inspection will begin at the Water Filtration Plant and end at the connection to the 20-inch transmission line that conveys water to the East Side Reservoir. The purpose of this project is to perform an acoustic leak detection survey to identify and locate leaks along the pipeline. The total length of inspection is approximately three miles of steel pipe conveying water to the eastern portions of the Allentown Division water distribution system. Results of this study will be used to inform LCA's pipeline prioritization program for ongoing water main replacements.

| Professional Services |
|---|
| 1. Project Planning |
| 2. Mobilization |
| 3. SmartBall Inspection |
| 4. Final Deliverable – Inspection report |

**Cost Estimate** (not to be exceeded without further authorization): **$ 70,500**

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

---

**(For Authority Use Only)**

**Authorization Completion:**

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

# MEMORANDUM

**Date:** June 13, 2022

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

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

**Subject:** Kline's Island Sewer System: Capacity Problem Definition - Planning Phase

**MOTIONS / APPROVALS REQUESTED:**

| No. | Item | Amount |
|---|---|---|
| 1 | Capital Plan Authorization: Arcadis – Capacity Problem Definition | $236,000 |
| 1A | Professional Services Authorization: Arcadis – Capacity Problem Definition | $196,000* |

**Included in the Capital Project Authorization*

## 1. Capacity Problem Definition

**AUTHORIZATION OVERVIEW:**
As Arcadis concludes the KISS model calibration, the next phase of Act 537 planning covers the pre-alternative modeling work. This next phase also includes some of the first-stage Preliminary Screening of Alternatives (PSOA) by involving Source Reduction Program (SRP) impacts on flows. This work will define the hydraulic problems to be solved as part of the Act 537 Plan. See attached for clear identification of proposal goals.

**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:**
Authorization to create the KISS model occurred in early 2021. As the flow characterization study ended in the fourth quarter of 2021, the model calibration started immediately and is slated for conclusion later this month. The model will be ready to "run" scenarios in early July of 2022.

This next critical phase of Act 537 will begin upon approval of this authorization.

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

| Professional Services |
|---|
| • Design storm evaluation and selection (3, 5, 10, and 20 year) |
| • Development of GIS figures and tables to depict existing system performance |
| • Calculation of interceptor and trunkline dry day performance |
| • Development of "KISS model specific" procedures for modeling I&I reductions |

| |
|---|
| • Development of "common-sense SRPs" and the impact on existing system performance |
| • Attendance at various meetings and workshops (including presentation preparation) |

**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 of Allentown since the 2009 EPA Administrative Order. They are also a critical Act 537 Partner and are developing crucial elements related to the Plan's development.

**SCHEDULE:**
Services listed in this proposal will conclude by the end of September 2022.

**FUTURE AUTHORIZATIONS:**
None anticipated for this specific phase of work.

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

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

Subject:
Scope and Budget Kline's Island Sewer System (KISS) Capacity Problem Definition Project

Date:
May 31, 2022

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

Dear Mr. DePoe:

Arcadis is pleased to provide LCA with this scope and budget for above work. This work will follow on the heels of the KISS model calibration and will cover the pre-alternative modeling work as well as some of the first-stage Preliminary Screening of Alternatives (PSOA) work involving Source Reduction Programs (SRP) impacts on flows. This work will define the hydraulic problems to be solved as part of the Act 537 Plan work which will subsequently be solved via an alternatives analysis process. Alternatives analyses will include:

1. Using the model to solve system capacity limitations:
    a. Calculate pipe diameter, slopes, and locations
    b. Calculate storage tank inflow and out flow rates and volumetric sizes
    c. Calculate pump station rates and head pressures and force main sizes
    d. Calculate reductions in baseline and wet weather flows from source reduction activities
    e. Calculate peak flow rates to wastewater treatment
2. Calculating capital and operating costs of the above solutions

## OBJECTIVES

There are several goals of this work:

1. Select actual rain events from the 2000-2022 record period to act as our design storm stand-in when conducting alternatives analyses.
    a. Ultimately, the final proof of an alternative's ability to solve problem/meet objectives will be a 23 year model simulation using the 2000-2023 rainfall from Allentown airport, but for the purposes of evaluations, a single event is needed.
2. Identify where SSOs will occur during various design storm events under 2021 flow conditions and under proposed 2050 flow conditions, and quantify their overflow volume.
3. Identify which trunklines and interceptors flow surcharged during dry day flows in 2021 and under 2050 flow conditions, and quantify the depth of flow.
4. Develop modeling methods specific to the KISS model calibration to estimate the reduction in baseline and wet weather flows using various source reduction techniques.
5. Identify where SSOs will occur during various design storm events under 2021 flow conditions and under proposed 2050 flow conditions, and quantify their overflow volume, after three different SRP approaches are applied.

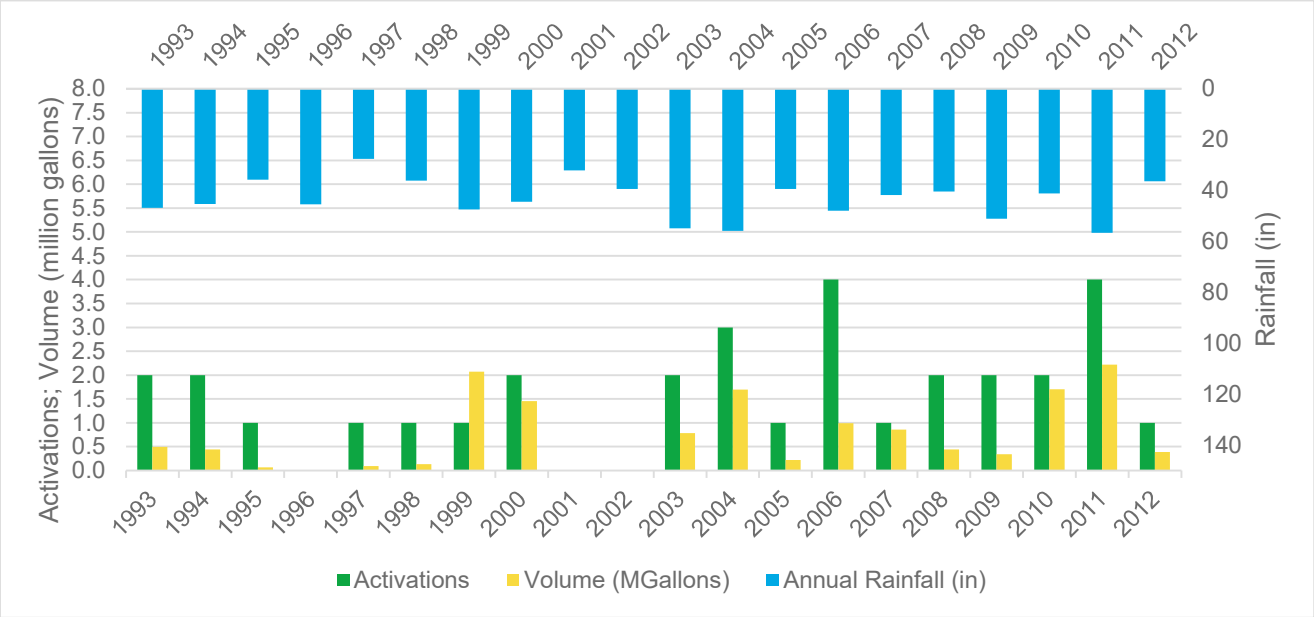
## SCOPE OF WORK

Once the model is calibrated, this scope will cover all the pre-alternative modeling work, plus the first of the RDII reductions alternatives modeling, including development of our formal techniques. This scope will include:

### Task 1 – Design Storm Evaluation

Arcadis will set up the model with the 2021 connections (current system customer demand with no additional development flow) and the current system physical configuration (no improvements). Under these conditions, Arcadis will run an extended simulation using the entire 2000 – 2022 hourly rainfall record from Allentown Airport NOAA station. System flows generated for each rain event over this 22 year period will be tabulated. These system flows will include flows that made it to Kline's Island WWTP (KIWWTP) and flow volumes that the model reported as overflowing from manholes or from Outfall 003. Arcadis will order these flow from highest to lowest, provide the total rainfall for each event, characterize the nature rainfall triggering the highest flowing events. Arcadis will also characterize the various aspects of each rain event relative to 2004 NOAA Atlas 14 Intensity-Duration-Frequency event for eastern

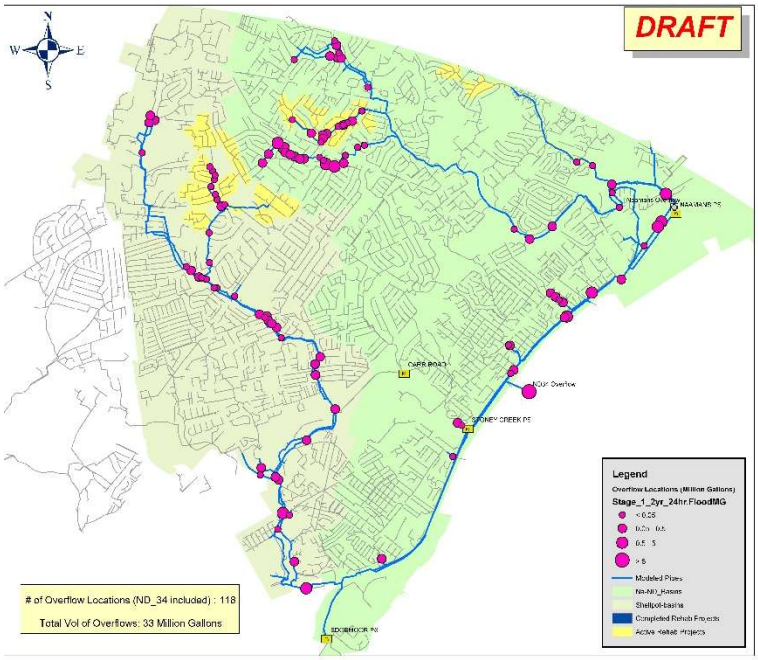
Pennsylvania. Arcadis will identify which of these events comport to 20 year, 10 year, 5 year, and 3 year recurrence intervals during this 22 year record period.




Arcadis will then work with the Program Steering Committee (PSC) to select 3, 5, 10, and 20 year stand-in events to be used for alternatives modeling during PSOA and Final Alternatives Analyses engineering.

**Task 2 – Existing System Performance**

For each of the 4 selected storms, Arcadis will develop GIS figures showing overflow locations by size (blossoms) and table listing locations, duration of SSO, and volume of SSO under 2021 flow conditions with the current in place infrastructure. Arcadis will then develop same for 2050 flow conditions. The 2050 flow conditions will include 0.5% I&I creep (consistent with previous program assumptions) but no base foul flow reduction from replacement of old appliances with new high efficiency appliances (this will be included in PSOA work). These two sets of figures and tables will define the hydraulic capacity problem definition for the Act 537 Plan.



**Task 3 – Interceptor and Trunkline Dry Day Performance**

Using the Task 1 data set, Arcadis will evaluate two dry day types:

- Typical average dry day flow (June 1-7, 2021)
- Dry day flow during wet years (December 1-7, 2018, which was higher than normal rainfall period)

From these analyses, for each of the 18" and larger sewers of the KISS, Arcadis will calculate:

- Depth of flow over full pipe (d/D)
- Depth of surcharge/pressurization
- Depth below rim for each manhole of for both the 2021 flow conditions and the 2050 flow demands.

