Manchester's CMOM Program

2009-2019

CITY OF MANCHESTER
ENVIRONMENTAL PROTECTION DIVISION
DEPARTMENT OF PUBLIC WORKS

NEWEA Annual Conference & Exhibit
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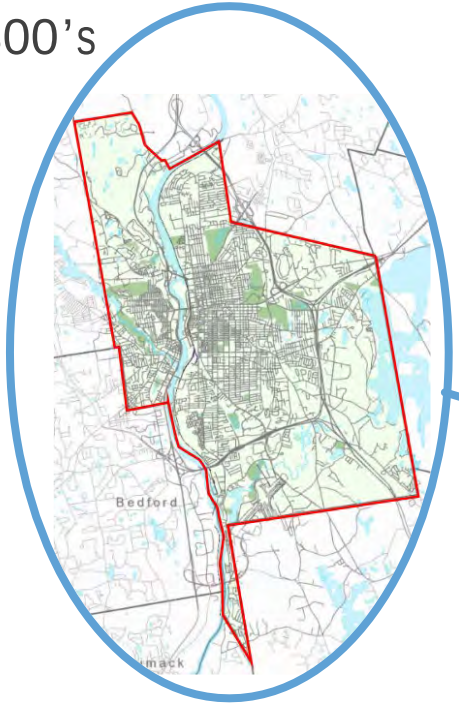
Jeremy Bouvier, P.E. and Frederick J. McNeill, P.E.

Agenda

- Background
- What is CMOM?
- Phase I (Infancy) – 2009 to 2013
- Phase II (Starting to Crawl) – 2014 to 2017
- Phase III (Learning to Walk) – 2018 to present
- Future Plans (Hope to run!) – The next decade
- Lessons Learned
- Questions

City of Manchester Background

- Population 110,000
- Industrialized early 1800's
- Amoskeag Mills
  - Largest Single Mill in the World
- Post Industrial Depression – 1930
- Revitalization 1900 to Present



Environmental Protection Division

- Manchester's wastewater utility created in 1975
- Division of Department of Public Works
- An "enterprise"
- Staff of 43
- 15 acre campus
- 10 buildings
  - Administration
  - Operations
  - Maintenance

Manchester's Wastewater Infrastructure – WWTP

- 1975 – 26 mgd
- 1994 – Upgrade to 34 mgd
- 2016 – Upgrade to 42 mgd
- Serves four communities
- Metro pop. – 172,000
- Investing $100 million over 20 years

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Manchester's Wastewater Infrastructure
Pump Stations

- 12 pump stations
- From small (100,00 gpd) to large (25 mgd)
- Full upgrade completed in 2013 including two new stations

Manchester's Wastewater Infrastructure – Pipelines

- 385 Miles of sewer
  - 50% "combined" system
  - 11,000 SMHs
  - 15 CSO outfalls
- 100 Miles of pipe, 100 years old or older

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Manchester's Stormwater Infrastructure – Pipelines

- 190 miles of drains
  - 12,000 CBs
  - 3,000 DMHs
- Six Urban Ponds

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What is CMOM??????

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CMOM is……

- **C**apacity
- **M**anagement
- **O**perations
- **M**aintenance

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CMOM - History

- EPA formalized sewer system maintenance program
- Outgrowth of 1994 CSO Policy
- Response to continued SSO problems
- Goals
  - Reduce regulatory non-compliance
  - Higher level of service to customers
  - Proactive instead of reactive

CMOM – History (continued)

- Program never adopted as national policy
  - Draft rule w/d from Federal Register under Bush Administration in 2001
- EPA published 126 Page Guideline Booklet in January 2005
- Regulators incorporate CMOM requirements in NPDES Permits, Consent Decrees, and as state regulations
- Manchester's 2008 NPDES Permit
  - Mapping
  - O&M Manual
  - Annual Reporting

The Start of Manchester's CMOMs program

- Aging and failing infrastructure
  - Over 100 miles of sewer over 100 years old
  - 50% combined system
  - Climate change
- No source of sustainable funding
- Proactive approach

Phase 1 – 2009 to 2013

Brown AND Caldwell

- Mapping
- O&M Manual
- Annual Reporting
- SOPs
- Criticality Assessment
- Capital Improvements Plan

