



Proactive Infrastructure Investments

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THE UNITED STATES
CONFERENCE OF MAYORS

Agenda

Proactive Infrastructure Investments

Best Practices from Our City

Individual Technology

System Integration

Strategic Framework

01

Recycled Water Program

02

Backbone of Modern Municipal Utilities

SCADA System

03

Asset Management



Recent UV replacement project
and key takeaways.



Recent SCADA improvement
project and key takeaways.



Stormwater management
as a key example.



City Services

**Wastewater collection
and treatment**

**Potable water distribution
(1/3 of the City's population)**

**Recycled water production
and distribution
(northwest part of the City)**

Stormwater management

1. Recycled Water Program



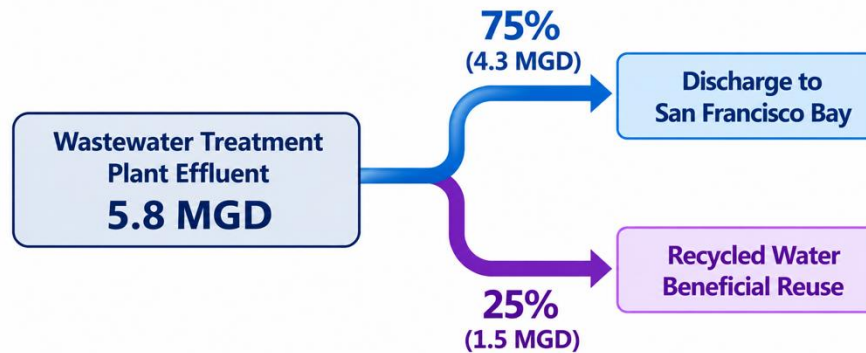
Our Recycled Water Services Started in the 1970s!

