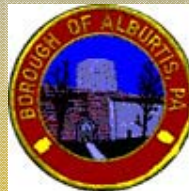




Lowhill Township
New Tripoli, PA 18066



Weisenberg Township
Lehigh County, Pennsylvania
Established 1755



LEHIGH COUNTY REGIONAL SEWER SYSTEM

Kline's Island WWTP EPA Administrative Order Public Meeting

Lehigh County Government Center
November 13, 2014

Agenda



- Administrative Order Overview
- Technical Presentation
- Questions
- Exhibits & Discovery

What's an Administrative Order?

An Administrative Order is a non-judicial enforcement action in the form of a legal document directing an entity to take action to come into compliance.

EPA Administrative Order Overview

A prior Administrative Order was issued in 2006 to address a specific location at Kline's Island Wastewater Treatment Plant (KIWTP) in Allentown where untreated wastewater was being discharged to the environment during peak flow periods following major storm events.

A second Administrative Order ("AO") was issued on 9/28/2009 and included EPA's findings that the regional sewer system has discharged untreated wastewater from various discharge points located prior to the headworks of KIWTP, implicating all entities connected to the regional system.

Note: More details about these discharges will be provided later in the technical portion of the presentation.

Administrative Order Details

The Order for Compliance included:

- Elimination of sanitary sewer overflows (SSOs) in the regional sewer system serving Lehigh County communities by December 31, 2014.
- The City and all Signatories to cooperate as necessary to comply & report regularly on progress

Administrative Order Details

Entities Named:

Cities: Allentown

Boroughs: Emmaus, Macungie & Alburtis

Townships: South Whitehall, Salisbury, Hanover,
Upper Macungie, Lower Macungie, Upper Milford,
Weisenberg & Lowhill

Municipal Authorities: Coplay Whitehall Authority,
Upper Macungie Township Authority & Lehigh
County Authority

Purpose of Tonight's Meeting

- Share details of progress toward compliance with the Administrative Order
- Highlight cooperative efforts among communities included in this effort
- Provide overview of work that remains to be completed and investments required moving forward
- Answer questions and hear your ideas!