Arcadis will provide tables and GIS maps showing depth of surcharge conditions (green, yellow, orange, red, and pink), and what percentage of each Signatory's wastewater flows through each interceptor and trunk line under these scenarios will also be defined under these two scenarios for these pipes. This will provide Signatories with information to evaluating which pipes are designed for gravity flow but are operating under pressure (and hence may be compromised based on pressure conditions forcing flow outside the pipe and then, when flow levels drop, allowing pipe bedding to migrate back inside the pipe when the stored wastewater flows back into the pipe). It will also provide information for setting dry weather operating condition goals for the 537 Plan actions, determining primacy rights for pipelines through which Signatories flow at pleasure of City, identifying basement protection areas (for basements that may back up when interceptors surcharge), and making interceptor parallel/redundancy vs. single pipe upsize decisions.

**Task 4 – KISS Model Specific Procedures for Modeling Various Types of I&I Reductions**

While models are calibrated to specific standards to the flow data provided, the way this is achieved varies from modeler to modeler and from basin to basin. Additionally, Arcadis recognized that pipes and manholes within floodplain/bottomland areas would leak differently than upland portions of a flow meter basin and have built the KISS model with separate catchments (a catchment is a subdivision of a flow meter basin). While all catchments within a given flow meter basin are calibrated equally, the differentiated bottomland catchments will allow us to preferentially load I&I sources into these catchments when evaluating SRP works. Also, within ICM (the model platform used for KISS), there are 4 major dials used to match the dry day and then the wet day peaks, troughs, and diurnal shape of flow before, during, and in the hours, days, and weeks after the storm before the next storm begins. Each of these dials affects the height, width, and shape of the model's response to rainwater. Some of these variable interact with each other, especially within the groundwater modules soil store and ground store mechanics. For typical RDII model estimates, when only a single RDII reduction percentage is entered into the model, these factors are not considered; all types of leakage are modeled as uniformly dropping. However, in systems that are highly inflow-impacted like the KISS, differentiating between inflow source reduction work and infiltration source reduction work will be very important.

Arcadis will develop rules for how to reliably do this specific to how the KISS model was calibrated to allow for removing different types of I&I flows from different catchments within a basin such that reductions from the following source reduction work applied to different pipes can be estimated with greater than typical resolution. These rules will cover:

- Inflow through manholes from sheet flow
- Inflow through manholes from stream flooding
- Inflow through cleanouts from sheet flow
- Baseline infiltration through sewers
- Rainfall induced infiltration through sewers

**Task 5 – Existing System Performance following Common-sense SRPs**

For each of the 4 selected storms, Arcadis will develop GIS figures showing overflow locations by size (blossoms) and table listing locations, duration of SSO, and volume of SSO under 2021 flow conditions and under the 2050 flow conditions assuming three different levels of SRPs shown below:

1. No SRPs (performed under Task 2)
2. Peak Inflow Sources
    a. Stream/Swale/Pond FCC (Frames, Covers, and Chimneys)
    b. Sheet Flow FCC – Priority 1 Areas
    c. CCO (Clipped Cleanouts) – Priority 1 Areas
3. Sewer Rehab
    a. Priority 1 Areas
    b. Mains, Taps, and Risers
        i. Grouting and CIPPL
4. Peak Inflow Sources and Sewer Rehab
    a. 2+3 above

These six sets of figures and tables will define the hydraulic capacity problem definition for the Act 537 Plan under various common-sense SRP approaches. Signatory SRPs will be evaluated under a future task.

**Task 6 – Meetings, Presentations, Workshops, and Project Management**

During the course of this work, Arcadis will prepare for and lead meetings, presentation, and workshops to LCA staff, the PSC, the KISS Signatories, and regulators. For the purposes of this scope and budget, we have assumed 12 meetings. This task will also account for project management costs.

## DELIVERABLES

1. Design Storm Evaluation - Draft – PowerPoint deliverable coupled with GIS figures and Excel tables
2. Design Storm Evaluation - Final – PowerPoint deliverable identifying select design storm events with PSC rationale, coupled with GIS figures and Excel tables
3. Existing System Performance – PowerPoint deliverable coupled with GIS figures and Excel tables
4. Interceptor and Trunkline Design Storm Evaluation– PowerPoint deliverable coupled with GIS figures and Excel tables
5. KISS Model Specific Procedures for Modeling Various Types of I&I Reductions – PowerPoint deliverable or Word document
6. Existing System Performance following Common-sense SRPs – PowerPoint deliverable coupled with GIS figures and Excel tables

## SCHEDULE

Work will begin once the KISS model is calibrated. Work is scheduled to start around July 5, 2022 and be completed by end of September 2022. Meetings and workshops to review deliverables will be scheduled throughout this period.

## BUDGET ESTIMATE

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

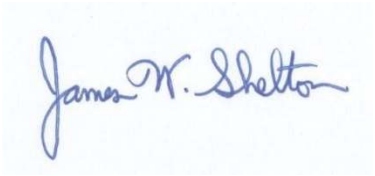
| Task | Hours | Cost |
|---|---|---|
| **Task 1 – Design Storm Evaluation** | 180 | $31,000 |
| **Task 2 – Existing System Performance** | 300 | $49,000 |
| **Task 3 – Interceptor and Trunkline Design Storm Evaluation** | 110 | $17,000 |
| **Task 4 – KISS Model Specific Procedures for Modeling Various Types of I&I Reductions** | 100 | $19,000 |
| **Task 5 – Existing System Performance following Common-sense SRPs** | 430 | $54,000 |
| **Task 6 – Meetings, Presentations, Workshops, and Project Management** | 120 | $26,000 |
| Total | **1240** | **$196,000** |

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

Cc: Tony Dill

# CAPITAL PROJECT AUTHORIZATION

| | | | |
|---|---|---|---|
| **PROJECT NO.:** | AD-S-12 | **BUDGET FUND:** | Allentown Div\Wastewater\Capital |
| **PROJECT TITLE:** | Kline's Island Sewer System Capacity Problem Definition – Planning Phase | **PROJECT TYPE:** | |
| | | ☐ | Construction |
| | | ☒ | Engineering Study |
| **THIS AUTHORIZATION:** | **$236,000** | ☐ | Equipment Purchase |
| **TO DATE (W/ ABOVE)** | **$236,000** | ☐ | **Amendment** |

**DESCRIPTION AND BENEFITS:**

As Arcadis concludes the KISS model calibration, the next phase of Act 537 planning covers the pre-alternative modeling work. This next phase also includes some of the first-stage Preliminary Screening of Alternatives (PSOA) by involving Source Reduction Program (SRP) impacts on flows. This work will define the hydraulic problems to be solved as part of the Act 537 Plan. See attached for clear identification of proposal goals.

**Prior Authorizations:** None specifically related to this authorization. To date, Arcadis has been granted multiple authorizations throughout the Act 537 planning process.

**This Authorization:** Completion of the work associated with this "Capacity Problem Definition" proposal. See attached Board Memo for further project details.

**Authorization Status:**

| **Requested This Authorization** | |
|---|---|
| ***Design Phase*** | |
| **Staff** | **$20,000** |
| **Contractor** | **$0** |
| **Engineering Consultant** | **$196,000** |
| **Contingency** | **$20,000** |
| **Total This Authorization** | **$236,000** |

| | |
|---|---|
| Prior Authorizations (2019-present) | Various |
| **Subtotal** | **$236,000** |
| *Future Authorizations* | *To be determined* |

**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:** June 13, 2022
**Requested By:** Phil DePoe

**Approvals**

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

**Allentown Division: Kline's Island Sewer System Capacity Problem Definition – Planning Phase**

As Arcadis concludes the KISS model calibration, the next phase of Act 537 planning covers the pre-alternative modeling work. This next phase also includes some of the first-stage Preliminary Screening of Alternatives (PSOA) by involving Source Reduction Program (SRP) impacts on flows. This work will define the hydraulic problems to be solved as part of the Act 537 Plan. See attached for clear identification of proposal goals. The services of the proposal include, but are not limited to, the following:

| **Professional Services** [(1)] |
|---|
| 1. Design storm evaluation and selection (3, 5, 10, and 20 year) |
| 2. Development of GIS figures and tables to depict existing system performance |
| 3. Calculation of interceptor and trunkline dry day performance |
| 4. Development of "KISS model specific" procedures for modeling I&I reductions |
| 5. Development of "common-sense SRPs" and the impact on existing system performance |
| 6. Attendance at various meetings and workshops (including presentation preparation) |

*(1) Planning phase only*

**This Approval:** $*196,000 (see attached proposal)*
**Total Amount (not to be exceeded without further authorization):** *$196,000*

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

---

**(For Authority Use Only)**

**Authorization Completion:**

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

LEHIGH COUNTY AUTHORITY
1053 SPRUCE ROAD * P.O. BOX 3348 * ALLENTOWN, PA 18106-0348
610-398-2503 * FAX 610-398-8413 * www.lehighcountyauthority.org
email: service@lehighcountyauthority.org

# MEMORANDUM

**TO:** LCA Board of Directors
**FROM:** Liesel Gross, Chief Executive Officer
**DATE:** June 6, 2022
**RE:** Trexlertown Act 537 Special Study
Resolution 6-2022-1 Approving Adoption of the Plan

Since 2019, Lehigh County Authority (LCA) has worked collaboratively with the 15 municipalities that make up the Kline's Island Sewer System (KISS) to develop a regional approach to addressing long-term sewage capacity needs. A major milestone was reached in June 2021, when the Pa. Department of Environmental Protection (DEP) approved an "Interim" Act 537 Plan – the first regional Act 537 Plan in KISS history.

Key components of the Interim Plan include:

1. Connection Management Plan for 2021-2025, to allow new connections to occur during the planning period, so long as work continues on schedule
2. Municipalities' individual efforts to remove I&I from their sewer collection systems
3. Western Lehigh Interceptor upgrade to address conveyance system challenges in Trexlertown (known as the "Trexlertown Bottleneck")
4. Flow characterization and system modeling (to be completed in 2022)
5. Alternatives analysis and final plan development (to be completed by 2025)

At the June 13, 2022 LCA Board meeting, we will focus our attention on the third item listed above, related to the "Trexlertown Bottleneck." Previously, presentations have been provided to the Board to review alternatives for this project, which resulted in Board authorization of the design phase of the Upper Western Lehigh Pump Station and Force Main project in February 2022. While design work is progressing, DEP also requires submission of an Act 537 "Special Study" for their review and approval of the project approach. In accordance with the Act 537 approval process, the Special Study was presented to municipal planning commissions for a 60-day review period, followed by a 30-day public comment period. Having received no specific comments on the study, the affected municipalities – Upper Macungie and Lower Macungie townships – must approve the Act 537 Special Study by resolution.

The main body and summary text of the Trexlertown Act 537 Special Study is attached to this memo, and the full package with all figures and exhibits is posted on our website at the following location: https://www.lehighcountyauthority.org/trexlertown-act-537-special-study/

**LCA's Role:** Since Lehigh County Authority is not a "municipality" for purposes of Act 537 Plan adoption, no action is officially required. However, due to the leadership role LCA will play in designing and constructing the project, followed by long-term ownership and operation of the new facilities, it is recommended that LCA indicate its support via Resolution 6-2022-1, approving adoption of the plan.

