

I Think I Can, I Think I Can

The Little Town that Could LTCP – Leverage the Coordination Potential!

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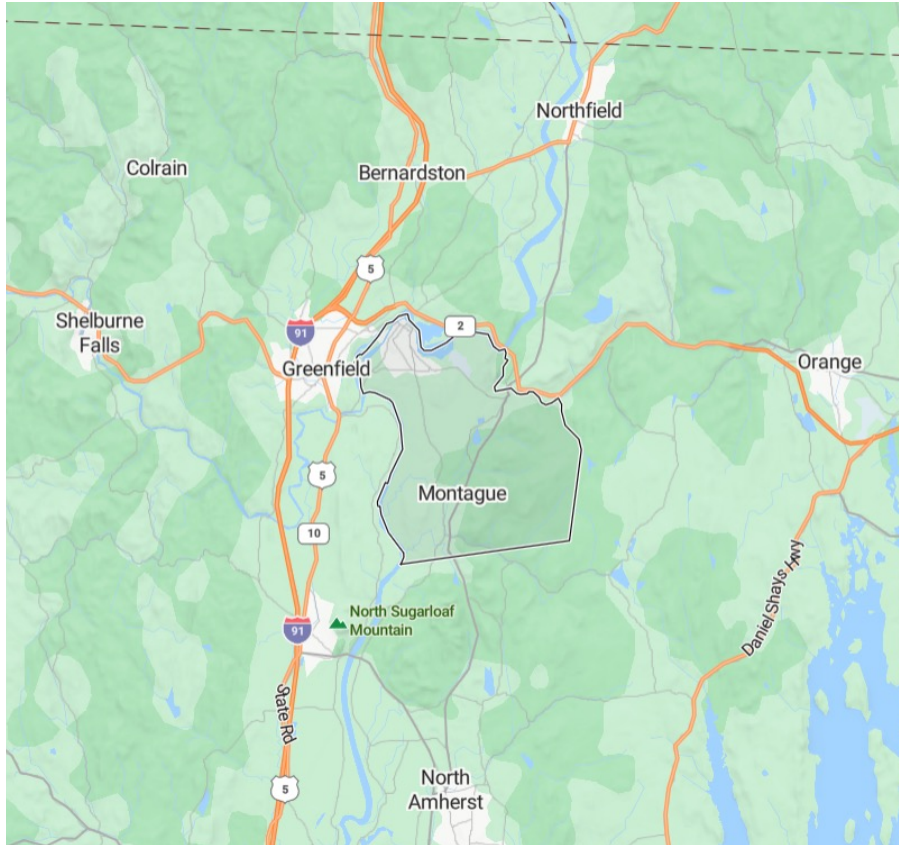


Presentation Overview

Overview and historical context
Flow monitoring
Field investigations
Hydraulic modeling
CSO LTCP update
Funding and financial capabilities

Overview and Historical Context

Montague Collection System



A CSO community

- Five villages
- Population of 8,580 (2021 US census bureau)
- Four census block groups = environmental justice areas
 - ~47% of residents
- Two permitted CSOs activated by three regulators
- ~90% of the town's sewer system is separated
 - 69 miles of pipe
 - 8 pump stations
 - One clean water facility

CSO Long-Term Control Plan – Timeline

2005



Original CSO
LTCP developed

2005-2020



Design and construction of avenue
A buffer line and WWCCT at the
clean water facility

2020



Administrative order
issued from U.S. EPA

CSO Long-Term Control Plan – Timeline

2021



CSO LTCP update (interim)
developed and applied to MA DEP
asset management grant program

2022



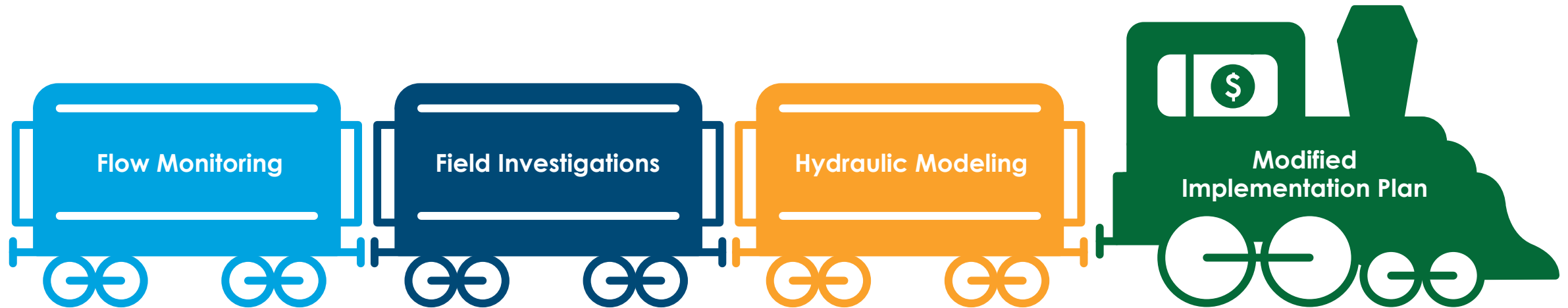
Flow metering, field
investigations, hydraulic
modeling, GIS database