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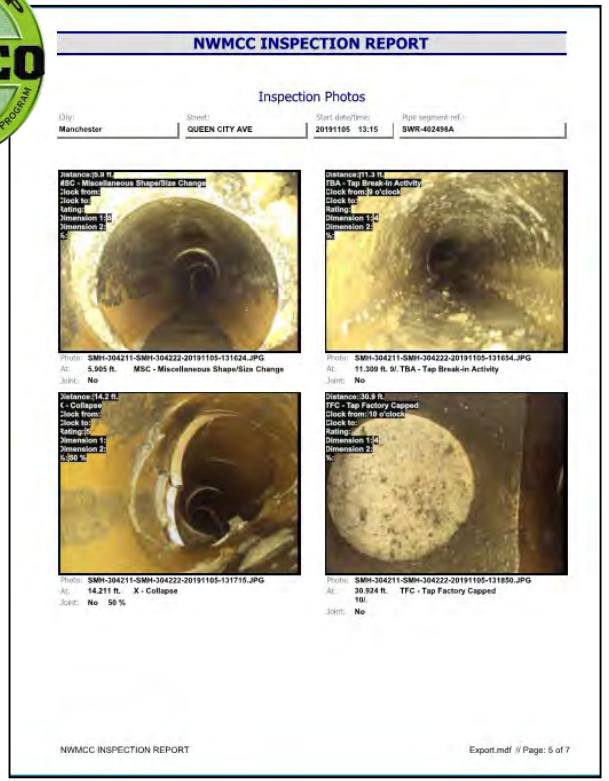
TV Inspection Program – Backbone of CMOM

- PACP/MACP Certified
  - Contractor requirement
  - City staff certified
- SMH Inspections
- Data Management
  - Critical success factor


NWMCC INSPECTION REPORT

Inspection Photos

City:	Street:	Start date/time:	Pipe segment ref.:
Manchester	QUEEN CITY AVE	20191105 13:15	SWR-402498A

Distance:9.9 ft
MSC - Miscellaneous Shape/Size Change
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
%

Photo: SMH-304211-SMH-304222-20191105-131624.JPG
At: 5.905 ft. MSC - Miscellaneous Shape/Size Change
Joint: No

Distance:31.3 ft
TBA - Tap Break-In Activity
Clock from:9 o'clock
Clock to:
Rating:
Dimension 1:
Dimension 2:
%

Photo: SMH-304211-SMH-304222-20191105-131654.JPG
At: 11.309 ft. 9/ TBA - Tap Break-in Activity
Joint: No

Distance:14.2 ft
X - Collapse
Clock from:
Clock to:
Rating:
Dimension 1:
Dimension 2:
% 50 %

Photo: SMH-304211-SMH-304222-20191105-131715.JPG
At: 14.211 ft. X - Collapse
Joint: No 50 %

Distance:30.9 ft
TFC - Tap Factory Capped
Clock from:10 o'clock
Clock to:
Rating:
Dimension 1:
Dimension 2:
%

Photo: SMH-304211-SMH-304222-20191105-131850.JPG
At: 30.924 ft. TFC - Tap Factory Capped
10/
Joint: No

NWMCC INSPECTION REPORT

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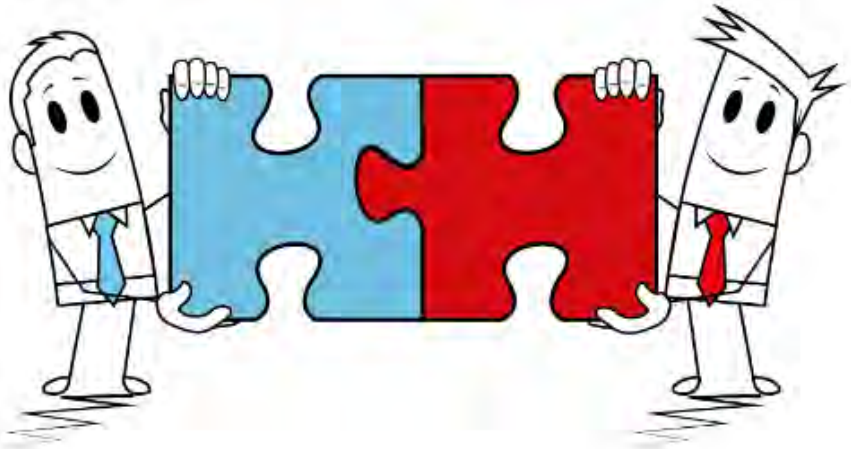
TV Inspection Program – Backbone of CMOM

- Establish multiyear contracts
  - Ted Berry (2010 - 2016)
  - Eastern Pipeline Services (2017)
  - National Water Main (2018 – present)
- Average since 2010:
  - 120,000 LF (22.7 mi) CCTV/yr
  - 425 MH Inspections/yr
  - $250,000/yr ($2.10/LF)

Complementary Programs to Leverage the CMOM Program

- MS4
- CSO
- Paving
- Root control
- CB Cleaning
- Other utilities



Phase II – 2014 to 2018

Hazen

- O&M Manual Updates/Annual Reporting
- Finalize Criticality Assessment
- MH/Pipe Repairs for DPW crews
- Start to build a toolbox
- Implement Capital Improvements Program
  - Pipe replacement
  - Excavated Point Repair (EPR)
  - Pipe lining
  - Short liners
  - SMH Rehab/Replacement
- GIS support for CMOM Program

