

County Executive J. Ryan McMahon

## WEP's Asset Management Program



**DRAFT**

**BUILDING A FOUNDATION TODAY...**

**FOR THE CHALLENGES WE WILL FACE TOMORROW.**

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**BY: Frank Mento, P.E. & Jim Thayer, P.E.**

# Presentation Summary

- WEP BACKGROUND INFORMATION
- HISTORY
- PRESENT
- FUTURE
- Q&A

The screenshot shows the homepage of the Onondaga County, New York website. At the top, it features the county name and the County Executive's name, J. Ryan McMahon, II, along with the 'ongov.net' logo. Below this is a navigation bar with dropdown menus for 'How May We Help You?' and 'Where Can I Find?', a search bar, and a language selection option. The main content area includes a portrait of the County Executive, a banner for 'ST. JOSEPH'S HEALTH Amphitheater AT LAKEVIEW', and a 'BUILDING A LEAD-SAFE COMMUNITY' registration notice. A 'Welcome to Onondaga County' section provides an overview of the county's location and transportation options. To the right, there are links for 'Property Tax Information' and 'METROPOLITAN SYRACUSE WASTEWATER TREATMENT PLANT'. A 'Plant Guide' image is also visible on the right side.

The screenshot displays the 'Save the Rain' website, which is dedicated to a comprehensive stormwater management plan. The header includes the title 'Save the Rain' and a tagline: 'See how you can make a difference... every drop counts.' Navigation tabs for 'ABOUT', 'GREEN PROJECTS', 'GREEN FUNDS', and 'PROGRAMS' are present. A search bar is located on the right. The main content area features four circular icons representing 'Milestones', 'Green Projects', 'Gray Projects', and 'Reports Monthly'. Below these icons, there is a 'Latest News' section with a recent article titled 'County Executive Ryan McMahon Announces the 2019 Rain Barrel Workshop Schedule'. A 'See how you can help:' section offers options for 'Home', 'Business', 'Schools', and 'Community'. At the bottom, there are links for 'Videos' (featuring 'Connect the Drops') and 'CSO combined sewer overflow notification'.

# What is Onondaga County's Department of WEP: Water Environment Protection (OCDWEP)

- Located in Syracuse, NY
- Large, advanced & progressive wastewater utility
- Provides services to 450,000 residents
- ~400 Employees
- \$90,000,000 Operating Budget



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## Legend

- ◻ County Pump Stations
- Pump Stations
- County Treatment Plants
- Village Treatment Plants
- Floatable Control Facilities

# Vision, Mission, Values & Goals

## Vision

To be a respected leader in wastewater treatment, stormwater management, and the protection of our environment using state-of-the-art innovative technologies and sound scientific principles as our guide.



## Mission

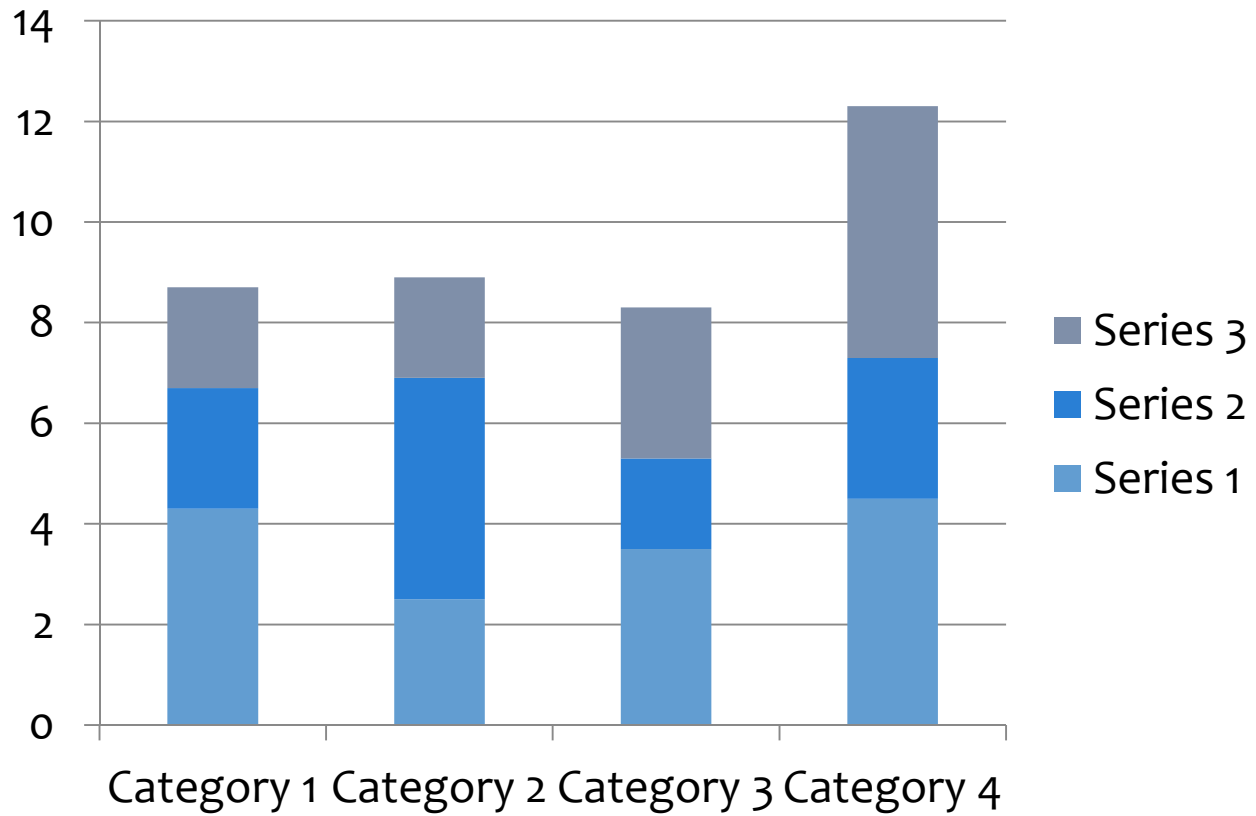
To protect and improve the water environment of Onondaga County in a cost-effective manner ensuring the health and sustainability of our community and economy.



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# Age of our Assets



# Sewers Dating Back to 1880's

- Miles of Sewer
- Manholes
- Force Mains



## Metropolitan WWTP (Metro)

- WEP's largest plant
- 270,000 capita
- Adv. tertiary treatment
- 84 MGD Average
- 240 MGD design peak



Over \$1  
Billion in  
Assets



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# WEP WWTP Facilities



**Brewerton**  
3 mgd @ \$70 million



**Meadowbrook Limestone**  
6.5 mgd @ \$80 Million



**Baldwinsville Seneca Knolls**  
9 mgd @ \$126 Million



**Wetzel Road**  
7 mgd @ \$147 Million



**Oak Orchard**  
10 mgd @ \$140 Million



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# Largest WEP Facilities



**Ley Creek Pump Station (20 mgd)**  
**\$X Asset Value**



**West Side Pump Station (40 mgd)**  
**\$x Million**



**Davis Road Pump Station (18 mgd)**  
**\$X Asset Value**



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# Save the Rain Program - WEP



**Clinton (Trolley Lot) CSO Storage Facility  
6.5 Million Gallons of Storage - \$77.68 Million**



View of Clinton CSO Storage Facility  
West Chamber from  
West Jefferson Street November 2013



# Historical Investment (Focus on fixing the Past)

Since 1998's Amended Consent Judge (ACJ )

- \* Approx. \$600 Million invested
- \* Nine (9) New CSO Facilities
- \* Countless Green Infrastructure

Onondaga Lake is experiencing a remarkable recovery



Water quality in Onondaga Lake is the best it's been in 100 years!