1. Recycled Water Program

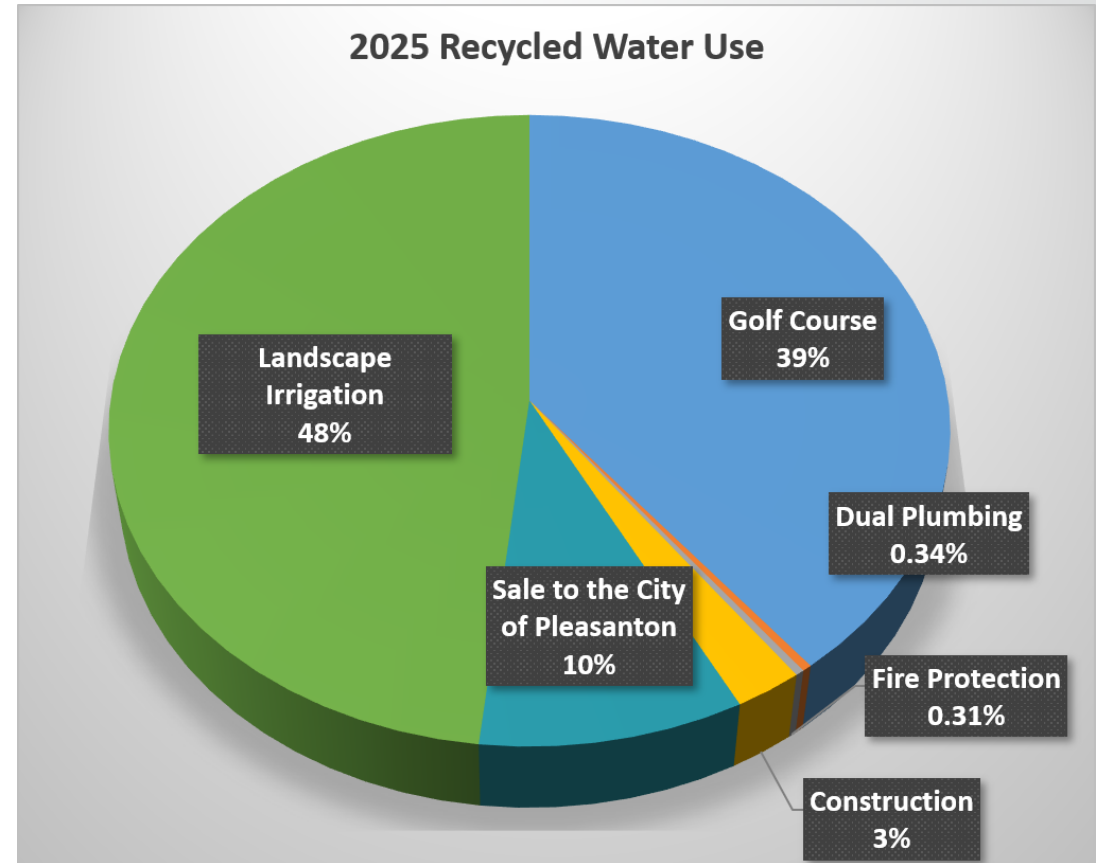
Potable Water Supplement



Wastewater Nutrient Removal



For example, for 300 kg/day nitrogen discharge limit
Effluent Limits: 13 mg/L for 5.8 MGD
18 mg/L for 4.3 MGD



Ultraviolet Disinfection System Replacement

Old UV System



Energy
Consumption

425
kWh/MG



O&M Cost

\$180,000
per year

New UV
System

New UV System



Energy
Consumption

176
kWh/MG



O&M Cost

\$87,000
per year



About **60%**