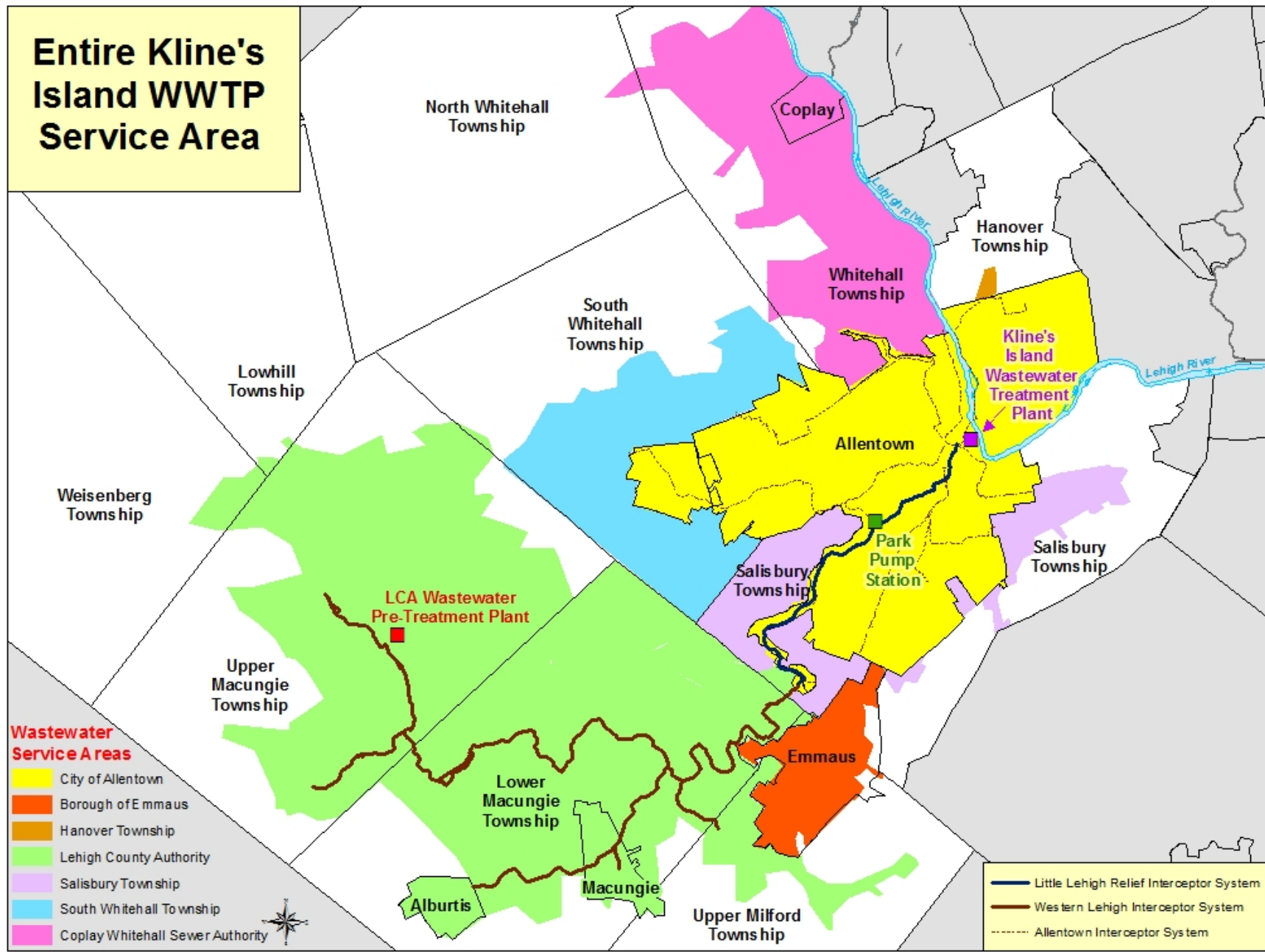
Technical Presentation

Tony Dill, Arcadis



- Sewer System Overview
- Overflow History
- Work Completed to Date
- Demonstrated System Improvements
- Proposed Future Efforts
- Path Forward and Schedule

Entire Kline's Island WWTP Service Area



Background Information - Aerial View of Existing Plant



KIWWTP Outfall 003



KIWWTP Outfall 003

- Treatment plant headworks outfall discharging to the Little Lehigh Creek
- Constructed as a functional part of the original 1929 treatment plant that provides emergency relief at the plant headworks
- Recognized as a permitted outfall up to and including the 1980 plant NPDES permit

Outfall 003 Activation History since AO issued

DATE	CAUSE	DURATION (hrs.)	VOLUME (mgd)	RAINFALL (in)	REOCCURRENCE INTERVAL (yrs.)
4/30/2014	Mechanical Problem - Bar Screens & Hydraulic Capacity Exceeded	11.33	1.17	3.68	>2
2013	No Bypasses	-	-	-	-
9/6/2011	Hydraulic Capacity Exceeded - Lee	23.50	2.09	2.71	>1
8/28/2011	Hydraulic Capacity Exceeded - Irene	19.25	4.66	3.62	>2
9/30/2010	Mechanical Problem - Bar Screens & Hydraulic Capacity Exceeded	13.17	5.32	8.01	>100
2009	No Bypasses	-	-	-	-
2/13/2008	Hydraulic Capacity Exceeded	8.48	0.74	3.41	>2
2007	No Bypasses	-	-	-	-
LEGEND No Bypasses Capacity Exceeded					

Interceptor Overflow History

CONVEYANCE SYSTEM OVERFLOW EVENTS

<u>EVENT DATE</u>	<u>COA</u>	<u>LCA</u>	<u>CAUSE</u>
4/30 TO 5/1/2014	X	X	Excessive rainfall
6/2/2012	X	X	Excessive rainfall
11/23/2011	X		Excessive rainfall
9/6 to 9/9/2011	X	X	Tropical Storm Lee
8/27 to 8/31/2011	X	X	Hurricane Irene
3/11/2011	X		Excessive rainfall
10/1/2010	X	X	8.08" of Rain
3/30/2010	X		Rain
12/9/2009	X		Rain
2/13/2008	X	X	Rain
3/27/2007	X	X	Rain
6/28/2006	X	X	Rain