2023



Town of Montague submits CSO
LTCP update with 5-yr and 20-yr
modified implementation plan

CSO LTCP Update Components



Flow Monitoring



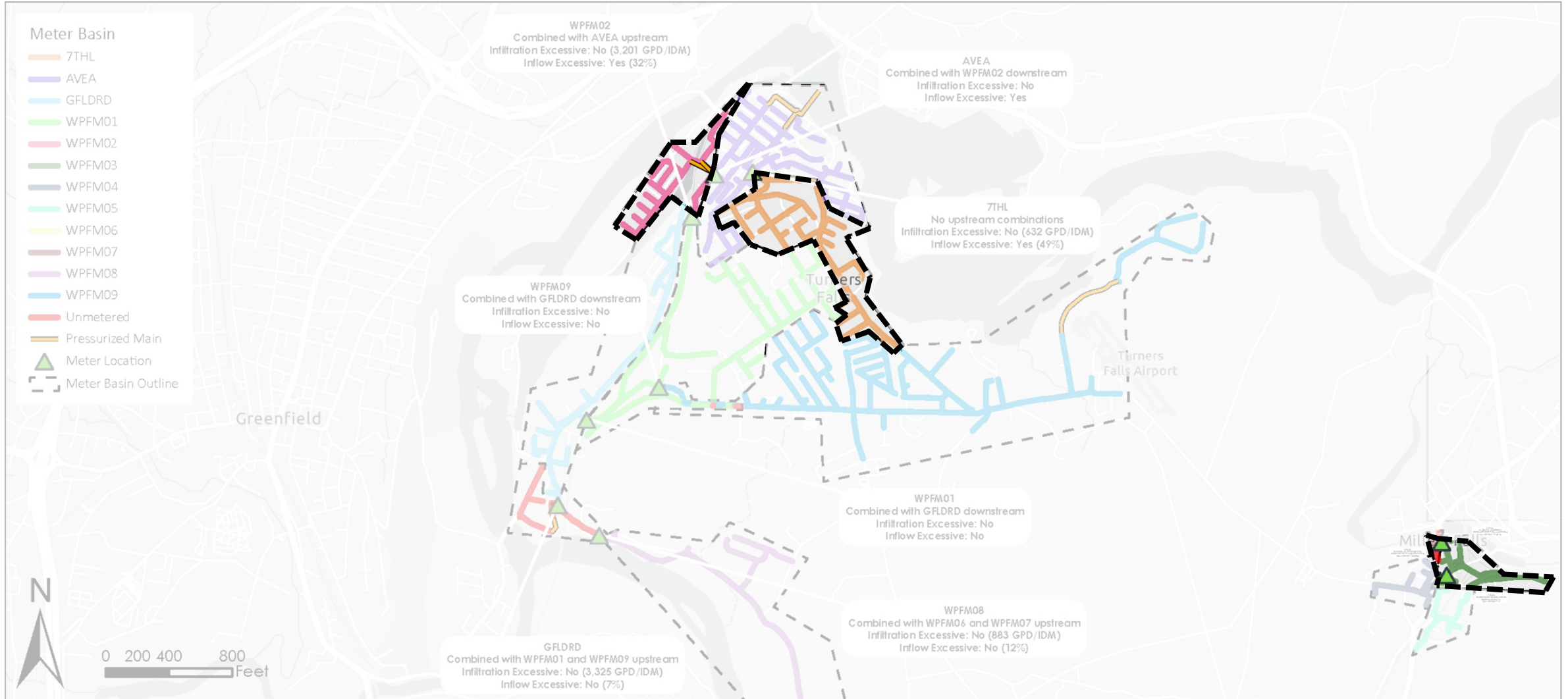
Turners Falls, Lake Pleasant, Montague Center

