



**Environmental  
Facilities Corporation**

# **Asset Management Standards**

## **2023 CIFA SRF WORKSHOP**

**November 13, 2023**

**William A. Brizzell, Jr., P.E.  
Director of Engineering  
NYS Environmental  
Facilities Corporation**

# Background

# Drivers for Asset Management

- In 2011, NY experienced two extreme weather events: Hurricane Irene and Tropical Storm Lee. These events occurred within two weeks of each other with significant impacts in upstate/central NY.
- In 2012, the NY Metropolitan area and Hudson River Valley were severely impacted by Superstorm Sandy. Congress appropriated \$60B to assist with recovery



# Drivers for Asset Management

- The 2100 Commission evaluated vulnerabilities in critical infrastructure, including wastewater, and recommended actions to improve their strength and resiliency against extreme weather events
- Commission recommended the state should assist with the development of asset management plans



# Terminology

## What is Asset Management?

Asset management is a **tool** that municipalities can use to manage current infrastructure and plan for future infrastructure investment.

## Why an Asset Management Program?

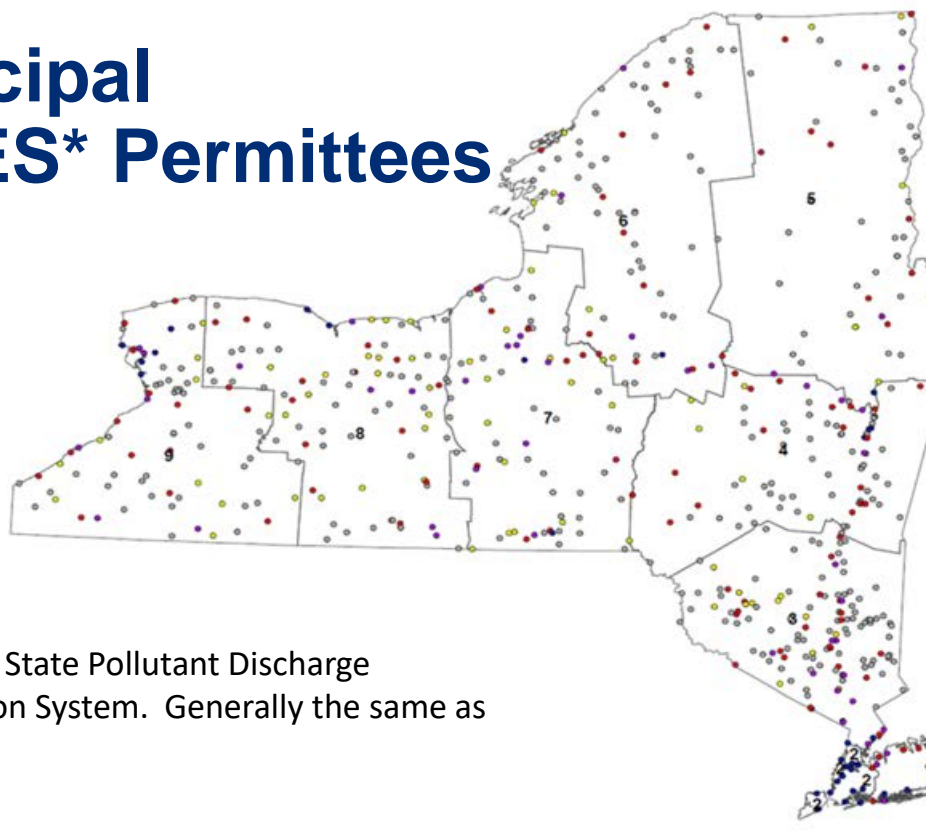
A program never stops but is ongoing. A plan is static and reflects a single point in time.

## What is an asset?

An asset is any component that is necessary for the **conveyance** or **treatment** of wastewater.