11-23-2011 SSO – Manhole K_3_4



05/01/2014

Wet Weather Improvement

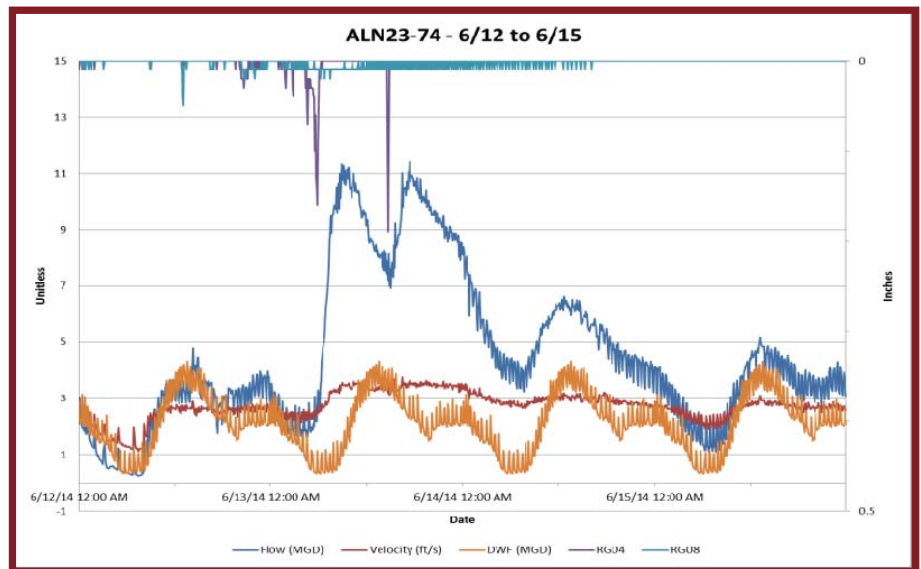
5 Year Summary of Activities



Progress Toward System Characterization

Flow Monitoring – Allentown

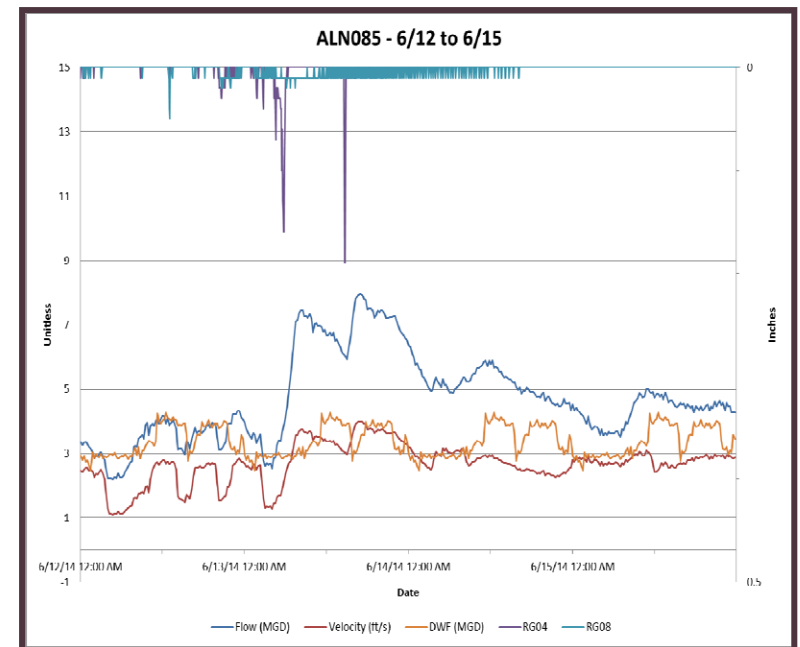
- 90-day study in 2008 of 169 flow meters in Allentown. RDII and infiltration for each basin was determined.
- Allentown Targeted Flow Monitoring Program conducted in 10 high priority Basins for 3 months in 2009.