# RESOLUTION NO. 6-2022-1

(Duly adopted 13 June 2022)

***A RESOLUTION OF LEHIGH COUNTY AUTHORITY APPROVING ADOPTION OF THE TREXLERTOWN ACT 537 SPECIAL STUDY.***

WHEREAS, the Lehigh County Authority (the "Authority") is a Pennsylvania municipal authority organized by the Board of County Commissioners of the County of Lehigh, Pennsylvania, under the provision of the Pennsylvania Municipality Authorities Act, 53 P.S. Sec. 5601, *et. seq.*, as amended (the "Act"); and

WHEREAS, the Authority's authorized purposes and powers include, *inter alia*, owning, leasing (both as lessor and lessee) and operating sewer systems; and

WHEREAS, the Authority's Board shall have full authority to manage the properties and business of the Authority, and to prescribe, amend and repeal bylaws, rules and regulations governing the manner in which the business of the Authority may be conducted, and the powers granted to it may be exercised and embodied; and

WHEREAS, Section 5 of the Act of January 24, 1966, P.L. 1535, No. 537, known as the "Pennsylvania Sewage Facilities Act," as amended, and the Rules and Regulations of the Department of Environmental Protection ("Department") adopted thereunder, Chapter 71 of Title 25 of the Pennsylvania Code, requires municipalities to adopt an Official Sewage Facilities Plan providing for sewage services adequate to prevent contamination of waters and/or environmental health hazards with sewage wastes, and to revise said plan whenever it is necessary to meet the sewage disposal needs of the municipality; and

WHEREAS, ARRO Consulting has prepared a Trexlertown Act 537 Special Study (TSS), as required by the DEP-approved Interim Act 537 Plan (approved June 25, 2021), to address sewage capacity needs within the Western Lehigh Interceptor (WLI) near Trexlertown, which is owned and operated by the Authority and which experiences dry-day surcharging and wet-weather overflows during intense rain events; and

WHEREAS, the alternative of choice to be implemented is an interim pump station and force main to divert sewage away from portions of the existing WLI facilities in Trexlertown and discharge the diverted sewage into the existing Upper Macungie Township Trunk Line; and

WHEREAS, the TSS is a standalone Act 537 Special Study, which will temporarily address the sewage capacity needs within the WLI until a long-term solution can be developed during preparation of the regional long-term Act 537 Plan that is currently scheduled for completion in 2025; and

WHEREAS, the service area primarily impacted by this portion of the WLI includes Upper Macungie Township and Lower Macungie Township (the "TSS Municipalities"); and

WHEREAS, the Authority acted as agent for the TSS Municipalities in the preparation of the TSS; and

WHEREAS, the Authority Board finds that the TSS described above conforms to (i) the Authority's plans and policies, (ii) applicable zoning, subdivision, other municipal ordinances and plans in the TSS Municipalities and (iii) a comprehensive program of pollution control and water quality management; and

WHEREAS, the Board desires to signify its approval for, support of, and concurrence in the TSS;

NOW THEREFORE, BE IT RESOLVED that the Lehigh County Authority Board hereby approves, adopts and supports the TSS, and concurs with the action of the TSS Municipalities in regard to amending and revising their respective Act 537 Plans in regard thereto. The Authority approves the submission of the TSS to the Department of Environmental Protection ("Department") for its approval as a revision to the "Official Plan" of the TSS Municipalities. The Authority Board hereby assures the Department of the complete and timely implementation of Authority's responsibilities as described in the said TSS, and as required by law.

On motion of_____, seconded by_____, this resolution was adopted the 13th day of June 2022.

Tally of Votes: Yeas_____ Nays _____

I, Michael A. Gaul, of the law firm of King, Spry, Herman, Freund & Faul, LLC, Solicitor to the Lehigh County Authority, do hereby certify that the foregoing is a true, correct and complete copy of a resolution which was duly adopted by the Authority Board at a public meeting of the Authority Board held on 13 June 2022, after notice thereof had been duly given as required by law, at which meeting a quorum was present and voting and which resolution No. 6-2022-1 is now in full force and effect on the date of this certification.

_____

Michael A. Gaul, Esquire Date
King, Spry, Herman, Freund & Faul, LLC
Lehigh County Authority Solicitor

Attest:

_____

Lisa J. Miller Date
Executive Administrative Support Specialist

# TREXLERTOWN ACT 537 SPECIAL STUDY

SUBMITTED TO:

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUBMITTED ON BEHALF OF:

**LEHIGH COUNTY AUTHORITY**

February 2022

Prepared by:

ARRO Consulting, Inc.

108 West Airport Road

Lititz, PA 17543

OUT-IN-FRONT. EVERY STEP OF THE WAY.

## CONTENTS

**Appendix List**

# PLAN SUMMARY

## A. PROPOSED SERVICE AREA AND MAJOR PROBLEMS

This Trexlertown Special Study (TSS) is being done to address sewage capacity needs within the Western Lehigh Interceptor (WLI) near Trexlertown. The interceptor experiences dry-day surcharging and wet-weather overflows during intense rain events and Lehigh County Authority (LCA) has developed alternatives to temporarily address this situation until a long-term solution can be developed during preparation of the regional long-term Act 537 Plan.

The Kline's Island Sewer System Interim Act 537 Plan has been adopted by the Kline's Island Sewer System (KISS) municipalities and approved by PADEP. The Implementation Schedule in the Plan includes construction of the Trexlertown area temporary improvements during the planning period of 2021 to 2025. The Implementation Schedule also includes evaluation and selection of a long-term solution to the hydraulic issues related to the Western Lehigh Interceptor and downstream conveyance facilities. Submission of the long-term Act 537 Plan, which includes these solutions, is scheduled for March 2025. Design and construction of these long-term improvements will begin after March 2025 and will include a construction implementation schedule through 2035. Projects beyond 2035 will require another Act 537 submission after March 2025.

The service area primarily impacted by this portion of the WLI includes Upper Macungie Township and Lower Macungie Township.

## B. IDENTIFY ALTERNATIVES

Two alternatives were considered to temporarily resolve the hydraulic issues in the Western Lehigh Interceptor. See Appendix 6 for a map of the two proposed alternatives. They are:

### 1. INTERIM PUMP STATION

A new interim pump station and force main located near the Industrial Pretreatment Plant- (PTP) that will divert flow away from the Western Lehigh Interceptor and pump it into the Upper Macungie Trunk Line (UMTL) at manhole PH3034A. The UMTL has both unused dry day (approximately 2.5 MGD) and unused wet weather (0.6 MGD) capacity and flows by gravity into the Spring Creek Pump Station. Note that the Western Lehigh Interceptor also flows by gravity into the Spring Creek Pump Station, so the impact on the Spring Creek Pump Station should be negligible. No improvements are being proposed to that Pump Station at this time.

### 2. TREXLERTOWN AND ANCIENT OAKS INTERCEPTOR/IN-LINE STORAGE

A new interceptor that will parallel the Iron Run (i.e., the Upper Western Lehigh Interceptor) and Western Lehigh Interceptors from the Gun Club (MH U67) to Spring Creek Road (MH L300). Providing in-line storage via a parallel 72" diameter pipe in this area was also modeled. Both of these alternatives did not resolve the dry or wet day issues and only moved the sanitary sewer overflow problem downstream (to the Ancient Oaks Interceptor).

The selected alternative is the interim pump station and force main to divert sewage away from the WLI. An interceptor operating agreement between UMT and LCA will be needed to implement this alternative. Terms of the agreement are still being negotiated; however, the Interim Pump Station (the selected

alternative) is expected to be in service through at least 2030. Exact details of the decommissioning will be handled within the Final Act 537 Plan that is due by March 2025.

### C. COST OF IMPLEMENTATION

In order to construct the Interim Pump Station alternative, flow from near the LCA PTP would be diverted from the Western Lehigh Interceptor to the Upper Macungie Trunk Line using a 2.5 MGD Interim Pump Station and 1.5 mile long 18" HDPE force main to connect to Upper Macungie Trunk Line. This will take 2-3 years to complete, including time to secure regulatory permits, and cost approximately $6 million.

### D. MUNICIPAL COMMITMENTS NECESSARY TO IMPLEMENT PLAN

Inter-municipal agreements are already in place to implement the actions in this Special Study. The Signatory municipalities have reviewed and adopted this Special Study (when submitted to DEP). However, an interceptor operating agreement between UMT and LCA will be needed to implement this alternative.

### E. IMPLEMENTATION SCHEDULE

| TASK | START | FINISH |
|---|---|---|
| Submit Special Study to PADEP | | June 2022 |
| PADEP Approval of Special Study | June 2022 | October 2022 |
| Preliminary Design | March 2022 | August 2022 |
| Final Design & Submit Permits | August 2022 | December 2022 |
| Receive Permits | December 2022 | April 2023 |
| Bid Phase | May 2023 | July 2023 |
| Construction Phase | August 2023 | February 2025 |

## MUNICIPAL ADOPTIONS

Copies of all Municipal Adoptions can be found in Appendix 11.

## PLANNING COMMISSION / COUNTY HEALTH DEPARTMENT COMMENTS

Copies of all Planning Commission and County Health Department comments can be found in Appendix 12.

## PUBLICATION

Proof of Publication can be found in Appendix 13.

## COMMENTS AND RESPONSES

Public comments and responses can be found in Appendix 14.

## IMPLEMENTATION SCHEDULE

Refer to previous page for the Implementation Schedule.

## CONSISTENCY DOCUMENTATION

There were no inconsistencies identified and therefore, none to be resolved. Applications were made to the Pennsylvania Natural Diversity Index as well as the Pennsylvania Historic Museum Commission. See Appendix 9 and 10 for that documentation.

## BACKGROUND

In 2007, EPA issued an Administrative Order (AO) to the City of Allentown requiring discharges from Outfall 003 be considered SSOs as that sewage had not received treatment and to provide corrective measures.

In 2008, in response to self-reporting of conveyance capacity limitations and excess I&I from LCA's Western Lehigh Interceptor, the Pennsylvania Department of Environmental Protection (DEP) required LCA, Upper Macungie, Lower Macungie, Weisenberg, Lowhill, and Upper Milford townships, and Macungie and Alburtis boroughs to develop a Chapter 94.21 Corrective Action Plan (CAP) for the areas identified as having significant capacity restrictions. The cited entities formed the Western Lehigh Sewerage Partnership (WLSP) and developed the Sewer Capacity Assurance and Rehabilitation Program (SCARP) to provide a formalized and planned method of evaluating the WLSP sewer systems, prioritize and conduct I&I source removal via sewer rehabilitation and private property clear-water elimination, and development of storage and conveyance expansions. To support this work, flow metering was conducted in 2009 and a hydraulic model was developed in 2011.

In 2009, in response to self-reported overflows from Allentown's central interceptor systems, EPA issued a second Administrative Order (AO). This AO addressed system-wide capacity issues for all Signatories to the KISS (Alburtis Borough, Emmaus Borough, Coplay Whitehall Sewer Authority, South Whitehall Township, Lower Macungie Township, Upper Macungie Township, Upper Milford Township, Salisbury Township, Lowhill Township, Macungie Borough, Weisenberg Township, Hanover Township, LCA, and the City of Allentown). Each of the contributors were required to submit a semi-annual report to EPA and DEP indicating what actions they had taken to address RDII conditions.