US Water Prize

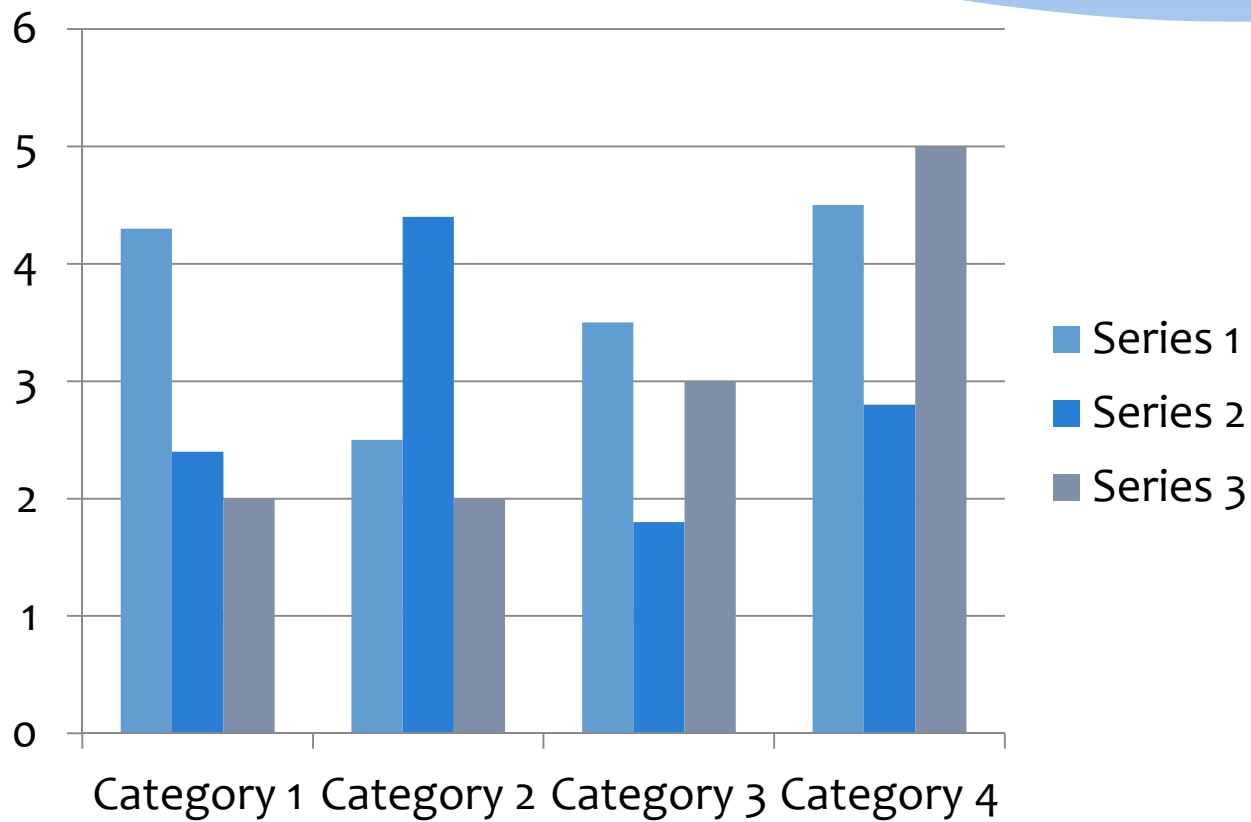


2013 Recipient



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# Investment History



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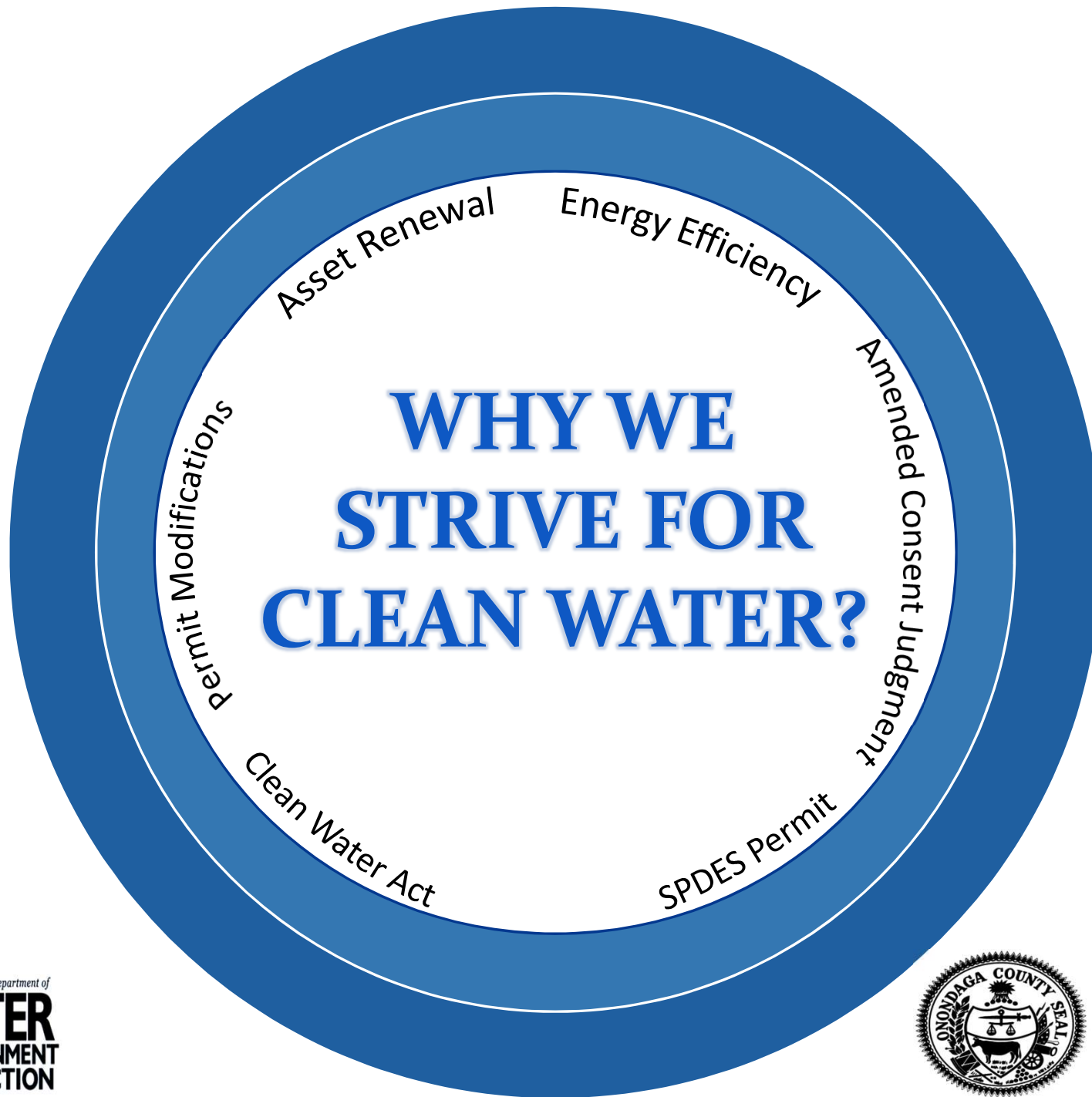
What we do?  
How we do it?