Progress Toward System Characterization

Flow Monitoring – Western Lehigh Sewerage Partners (WLSP)

- 6-month study in 2009 of 148 flow meters in the WLSP. RDII and infiltration for each basin was determined.
- Rehabilitation effectiveness metering to quantify I/I benefits of rehab.
- 10 meters recently installed for KISS model re-calibration purposes.



Progress Toward System Characterization

Western Lehigh Sewerage Partners (WLSP)

The communities in Western Lehigh County formed a Partnership to work together on the AO. The communities include:

- Borough of Alburtis
- Borough of Macungie
- Lehigh County Authority (LCA)
- Lower Macungie Township
- Lowhill Township
- Upper Macungie Township
- Upper Milford Township
- Weisenberg Township

Progress Toward System Characterization

Flow Monitoring – Salisbury

- 3 month study in 2011 of 3 basins. Basins were selected based on data from 13 permanent meters.
- Calculated RDII and determined which sub-basins exhibit the highest I&I potential.
- Re-metering of the 3 basins is currently out to bid. Re-metering will determine rehabilitation effectiveness using EPA SSOAP software.



Progress Toward System Characterization

SSES Activities



Respondent	SSES Activity
City of Allentown	• Preliminary SSES activities are 80% complete • Activities include: pipe and manhole inspections, 3,826 LF of heavy cleaning, 2,700 building inspections per year. • Potential additional work includes: test and sealing of sewer lines, point repairs, and smoke testing.
Borough of Emmaus	• 3,856 of 3,860 Basement Inspections - all catchments • Pipe inspections
Hanover Township	• Above grade wet weather observation, entire tributary area • Smoke testing • Basement inspection on 8 of 11 homes • Wet weather observations at 3 manholes • Pipe, manhole and lateral inspections
WLSP	• Weiring of 152 of 152 catchments • Smoke Testing of 97 of 152 catchments • Basement inspections in 100 of 152 catchments • Above grade storm water observations in 83 of 152 catchments • Pipe and manhole inspections
Salisbury Township	• Above grade stormwater inspections of manholes.

Progress Toward System Characterization

Manhole and CCTV Inspection

- 712,183 LF of CCTV
- 1,750 Manhole Inspections completed
- 78 Laterals televised