During this time there were semi-annual meetings to discuss the program on addressing the AOs while the Signatories worked independently on RDII remedial projects and programs within their service areas. There was not a more unified or collective approach to addressing the AOs until the WLSP and the City combined their two models to form the first KISS model (in 2014), which covered 75% of the actual KISS. The City and the WLSP individually and then jointly evaluated their projected future flows, considered the planned source reduction efforts of all Signatories, and selected a preferred alternative managing both dry and wet-weather treatment and conveyance of both current and future flows through 2040. Although a valuable tool and resource, the KISS model represents only 3/4ths of the sewer system, is calibrated from 2008 and 2009 flow data, uses only available entry-point flows from the other sewer Signatories, and except for the WLSP portion does not model antecedent conditions or changing groundwater conditions due to climate changes. The KISS Model is being updated and will serve as the initial foundation for modeling flow information collected during the Flow Characterization Study (FCS) being done as part of the approved Interim Act 537 Plan.

Over the years while the Signatories were working on their remediation projects and programs, there were periodic meetings with EPA and DEP. EPA acknowledged the progress in its letter of 11/2/2017 noting , " …it is evident that the ongoing efforts to reduce inflow and infiltration (I&I) and to generally upgrade and maintain the infrastructure in the area served by Kline's Island have been effective" and suggested that, rather than pursue multi-million dollar projects at the Kline's Island Wastewater Treatment Plant (KIWWTP), that the Signatories should work cooperatively and develop regional solutions to the problems which would be cost effective and provide continuing and lasting reductions in RDII. EPA suggested that the Signatories work cooperatively and submit a Regional Flow Management Strategy (RFMS). The RFMS was submitted in accordance with EPA's directive in 2018. This Regional Flow Management Strategy was intended to guide the development and implementation of Signatories' individual sewer I&I reduction plans so that they provide results that support the achievement of both municipal and regional goals for sewer system performance. This Strategy reflects broad-based commitments of action, collaboration, and cooperation. The RFMS contained flow characterization studies and anticipated conveyance or storage expansions to handle current and future dry and peak wet-weather flows.

EPA accepted the RFMS and withdrew the AOs on 3/19/2019 noting, "EPA has reviewed the regional flow management strategy and has found it acceptable" and "…hereby finds that all of the Respondents to the Administrative Orders CWA-03-2009-0313DN and CWA-03-2007-0332DN have completed the requirements". Oversight of the RFMS was delegated to DEP. DEP reviewed the RFMS and issued a review and comment letter to which the contributors responded.

Unfortunately, beginning in August 2018 and continuing through July 2019, the Lehigh Valley received the most annual rainfall since local rainfall data began being collected in 1895. The Lehigh Valley experienced 67 inches in 2018 and 61 inches in 2019, well over the annual average of 45 inches. In particular, during the 12-month period of August 2018 through July 2019, the region received 80 inches of precipitation. These continuing rainfalls saturated the ground surrounding the collection system piping of all service areas. The groundwater levels were 20-25 feet above normal during and after that annual period.

In addition to the 2018-2019 situation, DEP expressed concerns about future growth and continued efforts to address RDII. Beginning in August 2019, a series of meetings were held with representatives of DEP and the Signatories, to address the 2019 hydraulic overload. DEP required a Corrective Action Plan be developed that would include elements already in the RFMS. An Interim Act 537 Plan was to be submitted by mid-September 2020 which would include the steps for developing a Long-term Act 537 Plan to be submitted in 2025.

More specifically, the discussions focused on evaluating and documenting the KIWWTP's capacity to address continued higher flows if wet-weather patterns continue, illustrating the region's commitment to cooperative management of the KISS, and developing a plan to address the long-term capacity requirements of the system to meet the economic and environmental needs of the region. Through these discussions, a three-phase approach has been developed as follows:

### Phase 1 – 2020 Corrective Action & Connection Management Plan

Beginning in 2020, all new connections for all Signatories to the KISS were managed under the terms of a regional corrective action plan managed by DEP and implemented by LCA under the requirements of an Interim Act 537 Plan developed by the Signatories and submitted to DEP by September 2020. The primary thrust of the corrective action plan is the development of the Interim Act 537 Plan, quarterly progress

reporting to DEP, and new developments requiring sewer service approved in accordance with a formal allocation request to DEP. The Interim Act 537 Plan was approved by DEP on January 17, 2020.

### Phase 2 – Interim Act 537 Plan, Corrective Action & Connection Management Plan

From 2021 to 2025, the KISS Signatories will work cooperatively to develop a regional Long-Term Act 537 Plan. This plan will evaluate all Signatories' dry-weather and wet-weather flows projected through 2050, including peak flows and anticipated changes in regional weather patterns, and develop the facilities plan and other actions required to address those needs.

DEP's requirements for the Act 537 Sewage Facilities Plan include an evaluation of flows that can be removed by I&I programs in addition to construction of new facilities such as upsized parallel interceptors, pump stations, storage tanks, and treatment plant expansion/upgrades. This work will include flow monitoring and an update to the KISS hydraulic model to support the revised analysis of options previously evaluated, such as expansion of the KIWWTP, upgrade of LCA's Industrial Pretreatment Plant to provide full treatment, construction of parallel interceptors, construction of regional pump stations, and construction of storage facilities to address peak flows after consideration of I&I removal estimates. The plan that is ultimately developed and proposed to DEP by 2025 will include a financial and organizational / legal analysis to determine appropriate cost-sharing and inter-municipal agreement structures.

While this critical planning work is being completed, all KISS Signatories will continue to implement ongoing I&I source removal programs within their sewer collection systems. LCA will move forward on design and construction of facilities to address the hydraulic bottleneck in the system located in the Trexlertown area to improve service to customers in this area. This project was kicked off in 2019 with a feasibility study and hydraulic modeling being conducted in 2020.

New sewer connections during the time period of 2021 to 2025 will be based on the needs identified in the approved Interim Act 537 Plan and the region's satisfactory progress on this work as reported in quarterly reports to DEP. This Interim Act 537 Plan was approved by PADEP on June 25, 2021.

### Phase 3 – Regional Act 537 Plan

Implementation will begin upon approval by DEP. Approval of new connections to the sewer system after 2025 will be based on details of the plan and plan approval by DEP. This plan is scheduled to be submitted to DEP in March 2025.

# I. PREVIOUS WASTEWATER PLANNING

## A. EXISTING WASTEWATER PLANNING

### 1. PREVIOUS ACT 537 PLANNING

In September of 2020, the KISS municipalities submitted an Interim Act 537 Plan to DEP. That Plan was subsequently approved by DEP in June of 2021. Among other issues, the Interim Act 537 Plan included a schedule to address conveyance issues in the Western Lehigh Interceptor near Trexlertown. This Special Study is a result of the Interim Act 537 Planning effort.

In 2009, peak flow issues in the Western Lehigh Sewerage Partnership (WLSP) service area caused the DEP to review sewer connections in the WLSP communities. The WLSP communities consist of Upper Milford Township, Weisenberg Township, Lower Macungie Township, Upper Macungie Township, Lowhill Township, Borough of Alburtis and the Borough of Macungie. Pursuant to communications with PADEP and in accordance with Chapter 94 requirements, LCA and the above municipalities and, where applicable, their wastewater authorities, elected to prepare and implement a corrective action plan to collectively address the problems within each of these sanitary sewer systems. The Sewer Capacity Assurance and Rehabilitation Program (SCARP) was the resulting corrective action plan (approved by DEP in 2011 and was in place until late 2019).

Prior to the DEP approval, the *Sewer Capacity Assurance and Rehabilitation Program* was initiated by the Wester Lehigh Sewage Partners to address peak wet weather flows in the Western Lehigh service area. Subsequently, in 2018, the Western Lehigh Sewage Partners developed *Source Reduction Plans* and *Capital Improvement Plans* for each of the municipalities in the WLI, including Upper Macungie Township and Lower Macungie Township (these Plans were submitted to the EPA and PA DEP in 2018 – see below).

In August of 2018, the City of Allentown and its Signatories submitted a Regional Flow Management Strategy (RFMS) to USEPA and PADEP. The key components of the RFMS included: 1) collection system operation and maintenance, 2) system characterization, 3) inflow and infiltration removal, and 4) flow monitoring. The RFMS coordinates the development and implementation of each Signatory's I/I Source Reduction Program (SRP), in order to maximize the reduction of the excess infiltration and inflow from the sanitary sewer system.

While not a focus of this Special Act 537 Study, the Iron Run Pump Station was conceived in the mid-1990s and was designed in the 2000s. This pump station would also have diverted flow away from the WLI via a pump station and force main. The force main would have tied directly into the Spring Creek force main. This project was ultimately not built due to downstream surcharging issues. The 3 million gallon Flow Equalization Basin (FEB) at the PTP was built instead in 2010 (as part of the SCARP program) to relieve WLI issues.

In addition, a study was completed in 2020 to identify parallel interceptor routes in the Trexlertown area. Since hydraulic sewer modeling also indicates that this parallel interceptor option also caused downstream surcharging issues, the recommended route is not being selected for this Study.

With the approval of the Interim Plan, the provisions of the SCARP discontinued and were replaced by the Interim Plan. In addition to the Interim Act 537 Plan that was approved in 2021, the two affected municipalities also have previous wastewater planning:

### Upper Macungie Township

In 2010, Upper Macungie Township submitted an Act 537 Planning Supplement to PA DEP to supplement its previous Act 537 Sewage Facilities Plan which was approved March 10, 1993. The supplement serves to expand the public sewer service area and add a new On-lot Sewage Management Program, to address the needs of individual on-lot systems in the Township. The Township also has an approved Sewer Capacity Assurance & Rehabilitation Program dated October 2009 that was approved and adopted by the Township. Refer to the prior page for details on the discontinued SCARP.

### Lower Macungie Township

Lower Macungie Township submitted an Act 537 Planning Supplement to PA DEP to supplement its previous Act 537 Sewage Facilities Plan, which was approved January 1, 1987. The supplement serves to expand the public sewer service area and add a new On-lot Sewage Management Program, to address the needs of individual on-lot systems in the Township. The current supplement is dated January 2, 2013. The Township also has an approved Sewer Capacity Assurance & Rehabilitation Program dated October 2009 that was approved and adopted by the Township. Refer to the prior page for details on the discontinued SCARP.

## 2. IMPLEMENTATION SCHEDULE OMITTED ITEMS

There are no tasks within the current implementation schedule from the interim act 537 plan that were omitted. All tasks from that plan are presently on schedule.

## 3. CHAPTER 94 CORRECTIVE ACTION PLAN

Although the Interim 537 Plan was approved in June 2021 and the region received the Part 2 permit hydraulic re-rate for the Kline's Island WWTP in December 2021, the KISS system is still operating under the terms of a Chapter 94 connection management plan (Corrective Action Plan) through at least March 2025.

# II. PHYSICAL AND DEMOGRAPHIC ANALYSIS

## A. PLANNING AREA, MUNICIPAL BOUNDARIES, SERVICE AREA BOUNDARIES

The planning area for this section of the WLI is Upper Macungie Township and Lower Macungie Township. Both townships are part of The Kline's Island Sewage System (KISS) which provides service to a large area including the City of Allentown, Upper Milford Township, Weisenberg Township, Borough of Alburtis, Borough of Emmaus, Borough of Macungie, Lower Macungie Township, Lowhill Township, Salisbury Township, South Whitehall Township, Upper Macungie Township, North Whitehall Township, Coplay Borough, Whitehall Township and Hanover Township.