# Municipal SPDES\* Permittees



DEC Region	< 0.5 MGD	0.5-1.0 MGD	1.0-5.0 MGD	5.0-20 MGD	>20 MGD	Total
1	21	3	11	3	3	41
2	0	0	0	0	14	14
3	85	12	22	12	3	134
4	50	6	19	4	3	82
5	35	7	11	3	1	57
6	51	6	12	5	1	75
7	38	14	10	9	2	73
8	42	17	15	6	2	82
9	40	11	14	6	5	76
<b>Total</b>	<b>362</b>	<b>76</b>	<b>114</b>	<b>48</b>	<b>34</b>	<b>634</b>

## Legend

Design Flow

○ < 0.5 MGD

● 0.5-1.0 MGD

● 1.0-5.0 MGD

● 5.0-20.0 MGD

● >20.0 MGD

□ DEC Regional Boundary

\*SPDES – State Pollutant Discharge Elimination System. Generally the same as NPDES.



Environmental  
Facilities Corporation

# Benefits and Uses of Asset Management Programs



# State Benefits and Uses

- An AMP, including a Capital Improvement Plan (CIP), can be used as a Primary Document for Needs Survey.
  - Need applicants to keep them up-to-date
- Proactive maintenance results in:
  - Lower costs over time
  - Fewer enforcement actions



NEW  
YORK  
STATE

Environmental  
Facilities Corporation



# Community Benefits and Uses

- Supports municipal decision making
  - CIP is a risk-based listing of projects
    - Most critical float to the top
    - Identifies necessary projects
- Used to establish sustainable rate setting
  - Communication tool for stakeholders (ex: municipal officials, public, regulators)
- Proactive maintenance results in:
  - Lower costs over time
  - Fewer enforcement actions



