

# Kline's Island Sewer System (KISS): Act 537 Planning Update

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Presented to:  
Lehigh County Authority  
Board of Directors

March 14, 2022

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# Agenda

REVIEW PROJECT HISTORY AND  
TIMELINE

CRITICAL PATH ITEMS

REVIEW OF PAST AND CURRENT  
CONSULTANT AUTHORIZATIONS

# Recent Act 537 History

Regional Flow Management Strategy submitted to EPA on August 4, 2018

EPA Administrative Orders lifted on March 11, 2019

November 2018 – July 2019

- Sustained rainfall causes KIWWTP to exceed a Chapter 94 hydraulic permit value

August 2019 – December 2019

- Negotiations with Pennsylvania DEP over a Connection Management Plan (CMP)

2020 CMP submitted to DEP on December 31, 2019

DEP approves 2020 CMP on January 17, 2020

2021-2025 CMP (“Interim Act 537”) submitted to DEP on September 4, 2020

DEP approves the Interim Act 537 on June 25, 2021

DEP deadline for Final Act 537 is March 2025

# TASK ACTIVITY REPORT (TAR)

- *Board member request*
- *What is it?*
  - Required form to be submitted to DEP
  - Outlines 8 required sections of the Act 537 Plan
  - Provides consultant's (ARRO's) hours and costs for each Section
  - Used as a record of expenses in case planning reimbursement grants are funded (currently no funding available in the program)
  - *See next page for TAR form*

TASK/ACTIVITY REPORT

Lehigh County Authority (LCA), City of Allentown and Contributing Municipalities  
 Municipality

Lehigh County  
 County

LCA and City of Allentown Wastewater Service Areas  
 Proposed Planning Area

February 26, 2022  
 Date of Report

Date Completed plan will be submitted to DEP

March 31, 2025

Estimated Cost of Plan

\$184,705

Column Headings May Be Changed To Suit the Needs of the Planning Effort

Use Additional Sheets if Necessary

Sheet 1 of 1

TASK/ACTIVITY NUMBER FROM APPENDIX I	PROJECT MANAGER		PRINCIPAL		UNUSED		GIS SPECIALIST		ADMINISTRATIVE		UNUSED		UNUSED		UNUSED		UNUSED		UNUSED		UNUSED		UNUSED		UNUSED		EXPENSES		SUB TOTAL	
	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE	HRS	RATE
	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST	HRS.	COST
I. Previous Wastewater Planning	4	\$600																												\$1,190
II. Physical & Demographic Analysis	12	\$2,491																												\$4,764
III. Existing Sewage Facilities	30	\$6,239																												\$6,837
IV. Future Growth and Land Development	40	\$6,305																												\$10,576
V. Identify Alternatives to Provide New or Improved Wastewater Disposal Facilities	36	\$7,474																												\$7,474
VI. Evaluation of Alternatives	14	\$2,907																												\$5,195
VII. Institutional Evaluation		\$1,248																												\$1,248
VIII. Implementation Schedule and Justification for Selected Technical & Institutional Alternative																														\$603
Miscellaneous																														\$17,225
Subtotal - Engineering Costs	606	\$136,274	14	\$2,907			86	\$12,501	192	\$11,959																				\$17,225
TOTALS	606	\$136,274	14	\$2,907			86	\$12,501	192	\$11,959																				\$184,705

8 sections required for Act 537 Plan

ARRO's total cost of \$184,705, authorized by LCA Board on 2/28/2022

Michael A. Scholer, PE, BCEE (Print Name)

Signature

Title

LCA Representative (Print Name)

LCA Representative Signature

City of Allentown (Print Name)

City of Allentown Representative Signature

SIGNATURE

TITLE

SIGNATURE

TITLE

Alburtis Borough			North Whitehall Township		
Coplay Borough			South Whitehall Township		
Emmaus Borough			Salisbury Township		
Hanover Township					
Lower Macungie Township					
Lowhill Township			Weisenberg Township		
Macungie Borough			Whitehall Township		

All municipalities must sign the TAR to illustrate commitment to the planning effort and cost.

# Interim Act 537 Plan: *Outlines Work the KISS Municipalities Committed to Completing (2021-2025)*

## KLING STUBBINS ISLAND SEWER SYSTEM

### Interim Act 537 Plan

SUBMITTED TO:

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION

SUBMITTED BY:

**KLING STUBBINS ISLAND SEWER SYSTEM MUNICIPALITIES**

Prepared by:

ARRO Consulting, Inc.