**WHY?**

**CLEAN WATER**



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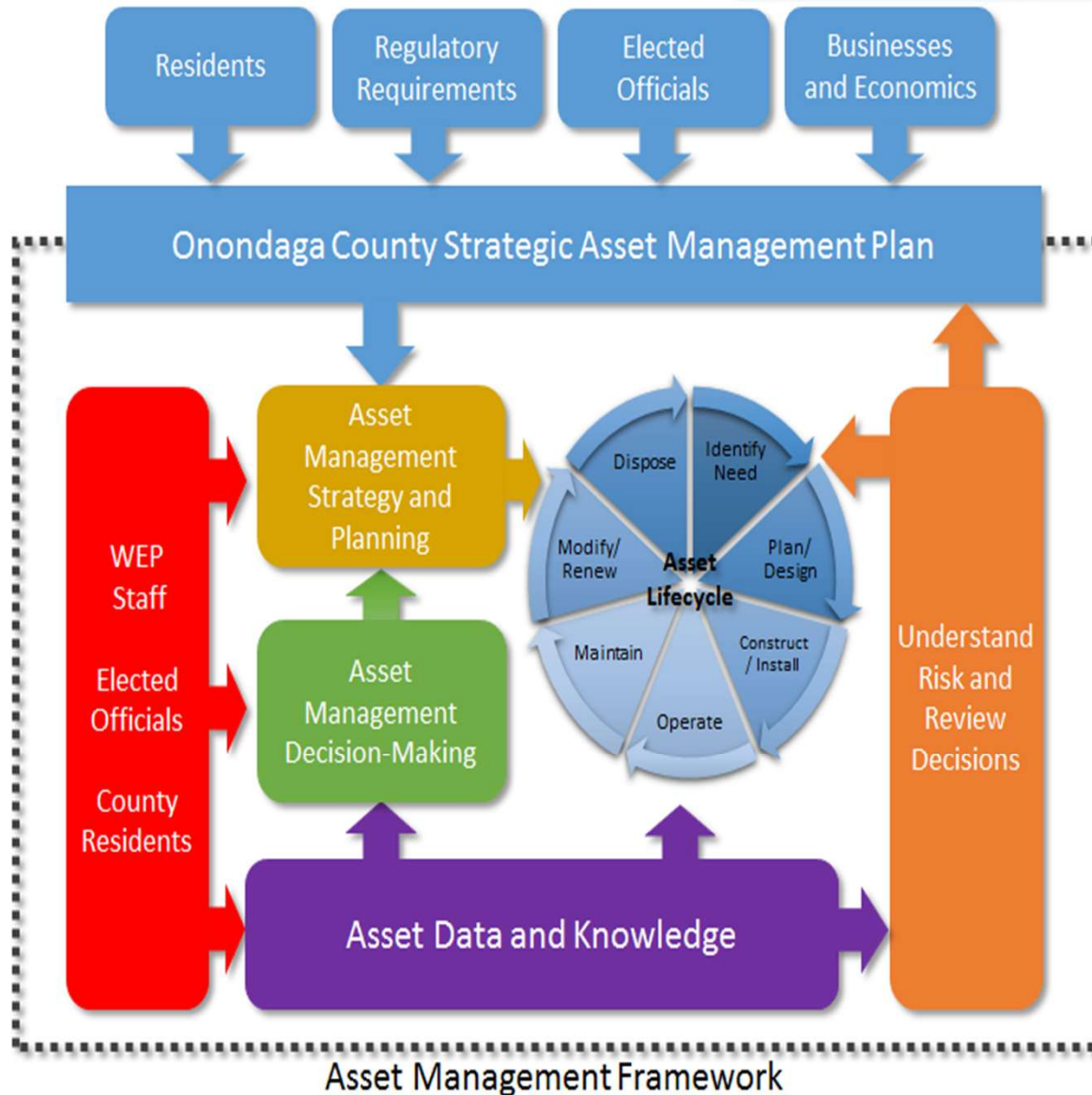


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# Framework for the Future



**WE ARE DETERMINED  
TO REPLACE THE  
RIGHT ASSET....**

**AT THE RIGHT TIME...**

**FOR THE RIGHT  
REASONS.**



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## WEP's Definition of Asset Management

**“ASSET MANAGEMENT IS...  
AN INTEGRATED SET OF  
PROCESSES TO MINIMIZE THE  
LIFE-CYCLE COSTS OF  
INFRASTRUCTURE ASSETS,  
AT AN ACCEPTABLE LEVEL OF  
RISK, WHILE CONTINUOUSLY  
DELIVERING ESTABLISHED  
LEVELS OF SERVICE”**



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# What is an Asset?

**“An asset is a component of a facility with an independent physical and functional identity and age”**



**EPA provides four examples: Pump, Motor, Sedimentation Basin, Main**



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WEP's Five (5) Levels of Service categories:

1. System Reliability
2. Regulatory Compliance
3. Public and Employee Health and Safety
4. Fiscal Impacts
5. Public Confidence



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# What is EAM & CMMS Software?



- ❖ Enterprise Asset Management (EAM)
- ❖ Computerized Maintenance Management System (CMMS)
- ❖ Asset Inventory
- ❖ Database for AM Data
- ❖ Organizational Efficiencies



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# Core Asset Data

- Asset Name
- Physical Location
- Asset Classifications
- Install Date
- Nameplate Data
- Replacement Cost
- Condition Score
- Risk Score



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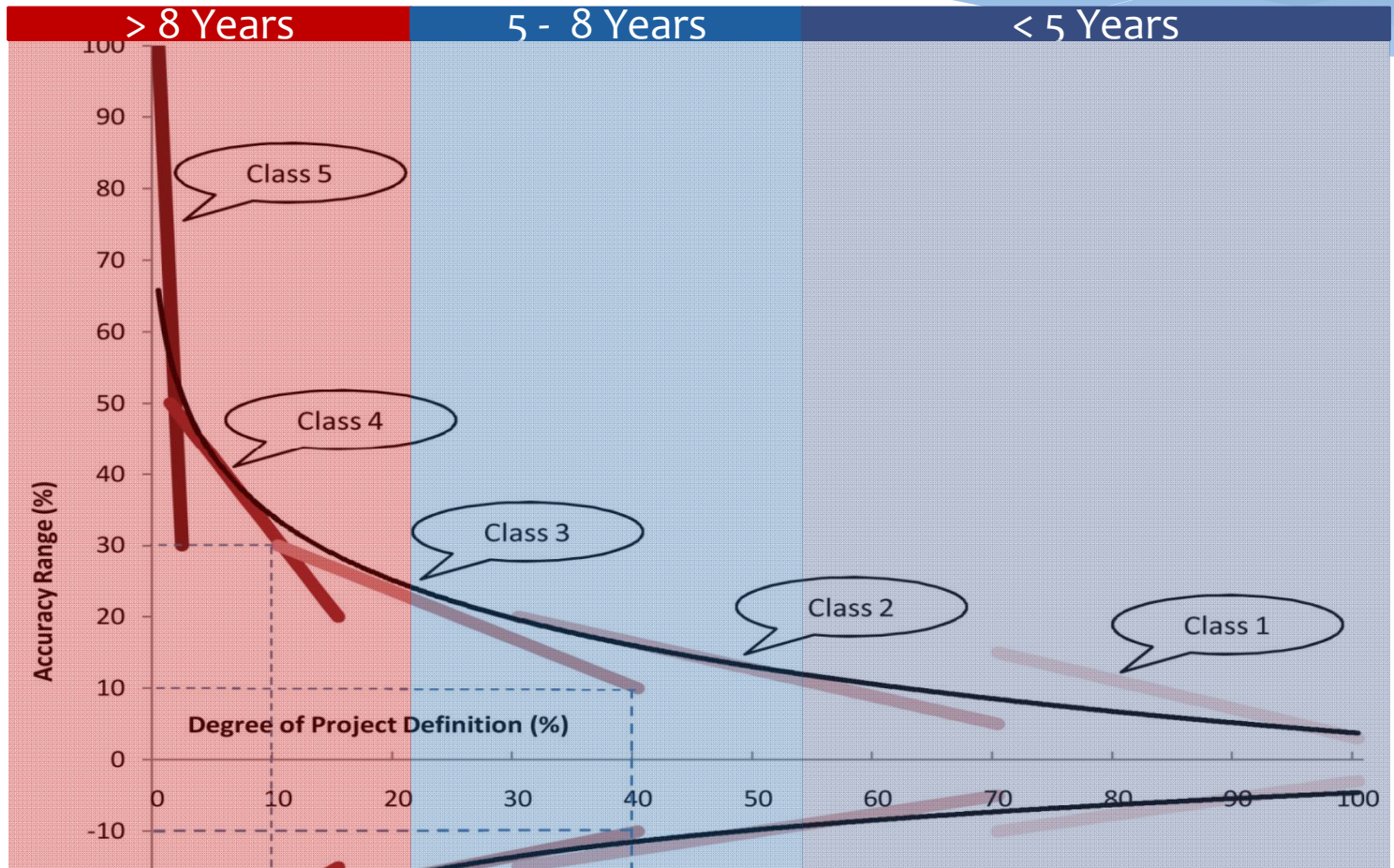
# Asset Classifications