Upper Macungie Township and Lower Macungie Township are adjacent to each other and located southwest of the City of Allentown. Refer to the KISS Planning Area Map in Appendix 1 and the Collection System Maps found in Appendix 2 which shows the extent of the existing sewer system in the Planning Area.

## B. PHYSICAL CHARACTERISTICS OF THE PLANNING AREA

The physical characteristics of the Planning Area are shown on the Topographic Map, the Wetlands and Hydric Soils Map and the Floodplains Map found in Appendices 3, 4 and 5, respectively.

### Upper Macungie Township

Upper Macungie Township is approximately 25 square miles and is located in western Lehigh County with a resident population of over 26, 000 and a working population of approximately 45,000. The Township is

bordered by South Whitehall Township to the east, Lower Macungie Township to the south, Berks County to the west and Lowhill and Weisenberg Townships to the north. The majority of the Township lies within the Little Lehigh Creek Watershed with a small portion located in the Jordan Creek Watershed.

#### Lower Macungie Township

Lower Macungie Township is one of the largest municipalities in the Lehigh Valley, covering 22.6 square miles. The population has been rapidly increasing, growing 60% from 2000 to 2010 according to the Census. The Township is drained by Little Lehigh Creek and Swabia Creek.

### C. WETLAND IDENTIFICATION

The National Wetlands Inventory for Pennsylvania was consulted to determine if wetlands or hydric soils were located in the area of the proposed project. Appendix 4 includes a map indicating those areas identified as wetlands or hydric soils. The proposed project does not impact wetlands or hydric soils.

## III. EXISTING SEWAGE FACILITIES IN THE PLANNING AREA

### A. MUNICIPAL AND NON-MUNICIPAL, INDIVIDUAL, AND COMMUNITY SEWERAGE SYSTEMS IN THE PLANNING AREA

#### 1. LOCATION, SIZE, AND OWNERSHIP OF FACILITIES

Sewage flows originating in northwest section of Upper Macungie Township are transported by gravity in the Western Lehigh Interceptor into Lower Macungie Township on its way to the Spring Creek Pump Station. The WLI and the Spring Creek Pump Station are owned, operated and maintained by the Lehigh County Authority and ranges in size from 21” to 36”.

Sewage flows originating in the upper central section of Upper Macungie Township are transported by gravity in the Upper Macungie Trunk Line (UMTL) on its way to the Spring Creek Pump Station. The UMTL is owned and maintained by Upper Macungie Township and ranges in size from 12” to 24”.

Lower Macungie Township has multiple connection points into both the WLI (both upstream and downstream of the Spring Creek Pump Station) and the UMTL.

A significant portion of the LCA flow receives pretreatment at the LCA Industrial Pretreatment Plant (PTP) located in Upper Macungie Township. This partially-treated wastewater is then conveyed to the City of Allentown’s KIWWTP via the WLI.

The Spring Creek Pump Station discharges to LCA’s Little Lehigh Relief Interceptor – upstream of both the LCA Park Pump Station (located in the Allentown Parkway) and the KIWWTP.

#### 2. PROBLEMS WITH EXISTING FACILITIES

The Western Lehigh Interceptor (WLI) originates in Upper Macungie Township and flows into Lower Macungie Township on its way to the Spring Creek Pump Station. Due to peak wet weather flows and a very flat profile, the WLI has experienced surcharging and sanitary sewer overflows (SSO’s). The KISS modeling of alternatives identified the 2-mile section of the Western Lehigh Interceptor from just north of

Hamilton Boulevard through to Spring Creek Road as being currently within 0.5 MGD of its dry weather capacity and within a decade of being well over its wet-weather level of protection (LOP) goals. The capacity issues with the WLI have been well documented and were the subject of a *2009 Sewer Capacity Assurance and Rehabilitation Program* initiated by the Wester Lehigh Sewage Partners. Subsequently, in 2018, the Western Lehigh Sewage Partners developed *Source Reduction Plans* and *Capital Improvement Plans* for each of the municipalities in the WLI, including Upper Macungie Township and Lower Macungie Township.

A more detailed description of problems with the existing facilities can be found in Appendix 6 - Arcadis Interim Pumping Solution Analysis and Cost Estimate.

# IV. FUTURE GROWTH AND LAND DEVELOPMENT

## A. IDENTIFICATION OF MUNICIPAL AND COUNTY PLANNING DOCUMENTS

### 1. ZONING AND LAND USE FOR THE PLANNING AREA

There are several land use ordinances that can be used as a guide for planning future needs in the Planning Area. Each municipality has its own land use ordinances, as follows:

- Upper Macungie Township Subdivision and Land Development Ordinance and Zoning Ordinance
- Lower Macungie Township Subdivision and Land Development Ordinance and Zoning Ordinance

The purpose set forth by these subdivision and land development ordinances is as follows:

- to provide and protect for the public health, safety, and general welfare of the community;
- to guide for future growth and development of the municipality in accordance with the Comprehensive Plan;
- to provide for adequate light, air, and privacy, to secure safety from fire, flood, and other danger, and to prevent overcrowding of the land and undue congestion of population;
- to protect the character and the social and economic stability of the municipality and to encourage the orderly and beneficial development of the municipality;
- to protect and conserve the value of the land throughout the municipality and the value of buildings and improvements upon the lands; and to minimize the conflicts among the uses of land and buildings;
- to guide public and private policy and action in order to provide adequate and efficient transportation, water, sewerage, schools, parks, playgrounds, recreation, and other public requirements and facilities;
- to provide the most beneficial relationship between the uses of land and building, the circulation of pedestrian and vehicular traffic throughout the municipality, having particular regard to the

avoidance of congestion in the streets and highways, and to provide for the proper location and width of streets and building lines;

- to establish reasonable standards of design and procedures for land development in order to further the orderly layout and use of the land; and to ensure proper legal descriptions and monumenting of land developments;
- to ensure that public facilities and available and will have a sufficient capacity to serve the proposed subdivision and/or land development;
- to prevent the pollution of air, streams, and ponds; to ensure the adequacy of drainage facilities; to safeguard the water table; and to encourage the wise use and management of natural resources throughout the western Lehigh region in order to preserve the integrity, stability, and the beauty of the community and the value of the land;
- to ensure the natural beauty and topography of the municipality and to ensure appropriate development with regard to these natural features; and
- to provide for adequate open space through the most efficient design and layout of the land.

The purpose set forth by the municipal zoning ordinance is as follows:

To promote the public health, safety, morals or the general welfare of the present and future inhabitants of the municipality by:

- Encouraging the most appropriate use of land;
- Preventing the overcrowding over land;
- Avoiding undue congestion of population;
- Conserving the value of land and buildings;
- Lessening the congestion of traffic on the roads and highways;
- Providing for adequate light and air;
- Securing safety from fire, panic, flood or other dangers;
- Facilitating the adequate provision of transportation, vehicular parking and loading space, water, sewerage, schools, parks and other public grounds and facilities;
- Giving reasonable consideration, among other things, to the character of all areas of the Township and their particular suitability for particular land uses;
- Giving effect to the policies, proposals, and the statement of community development objectives contain in the Comprehensive Plan; and
- Promoting small business development and fostering a business-friendly environment in the municipality.

### 2. IDENTIFICATION OF ZONING REGULATIONS

Each municipality in the Planning Area has its own Zoning Ordinance/Code that serves to establish regulations that apply to all zoning districts.

## B. DESCRIPTION OF GROWTH AND DEVELOPMENT

### 1. AREAS WITH EXISTING DEVELOPMENT OR PLOTTED SUBDIVISIONS

The municipalities have a network of trunk mains and tributary mains that collect flow from subdivisions within the Planning Area. The map in Appendix 2 shows the bounds of the existing collection and conveyance system. However, it is not the intent of this Plan to preclude a planning module from expanding the service area.

### 2. LAND USE DESIGNATIONS

Land use within the Planning Area is designated per each municipality's respective Zoning Ordinance. Zoning for the Planning Area can be found within each municipality's Zoning ordinance. Each Municipality submitted flow projections consistent with their respective Municipal Zoning Ordinance.

### 3. FUTURE GROWTH AREAS, POPULATION, AND EDU PROJECTIONS FOR THE PLANNING AREA

Growth and development projections for Upper Macungie Township and Lower Macungie Township for the period 2020-2050 can be found in Table 4.1. These projections were determined by each municipality based on known pending or anticipated development. These flow projections are based on only new projected planning modules and do not include previously approved modules. Individual flow projections for each Signatory, including project locations, EDUs, parcel address, type of development and development year can be found in Appendix 7.

The UMTL's existing 2021 average dry day flow entering just upstream of the Spring Creek Pump Station is approximately 0.85 MGD. Of this 2021 dry day flow, approximately 0.33 MGD is from the various Lower Macungie Township upstream connection points. The 2021 peak dry day flow was 1.40 MGD and the ultimate peak flow was 4.75 MGD.

This Special Study does not propose the expansion of any existing sewer service areas.

Table 4.1 are the projected total flows for both Townships in accordance with the DEP approved 2020 Connection Management Plan, the DEP approved Interim 537 Plan, and preliminary numbers for the Final Act 537 Plan (2026-2050).

Table 4.1

| MUNICIPALITY | 2020 FLOW PROJECTION (GPD) APPROVED | 2021-2025 FLOW PROJECTION (GPD) APPROVED | 2026-2050 FLOW PROJECTION (GPD) |
|---|---|---|---|
| Lower Macungie Township | 276,996 | 286,778 | 147,153 |
| Upper Macungie Township | 428,269 | 458,711 | 689,607 |
| Total | 705,265 | 745,489 | 836,760 |

### 4. ZONING AND/OR SUBDIVISION REGULATIONS FOR PLANNED DEVELOPMENT

The Subdivision and Land Development regulations, which govern development within the Planning Area, are included in each individual municipality's Subdivision and Land Development Ordinances. These regulations provide each municipality with design standards for open space, recreation, storm water management, sanitary sewage systems, water supply, and other public utilities.

### 5. SEWAGE PLANNING NECESSARY TO PROVIDE ADEQUATE TREATMENT FOR 5- AND 10-YEAR FUTURE PLANNING PERIODS

As noted in the previous section, this Special Study is based on a planning horizon of 2025 to 2050 as it relates to evaluating interceptor capacities.

Note that of the flows listed for UMT in Table 4.1, approximately 0.17 MGD of additional dry day peak flow is expected to enter the UMTL (upstream of the proposed connection point) by 2050. Of the flows listed for LMT in Table 4.1, approximately 0.05 MGD of additional dry day peak flow is expected to enter the UMTL by 2050. In other words, this interceptor drainage basin is well built out already. All of this has been accounted for in the hydraulic sewer model when preparing the alternative analyses.

## V. IDENTIFY ALTERNATIVES TO PROVIDE NEW OR IMPROVED WASTEWATER DISPOSAL FACILITIES

## A. CONVENTIONAL COLLECTION, CONVEYANCE, TREATMENT AND DISCHARGE ALTERNATIVES

### 1. POTENTIAL TO EXTEND EXISTING FACILITIES TO AREAS OF NEED

The purpose of this Special Study is to address the conveyance capacity within the WLI near Trexlertown. Extending existing facilities is not being considered in this Special Study. However, it is not the intent of this Special Study to preclude a planning module from expanding the service area.