- 5 area-velocity, in-pipe meters
- 10-week period, April to early June 2022
- 3 additional meters, including 2 ongoing meters by ADS Environmental Services at the CSO regulators
- 15-minute data intervals
- 1 tipping bucket rain gauge

Millers Falls

- 3 area-velocity, in-pipe meters
- 10-week period, April to early June 2022
- 15-minute data intervals
- 1 tipping bucket rain gauge

Inflow/Infiltration Results





Infiltration

- Groundwater based
- Infiltration rates equal to or greater than 4,000 GPD/IDM
- Gallons per day
- Inch-diameter-mile

Inflow

- Rain derived
- 80% of the top total system inflow volume
- Estimated for a standard 1-year, 6-hour design storm
 - 1.67 inches of rainfall

Field Investigations



Pipe Inspections

- NASSCO PACP certified inspectors
- Town's CCTV camera and jetter
- Town recorded videos
- Wright-pierce coded inspections



Manhole Inspections

- NASSCO MACP certified inspectors
- Level 2 inspections to gather detailed information for all components
- Remote inspection without entry



40% of inspection work completed as part of project

- Smoke testing
- Night flow isolations
- Manhole inspections (51)
- Pipe inspections (5,900 LF)

Smoke Testing Results



**63 Potential Catch Basin Cross-Connections
(50/50 in Separated vs. Combined Areas)**



9 Defective or Missing Cleanouts (Mostly in Separated Areas)

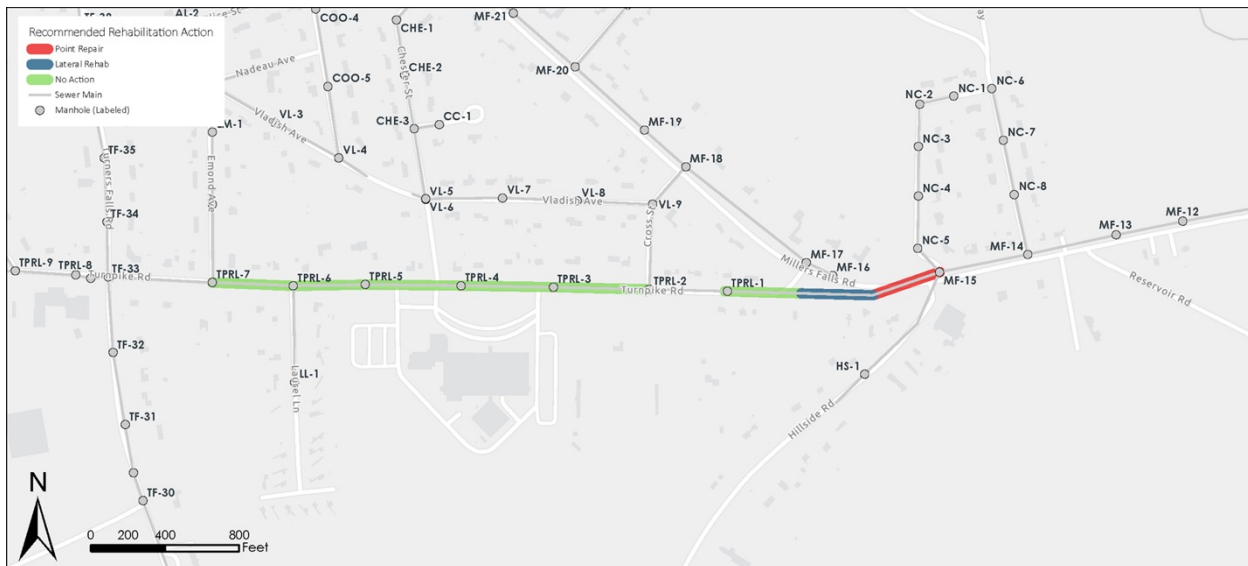
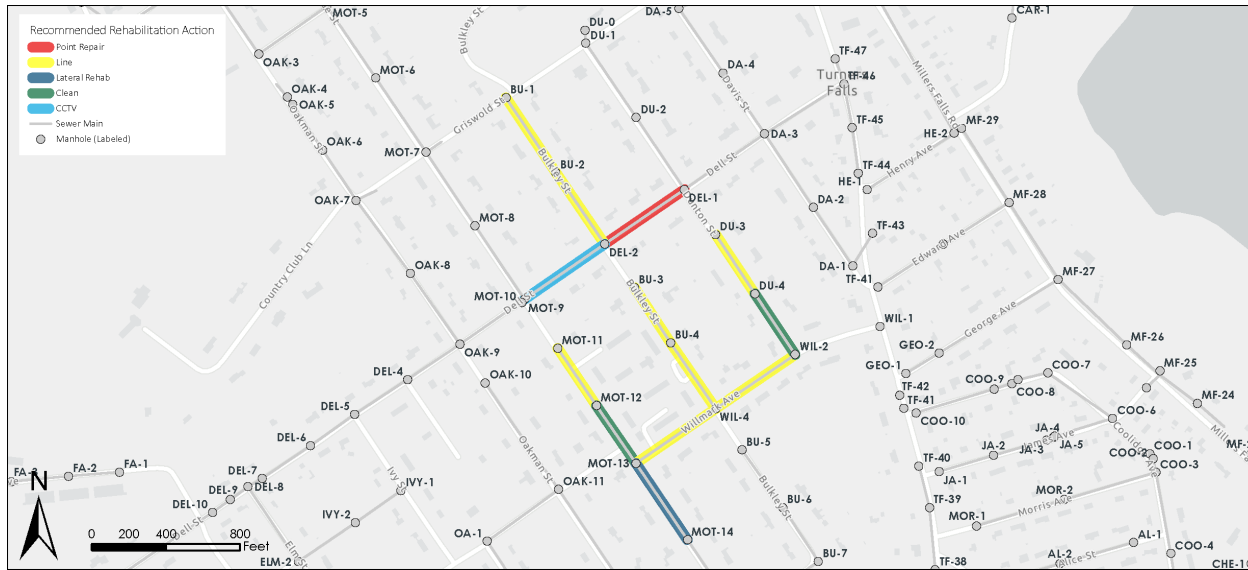