# State AM Program *Pilot & Phase 2*



# Pilot

## Municipality

Town of Bethlehem

Town of Carmel

Village of Dolgeville

Village of Greenport

Village of Honeoye Falls

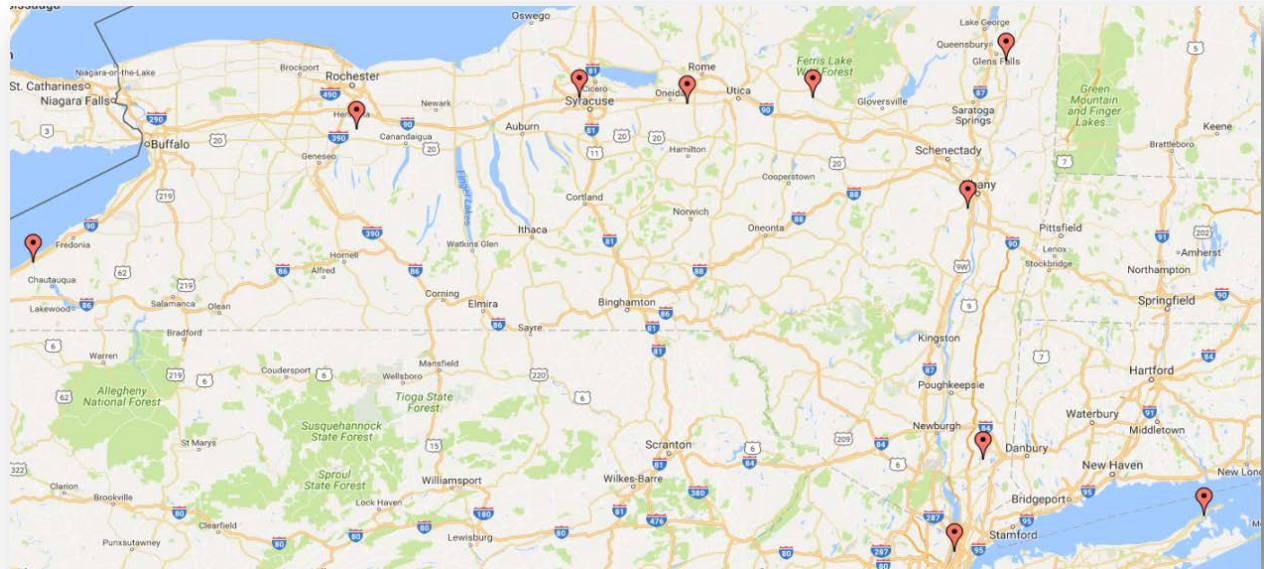
Onondaga County

Village of Vernon

Washington County

Village of Westfield

City of Yonkers



**Environmental  
Facilities Corporation**

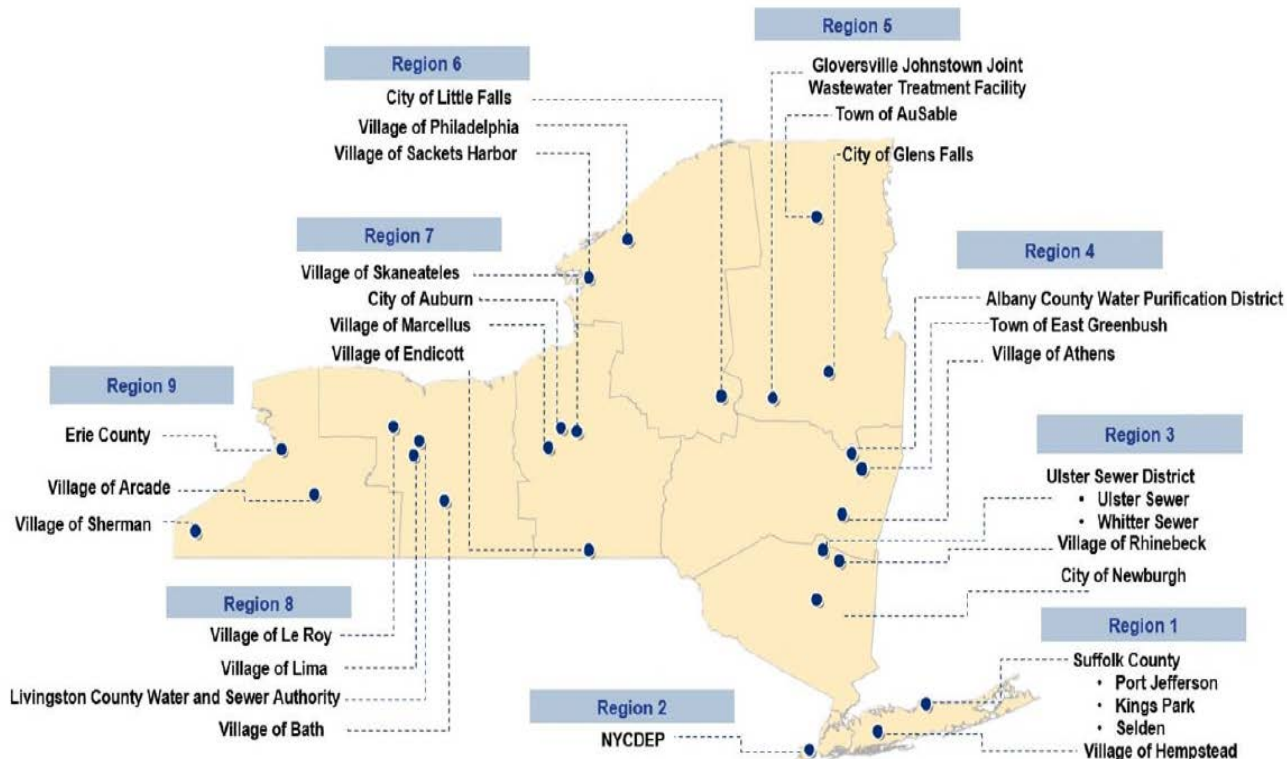
# Phase 2

## Program Manager

Arcadis

## Firms

1. Barton & Loguidice
2. C2AE
3. CDM Smith
4. CHA
5. GHD
6. Jacobs Civil Consultants
7. Kimley-Horn
8. STV Incorporated
9. Walden Environmental
10. Woodard & Curran



# Asset Management Guide



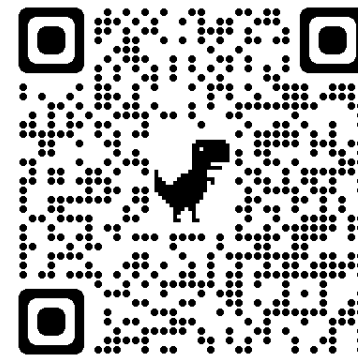
# EPA's 5 Core Questions -> AM Guide

- Common question: How do I get started?
- Our solution: A guidance that is...
  - Useable
  - Easy to understand and follow
  - Simple language
  - Gets people started
  - Kept up to date



# Asset Management Guide

- Audience: municipal staff, operations staff
- Style:
  - Textbook format with bolded words that are defined
  - Toolboxes to complete AM tasks and calculations
  - Tips and helpful call-outs to guide the reader through development
  - Examples



# Table of Contents

Chapter 1: Introduction to Asset Management

Chapter 2: The Asset Management Team, Staffing, Succession

Chapter 3: Current State of the Assets

Chapter 4: Level of Service

Chapter 5: Assessing Asset Risk

Chapter 6: Planning, Managing, Funding

Chapter 7: Implementation and Reporting





# Chapter 1: Introduction to Asset Management

A successful program includes...