less energy consumption



About **52%**
lower annual O&M costs

2. Supervisory Control and Data Acquisition (SCADA) System Improvements



Integrates all utility infrastructure for potable water, wastewater, recycled water, and stormwater.



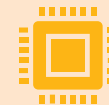
Enhances operational efficiency, situational awareness, and emergency response.



Server Virtualization

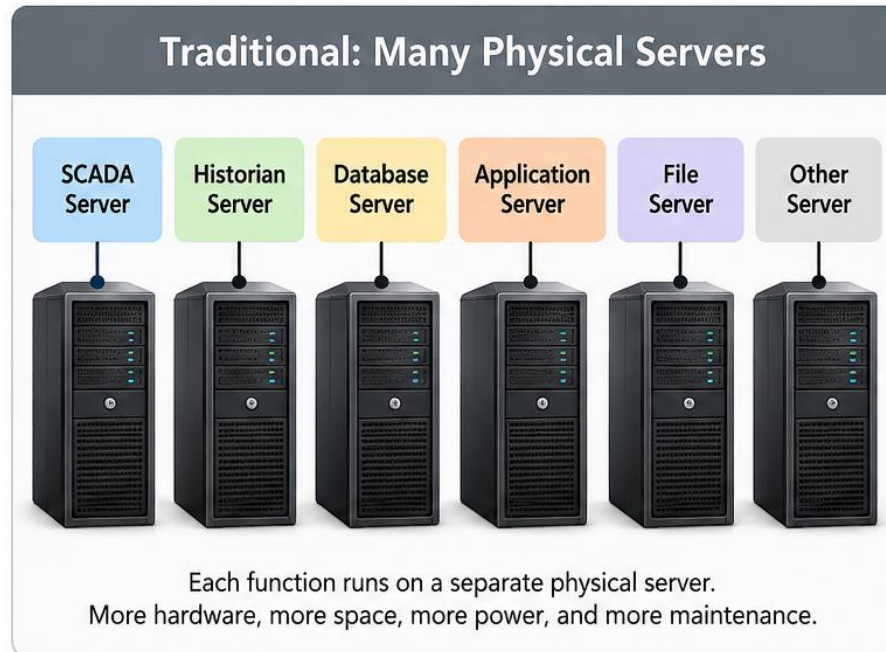
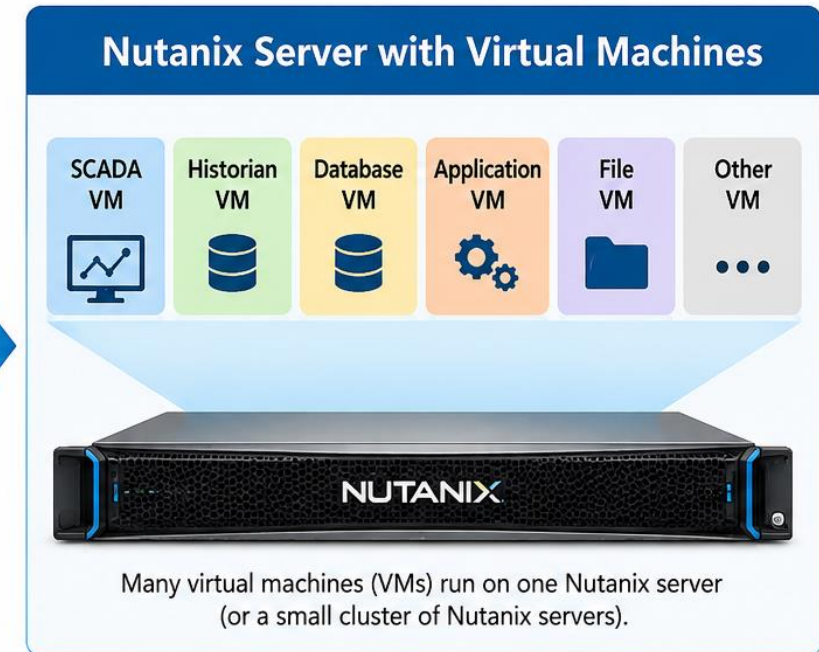