108 W. Airport Road

Lititz, PA 17543



# Interim Act 537 Plan: Work Schedule

Work Categories & Description	Start	Finish
<b>Immediate:</b> <ul style="list-style-type: none"> <li>■ Sewage Billing Meter (SBM) Upgrades &amp; data validation / capture method</li> <li>■ Defined scope and meter placement for Flow Characterization Study</li> <li>■ Agreement on Cost-Sharing for Planning work</li> <li>■ Municipal Flow Projections → 2050</li> <li>■ Part 2 Permit Resubmission for the KIWWTP hydraulic rerate</li> </ul>	As soon as possible	December 2020 <i>* Timing required to design flow metering program</i>
<b>Preliminary:</b> <ul style="list-style-type: none"> <li>■ Preliminary Treatment Alternatives Evaluation –Resolve concepts with preliminary regulatory and engineering evaluation so signatories can review impacts to inter-municipal agreements, cost-sharing, etc.</li> </ul>	As soon as possible	September 2021 <i>* Timing required to have inputs available for flow modeling work</i>
<b>Flow Monitoring &amp; Model Calibration:</b> <ul style="list-style-type: none"> <li>■ Flow Monitoring</li> <li>■ Rainfall Monitoring</li> <li>■ RDII Characterization</li> <li>■ KISS Model Calibration</li> <li>■ Preliminary modeling of alternatives</li> <li>■ Update treatment alternatives analysis</li> </ul>	January 2021	June 2022
<b>Trexlerstown Special Planning Study:</b> <ul style="list-style-type: none"> <li>■ Develop Alternatives</li> <li>■ Select Alternative</li> <li>■ Pre-Planning Meeting with PADEP</li> <li>■ Develop Special Planning Study</li> <li>■ Submit Special Planning Study</li> <li>■ Prepare Part II Permit Application</li> </ul>	January 2021	January 2023

# Interim Act 537 Plan: Work Schedule

<b>Administrative Issues:</b> <ul style="list-style-type: none"> <li>■ Inter-Municipal Agreements</li> <li>■ Discuss Regional Approach</li> <li>■ Develop Cost Sharing Agreement</li> </ul>	September 2021	June 2024
<b>Alternatives Analysis:</b> <ul style="list-style-type: none"> <li>■ KIWWTP vs. Pretreatment Plant</li> <li>■ Storage vs. conveyance/pumping alternatives</li> <li>■ Peak flow capacity alternatives</li> <li>■ I&amp;I removal impacts on alternatives</li> <li>■ Preliminary cost estimates</li> </ul>	June 2022	June 2023
<b>Selection of Preferred Alternative:</b> <ul style="list-style-type: none"> <li>■ Detailed cost estimates</li> <li>■ Address impact to inter-municipal agreements</li> <li>■ Develop implementation schedule</li> <li>■ Stakeholder input</li> </ul>	June 2023	June 2024
<b>Act 537 Plan Development (Write the plan)</b>	June 2024	September 2024
<b>Public Notice &amp; Municipal Adoptions</b>	September 2024	February 2025
<b>Final Submission</b>		March 2025



# Critical Path Items – Simplified

Model Calibration (Summer 2022)