1. Knowledge sharing
2. Frequent use
3. Continuous improvement
4. Be a champion – promote what you do



# Chapter 2: The Asset Management Team, Staffing and Succession Planning

## CHAPTER HIGHLIGHTS

In this Chapter you'll learn how to...

- Form an Asset Management Team,
- Develop a staffing plan,
- Develop knowledge retention plans,
- Create mission and vision statements.

Team Member	Responsibilities
Asset Management Executive	Internally: Provides vision; coordinates intra-agency assignments; commits resources.  Externally: Interacts with stakeholders; shares results; puts in needs requests.
Asset Management Coordinator	Internally: Coordinates staff assignments; tracks progress; manages meetings; creates, distributes, and reports information from the Asset Management Program ( <a href="#">Chapter 7</a> ).  Externally: Assists Executive as necessary.
Wastewater Operations Manager	Internally: Develops, maintains, and reports information relating to the WWTP.  Externally: Assists Coordinator as necessary.
Conveyance Manager	Internally: Develops, maintains, and reports information relating to conveyance.  Externally: Assists Coordinator as necessary; communicates with POSS representatives, if applicable.
Fiscal Officer	Internally: Develops, maintains, and reports information relating to the sustainable ownership status of the municipality ( <a href="#">Chapter 6</a> ).  Externally: Assists Executive or Coordinator as necessary.
Quality Assurance Supervisor	Internally: Assures consistency with this Guide; reviews final documentation and ensures consistency across the program.  Externally: Not applicable.
Technical Support Officer	Internally: Maintains and updates EAM and GIS software systems ( <a href="#">Chapter 3</a> ).  Externally: Not applicable.

# Chapter 3: Electronic Asset Inventories



**Who is involved?** The Asset Management Coordinator, Wastewater Operations Manager, Conveyance Manager, Fiscal Officer, and Technical Support Officer may each be involved in documenting the current state of the assets.

## CHAPTER HIGHLIGHTS

In this Chapter you'll learn how to...

- Define and identify assets,
- Select enterprise asset management (EAM) and Geographic Information Systems (GIS) software,
- Create an asset inventory,
- Establish a process hierarchy,
- Determine the condition of each inventoried asset.

