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**LEHIGH COUNTY AUTHORITY**



## **Successful Implementation of a Main Replacement Program in Allentown**

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Jason Peters

**ISO** 9001:2008  
CERTIFIED



# In 2013 LCA assumed control of the Allentown Water and Wastewater Systems

## ALLENTOWN WATER AND SEWER UTILITY SYSTEM CONCESSION AND LEASE AGREEMENT

dated as of

\_\_\_\_\_, 2013

by and between

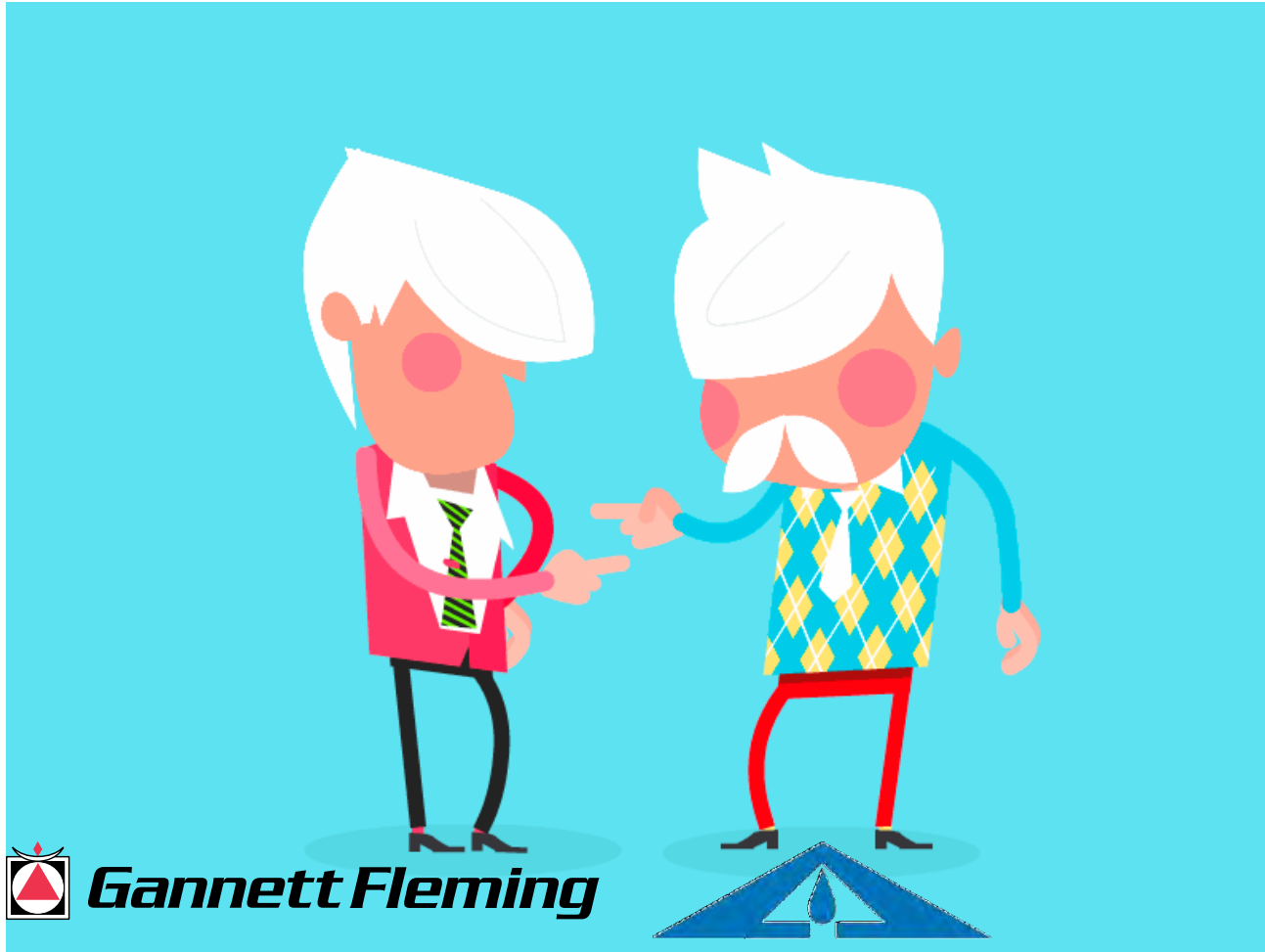
CITY OF ALLENTOWN

and

LEHIGH COUNTY AUTHORITY

- **50-year Concession and Lease Agreement**
- **Minimum Standards & Performance Measures**
- **Replacement of 1 mile in Year 1 and 2 miles/yr thereafter**
- **Currently in Cycle 4**

# LCA Identified Need to Contract With a Consultant to Manage and Execute Program



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# Establish A Defendable Process to Prioritized the Main Replacements