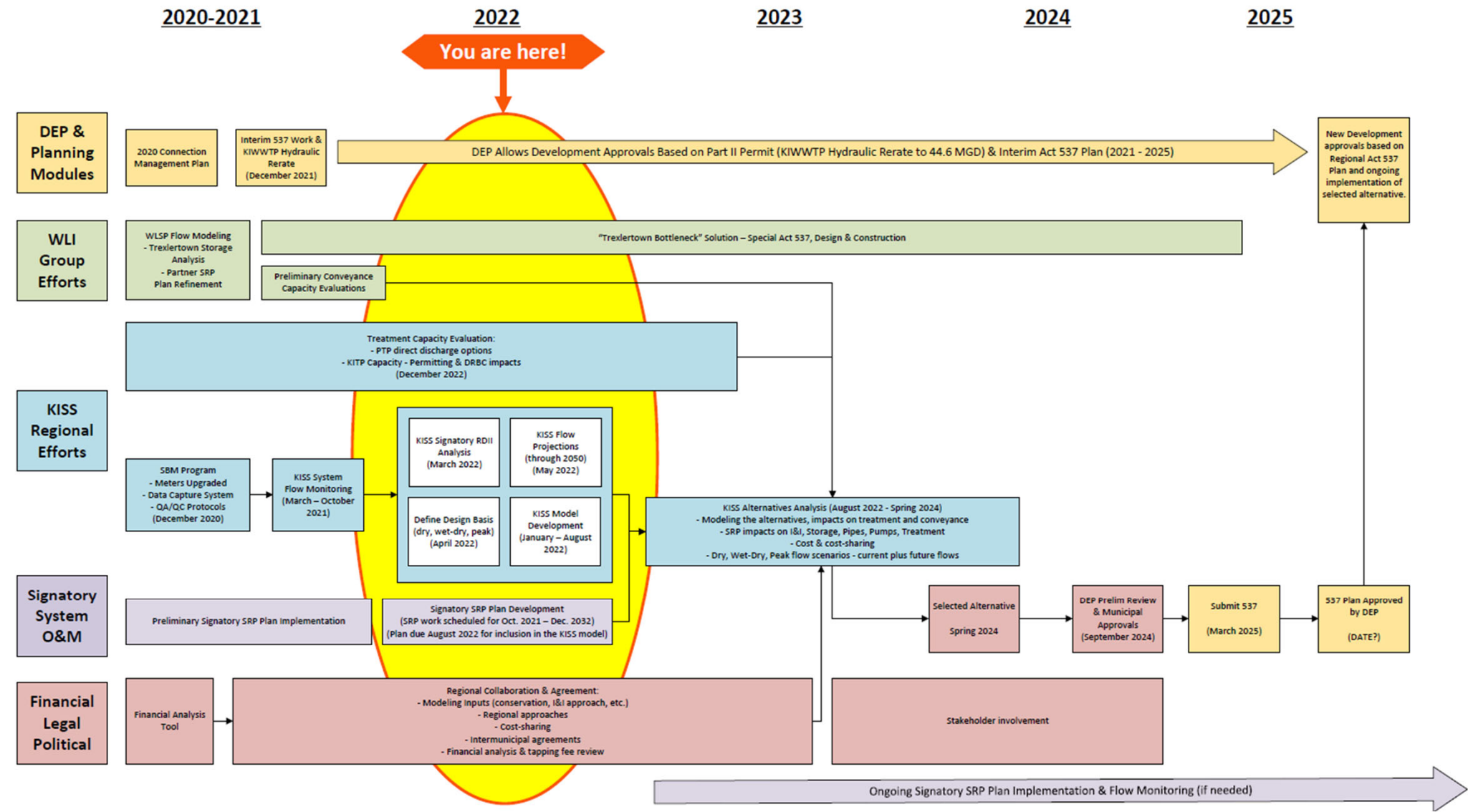
Preliminary Screening of Alternatives

Final Screening of Alternatives

Writing of Act 537 Chapters 5, 6, and 7

Municipal Approvals & DEP Submission (March 2025)

Kline’s Island Sewer System – Pathway to Regional Sewage Facility Plan in Support of Continued Economic Vitality in Lehigh County



# Major Components of Engineering Analysis

## PTP Upgrade Option

- Treatment Technology Analysis
- Constructability of Force Main
- DRBC / Regulatory Impacts
- Cost-Sharing Impacts
- Potential Reduction in Downstream Conveyance Upgrades
- Long-Term Capital Needs (not driven by Act 537)