- Aeration Diffusers
- Blowers
- Electrical
- HVAC
- Instrumentation & Controls
- Pumps
- Piping
- Tanks
- Valves



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# Asset Valuation




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# Condition Assessments

## Electrical Assets Condition Criteria

Assessment Description	Scoring	Description
Equipment has appropriate classification	1	Equipment is listed for the environment?
	5	Equipment is not listed for the environment?
General Condition Description	1	No corrective maintenance required
	2	Few minor deficiencies and minimal corrective maintenance required
	3	Several minor deficiencies noted and corrective maintenance required.
	4	Major deficiencies and significant corrective maintenance or rehab required
	5	Asset may be unserviceable, needs replacement or rehabilitation
Visual Asset Condition and Remaining Useful Life	1	Asset appears to be in very good condition, with more than 80% of life remaining
	2	Asset appears to be in good condition, with 60-80% of life remaining
	3	Asset appears to be in average condition, with approx. 50% of life remaining
	4	Asset appears to be in poor condition, with approx. 20-40% of life remaining
	5	Asset appears to be in very poor condition, with less than 20% of life remaining
Electric Enclosures	1	Protective enclosure coating sound, no deterioration. Sealing and ventilation /
	2	Coating cracked with some flaking exposing undercoat <20% of area, evidence Some seal wear but no dirt ingress. Ventilation and cooling adequate.
	3	Coating cracked with some flaking exposing undercoat >20% of area, evidence Some seal wear but no dirt ingress. Ventilation and cooling adequate.
	4	Coating cracked and flaking exposing metal > 20% of area, areas of panel heat Seal allowing dirt ingress, contaminating components. Ventilation and cooling
	5	Coating cracked and flaking exposing metal > 20% of area, areas of panel heat Seal allowing dirt ingress, contaminating components. Ventilation and cooling
Component / Part Availability	1	Components available locally. Component age < 2 yrs.
	2	Components available locally. Component age < 5 yrs.
	3	Components available locally. Component age < 10 yrs.
	4	Components available special order only. Component age < 15 yrs.
	5	Components not available. Component age > 15 yrs.




Asset	2490	Blower B-2
Parent		
Location	6375	Blower B-2
Type	Centrifugal Multi-Stage Blower	
Serial #	M088110	
Model #	74106A7	
Vendor		
Manufacturer	Hoffman Air & Filtration Systems	
Install Date	1/1/1998 12:00:00 AM	
Purchase Price	\$0.00	
Replacement Cost	\$0.00	

Likelihood of Failure		Consequence of Failure	
Condition	4.22	System Reliability	7.00
Performance	2.00	Regulatory Compl.	1.00
O&M Protocols	7.00	Health & Safety	7.00
Maintenance His.	2.00	Fiscal Impacts	7.00
		Public Confidence	4.00

LoF: 3.58 (Scale 0-10)

CoF: 6.56 (Scale 0-10)

Risk: 23.47 (Scale 0-100)



### Maintenance History



Maintenance Type	Labor Cost	Material Cost
Corrective Maintenance - Unplanned	\$1,500	\$0
Predictive Maintenance	\$2,500	\$500
Preventive Maintenance	\$2,500	\$0

Asset Specifications / Attributes		
Attribute	Value	Reading Description
Capacity	3000	SCFM
CHAIN SPD	3570	RPM
Horsepower	100	FTLB
Inlet Size	8	INCHES
Outlet Size	8	INCHES
Pressure	25	PSIG
Speed	3570	RPM
Stage	9	
Type	Centrifugal	




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LoF

3.58

0 2 4 6 8 10

CoF


6.56

0 2 4 6 8 10

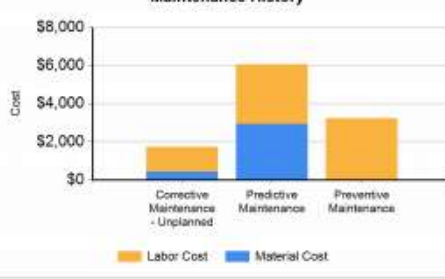
Risk

23.47

0 20 40 60 80 100



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# Maintenance (Preventative & Reactive)