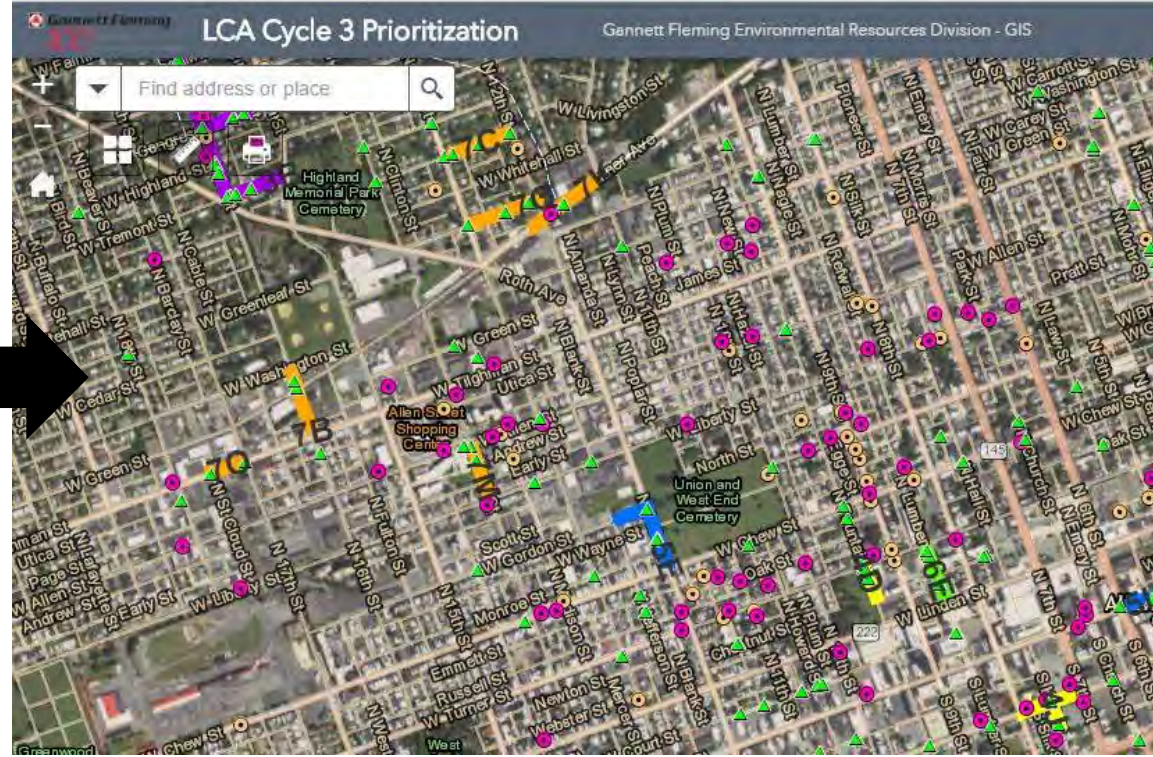


- **240 miles of main**
- **100 miles of cast iron main**
- **60 miles > 100 years old**
- **40 miles of spun cast iron**

# Use of GIS for a Practical and Efficient Main Prioritization Program

MAIN BREEKES 5" PIT EAST CLIP

DATE	LOCATION	DATE	LOCATION	DATE		
91 923	MADISON, S. of Walnut	1905	L	65	7 <sup>th</sup> S. of Cleveland	1909
92 923	S. 4 <sup>th</sup> of Main	1911	L	65	HALL at Market	1911
93 926	1005 BLOCK UTICA	1911	L	65	HAMILTON & CENTER	1913
94 930	S. Hall & Walnut	1924	L	65	4 <sup>th</sup> & Gordon	?
95 48	5 <sup>th</sup> St, N. of Union	?	L	66	Symons, River & Lincoln	1904
96 42	500 Block Elmwood	1909	L	67	2 <sup>nd</sup> N. 5 <sup>th</sup>	1906
97 44	Block on Hazel	?	L			
98 442	TILGHMAN at LYRAR	1914	L	67	716 S. HALL	1909
99 452	W. 1 <sup>st</sup> St	1910	L	68	749 BALDWIN	84
100 53	W. 1 <sup>st</sup> St, E. of Ridge	1914	L	68	112 S. HALL	1932
101 54	Block N. of Liberty	1908	L	68	1215 LAWRENCE	?
102 54	429 N. B <sup>th</sup>	?	L	69	4 <sup>th</sup> & COOPER	?
103 55	Felony at 2 <sup>nd</sup>	1901	L	69	22 <sup>nd</sup> & ALLEN	?
104 50	Block N. of Walnut	1911	L	70	15 <sup>th</sup> E. WALNUT	1911
105 57	N. 5 <sup>th</sup> S. of Lincoln	1875	L	70	CHURCH & BRADLEY	1918
106 60	FRONT & COMMERCE	1902	L	70	RAILROAD & FURNACE	?
107 60	4 <sup>th</sup> at Geneva	1903	L			
108 61	MADISON, S. of Walnut	1903	L			
109 63	8 <sup>th</sup> S. of Lincoln	?	L	71	1900 Block DUBOIS	1910
110 62	LIBERTY, R. of 1 <sup>st</sup> St	1892	L	71	Block N. of Walnut	1911
111 63	624 N. FURNACE	1910	L	71	6 <sup>th</sup> & SUMNER	1900
112 63	OH & JAMES	1905	L	71	UNIVERSITY	1925
113 63	LUMBER & COOP	1911	L	71	FURNACE & WATER	602
114 62	327 S. 7 <sup>th</sup>	1914	L	71	2 <sup>nd</sup> & COOPER	?
115 63	N. 6 <sup>th</sup> on Oak	?	L	73	Geneva St. E. of 2 <sup>nd</sup>	1924
116			L	73	Block N. of	1911
117 64	14 <sup>th</sup> of Lincoln	1914	L	74	6 <sup>th</sup> N. of Hamilton	?