**31 Vented Manhole Covers
(50/50 in Separated vs. Combined Areas)**



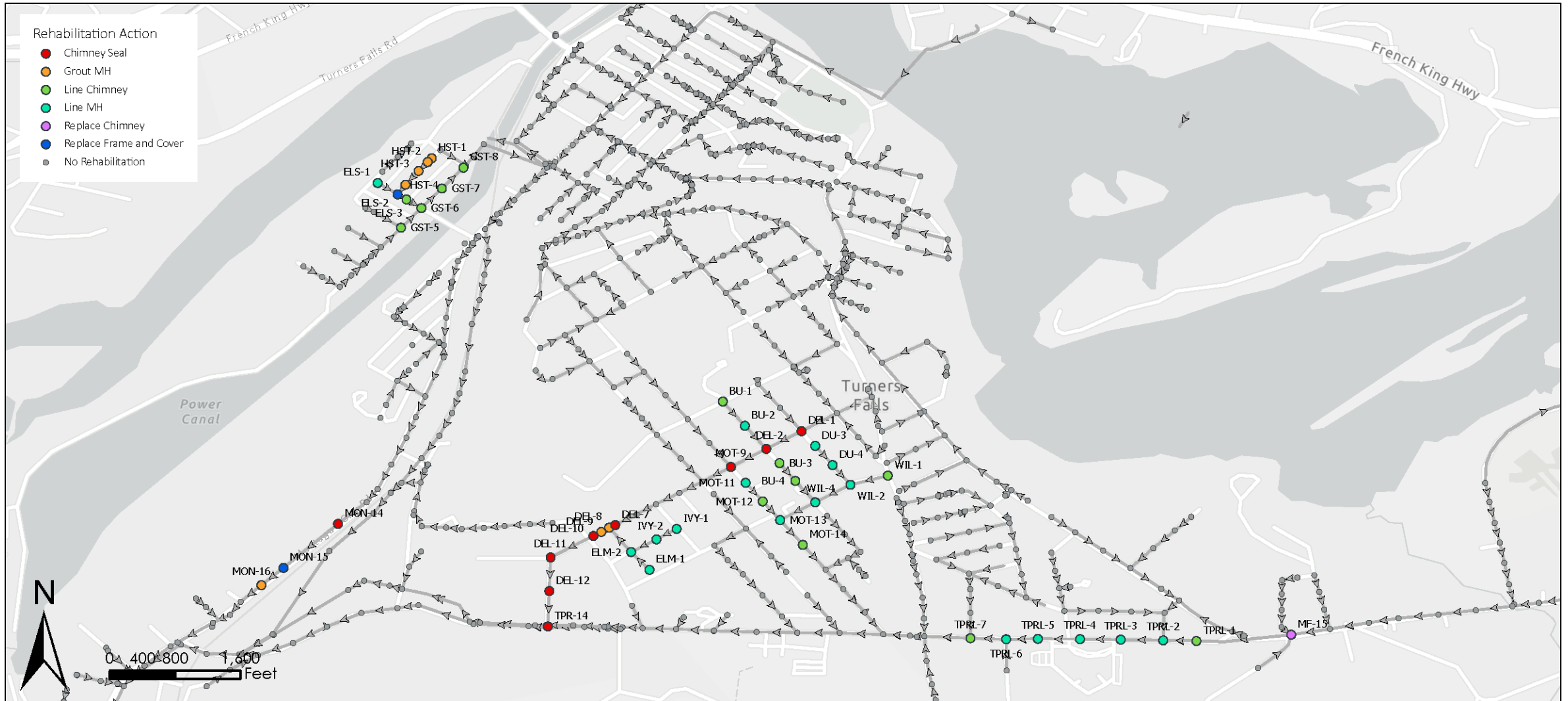
**20 Potential Illicit Connections from Homes/Structures/Buildings
(Mostly in Separated Areas)**