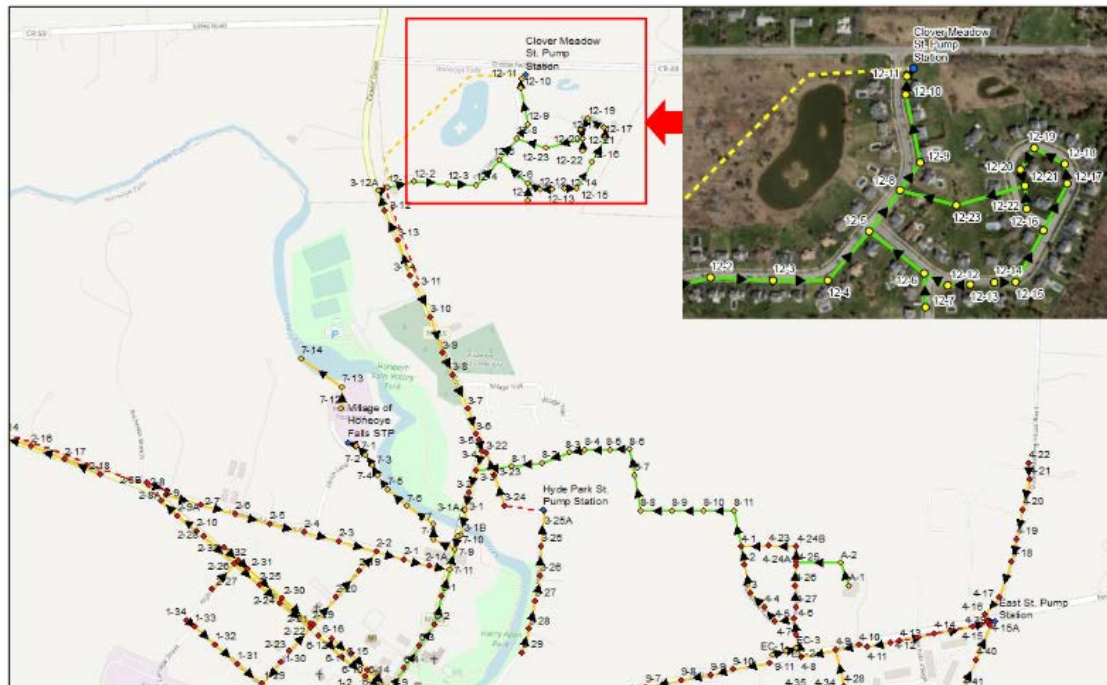


# Don't Forget to Collect...

Inventory Information	Purpose
GPS Coordinates	GIS mapping
Location Description (e.g., cross-streets, building, floor)	Asset identification, resilience
Elevations	Resilience
Ownership	Level of service, capital improvement planning
Physical Qualities (e.g., invert elevation, diameter, depth, material)	Condition scoring, consequence of failure
Replacement Cost	Capital improvement planning
Cost Index Year (i.e., reference year for cost data)	Capital improvement planning
Installation Date	Condition scoring, likelihood of failure
Age	Condition scoring, likelihood of failure
Design Life	Condition scoring, likelihood of failure



# Electronic Inventory in ArcGIS



# Chapter 4: Level of Service



**Who is involved?** All members of the Asset Management Team may be involved.

## CHAPTER HIGHLIGHTS

In this Chapter you'll learn how to...

- Identify stakeholders and expectations;
- Develop one SMART goal per service category;
- Create tracking and reporting procedures;
- Assign weightings for each service category;
- Complete a Level of Service Profile.

### Social

- Health and Safety
- System Reliability

### Environmental

- Regulatory Compliance
- System Reliability

### Financial

- Fiscal Impact
- System Reliability



## EXAMPLE

The Town of Tessa's Asset Management Team has documented "no service backups" as a stakeholder expectation. It receives customer complaints via email, town hall drop box, and by letter. The Asset Management Team organized the complaints during inventory development and now stores them in an electronic database. The Team notices a large portion of these complaints are sewer backups from the collection system.

### SMART Goal

Reduce the number of sewer backup events by 10% per year as compared to the previous fiscal year. This is a System Reliability goal to address stakeholder expectations (no service backups).



# Chapter 5: Assessing Asset Risk



**Who is involved?** The Asset Management Coordinator, Wastewater Operations Manager, Conveyance Manager, and Technical Support Specialist may be involved in this task.

## CHAPTER HIGHLIGHTS

In this Chapter you'll learn how to...

- Develop an Impact Definition and assess each asset for impacts,
- Calculate the consequence of failure,
- Estimate service life and remaining useful life,
- Calculate the likelihood of failure,
- Determine risk for all assets,
- Identify risk mitigation strategies for high-risk assets.





# Defining Impacts

Impact Definition					
Scale		Service Categories			
Narrative	Numeric	Health & Safety	System Reliability	Regulatory Compliance	Fiscal Impact
Negligible	1	No potential injuries or adverse health effects.	Can be without asset for 1-month or more.	No violations.	Absorbed within the budget line item. Will not result in overtime.
Low	4	No infectious disease or release of chemicals or contaminants within area. Minor injuries possible.	Cannot be without asset for 1-week.	Violation with no formal enforcement action.	Absorbed within the current budget. Will result in overtime hours.
Moderate	7	Possibility of infectious disease or release of chemical or contaminants. Major injuries possible.	Cannot be without asset for 1-day.	Potential for formal enforcement action with potential fines.	May require transfer from reserves. May exceed maximum allowable overtime hours.
Severe	10	Potential workplace reportable injury due to extreme unsafe conditions.	Cannot be without asset for 1-hour.	Potential for major enforcement action or Consent Decree.	May require new borrowing or impact rates. Exceeds maximum allowable overtime hours.