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# Risk Scoring

$$\text{Risk} = (\text{consequence}) \times (\text{likelihood})$$



*How severe are the consequences of asset failure?*



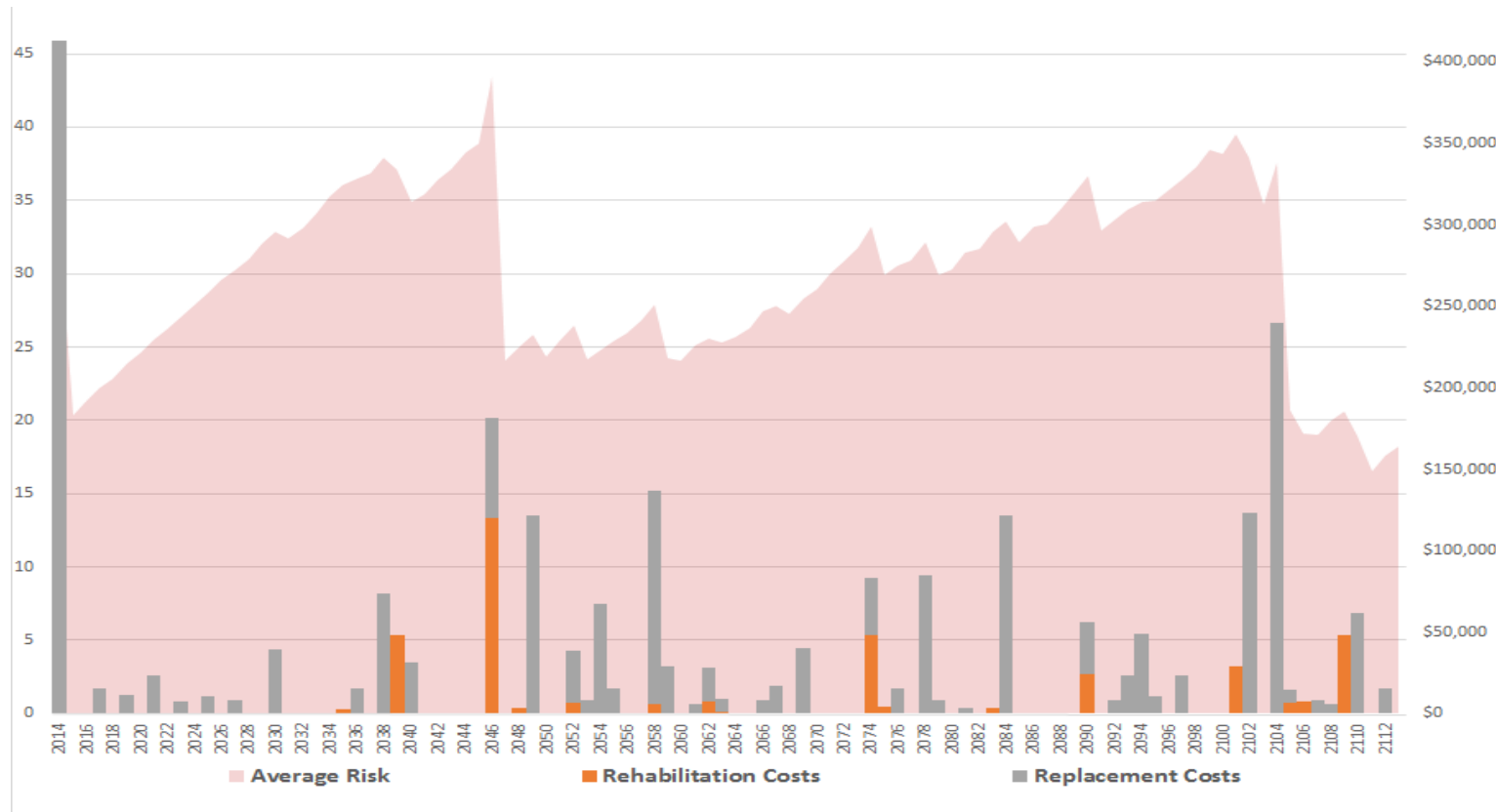
*How likely is it for the asset to fail?*

Consequence of Failure by Level of Service			
Consequence Category	Rate = 7	Severe = 10	
<b>System Reliability (60%)</b>			
Capacity	Adequate	Capacity	
SSO / Dry Weather CSO	No	Adverse impact on Consent Decree	
Property damage	No	Receiving water bodies degradation	
Odor	No	Possible infectious disease or release of chemicals or contaminants without any containment and draining into water body or storm sewer	
Process/System Impact	No	Needs to go to full County Ledger (> 100K)	
Water, etc.)	No adverse impact on community	Managed traffic disruption	adverse
Business Impact	No adverse impact on businesses	Limited adverse impact on businesses. Impacts < 5 businesses, not resulting in temporary closure	Localized adverse impact on businesses. Impacts > 5 businesses with potential for temporary closure of less than 1 day
Natural Resource	No impact on natural resources or recreation		Discharge of contaminants to an impaired water body, tributary, or hydraulic connected storm sewer with impacts to local recreation
Public perception	No adverse media attention	Loss of some support from the public; some concerns expressed publicly (local 1-day story)	Loss of support from the public; concerns expressed publicly (multiple local news stories)
Development Impact	Support smart growth		No public confidence in the Utility (consistent negative media)

Likelihood of Failure			
Likelihood Category	5	7	10*
<b>Physical Condition (60%)</b>			
General Condition	Fair	Poor	Very poor
Grade - (Based on the Assessment Rubric)	Condition Grade 3	Condition Grade 4	Condition Grade 5
Maintenance Requirements	Several minor deficiencies noted and corrective maintenance required.	Major deficiencies and significant corrective maintenance or rehab required	Asset may be unserviceable, needs replacement or rehabilitation
Age (Remaining Useful Life)	40% < Age ≤ 60% of Its Service Life	60% < Age ≤ 80% of Its Service Life	Age > 80% of Its Service Life
Currents and Service but	Sufficient capacity to meet current average capacity requirements and 100% during peak conditions	Able to meet current average capacity demands but not peak demands	Unable to meet current average capacity requirements
Operational	Provides LOS 50% of the time and has constant efficiency issues	Cannot consistently meet current or anticipated LOS (Approximately 75% of the time or more)	Cannot meet current or pending LOS
Operational	Operational efficiency is poor, replacement with new equipment has ROI < 10 years	Excessive operational costs, replacement with new equipment has ROI < 5 years	Replacement with new equipment has ROI < 3 years
Low I/I	Low I/I (>200 GPD/IDM)	Moderate I/I (<400 GPD/IDM)	Significant I/I (>400 GPD/IDM)
		Subject to flooding	
		Obsolete-cannot acquire part	
Written/online but not complete or not up-to-date.	Written/online but outdated or location unknown.	No written or online protocols	
<b>History of Planned Maintenance (5%) **</b>			
	> 80% of total maintenance	< 80% to > 60% of total maintenance	< 60% to > 40% of total maintenance
		< 40% to > 30% of total maintenance	< 30% of total maintenance
	No planned (PM) currently performed or recorded		



# AM Forecast



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# WEP's AM Accomplishments

- 17 years of Asset Management & CMMS
- Strategic AM Plan
- Review of 6 WWTP in 5 years
- Mapping of collection system



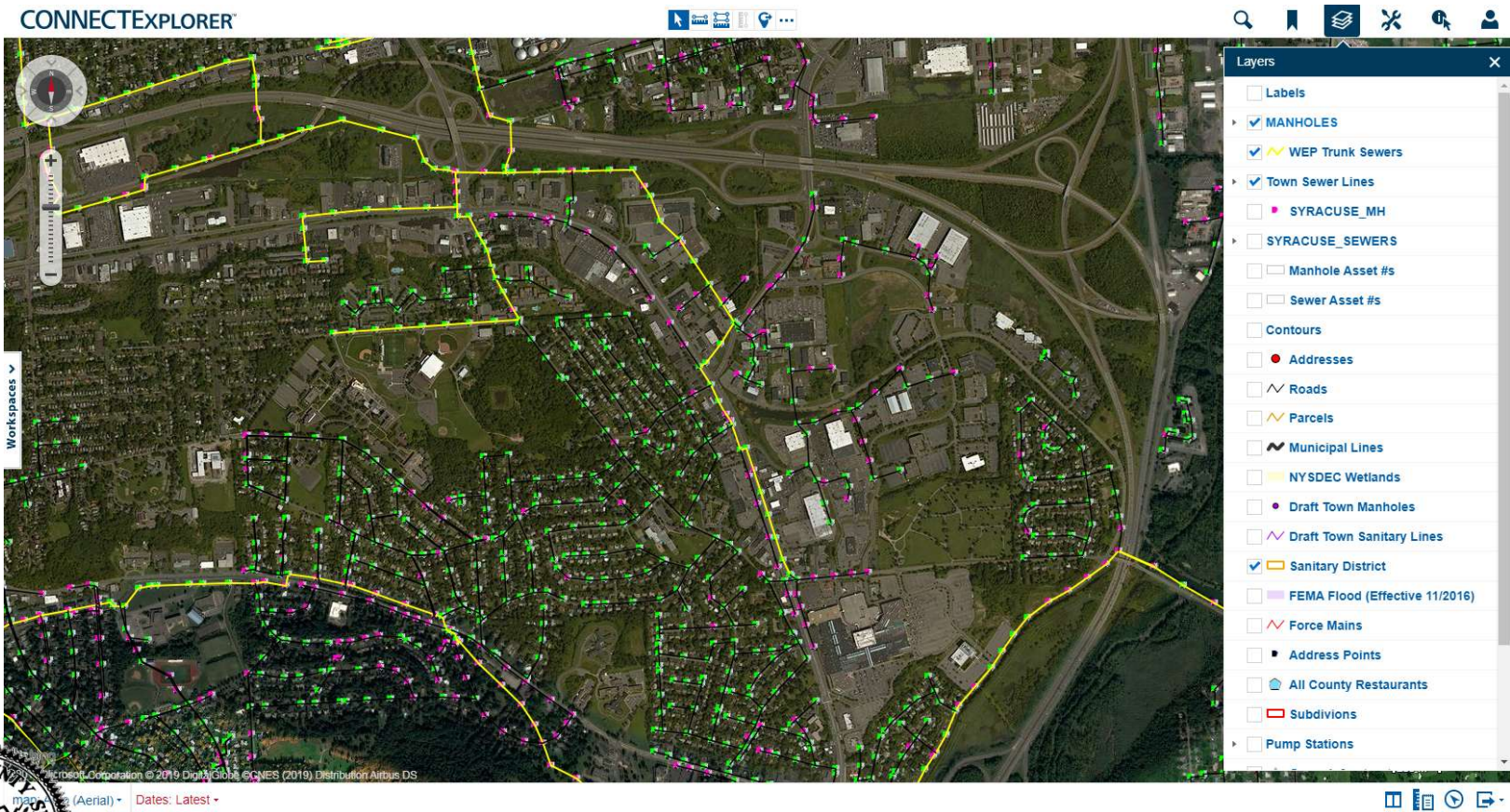
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# GIS Mapping & Maximo Spatial