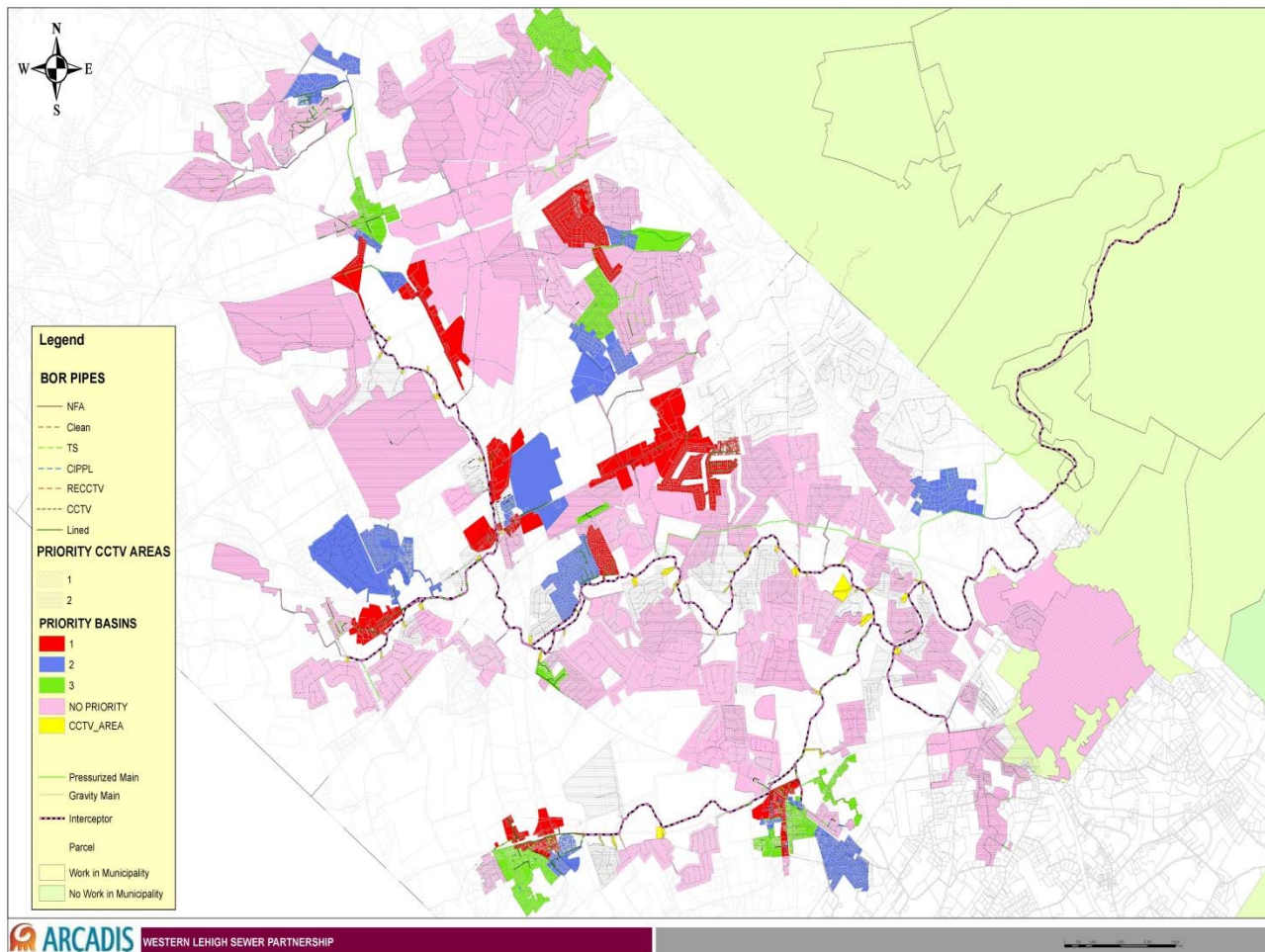
*Inspections performed in Allentown, WLSP, Hanover Township, Salisbury Township, and Emmaus. Includes CCTV reported from 2003 to present.



Progress Toward System Characterization

Prioritization

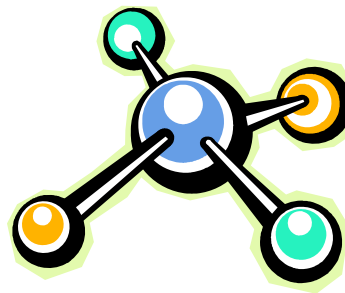
- Allentown identified leakiest 8% (23 miles) of City system in Primary and Secondary Basins
- WLSP identified leakiest 23% (59 miles) of WLSP system in 1st, 2nd, and 3rd Priority Areas