## KIWWTP Treatment Options

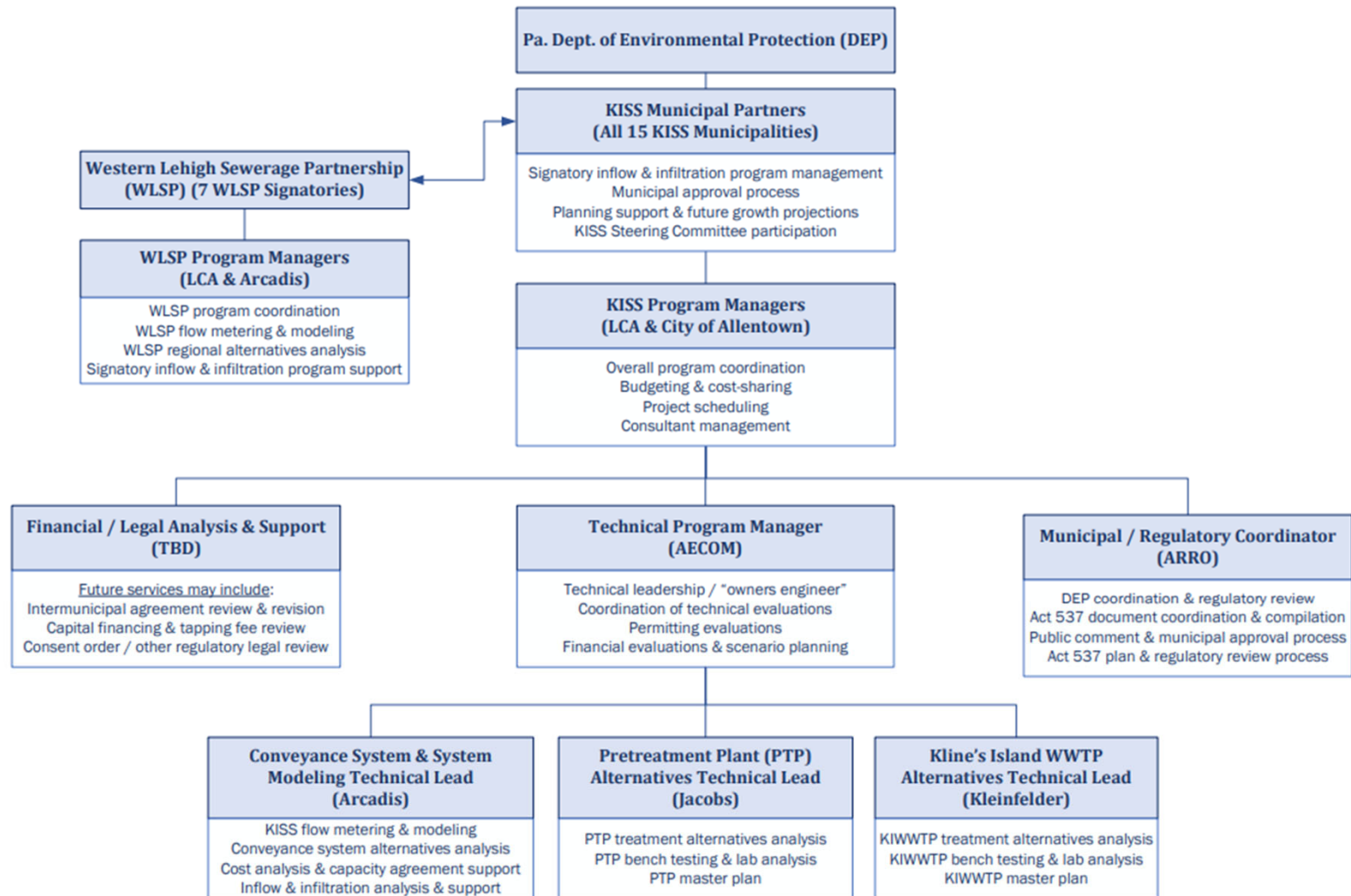
- BioActiflo vs. Parallel Wet-Weather Treatment
- Flow Equalization & Storage
- Flow-Triggered Dry-Weather Treatment Needs
- Hydraulic Capacity Allocation to Signatories
- Long-Term Capital Needs (not driven by Act 537)

## System Modeling / Conveyance Alternatives

- Address Current System Bottlenecks
- Largest Cost Component
- Constructability of Parallel Interceptors
- Municipal Growth Projections (through 2050)
- Municipal System Leakage / Projections for Removal

# KISS Act 537 Plan Roles

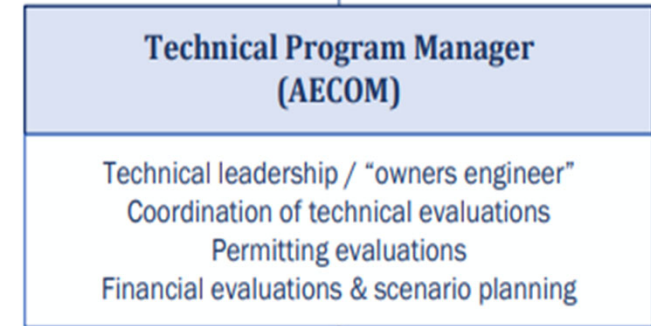
## Kline's Island Sewer System (KISS) Act 537 Plan – Roles & Responsibilities



# Consultant Authorizations (since 2019): AECOM

## Past Authorizations / Completed Work (since 2019):

- Overall program management & engineering coordination
- Pretreatment (PTP) Upgrade Option analysis, including construction analysis of force main
- Chemically Enhanced Primary Treatment (CEPT) analysis & case study review
- BioActiflo (high rate wet-weather treatment) analysis & bench test at KIWWTP
- Delaware River Basin Commission (DRBC) regulatory review
- Revenue planning tool development
- **Past Authorizations: \$539,276**