# GIS Mapping & Maximo Spatial



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# Brewerton WPCP - Project



Final Report

## Brewerton Water Pollution Control Plant Comprehensive Facility Assessment

Prepared for: Onondaga County Department of Water Environment Protection, Onondaga County, New York

#102 Architectural

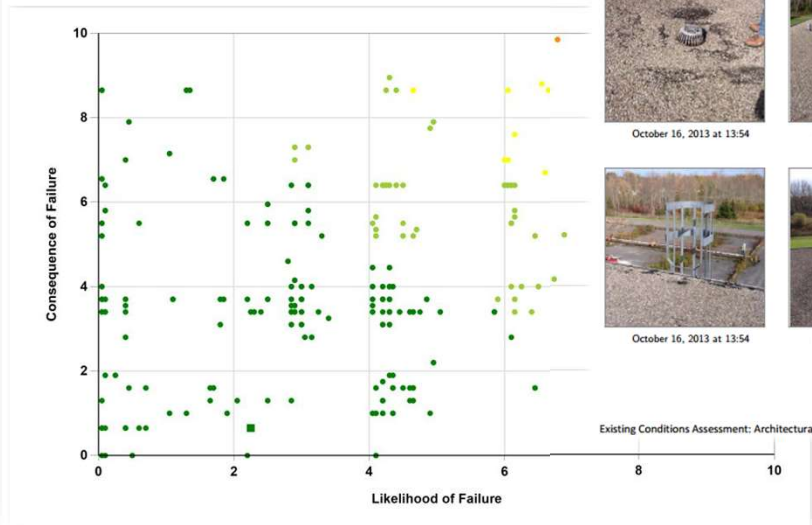


## Plant Performance & Condition Assessment Conducted in 2014

Issue Number: 102  
 Date Created: Oct 15, 2013 @ 18:37  
 Creator: Robert McCormick, AIA  
 Status: Open  
 Room: ROOF  
 Description: Original BUR system is over 42 years old, with lightning protection aerials and cabling.

Asset Risk Profile for:

Brewerton



Photos (6)



October 16, 2013 at 13:54



October 16, 2013 at 13:54



October 16, 2013 at 13:54



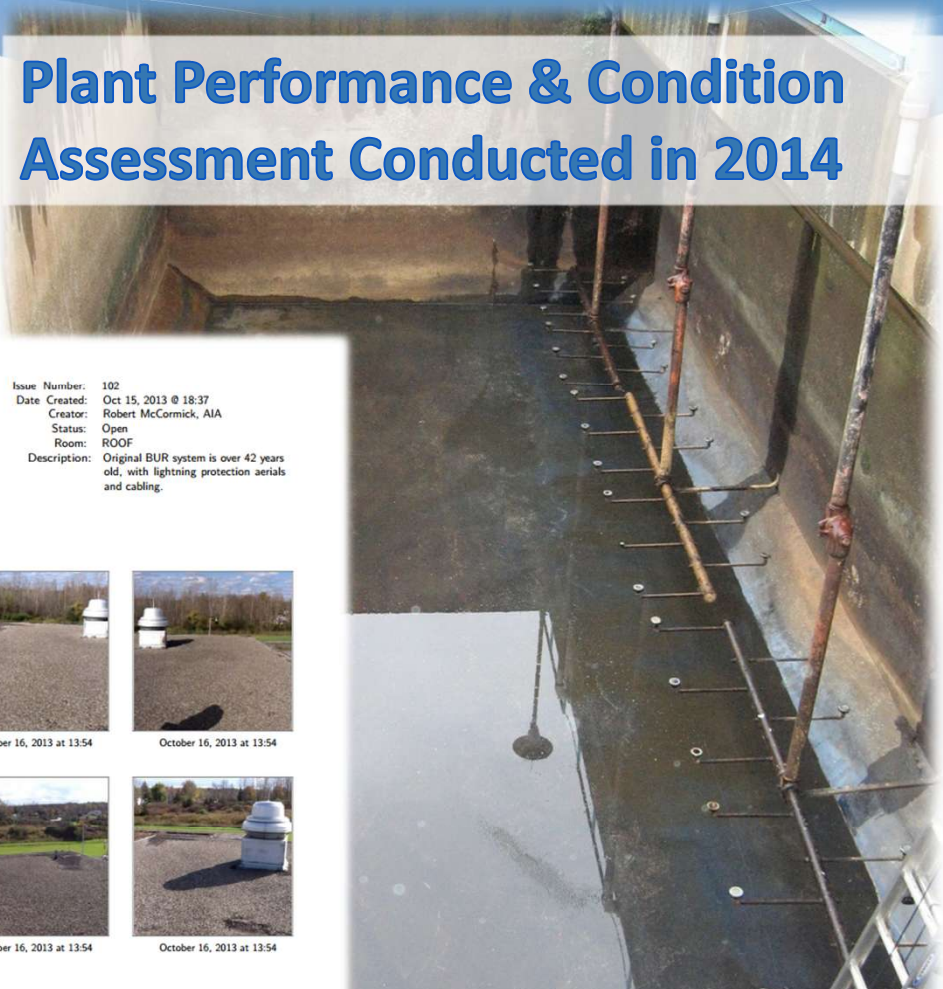
October 16, 2013 at 13:54



October 16, 2013 at 13:54



October 16, 2013 at 13:54



### 20 Year CIP Planning

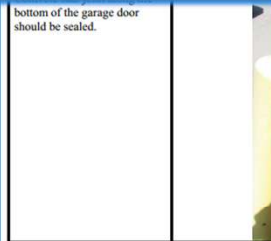
- Immediate Need
- 10 Year Window
- 20 Year Window