CCTV Pipe and Manhole Inspections



- Calculated Likelihood of Failure (LoF)
- Performed Cost-Effective Analysis (C/E/A)
- Used asset management software to assign rehabilitation actions and costs

Manhole Inspections & Rehabilitation Recommendations



Priority Improvements



Immediate Corrective Action

Replace 14 vented manhole covers
Replace 7 defective cleanout caps
Rehabilitate/access 2 pipe segments

Priority 1

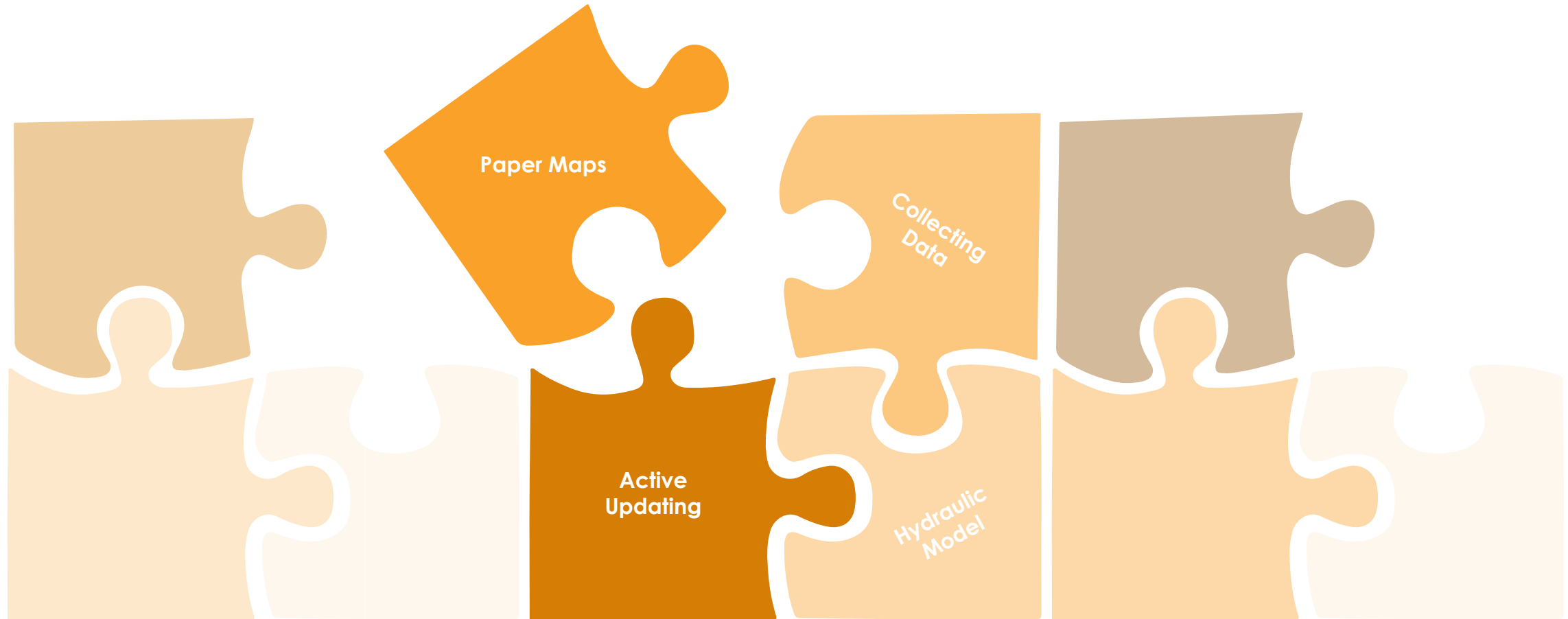
100 manhole repairs
1,300 LF pipe lining
32 dyed water tests for catch basins
9 building investigations