## Current Work:

- Continued program management & engineering coordination
- Finalize PTP Upgrade Option recommendation
- Finalize DRBC regulatory analysis
- Run current scenarios through revenue planning tool
- **Open Authorization: \$100,000**

# Consultant Authorizations (since 2019): ARRO

## Past Authorizations / Completed Work (since 2019):

- Develop Interim Act 537 Plan document
- Coordinate communication & plan review process with DEP
- Coordinate municipal reviews & approvals of Interim Plan
- Ongoing municipal coordination & communication
- Develop “special study” Act 537 Plan for Trexlertown area solution (Upper Western Lehigh pump station & force main)
- **Past Authorizations: \$130,647**

### Municipal / Regulatory Coordinator (ARRO)

DEP coordination & regulatory review  
Act 537 document coordination & compilation  
Public comment & municipal approval process  
Act 537 plan & regulatory review process

## Current Work:

- Compile engineering, financial & other inputs for 8 sections of Act 537 Plan
- Coordinate ongoing communication & progress reviews with DEP
- Develop Final Act 537 Plan document
- Coordinate municipal approval process
- **Open Authorization: \$184,705**

# Consultant Authorizations (since 2019): ARCADIS

## Past Authorizations / Completed Work (since 2019):

- Annual Western Lehigh sewer signatory engineering support
- Sewage billing meter evaluation, data analytics, and signatory support for metering upgrades
- Western Lehigh system flow metering, model calibration, rehab effectiveness analysis (2020)
- Western Lehigh scenario modeling (in support of PTP Upgrade Option analysis and “Trexlerstown Bottleneck” solution)
- 2021 flow characterization study (includes flow monitoring, QA/QC work, and related tasks)
- **Past Authorizations: \$1,768,500**

## Current Work:

- KISS Model development
- Rain Derived Inflow & Infiltration (RDII) analysis (all KISS municipal sewer systems)
- Western Lehigh sewer signatory engineering support
- **Open Authorizations: \$1,168,000**

### WLSP Program Managers (LCA & Arcadis)

WLSP program coordination  
WLSP flow metering & modeling  
WLSP regional alternatives analysis  
Signatory inflow & infiltration program support

### Conveyance System & System Modeling Technical Lead (Arcadis)

KISS flow metering & modeling  
Conveyance system alternatives analysis  
Cost analysis & capacity agreement support  
Inflow & infiltration analysis & support

# Consultant Authorizations (since 2019): JACOBS

## Past Authorizations / Completed Work (since 2019):

- Plant operations support for PTP Upgrade Option analysis
- PTP capacity analysis & plant modeling
- PTP Upgrade Option engineering alternatives analysis
- Chemically Enhanced Primary Treatment (CEPT) bench test at PTP
- **Past Authorizations: \$472,243**

### **Pretreatment Plant (PTP) Alternatives Technical Lead (Jacobs)**

PTP treatment alternatives analysis  
PTP bench testing & lab analysis  
PTP master plan

## Current Work:

- Continued plant operations support for PTP Upgrade Option analysis
- PTP master plan development
- **Open Authorization: \$166,700**



# Consultant Authorizations (since 2019): KLEINFELDER

## Past Authorizations / Completed Work (since 2019):

- KIWWTP “max month” study
- DEP Part 2 permit submissions, KIWWTP hydraulic re-rate from 40 MGD to 44.6 MGD
- KIWWTP peak capacity evaluation
- KIWWTP wet-weather parallel treatment option engineering and cost analysis
- Annual on-call support for KIWWTP options analysis
- **Past Authorizations: \$185,500**

### **Kline’s Island WWTP Alternatives Technical Lead (Kleinfelder)**

KIWWTP treatment alternatives analysis  
KIWWTP bench testing & lab analysis  
KIWWTP master plan

## Current Work:

- On-call engineering support for KIWWTP options analysis
- **Open Authorization: \$40,000**