# Summarizing the Status

The Asset Management Team can create reports or other visual aids to better share information with municipal officials and residents

**Asset Risk Matrix: Total Asset Value and Asset Count**

Likelihood of Failure Scores	Consequence of Failure Scores		
	1-3	4-7	8-10
10-9	\$25,612,955 626 assets	\$63,203,028 1452 assets	\$5,446,061 89 assets
7-6	\$3,575,207 305 assets	\$13,138,399 313 assets	\$360,763 19 assets
3-2	\$7,760,123 192 assets	\$30,182,124 277 assets	\$11,400 2 assets



# Chapter 6: Planning, Managing, and Funding



**Who is involved?** The Asset Management Coordinator, Wastewater Operations Manager, Conveyance Manager, Fiscal Officer, and Technical Support Specialist may be involved in this task.

## CHAPTER HIGHLIGHTS

In this Chapter you'll learn how to...

- Identify current and future flood risk,
- Ensure work orders include all defined maintenance activity fields,
- Create a risk-based Capital Improvement Plan,
- Evaluate sustainable cost of ownership.



# Tracking Maintenance Work

Work Orders for system maintenance should include...

1. Procedures to be followed to complete the maintenance activity,
2. Planned and unplanned maintenance costs,
3. Estimated and actual labor hours,
4. Maintenance type (routine, preventive, predictive, corrective).

KEY TERM	
<i>Routine Maintenance</i>	The normal support, periodic and minor in nature, required to sustain performance and <i>achieve</i> expected life.  Example: Check the oil level.
<i>Preventive Maintenance</i>	The servicing performed in order to reduce the likelihood of failure and <i>extend</i> expected life.  Example: Changing a car's oil every 4,000 miles.
<i>Predictive Maintenance</i>	Performing maintenance activities based on measured conditions.  Example: Change the oil after an oil sample shows deterioration.
<i>Corrective Maintenance</i>	Unplanned or unanticipated work, usually emergency.  Example: Replacing the engine gaskets because the engine overheated from poor oil conditions.



# Chapter 7: Implementation and Reporting



**Who is involved?** All members of the Asset Management Team may participate.

## CHAPTER HIGHLIGHTS

In this Chapter you'll learn how to...

- Document decisions in an Asset Management Report,
- Report to stakeholders annually.

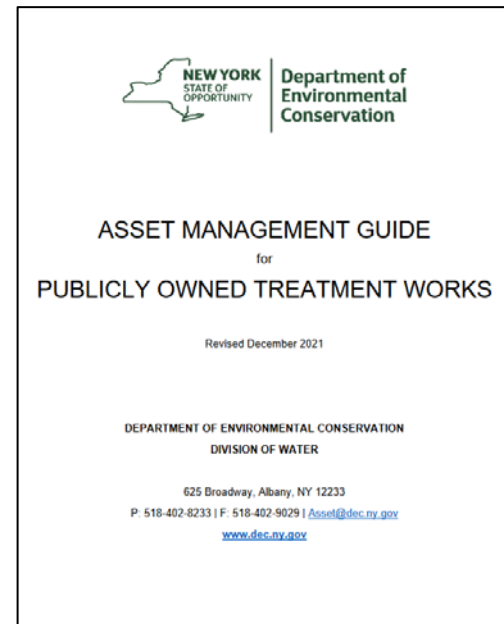
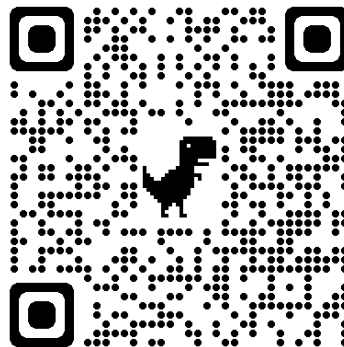


# What's Next?



# Future Work

- Continue implementation of Phase 2 until Sept 2027
- EFC/DEC identifying support for development of more AMPs
- Gain experience and better assist Communities and Stakeholders
- Path for encouraging good behavior



# Thank you

**William A. Brizzell, Jr., P.E.**  
**Director of Engineering**  
**NYS Environmental Facilities Corporation**  
**[William.Brizzell@efc.ny.gov](mailto:William.Brizzell@efc.ny.gov)**



**Environmental  
Facilities Corporation**