### 2. NEED FOR NEW COMMUNITY SEWAGE SYSTEMS

Two alternatives are being considered to temporarily resolve the hydraulic issues in the Western Lehigh Interceptor. They are:

a. A new interim pump station located at the Lehigh County Industrial Pretreatment Plant that will divert flow away from the Western Lehigh Interceptor and pump it into the Upper Macungie Trunk Line (UMTL) at manhole PH3034A. The UMTL has adequate unused capacity and flows by gravity into the Spring Creek Pump Station. Note that the Western Lehigh Interceptor also flows by gravity into the Spring Creek Pump Station, so the impact on the Spring Creek Pump Station should be negligible.
b. A new interceptor that will parallel Iron Run and Western Lehigh Interceptors from Gun Club (U67) and Spring Creek Road (L300), providing in-line storage to handle diurnal peaks without moving dry day SSOs into Ancient Oaks section (the Western Lehigh Interceptor in this area).

The new pump station alternative is the preferred alternative. Modeling shows that at a pumping rate of 2.5 MGD, total system overflows during the model proofing period (2030) drops 94.5 % without causing overflows in the UMTL. There are 44 manhole segments in the UMLT from the proposed connection to

Spring Creek Pump Station, the average capacity is 6.74 MGD (minimum of 3.70 MGD and maximum of 18.06 MGD). Flow (design point of 2.5 MGD) entering the UMLT from the proposed pump station will be controlled via downstream control point(s) in the UMLT. The exact location(s) will be determined during the design phase. See Appendix 6 for more information on the sewer modeling.

Provisions for the Final Act 537 Plan will be made as appropriate. These potential provisions include, but are not limited to, the following: (1) parallel force main; (2) additional pump location; (3) wet well sizing. The Final Act 537 Plan that is due by March 2025 will discuss details of the potential future decommissioning of this proposed pump station.

Alternative 2, the parallel interceptor with in-line storage, was determined to not work since downstream pipes are too small to convey the projected flows. Under this alternative, all projects under consideration for the Final 537 Plan would need to be implemented first; thus, this alternative cannot be selected at this time.

The selected alternative includes the construction of a new sewage pump station and force main to transfer sewage flows away from the WLI and into the UMTL. These are the only new sewage systems being contemplated under this Special Study. This is not considered an extension of existing facilities. However, it is not the intent of this Special Study to preclude a planning module from expanding the service area.

Refer to Appendix 6 for a detailed description of each alternative.

## B. NO-ACTION ALTERNATIVE IMPACTS

The No-Action alternative could have adverse impacts on water quality/public health, growth potential, Community Economic Conditions, recreational, opportunities, drinking water sources and may create other environmental concerns.

No-Action would eventually result in an increase of sanitary sewer overflows and would adversely impact public health, recreation and drinking water supplies. Furthermore, no-action would precipitate a prohibition of new connections resulting in diminished economic conditions and potential environmental degradation.

### 1. WATER QUALITY/PUBLIC HEALTH

An increase or continuation of sanitary sewer overflows would have a negative impact on water quality and public health.

### 2. GROWTH POTENTIAL

An increase or continuation of sanitary sewer overflows would limit or prevent additional connections to the sewer system in this service area. A connection limitation or moratorium would negatively impact growth potential in the service area.

### 3. COMMUNITY ECONOMIC CONDITIONS

An increase or continuation of sanitary sewer overflows would result in a limitation or moratorium to connections as discussed in the section above. These limitations would suppress or stop economic growth in the service area.

#### 4. RECREATIONAL OPPORTUNITIES

An increase or continuation of sanitary sewer overflows would negatively impact local waterways and could limit recreational activities such as swimming, fishing and boating.

#### 5. DRINKING WATER SOURCES

An increase or continuation of sanitary sewer overflows could negatively impact downstream drinking water sources by increasing the concentrations of contaminants in the drinking water source supply.

#### 6. OTHER ENVIRONMENTAL CONCERNS

An increase or continuation of sanitary sewer overflows could negatively impact public health due to the increased potential for human direct contact with untreated sewage.

## VI. EVALUATION OF ALTERNATIVES

### A. CONSISTENCY DETERMINATION

Title 25, Chapter 71.21(a)(5) of the Pennsylvania Code requires that each alternative which is available to provide for new or improved sewage facilities for each area of need be evaluated for consistency with the objectives and policies of Comprehensive Plans, state water plans, plans developed under Chapter 94, plans developed under the Federal Water Quality Act, anti-degradation requirements, Pennsylvania's prime agriculture land policy, plans adopted by the county and approved PA DEP under the Storm Water Management Act, wetland protection, protection of rare, endangered or threatened plant and animal species as identified by the Pennsylvania Natural Diversity Inventory, and the Historical and Museum Commission. The consistency determination is as follows:

#### 1. CLEAN STREAMS LAW/ CLEAN WATER ACT

Sections 4 and 5 of the Clean Streams Law require that consideration be given to water quality management and pollution control in a watershed as a whole. The 2009 Sewer Capacity Assurance & Rehabilitation Program for the Western Lehigh Partners was superseded by the DEP approval of the Interim Act 537 Plan in June of 2021. Flow issues in the Kline's Island Sewer System and activation of bypass Outfall 003 led USEPA to issue two Administrative Orders in 2007 and 2009. Both required the KISS municipalities to reduce excessive I/I flow into the collection system. Both Administrative Orders were satisfactorily resolved.

#### 2. MUNICIPAL WASTELOAD MANAGEMENT PLANS

Upper Macungie Township and Lower Macungie Township annually submit a Chapter 94 Municipal Wasteload Management Report to DEP for their respective systems. The 2020 Chapter 94 Plans submitted by the municipalities identified their individual efforts toward extraneous I/I flow reduction. This Special Study is consistent with the plans identified in the Municipal Chapter 94 Reports.

## 3. TITLE II OF THE CLEAN WATER ACT

There are no current Section 201 Facility Plans in effect on this system. Therefore, there are no Section 201 Facility plans with which to measure consistency.

## 4. COMPREHENSIVE PLANNING

Municipal Comprehensive Plans designate areas for residential, commercial, and industrial developments and agricultural preservation and floodplain areas within the two affected municipalities. This Special Study is consistent with the Comprehensive Plans of the two affected Municipalities. A brief summary of each municipality's comprehensive plan is as follows:

### Upper Macungie Township

The Upper Macungie Township Comprehensive Plan (A Plan for Growth Management and Preservation) was adopted October of 2019. The primary goals of the plan are to protect the community character of the Township and protect its natural resources and farmland preservation along with sustainable development. This plan does not expand the Township's current Urban Growth Boundary (Act 537 Boundary) but rather encourages extending the Open Space Preservation District zoning regulations outside the Act 537 Sewer Service Area to protect natural resources.

### Lower Macungie Township

Lower Macungie Township is a part of the Southwestern Lehigh County Comprehensive Plan, adopted by the Township in April 2005. The other municipalities addressed in the Comprehensive Plan are Alburtis, Emmaus and Macungie Boroughs, and Lower Milford and Upper Milford Townships. The major recommendations include updating each municipality's development regulations to carry out the land use plan, updating existing zoning ordinances, and resolving outstanding traffic issues.

## 5. ANTIDEGRADATION REQUIREMENTS

Chapters 93, 95 and 102 under Pennsylvania's Clean Stream Law classifies all surface waters according to uses to be protected and establishes water quality criteria which need to be maintained in the surface waters. The proposed alternatives in the Special Study do not propose to increase the monthly average flow at the KIWWTP and is consistent with Chapter 95 and 102. No new surface water discharges are proposed under this Special Study.

## 6. STATE WATER PLANS

In order to meet the rapidly expanding demands for water throughout the Nation, it the policy of the Congress to encourage the conservation, development, and utilization of water and related land resources of the United States on a comprehensive and coordinated basis by the Federal Government, States, localities, and private enterprise with the cooperation of all affected Federal agencies, States, local governments, individuals, corporations, business enterprises, and others concerned. The selected approach in this Special Study does not propose any new discharges to receiving waters and is; therefore, consistent with state water plans.

## 7. PENNSYLVANIA PRIME AGRICULTURAL LAND POLICY

Both Lower Macungie Township and Upper Macungie Township have zoning and planning in place to identify and protect prime agricultural land.

Lower Macungie Township's Zoning Ordinance includes an Agricultural Protection District whose purpose is to "protect and promote the continuation of agriculture, particularly in areas with prime agricultural lands, consistent with the Governor's Executive Order 2003-2 dated March 20, 2003. To support the Governor's Executive Order regarding the irreversible conversion of prime agricultural land to uses that result in its loss as an environmental and essential food and fiber resource across the Commonwealth of Pennsylvania. To implement the 2005 Southwestern Lehigh County Comprehensive Plan and the Lehigh Valley Comprehensive Plan 2030, which emphasizes the need for effective zoning regulations to preserve prime agricultural land and to identify the AP-Agricultural Protection District as an area which includes Class I and Class II soils which are the "very best agricultural soils."

Upper Macungie has similarly addressed the protection of prime agricultural land in their Township Comprehensive Plan and Zoning Ordinance which includes the adoption of Agricultural Protection Zones (APZ). Among other strategies, the Comprehensive Plan includes "maintaining the Urban Growth Boundary (the Township's established Act 537 Growth Boundary) to assure that agricultural lands not preserved adjacent to this boundary are not targeted for development."

An overlay map of prime agricultural soils can be found in Appendix 8.

## 8. COUNTY STORMWATER MANAGEMENT PLANS

In 2005 the Lehigh Valley Planning Commission prepared an Act 167 update for the Little Lehigh Creek. The updated plan includes an exemption from certain requirements of the Ordinance in the Plan and Ordinance for new developments which are expected to have an insignificant impact on the watershed. The exemption provides that any development which would create 10,000 square-feet or less of additional impervious cover will not be required to meet the Drainage Plan. The proposed pump station anticipated in the selected alternative will be considerably less than 10,000 square-feet of impervious area.

## 9. WETLAND PROTECTION

The National Wetlands Inventory for Pennsylvania was consulted to determine if wetlands or hydric soils were located in the area of the proposed project. Appendix 4 includes a map indicating those areas identified as wetlands or hydric soils. The proposed project does not impact wetlands or hydric soils.

## 10. PROTECTION OF RARE, ENDANGERED OR THREATENED PLANT AND ANIMAL SPECIES

Pennsylvania Department of Conservation and Natural Resources Project Search (ID: PNDI-744909) was conducted to determine if the proposed project would impact endangered or threatened species. The Pennsylvania Natural Diversity Inventory (PNDI) records indicate no known impacts to threatened and endangered species and/or special concern species and resources within the project area. A copy of the PNDI result is included in Appendix 9.

#### 11. HISTORICAL AND ARCHEOLOGICAL RESOURCE PROTECTION

A.D. Marble, Inc. conducted an archaeological Area of Potential Effects (APE) study of the project area encompassed by the proposed force main. No historic artifacts were recovered during the survey. No subsurface historic or precontact features were identified within the APE during the survey. A full copy of the APE study can be found in Appendix 10.

### B. RESOLUTION OF INCONSISTENCIES

No inconsistencies were identified in the consistency evaluation.

### C. COST ESTIMATES AND PRESENT WORTH ANALYSIS

As outlined in the Arcadis memo in Appendix 6, the cost estimates for the two alternatives can be summarized as follows:

| ALTERNATIVE | PROBABLE COST |
|---|---|
| | |
| Interim Pump Station | $6,000,000 |
| | |
| Interceptor / In-Line Storage | $30,000,000 |

A present worth analysis was not completed because of the significant difference in costs between the two alternatives. Also, a 20-year present worth analysis on an interim facility may not be valid.