# Baldwinsville Seneca Knolls - Project

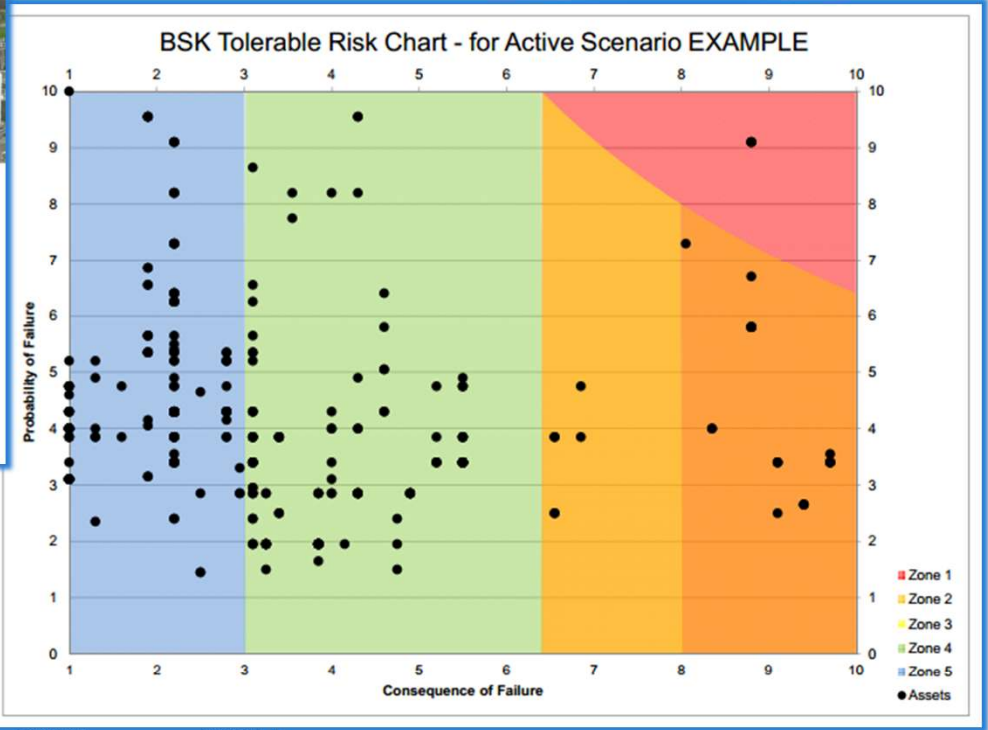


**Onondaga County, NY**  
 Condition Assessment Report  
 Baldwinsville-Seneca Knolls Wastewater Treatment Plant

December 2015



bottom of the garage door should be sealed.



Location: Control Building - Exterior	Photo Name:	Photo #:
Garage Area view	CNTRL-BLDG_034.jpg	24
Description(s):		
Concrete slab joint along the bottom of the garage door should be sealed.		



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## Current Projects

- Metro 1978 Plant
- Risk Scoring of all Collection System (WEP staff)
- Strategic Energy Management



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# Metro 1978 Plant Inspection



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## Tank, Building & Gallery Inspections

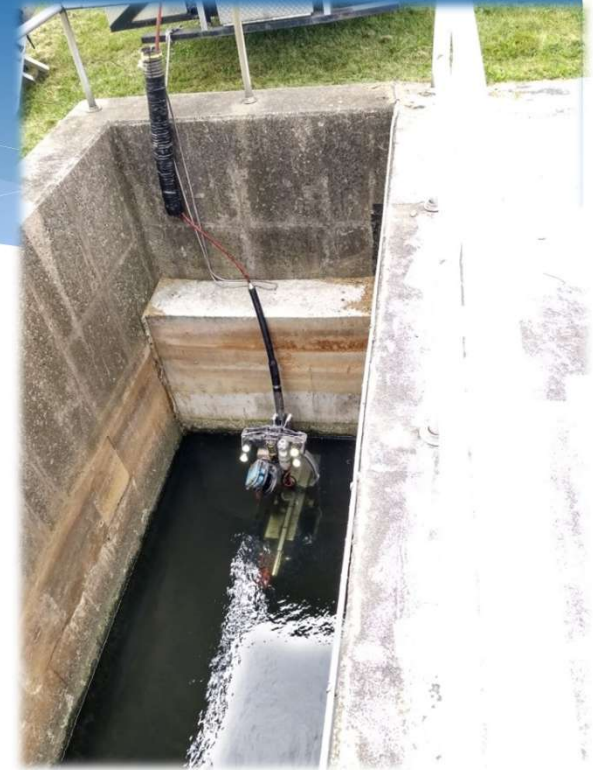


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# Pipeline Inspection Methods

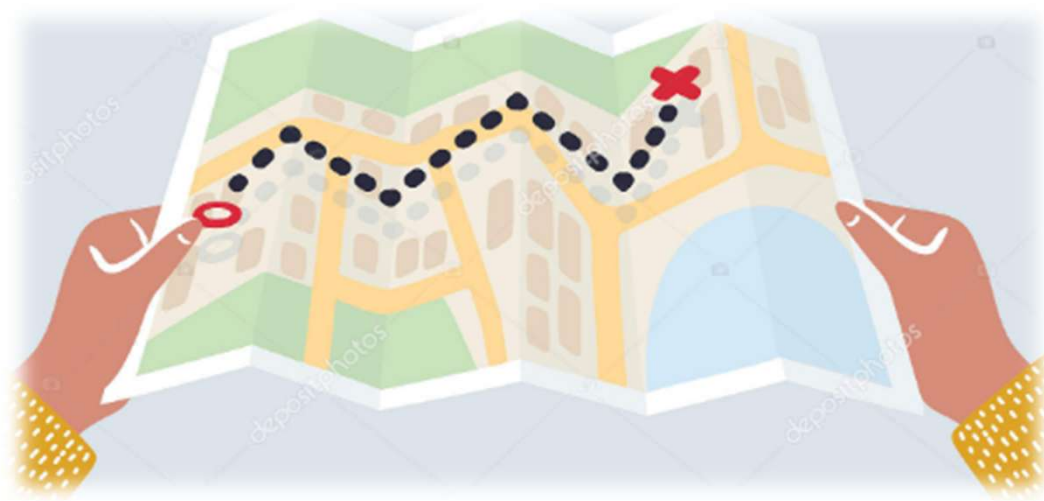
- \* **Multiple inspection methods**
- \* API-570
  - Robotic
    - CCTV
    - Sonar
    - Lidar
- \* **Best technology selected for the situation**
  - Pipe material
  - Accessibility
  - Full vs. drained pipe



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# Road Map for the Future

- ➔ Replacement vs. Rehabilitation Evaluation
- ➔ Assembling Manageable Projects
- ➔ 20 year forecast for Capital Planning



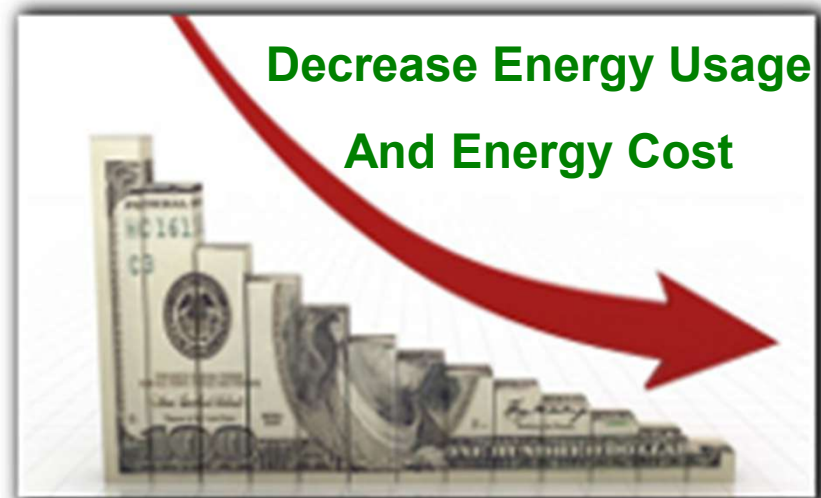
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# Insuring Asset Efficiency

Strategic Energy Management (NYSERDA Pilot)  
Energy Performance Contract (ECMs)



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How do you prepare for the future...