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Construction Contract No. 1 – 2015 to 2017

- Park Construction - GC
- Green Mountain Pipeline Services – Subcontractor
- $6.3 million contract
  - Pipe replacement – 11,200 LF
  - Lining – 11,000 LF
  - EPRs – 20 each
  - Emergency Work Allowance ($250K)
- Based on:
  - TV Inspection program 2013-2015
  - Historic problem areas
  - Initial criticality assessment

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PARK CONSTRUCTION OF NC Since 1995

GREEN MOUNTAIN Pipeline Services

Change in Direction

- City embarks on $5.0 million annual paving program
- TV inspection shifted from critically assessment driven to paving driven
- Takes the guess work away
- But tends to be a moving target
- “Works for Us”

Contract No. 2 – 2017 to 2019

- Green Mountain Pipeline Services - GC
- GVC Construction, Inc. - Subcontractor
- $6.25 million contract
  - Lining – 27,500 LF
  - Short liners – 50 each
  - Pipe replacement – 1,700 LF
  - EPR – 32 each
  - Emergency Work Allowance (250K)
- Based on TV Inspection 2015 and 2016

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Phase III – 2018 to Present

- Continue with annual reporting
- Online GIS based coordination
- Cross-country inspections
- Un-sewered areas
- FOG program
- Root control
- Toolbox

Construction Contract No. 3 – 2018 to 2020

- GVC Construction, Inc. – GC
- Green Mountain Pipeline Services - Subcontractor
- $7.65 million contract
  - Lining – 40,000 LF
  - Short liners – 145 each
  - Pipe replacement – 3,000 LF
  - EPR – 13 each
  - Emergency Work Allowance (500K)
- Based on TV Inspection program 2017-2018

GVC Construction, Inc.

GREEN MOUNTAIN Pipeline Services

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This is what 10 years of CMOM looks like to me

- CMOM
  - **2009 Work** (2)
  - **2010 Work** (17)
  - **2011 Work** (5)
  - **2012 Work** (15)
  - **2013 Work** (10)
  - **2014 Work** (6)
  - **2015 Work** (27)
  - **2016 Work** (16)
  - **2017 Work** (22)
  - **2018 Work** (24)
  - **2019 Work** (34)
  - 2020 Work
  - Contract
  - Contract 2014
  - Contract 2015
  - Contract 2017
  - Contract 2018
  - RE Contract 2017
  - RE Contract 2018
  - **RFP 2014** (1)
  - RFP 2017
  - RFQ/RFP
  - **SRF Loan 2018** (1)
  - **Webster and Maple** (9)

Where do we go from here???

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Construction Contract No. 4 – 2021 to 2023

Repair Type	No. of Segments	Estimated Cost	GVC CO Work	GVC CO Cost	DPW Work	DPW Cost	Remaining Work	Remaining Cost
Replace	14	$ 648,500	5	$ 243,066	1	$ 9,339	8	$ 396,095
CIPP	199	$ 1,730,031	-	-	-	-	199	$1,730,031
ISR	92	$ 186,757	-	-	-	-	92	$ 186,757
EPR	50	$ 637,500	5	$ 62,500	13	$ 162,500	32	$ 412,500
Root Treat/ Clean	74	-	-	-	-	-	-	-
Re-TV	30	-	-	-	-	-	-	-
MH Work	56	$ 227,200	2	$ 8,700	5	$ 18,600	49	$ 199,900
Total CCTV Reviewed	1520	-	-	-	-	-	-	-
Total		**$ 3,429,989**		**$ 314,266**		**$ 190,439**		**$2,925,283**

$ 3,429,989

Future Plans – The Next Decade

- CMOM – Remain proactive and funded
- Pipe rehabilitation/replacement contract every other year
- Continue Collaborative Approach
  - DPW Paving
  - CSO
  - MS4
  - Other utilities
  - Local development
- Get Biggest bang for your Buck $$$

Lessons Learned

- This is a major financial commitment
  - C-1……$6.30 million
  - C-2……$6.25 million
  - C-3……$7.65 million
  - Engineering…$8.00 million
  - CCTV……$2.50 million
- Ten year investment - $30.70 million
- Program $3.25 million annually for the next 20 years

Lessons Learned

- Contracts becoming more defined
  - Ten years of CMOM experience
  - Technology improvements
  - Pipe replacements → Excavated Point Repairs
  - Pipe Lining → Short Liners
- GIS coordination – Critical success factor
  - Multiple stakeholders
  - Multiple hardwares/softwares
  - Ever changing technology

Final Thoughts

- CMOM Critical to Sewer System's
  - Successful Operation
  - Longevity
  - Cost Effectiveness
- CMOM – Remain proactive and funded
- Continue "Big Picture" Thinking
  - Lining – 50 year life
  - New pipe – 100 year life

Questions?

2009-2019

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