### D. FINANCING METHODS

This project was anticipated by the Lehigh County Authority and funding for it was built into the 2022-2026 capital plan. The funding for the Trexlertown Project would be from Lehigh County Authority cash reserves. The municipalities would be back charged in accordance with the intermunicipal agreements.

### E. ADMINISTRATIVE ORGANIZATIONS AND LEGAL AUTHORITY TO IMPLEMENT THE ALTERNATIVE

The current organizations, authorities, municipalities and their inter-municipal agreements are sufficient and legal to implement the selected alternatives. However, an interceptor operating agreement between UMT and LCA will be needed to implement this alternative.

## VII. INSTITUTIONAL EVALUATION

### A. ANALYSIS OF THE MUNICIPALITIES, PAST ACTIONS, AND PRESENT PERFORMANCE

#### 1. FINANCIAL & DEBT STATUS

Approval of the Special Study shall be based on the feasibility for implementation of the selected alternative in relation to applicable administrative and institutional requirements. The Lehigh County Authority and its partners, including Upper Macungie Township and Lower Macungie Township, have the appropriate inter-municipal agreements in place to proceed with the selected alternative. Appropriate financial planning is in place to adequately finance the project.

## 2. STAFFING AND ADMINISTRATIVE RESOURCES

Lehigh County Authority maintains adequate professional and administrative staff to perform these projects. Staff is regularly supplemented with outside professional staff to perform detailed planning, design, permitting and construction phase services.

## 3. LEGAL AUTHORITY

Through existing inter-municipal agreements, Upper Macungie Township and Lower Macungie Township have authorized Lehigh County Authority to be their agent in managing the sewer interceptors in their respective townships. Lower Macungie Township and Upper Macungie Township both own and operate their respective collection systems and are responsible for billing for sewer services. Through an existing inter-municipal agreement, the Lehigh County Authority sends a quarterly bill to the two Townships which is based on the amount of water used per property. The two Townships pay Lehigh County Authority for this service and then directly bill the Township sewer customers to recoup the cost.

a. Implement Recommendations
   The Lehigh County Authority owns and is responsible for the operation and maintenance of the WLI and Spring Creek Pump Station. LCA owns the Pretreatment Plant which is operated under contract by Jacobs. The UMTL is owned, operated, and maintained by Upper Macungie Township. LCA will own, operate, and maintain the new proposed pump station and force main. LCA will have the responsibility to build the pump station and force main described in the selected alternative.

b. Implement Operation & Maintenance Activities
   The Lehigh County Authority is responsible for the operation of the WLI and the Spring Creek Pump Station as well as the Lehigh County Pretreatment Plant. The Authority already is responsible for operations and maintenance and will continue to have the responsibility for these facilities as well as the proposed pump station and force main described in the selected alternative.

c. Set User Fees and Purchasing
   The Lehigh County Authority has an administrative staff that performs purchasing duties as part of the Authority's responsibilities under the inter-municipal agreements with Upper Macungie Township and Lower Macungie Township. The same inter-municipal agreements establish the fees that Lehigh County Authority will charge the Townships for their services. The Townships then determine the appropriate user fees to charge the Township sewer customers.

d. Negotiate Agreements
   Through existing inter-municipal agreements, Upper Macungie Township and Lower Macungie Township have authorized Lehigh County Authority to be their agent in managing the sewer interceptors in their respective townships. The Lehigh County Authority is authorized to negotiate agreements in order to perform the responsibilities outlined in the inter-municipal agreements.

e. Raise Necessary Capital
   Through existing inter-municipal agreements, Upper Macungie Township and Lower Macungie Township have authorized Lehigh County Authority to be their agent in managing the sewer interceptors in their respective townships. The Lehigh County Authority is authorized to raise capital in order to perform the responsibilities outlined in the inter-municipal agreements.

## B. INSTITUTIONAL ALTERNATIVES NECESSARY TO IMPLEMENT THE TECHNICAL ALTERNATIVE

### 1. FUNCTIONS OF EXISTING AND PROPOSED ORGANIZATIONS

The existing sewage collection and conveyance systems are owned by the respective municipality and operated by either the respective municipality or a service agreement with LCA. The municipalities have the necessary staff and resources in place for day-to-day operations and maintenance of the overall system either through their own authority or an agreement with another, and the existing municipal governments oversee this staff.

### 2. COST OF ADMINISTRATION, IMPLEMENTABILITY AND CAPABILITY OF LCA TO REACT TO FUTURE NEEDS

Lehigh County Authority has existing administrative, planning, engineering and purchasing departments already established and capable of performing multiple large infrastructure projects. The cost to administer the selected alternative can easily be included into the existing structure of the Authority. The selected alternative is a project that is very similar in nature to dozens of projects already performed by the Authority. The Authority performs robust capital planning as well as growth planning and is constantly evaluating future needs.

## C. ADMINISTRATIVE AND LEGAL ACTIVITIES TO BE COMPLETED AND ADOPTED TO ENSURE THE IMPLEMENTATION OF THE TECHNICAL ALTERNATIVE

### 1. REQUIRED ORDINANCES, STANDARDS, REGULATIONS, AND INTER-MUNICIPAL AGREEMENTS

All required Ordinances, Regulations and inter-municipal agreements are already in place. Additional Ordinances or Regulations are not required. However, an interceptor operating agreement between UMT and LCA will be needed to implement this alternative.

### 2. LEGAL DOCUMENTS

All existing Inter-municipal Agreements that are in place are adequate to address the selected alternative. Additional legal documents are not required.

### 3. DATES AND TIMEFRAMES

No documents or other administrative activities are required to implement this Plan so there are no tasks to add to the Implementation Schedule.

## D. IDENTIFY PROPOSED INSTITUTIONAL ALTERNATIVE FOR IMPLEMENTING THE SELECTED TECHNICAL ALTERNATIVE

No changes to the institutions are recommended to implement this Special Study.

The December 29, 1981 Inter-Municipal sewage agreement states in part that “the appropriate parties agree to enter into discussions and negotiations in an effort to attempt to arrive at agreements on the following matters:

1. The establishment of a regional sewer agency of some type to possibly own and operate the Treatment Plant, to plan and build any future treatment plants as they may be needed, to own and operate major interceptors and to own and operate all the collection systems themselves."

Although the Inter-municipal sewage agreement does not require the parties to agree to regionalization, the topic will be discussed as part of the Long-term Act 537 Planning process.

# VIII. IMPLEMENTATION SCHEDULE AND JUSTIFICATION FOR SELECTED TECHNICAL AND INSTITUTIONAL ALTERNATIVES

## A. IDENTIFY AND JUSTIFY THE SELECTED ALTERNATIVE BASED ON THE FOLLOWING:

The selected alternative is a new pump station located at the Lehigh County Industrial Pretreatment Plant that will divert flow away from the Western Lehigh Interceptor (WLI) and pump it into the Upper Macungie Trunk Line (UMTL).

### 1. EXISTING WASTEWATER DISPOSAL NEEDS

Sewage flow metering and modelling indicate an imminent need to divert sewage flows from the WLI. The existing interceptor is relatively flat and under surcharged conditions during dry-day flows and overflows during significant rain events. The selected alternative within this Special Study will help alleviate the dry-day surcharge conditions and will help to reduce the volume of overflows during significant rain events through 2035. The long-term solution (beyond 2035) will be identified in the Regional Act 537 Plan that is under development.

### 2. FUTURE WASTEWATER DISPOSAL NEEDS

Design of the selected alternative considers growth and flow projections from Upper Macungie Township and Lower Macungie Township through the 2050 planning horizon. Details of the Township's flow projections can be found in Appendix 7.

### 3. OPERATIONS AND MAINTENANCE CONSIDERATIONS

The existing Source Reduction Plans for collection systems and existing O&M plans for pump stations provide the necessary operations and maintenance for the selected alternative. LCA staff regularly operate and maintain pump stations throughout the LCA service area. The addition of the interim pump station will be easily assimilated into the LCA operations and maintenance program.

### 4. COST EFFECTIVENESS

Construction of a 2.5 MGD pump station and force main is a very cost-effective solution for dealing with capacity issues in a large diameter interceptor. The alternative of constructing a parallel interceptor with storage would be many times more expensive than the selected alternative.

### 5. AVAILABILITY OF MANAGEMENT AND ADMINISTRATIVE SYSTEMS

The existing Authority and Municipal institutions along with their inter-municipal agreements are adequate to implement the project selected in this Special Study. However, an interceptor operating

agreement between UMT and LCA will be needed to implement this alternative. Details of this new operating agreement are still being negotiated.

### 6. FINANCING METHODS

The Lehigh County Authority has a number of financing methods available to implement the selected alternative. The impacted Townships could fund the project, or LCA could finance the project and include the cost of financing in the quarterly user fee to the Townships. LCA also has the ability to borrow funds, issue bonds and submit grant funding applications.

### 7. ENVIRONMENTAL SOUNDNESS

The selected alternative proposes to construct a small pump station at the existing site of the Lehigh County Pretreatment Plant. The proposed force main is approximately 1.5 miles long and primarily located within the recreational parks of Upper Macungie Township. Application through the Pennsylvania Natural Diversity Index (PNDI) and the Pennsylvania Historic Museum Commission (PHMC) did not indicate any environmental or historic issues of concern. A review of national wetland inventory indicates that no wetlands will be impacted. Therefore, the selected alternative is consistent with environmental soundness and natural resource planning and preservation programs.

## B. DESIGNATION OF FINANCING PLAN

This project was anticipated by the Lehigh County Authority and funding for it was built into the 2022-2026 capital plan. The funding for the Trexlertown Project would be from Lehigh County Authority cash reserves. The municipalities would be back charged in accordance with the intermunicipal agreements.