Priority 2

1,300 LF pipe Lining

Hydraulic Modeling

GIS Database Development



Hydraulic Modeling – Model Results



1-year existing conditions



Model Simulation Results (Existing Conditions)



	Model-Predicted CSO Volumes (Gal)			
	7th & L Streets CSO	Avenue A CSO	Greenfield Road CSO	Total CSO Volume
Existing Conditions – 3-Month	20,000	65,000	49,000 (95,000*)	134,000 (180,000*)
Existing Conditions – 1-Year	48,000	98,000	121,000 (186,000*)	267,000 (332,000*)

* Model results including CWF tailwater conditions

Model Simulation Results – Buffer Line Modifications



Alternative – 3 month	Model-Predicted CSO Volumes (Gal)	
	Total CSO Volume	Total CSO % Reduction
Existing Conditions	134,000	-
1A - Buffer Line Only	119,000	11%
1B – Buffer Line/Raise Ave. A	80,000	40%
1C – Buffer Line/AV-12-AV-13 30	79,000	41%
1D – Buffer Line/AV-12-AV-13 30"/Raise Ave. A	68,000	49%
1E – Buffer Line/ AV-12-AV-13 30"/Orifice Plate	65,000	51%
1F – Buffer Line/Raise Ave. A/AV-12-AV-13 30"/I/I Reduction Projects	19,000	86%

Alternative – 1 year	Model-Predicted CSO Volumes (Gal)	
	Total CSO Volume	Total CSO % Reduction
Existing Conditions	267,000	-
1A - Buffer Line Only	219,000	18%
1B – Buffer Line/Raise Ave. A	162,000	39%
1C – Buffer Line/AV-12-AV-13 30"	158,000	41%
1D – Buffer Line/AV-12-AV-13 30"/Raise Ave. A	135,000	49%
1E – Buffer Line/ AV-12-AV-13 30"/Orifice Plate	166,000	38%
1F – Buffer Line/Raise Ave. A/AV-12-AV-13 30"/I/I Reduction Projects	27,000	90%

Model Simulation Results – CWF Interceptor Modifications



Alternative – 3 month	Model-Predicted CSO Volumes (Gal)	
	Total CSO Volume	Total CSO % Reduction
Existing Conditions	134,000 (180,000*)	-
2A – Increase Pipe Diameter of Segment PS-GE-4-PS-GE-3 Pipe to 24”	116,000 (154,000*)	13% (14%*)
2B – Increase Pipe Diameter of Last 2 Pipe Segments before CWF to 30”	109,000 (150,000*)	19% (17%*)
2C – Increase Pipe Diameter from Greenfield CSO to CWF to 24”	100,000 (130,000*)	25% (28%*)
2D – Increase Pipe Diameter from Greenfield CSO to CWF to 30”	85,000 (85,000*)	37% (53%*)

Alternative – 1 year	Model-Predicted CSO Volumes (Gal)	
	Total CSO Volume	Total CSO % Reduction
Existing Conditions	267,000 (332,000*)	-
2A – Increase Pipe Diameter of Segment PS-GE-4-PS-GE-3 Pipe to 24”	237,000 (293,000*)	11% (12%*)
2B – Increase Pipe Diameter of Last 2 Pipe Segments before CWF to 30”	226,000 (284,000*)	15% (14%*)
2C – Increase Pipe Diameter from Greenfield CSO to CWF to 24”	175,000 (214,000*)	34% (36%*)
2D – Increase Pipe Diameter from Greenfield CSO to CWF to 30”	146,000 (146,000*)	45% (56%*)