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## Challenges

- ❑ Increased Demand on Infrastructure (Age, Climate, budgets, etc.)
- ❑ Staff Turnover
- ❑ Consolidation
- ❑ The Unknown (New Regulations?, Funding, etc.)



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How do you prepare for the future...



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## Increased Demand on Infrastructure

**Assets are getting older....**



**and we keep asking them to do more new things.**



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## Increased Demand on Infrastructure

How will weather be 10 years from now...



BJC WWTP inundated by floodwaters (DEC photo)



**More Intense Storms?**

**Longer Droughts?**

**Are we prepared with our current assets?**



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# Doing More With Less.....



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How do you prepare for the future...



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# Staff Turnover

## NEW PEOPLE SINCE 2016



**111 NEW PEOPLE COMING IN THE DOOR...**



**Staff Turnover**

***Approx. 1/3  
of WEP's Staff***



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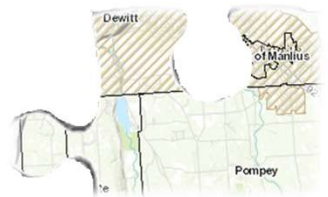
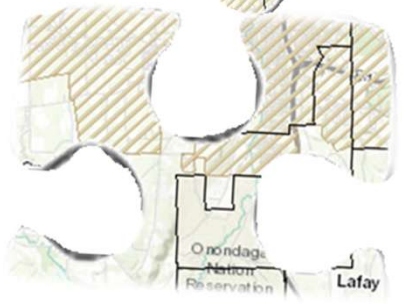
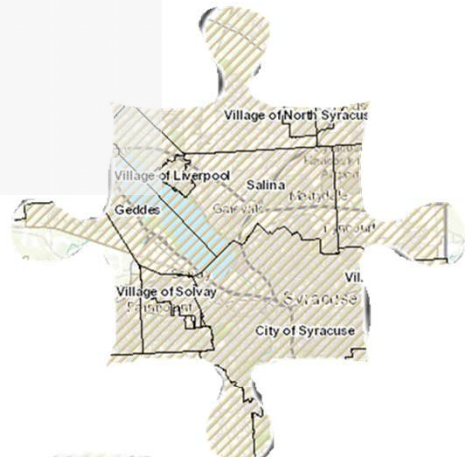
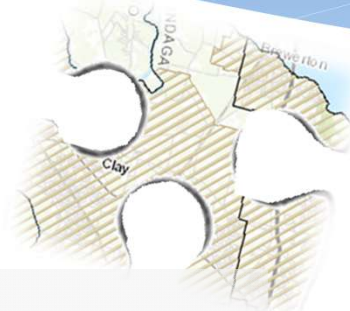
How do you prepare for the future...



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# Consolidation

**Many System Components  
Various Ages  
21 Municipal Owners**



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# Consolidation

**Assess Condition of facilities**  
**Standardize Facilities**  
**Standardize O&M**



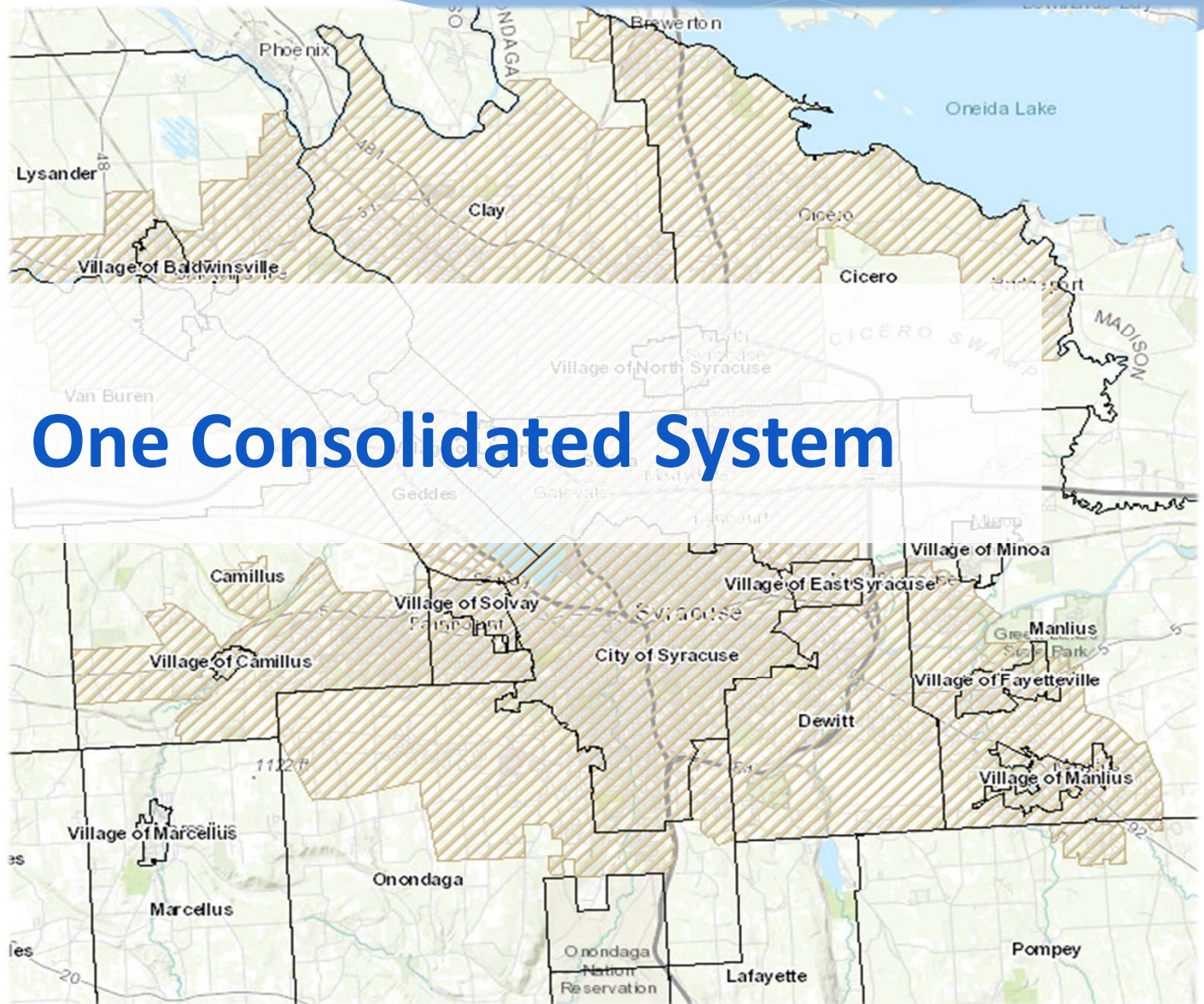
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# Consolidation

Result:

## One Consolidated System



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# The Unknown (New Regulations?, Funding, etc.)



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# Question & Answer



Save the Rain

Questions???