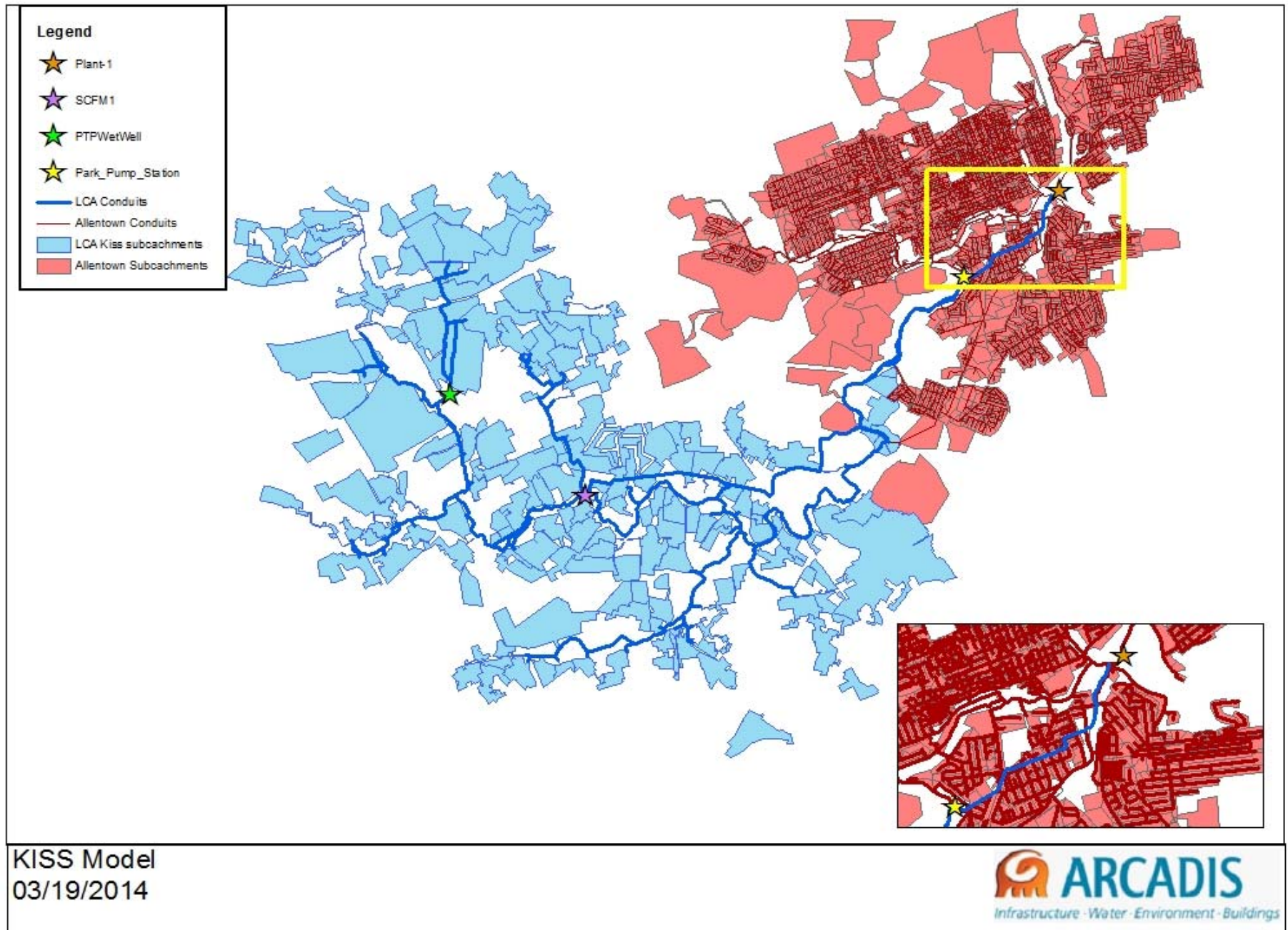


Progress Toward System Characterization

Hydraulic Modeling

- Initially, two hydraulic models were created, one of the WLSP system and one of Allentown.
- These have been combined into the Klines Island Sewer System (KISS) model.
 - Alternative analysis
 - Level of Control evaluations
- 4 time horizons (2009, 2020, 2030, 2040) flows considered.





Other Engineering Projects

- KIWWTP Influent Screen Replacement – should reduce blockages and mechanical failures
- Flow Equalization Basin – 3MG tank built at the Wastewater Pre-Treatment Plant



Progress Toward Eliminating Inflow

No. of Basement Disconnections*	No. of Manhole Dishes*	No. of Manhole Frame and Covers Reset/ Replaced*	Cleanout Cap Repair/ Replacement	Roof Drains Disconnected	Lateral Repairs	Trestle and Bridge Clearings
267	1,847	265	126	133	68	26

* Exact quantity unknown, reported quantity is known quantity only.