* Model results including CWF tailwater conditions



Short-Term

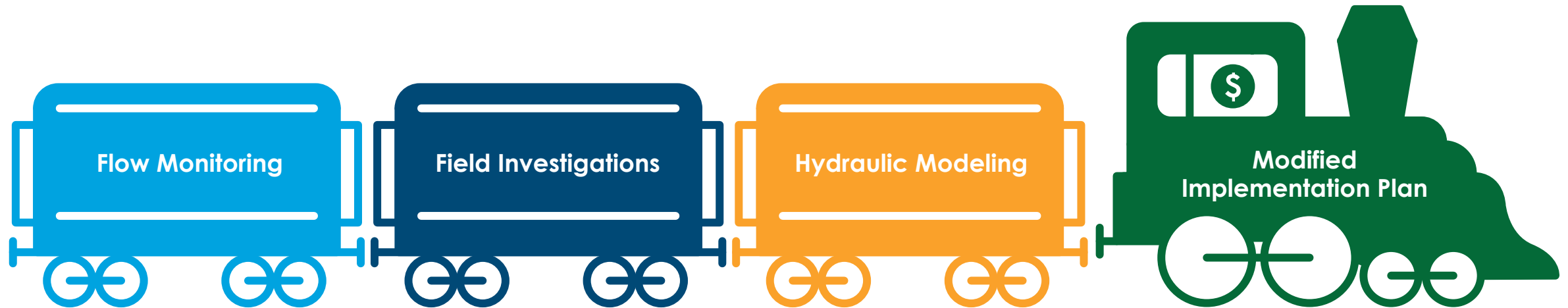
- Avenue A buffer line improvements
- Evaluate peak capacity of the CWF's primary treatment and WWCCT systems
- Evaluate replacement of last two pipe segments entering the CWF with 24-inch or 30-inch pipe
- Design and construction of upstream I/I reduction projects in Turners Falls

Long-Term

- Sewer separation study, design, and construction
- Additional field investigations, I/I reduction projects
- Consider increasing pipe diameter between Greenfield CSO and CWF to a 30-inch diameter pipe

CSO LTCP Update

CSO LTCP Update Components



Modified Implementation Plan



5 Years Short-Term

Avenue A Buffer Line
Improvements /
Modifications Project

Priority 1 and
Priority 2 Turners Falls
I/I Rehab Project



20 Years Long-Term

Sewer Separation
Study, Design, and
Construction Project(s)



20+ Years Extended-Term

Sewer
Separation
Project(s)

Design and Construction
of Future Upstream
I/I Reduction Projects



O&M

Collections System
and CWF

\$258,000+ per yr.

~\$20,000+ per mo.

Funding and Financial Capabilities



- **New England Environmental Finance Center/Quantified Ventures**
- **Sewer rate study for the CWF enterprise fund**
- **Funding sources**
 - ARPA
 - CDS
 - STAG
 - MADEP asset management grants and SRF grant/loans
 - Rural and small-town development funds