# Act 537 Consultant Authorization Summary (since 2019)

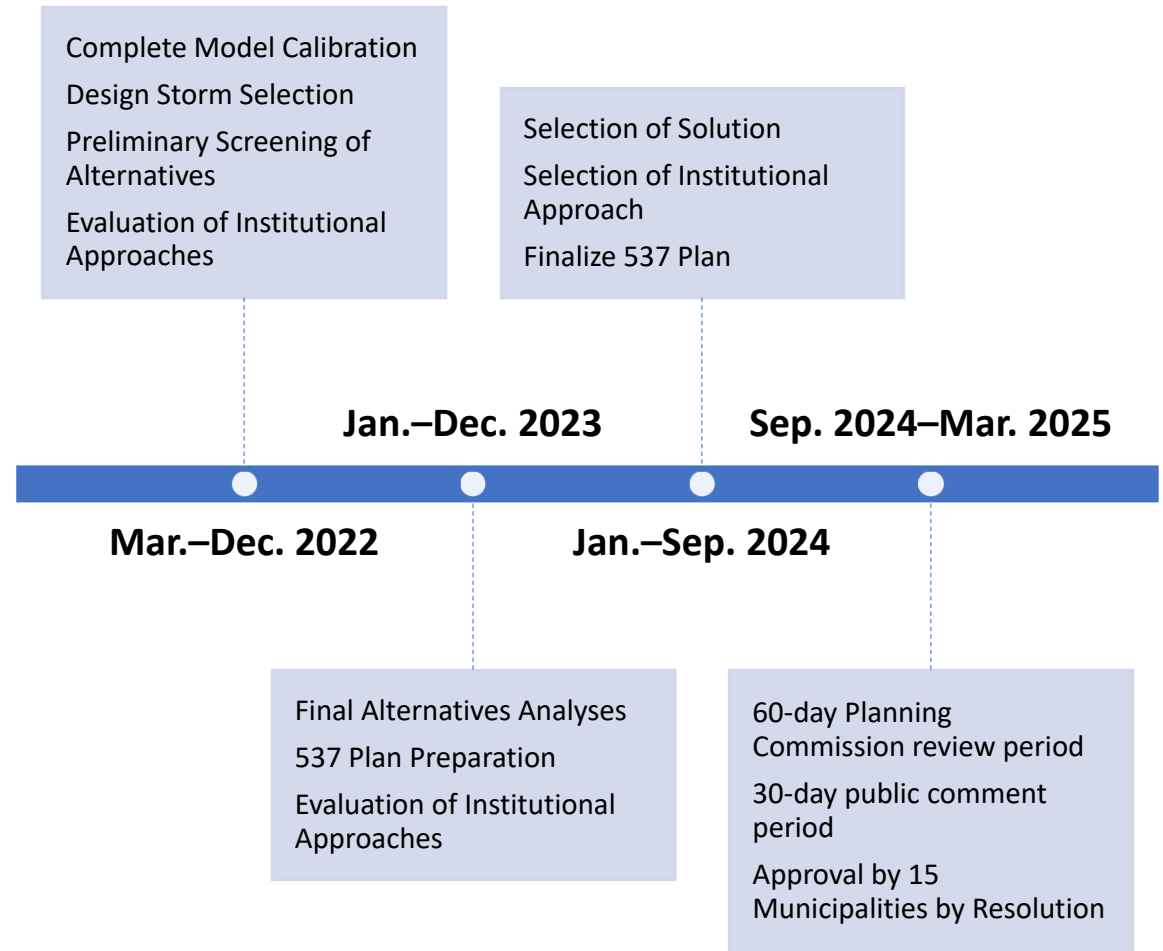
	City Funded (AO)*	LCA Allentown Division*	LCA Suburban Division**	Total	Future
AECOM	\$18,300	-	\$620,976	<b>\$639,276</b>	\$TBD
ARRO	\$276,090	-	\$39,262	<b>\$315,352</b>	\$TBD
Arcadis***	\$1,823,550	\$110,000	\$1,002,950	<b>\$2,936,500</b>	\$TBD
Jacobs	\$0	-	\$638,943	<b>\$638,943</b>	\$TBD
Kleinfelder	\$148,500	-	\$77,000	<b>\$225,500</b>	\$TBD
<b>TOTAL</b>	<b>\$2,266,440</b>	<b>\$110,000</b>	<b>\$2,379,131</b>	<b>\$4,755,571</b>	\$TBD

\* All expenses funded by the City or the LCA Allentown Division are shared with the KISS municipalities

\*\* All expenses funded by the LCA Suburban Division are shared with the Western Lehigh municipalities

\*\*\* Arcadis costs include Flow Assessment Services (FAS) contract for 2020 (WLSP) and 2021 flow monitoring program (KISS)

What do  
the next  
three years  
look like?



# Questions?

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