Progress Toward Eliminating Infiltration

No. of Manhole Chimney Seals	No. of Manholes Lined	No. of Manholes Grouted	No. of Manholes Replaced	Cured-in-Place Pipe (LF)	Lateral Replacement	Sewer Line Replacement (LF) *	Pipe Tested and Sealed (LF) *	No. of Laterals Tested and Sealed	No. of Pipe Joint Sleeve Repairs	Chemical Root Treatment (LF)
123	50	74	8	72,967	21	4,230	42,777	54	14	62,843

* Quantity estimated due to differences in signatory reports, assumed 10ft/ excavated point repair and 4 ft joint spacing.



Funding

Respondent	Cost to Date
City of Allentown	\$2,306,763
Borough of Emmaus	\$454,000 [2003-2013]
Hanover Township	\$257,465
WLSP	\$9,292,521
Salisbury Township	\$1,020,071
TOTAL*	\$13,330,820

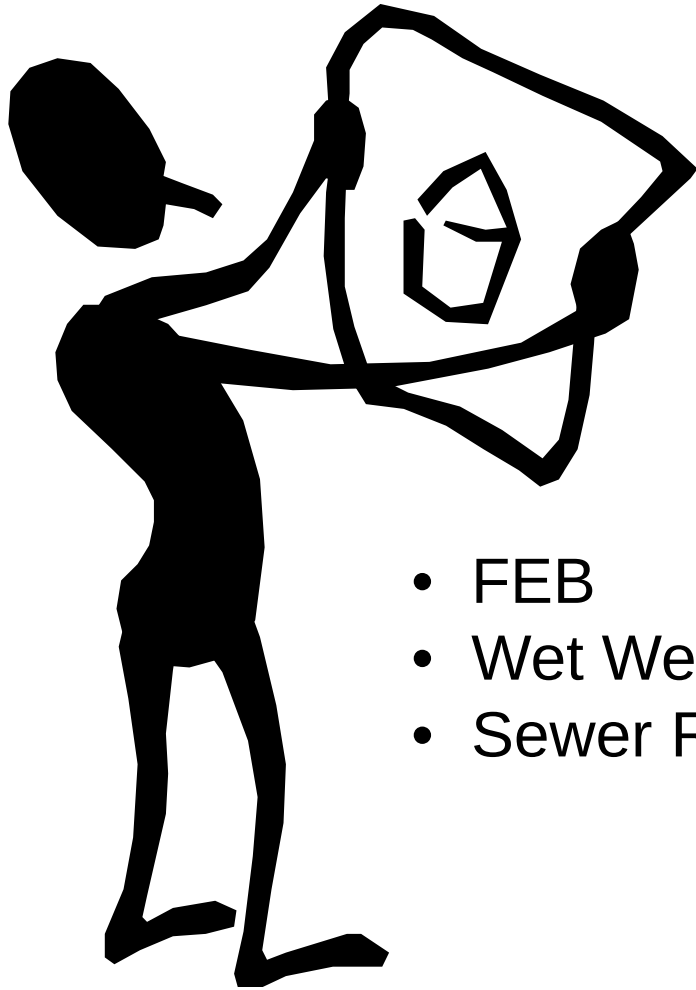
*Additional money was spent by South Whitehall Twp and Coplay Whitehall Authority

Current/Planned Activities

Respondent	Future Activities
City of Allentown	• Complete manhole lining project, 2014 • Complete manhole chimney repair projects, 2015 • Perform additional hydraulic modeling and prepare the Phase 2 Corrective Action Report • Design and construction of Phase 2 recommended improvements.
Borough of Emmaus	• Continue CCTV inspection in next 5 years to complete CCTV and repairs in 2 basins. • Implement a manhole inspection pilot study to determine if large scale manhole inspection program will reduce I/I.
WLSP	• Alternatives Evaluation – narrow potential alternatives to address the current and future flows in the WLSP • Capital Improvements Plan – recommend repair, rehabilitation, new projects or combination of work to reduce SSOs, report anticipated schedule and life-cycle costs of work. • Complete Test and Seal Project
Salisbury Township	• Complete Test and Seal Project • Complete re-metering project • Continue rehabilitation as part of the Capital Improvement Plan