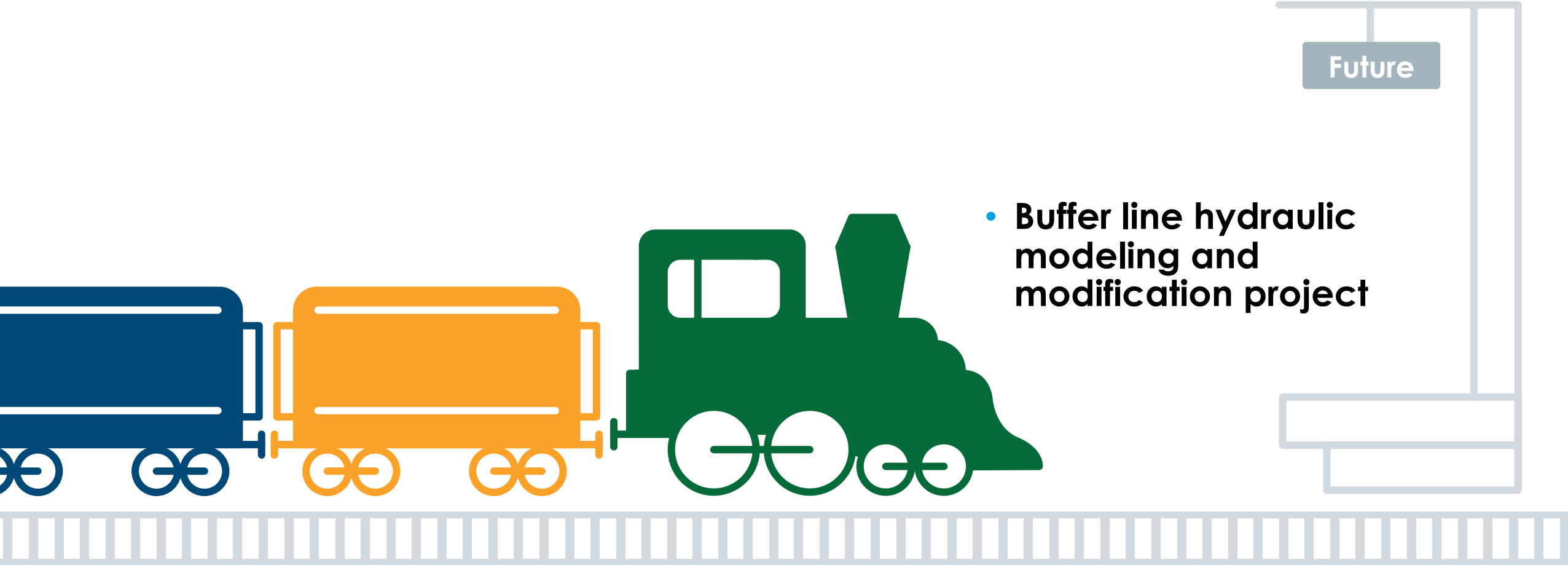
Next Stop – The Future



- Sewer manhole and pipe rehabilitation projects

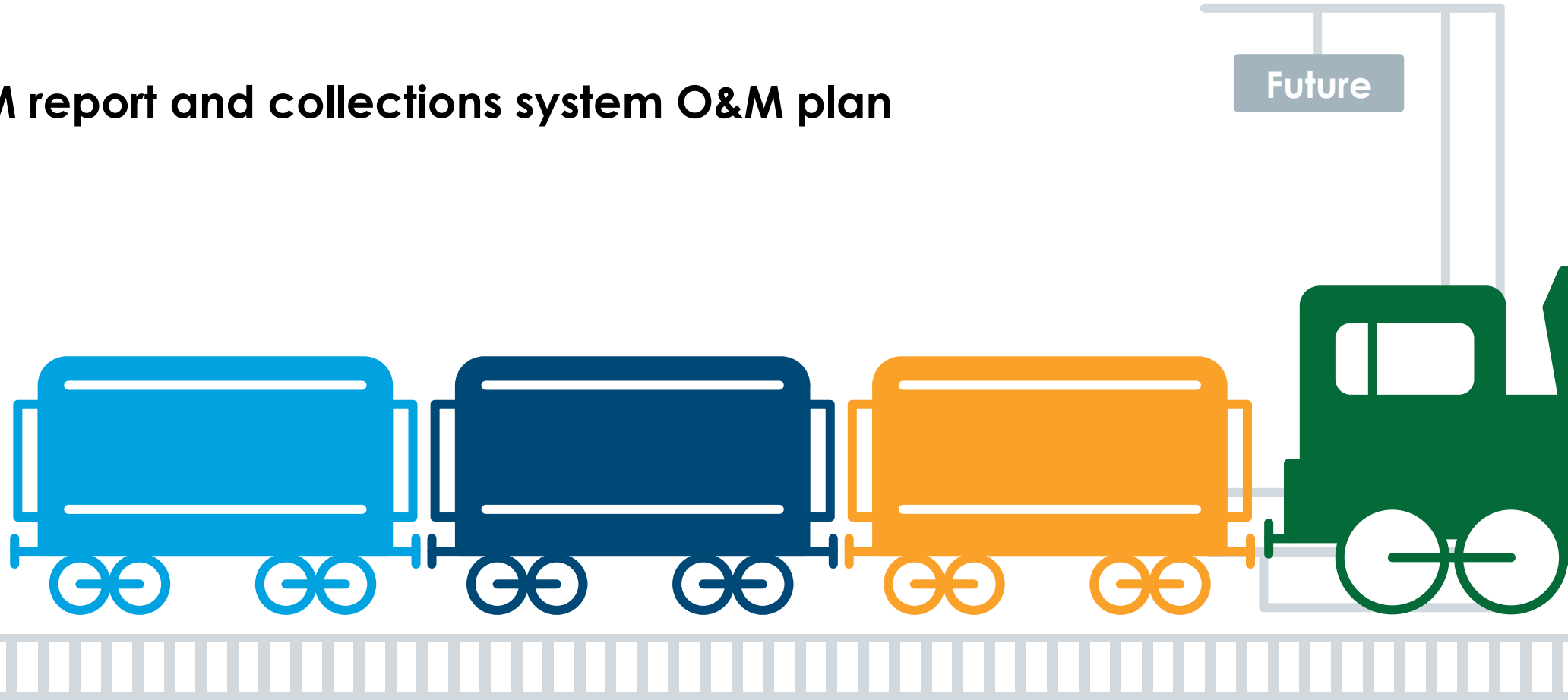


Next Stop – The Future



Next Stop – The Future

- **CMOM report and collections system O&M plan**



Next Stop – The Future

Questions?

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THANK YOU