# Rank Pipe Segments Based on Prioritization Scoring

Break Score	Diameter Score	Material/Age Score	Pressure Score	Sinkhole Score	Customer Score	TOTAL SCORE	Base Score Rank
45	0.5	5	1	0	0.0	51.5	1.0
25	0.5	5	1	0	0.0	31.5	2.0
25	0.5	5	1	0	0.0	31.5	3.0
25	0.5	5	1	0	0.0	31.5	4.0
25	0.5	5	0	0	0.7	31.2	5.0
25	0	5	1	0	0.0	31.0	6.0
20	0.5	5	1	0	0.0	26.5	9.0
20	0	5	2	0	0.5	27.5	7.0
20	0.5	5	1	0	0.3	26.8	8.0
20	0.5	5	1	0	0.0	26.5	10.0
20	0.5	5	1	0	0.0	26.5	11.0
20	0	5	1	0	0.3	26.3	12.0
20	0	5	1	0	0.2	26.2	13.0
15	1	5	2	0	3.0	26.0	14.0
20	0	5	1	0	0.0	26.0	15.0
20	0	5	1	0	0.0	26.0	16.0
20	0	5	1	0	0.0	26.0	17.0
20	0.5	5	0	0	0.3	25.8	18.0
20	0.5	5	0	0	0.0	25.5	19.0

# Adjust Yearly Prioritization Based on Utility Coordination

UGI Score	PENNDOT Score	COA Streets Score	Adjusted Score
0	0	0	51.5
0	0	0	31.5
0	0	0	31.5
0	0	0	31.5
0	0	0	31.2
0	0	0	31.0
2	0	0	28.5
0	0	0	27.5
0	0	0	26.8
0	0	0	26.5
0	0	0	26.5
0	0	0	26.3
0	0	0	26.2
0	0	0	26.0
0	0	0	26.0
0	0	0	26.0
0	0	0	26.0
0	0	0	25.8
0	0	0	25.5

# Establish 5-Year Prioritization Plan

WATER MAIN REPLACEMENT PROJECT								
PIPE PRIORITIZATION PROGRAM								
CYCLE 2 - PRIORITIZATION (9-16-14)								
MAP ID	Street	Start Intersection	End Intersection	Length (approx ft)	Main Diameter	Main Material	Greater than 100 yrs	Number of Breaks
1A	S Ivy St / Private ROW / E Eaton St	E Johnston St	Mountain Park Rd	1,693	4, 6, & 8	CI	No	26
1B	N Main St	North of W Allen St	North of W Chew St	1,672	6 & 8	CI/PC	No	18
1G	College Dr / Honichick Dr / Park Blvd	12" main west end of College Dr	Hamilton Blvd	1,617	6 & 8	CI	No	11
1C	Broder St SW	Fernor St	Klein St	1,352	6 & 8	CI	No	10
1D	Tremont St	N 12th St	N 14th St	1,180	6 & 8	CI/PC	No	8
1E	S Leh St	W Elm St	North of Mosser St	1,019	8	CI	No	7
1F	Miller St & Reading Rd	Just south of Hamilton/W of College Dr	S Ott St	2,128	8	CI	No	8
		TOTAL LINEAL FOOT (approximate)				10,661		
		TOTAL LINEAL MILEAGE (approximate)				2.02		



# Coordination with Stakeholders Key to Successful Design



# Key Components of Bid/Construction

- **Bid Phase**
  - PennBid
  - Scheduling
  - Combining Projects
  - Materials Procurements
- **Construction Phase**
  - COA cooperation
  - Use of local inspector with GF CM
  - Daily field log

# Annual Lessons Learned Meeting = Continuous Program Improvement

- *Learn from Mistakes*
- *Understand Problems*
- *Recognize Successes*
- *Retain Knowledge*
- *Reduce Future Risk*
- *Improve Future Performance*

## In Closing....

### **1. Establish Practical/Efficient Main Prioritization Program**

- Level of Sophistication matches Need

### **2. Collaborate with Key Stakeholders**

- Build relationships and establish team approach

### **3. Lessons Learned for Continuous Improvement**

# Questions??



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