Demonstrated System Improvements

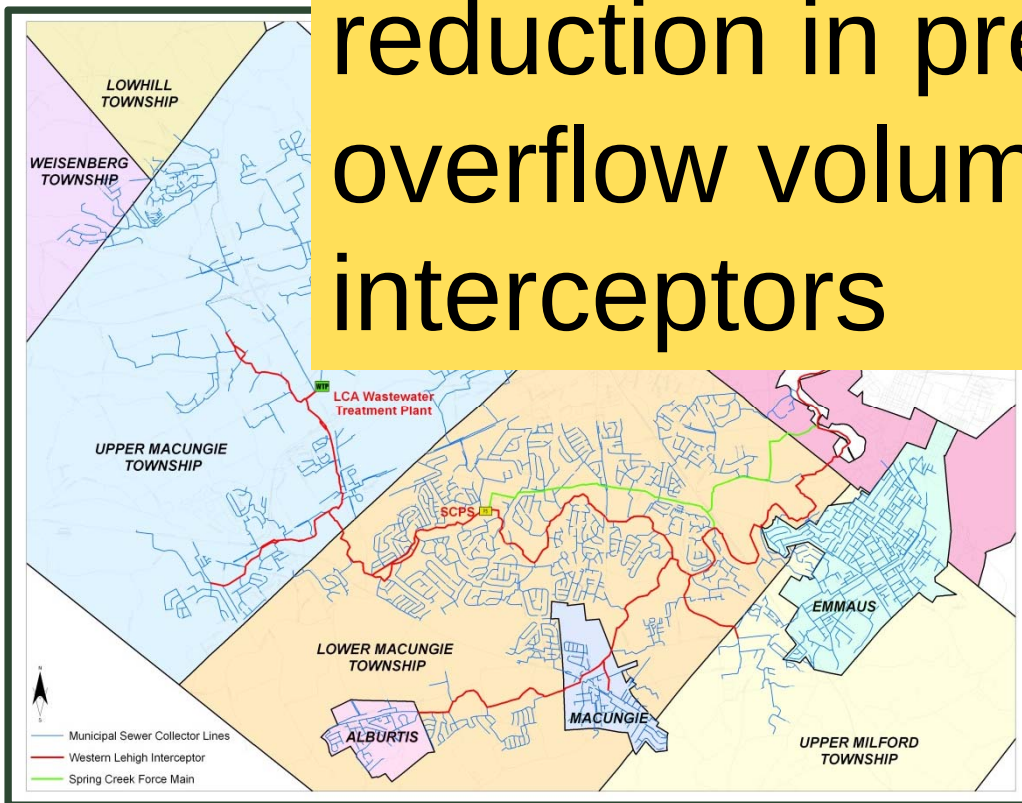


- FEB
- Wet Weather Operating Logic
- Sewer Rehab Source Removals

Demonstrated System Improvements

3 MG flow equalization basin (FEB) at LCA wastewater pretreatment plant helps manage wet-weather flows

Greater than 50% reduction in predicted overflow volume in interceptors



Pipe Rehabilitation



Work Remaining to be Done

1. Complete Remaining Preliminary Alternative Evaluations
2. Consolidate Signatory approaches and goals
3. Conduct Final Alternative Analyses
4. Develop project sequence, cost, and schedule (Signatory submission of plan)
5. Complete Signatory budget planning
6. Finalize Capital Improvements Plan(CIP) with budget and schedule (Regulatory submission of plan)
7. Implement AO/SCARP CIP (Multi-year implementation)

Current AO Status

- More work is needed to meet the AO
- A Plan of Action has been developed which outlines the work remaining and a timeline
- Completion of the Investigative Phase will be completed by the end of 2017
- Completion of Capital Improvements necessary to meet the AO is expected to take more than 8 years
- Signatories are requesting an extension from EPA
- Combined cost of meeting the requirements of the AO is unknown but expected to be over \$50 million

Questions?