## C. IMPLEMENTATION SCHEDULE

The following Implementation Schedule represents the necessary steps to implement the selected alternative of constructing a pump station and force main to divert sewage from the WLI to the UMTL. The table that follows is a best estimate of the time needed to complete the project recommended in this Special Study. The potential exists for changes during implementation which will be addressed and the schedule modified accordingly.

| TASK | START | FINISH |
|---|---|---|
| Submit Special Study to PADEP | | June 2022 |
| PADEP Approval of Special Study | June 2022 | October 2022 |
| Preliminary Design | March 2022 | August 2022 |
| Final Design & Submit Permits | August 2022 | December 2022 |
| Receive Permits | December 2022 | April 2023 |
| Bid Phase | May 2023 | July 2023 |
| Construction Phase | August 2023 | February 2025 |

# Lehigh County Authority – Monthly Report to Board of Directors

Upcoming Board Agenda Items & Project Updates – June 2022

Published: June 6, 2022

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

### FINANCE & ADMINISTRATION

**Project Title: Monthly Financial Review**
Division / Funding: n/a
Board Action Date: 6/27/2022
Status or Action Desired: Discussion
Project Phase: n/a

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

**Project Title: Resolution 6-2022-2: Suburban Water Division & Suburban Wastewater Division Tapping Fees**
Division / Funding: Suburban Division
Board Action Date: 6/27/2022
Status or Action Desired: Approval
Project Phase: n/a

Project Notes: Staff will present updated Suburban Water Division and Suburban Wastewater Division Tapping Fees to the Board for approval by Resolution, effective July 1, 2022. Staff Responsibility: Ed Klein

### SYSTEM OPERATIONS

**Project Title: Monthly Operations Report**
Division / Funding: n/a
Board Action Date: 6/27/2022
Status or Action Desired: Discussion
Project Phase: n/a

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

## WATER PROJECTS

**Project Title: SmartBall Inspection - 30" and 36" Transmission Main - East Side**

Division / Funding: Allentown Division
Board Action Date: 6/13/2022
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: The purpose of this project is to perform acoustic leak detection survey to identify and locate leaks along the 30- and 36-inch East Side Transmission Main using SmartBall technology. The total length of inspection is approximately three miles of steel pipe conveying water from the Water Filtration Plant to the eastern portions of the Allentown Division water distribution system. Similar SmartBall evaluations have been conducted on various other transmission mains in the past, with results used to inform LCA's pipeline prioritization program for ongoing water main replacements. Approval for the study through a Professional Services Authorization will be requested at the 6/13/2022 Board meeting. Staff Responsibility: Chris Moughan

**Project Title: Water Filtration Plant: Filter Upgrade Project**

Division / Funding: Allentown Division
Board Action Date: 6/27/2022
Status or Action Desired: Approval
Project Phase: Design Phase

Project Notes: The WFP filter underdrains and associated mechanical equipment are approximately 60 years old and have reached the end of their useful life. This near-term Master Plan project is intended to improve reliability, extend service life, enhance high level of service and maintain regulatory compliance. Preliminary engineering was completed in Spring 2022, and the basis of design includes replacement of the filter underdrains, installation of an air scour backwash system, replacement of old control panels and SCADA integration , and media replacement. The Conceptual Design was submitted to the City on 5/11/2022, and design phase will proceed upon receipt of city conceptual design approval. Design phase authorization is to be requested at the 6/27/2022 LCA Board meeting. Staff Responsibility: Chuck Volk

## WASTEWATER PROJECTS

**Project Title: KISS System Modeling - Capacity Problem Definition**

Division / Funding: City of Allentown (AO)
Board Action Date: 6/13/2022
Status or Action Desired: Approval
Project Phase: Planning Phase

Project Notes: As preparation work on the Act 537 Plan continues, the next major milestones involve (1) the selection of design storms to be modeled and (2) the development of figures and tables indicating overflow locations under various modeled scenarios. This includes an analysis of the prior 20 years' worth of rainfall data. Upon a thorough review of the data, the 3, 5, 10, and 20 year stand-in events will be selected for alternatives modeling. After these storms are selected, figures will be developed to show overflow locations under 2021 and 2050 flow conditions. Authorization will be requested at the June 13, 2022 Board meeting. Staff Responsibility: Phil DePoe

**Project Title: Resolution 6-2022-1: Trexlertown Act 537 Special Study**

Division / Funding: Suburban Division | Board Action Date: 6/13/2022

Status or Action Desired: Approval | Project Phase: Planning Phase

Project Notes: In late February 2022, the formal municipal approval process for the Trexlertown Act 537 Special Study started. The Upper Macungie Township, Lower Macungie Township, and Lehigh Valley Planning Commissions then started their 60-day alloted time window for review. The 30-day public comment period opened on May 2, 2022 and ended on June 1, 2022. Although not required by Act 537 regulations, an LCA Resolution is being requested at the June 13, 2022 Board meeting as an illustration of support for the submission. Upon receipt of the two required Resolutions from the Townships, the Trexlertown Act 537 Special Study will be submitted to DEP. The primary focus of the Trexlertown Act 537 Special Study is the alternatives analysis completed to address the "Trexlertown Bottleneck" area in the Western Lehigh Interceptor, which wll result in the Upper Western Lehigh Pump Station and Force Main project that is currently in design phase. Staff Responsibility: Phil DePoe

**Project Title: Regional Sewer Capacity & Wet-Weather Planning: Engineering & Program Support**

Division / Funding: Suburban Division | Board Action Date: 6/27/2022

Status or Action Desired: Approval | Project Phase: Planning Phase

Project Notes: As defined at the November 8, 2021 Board meeting, consultants were assigned various roles for the region's Act 537 planning process. As program manager, AECOM is assisting LCA in numerous engineering and coordination tasks to help achieve the region's current DEP deadline for submission. These periodic authorization requests are an extension of ongoing engineering and program support that AECOM provided in 2013-2016 and 2019-2021. In addition to coordinating and evaluating the efforts of other consultants, AECOM will also focus on continued analysis of the Pretreatment Plant upgrade option (preliminary report was delivered in October 2021), regulatory (DRBC) review of the alternatives, and continued financial analysis through the cost-revenue benefit tool. Authorization approval of Professional Services Authorization for Act 537 Plan Program Management support in 2022 was granted at the February 14, 2022 Board meeting. A second authorization in 2022 is being requested at the 6/27/2022 Board meeting to bring further clarity to the 537 planning process. At this meeting, AECOM will be in attendance to provide a brief look at the planning efforts to date and will provide a preview of the future planning efforts through September 2024. Staff Responsibility: Phil DePoe

**Project Title: Park Pump Station Phase 2 Upgrade**

Division / Funding: Suburban Division | Board Action Date: 6/27/2022

Status or Action Desired: Approval | Project Phase: Construction Phase

Project Notes: The Park Pump Station Phase 1 Upgrade was completed in early 2020, and consisted of new pumps, new pump control center with variable frequency drives, new automatic transfer switch, new wet well level control system, upgraded HVAC system, roof replacement, and related mechanical improvements. The existing 40-year-old generator does not have the capacity to handle the full loads of the upgraded station at 100% design flow and is at the end of its useful life. The Phase 2 Upgrade project consists of replacement of the original station backup generator system. Authorization for Phase 2 design phase was granted at the 3/22/2021 Board meeting. Design was completed in early 2022 and the project was advertised for bid in May 2022 and bids will be opened in June. Construction phase authorization is to be requested at the 6/27/2022 LCA Board meeting. Staff Responsibility: Chuck Volk

## *PART 2 – Project Updates – Information Items*

**Project Title: LCA-South Whitehall Township Emergency Water System Interconnection**
Division / Funding: Suburban Division — Board Action Date: n/a
Status or Action Desired: Updated — Project Phase: Design Phase

Project Notes: An emergency water system interconnection is currently being designed to connect LCA's Central Lehigh Division with the South Whitehall Township water system for emergency back-up water supply. An agreement regarding the interconnection is required to complete the required permitting of the interconnection, which the Board approved at the May 23, 2022 Board meeting. Construction is expected to start mid-June 2022, with formal start-up scheduled for the first week of July. Staff Responsibility: Phil DePoe

**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 moving from an Automatic Meter Reading (AMI) system to an Advanced Metering Instructure (AMI) system for the Suburban Division. An engineer was retained to prepare a site alternative study to meet our AMI goal of maximizing service coverage while minimizing the amount of new infrastructure (towers) needed. In addition to LCA owned properties, the study is evaluationg co-locatable existing structures where new tower construction and local zoning and land development approvals would not be required. By optimizing the site selection process, we will reduce juridictional approvals required, impact to neighbors and construction costs. Upon completion of the study, a presentation of findings will be given to the LCA Board. Staff Responsibility: Amy Kunkel

**Project Title: Heidelberg Heights Wastewater Treatment Plant - Mechanical Screen Project**
Division / Funding: Suburban Division — Board Action Date: n/a
Status or Action Desired: New — Project Phase: Design Phase

Project Notes: Since acquiring the Heidelberg Heights WWTP in 1998, LCA has performed numerous plant upgrades to extend service life and meet DEP discharge requirements. The original plant headworks consists of a comminutor and manual bar screen that are obsolete and allow passage of rags and bulky debris into the plant, which creates downstream issues with pump clogging and instrumentation fouling. This project consists of the installation of a mechanical screen to remove the rags from the influent waste stream. The screen system is equipped with an auger that compactsd and conveya the materioal to a trash container. Design phase is in progress and the project is anticipated to be bid in summer 2022. Staff Responsibility: Chuck Volk

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

| Project Category | Project Title | Division / Funding | Project Phase | Staff Responsibility |
|---|---|---|---|---|
| Finance & Administration | LCA Enterprise Resource Planning (ERP) Needs Assessment & Roadmap | Internal Services | Planning Phase | Liesel Gross |
| Finance & Administration | LCA Strategic Plan - 2022 Quarterly Progress Reporting | n/a | n/a | Liesel Gross |
| Finance & Administration | Suburban Water & Sewer Facilities - SCADA System Upgrade | Suburban Division | Construction Phase | Chris Moughan |
| System Operations | Large Diameter Valve Prioritization Program | Allentown Division | Planning Phase | Chris Moughan |
| 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 | 2022 Commercial Meter Replacement Project | Suburban Division | Construction Phase | Amy Kunkel |
| Water - Suburban | Far View Farms Pump Station Demolition | Suburban Division | Construction Phase | Ed Hoyle |
| Water - Suburban | Arcadia West Water Storage Tank Replacement | Suburban Division | Construction Phase | Amy Kunkel |
| Water - Suburban | Water Main Replacement Program Cycle 6 | Suburban Division | Design Phase | Jason Peters |
| 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: 2022 Indenture Upgrades | Allentown Division | Construction Phase | Bryan Geissel |
| Water - Allentown | Water Main Replacement Program Cycle 6 | Allentown Division | Design Phase | Jason Peters |

| Project Category | Project Title | Division / Funding | Project Phase | Staff Responsibility |
|---|---|---|---|---|
| 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 & System Master Plan | Allentown Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | Sanitary Sewer Collection System: Rain Derived Inflow and Infiltration (RDII) Analysis - Signatory Systems | Allentown Division | Planning Phase | Phil DePoe |
| Sewer - Act 537 | KISS System Modeling - Rain Derived Inflow and Infiltration (RDII) Analysis - City System | City of Allentown (AO) | Planning Phase | Phil DePoe |
| Sewer - Act 537 | City of Allentown: 2022 Nighttime Weiring | 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 | Upper Western Lehigh Pump Station and Force Main | Suburban Division | Design Phase | Amy Kunkel |
| Sewer - Act 537 | Western Lehigh Service Area: 2022 Nighttime Weiring & Budget Amendment | 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 |

| Project Category | Project Title | Division / Funding | Project Phase | Staff Responsibility |
|---|---|---|---|---|
| Sewer - Act 537 | Industrial Pretreatment Plant Master Plan | Suburban Division | Planning Phase | Phil DePoe |
| Sewer - Suburban | Park Pump Station Phase 2 Upgrade | Suburban Division | Design Phase | Chuck Volk |
| Sewer - Suburban | Western Lehigh Manhole Rehabilitation Project - Phase 3 | Suburban Division | Design Phase | Jason Peters |
| Sewer - Suburban | Heidelberg Heights 2021 and 2022 Sanitary Sewer Replacement Project | Suburban Division | Construction Phase | Jason Peters |
| Sewer - Allentown | Kline's Island WWTP: 2022 Indenture Upgrades | Allentown Division | Construction Phase | Bryan Geissel |
| Sewer - Allentown | Kline's Island WWTP: Dechlorination System Pilot Program | Allentown Division | Preliminary Design | Bryan Geissel |
| 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 | Lehigh Street (Rte. 145) Water and Sewer Main Relocation Project | Allentown Division | Construction Phase | Jason Peters |
| Sewer - Allentown | Sanitary Sewer Collection System: I&I Source Reduction Program Plan (Year 3) | City of Allentown (AO) | Construction Phase | Phil DePoe |