Network Replacement

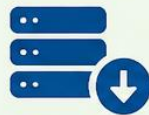


Security and Remote Access

Server Virtualization



Key Benefits for the City



Less Equipment



Saves Space



Lower Power Use



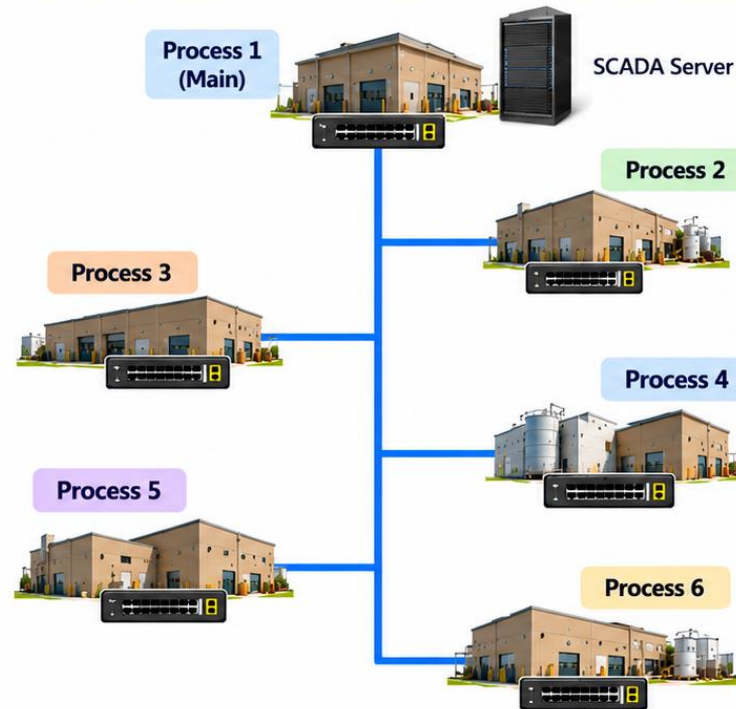
Easier Management



More Reliable

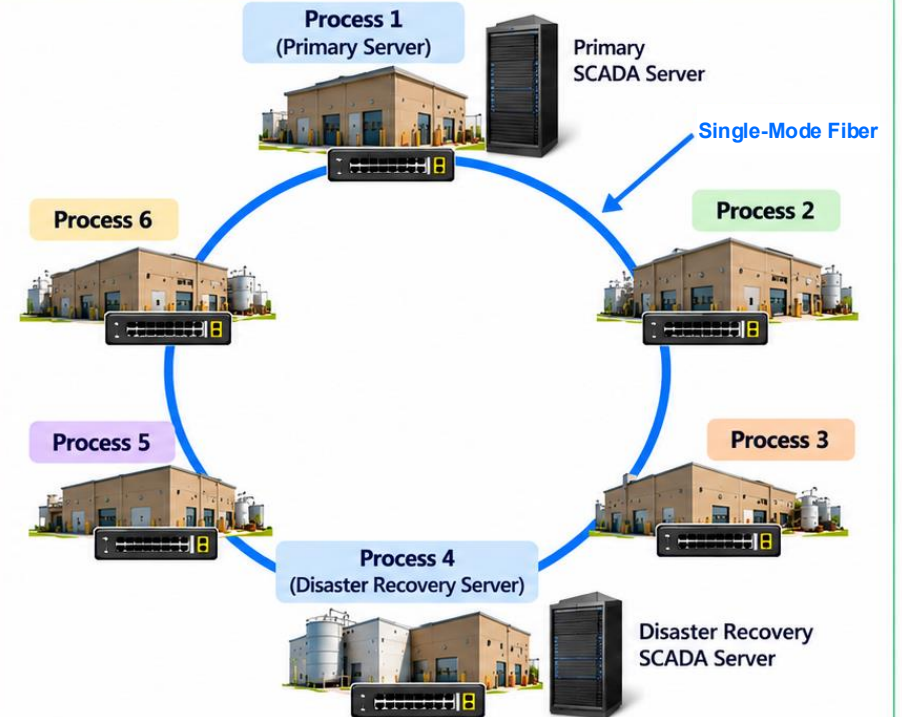
Network Replacement

Branch Network (Tree)



Multiple Single Points of Failure

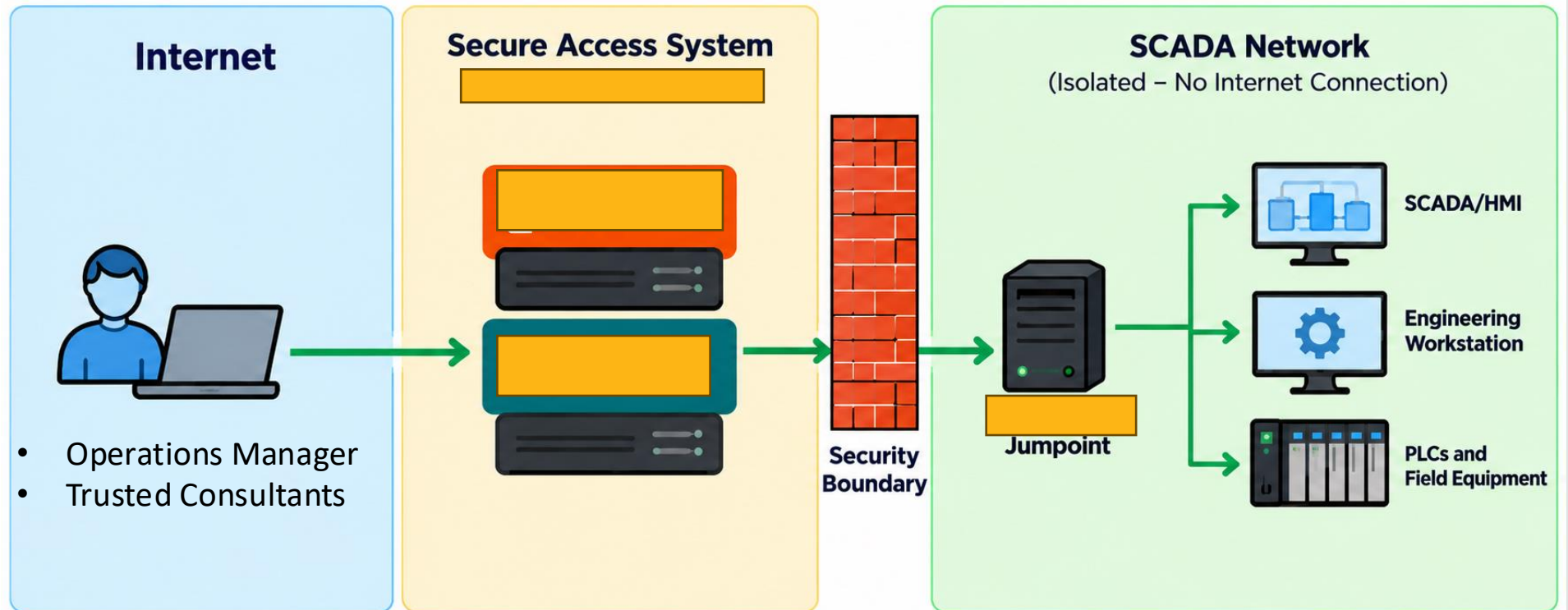
Ring Network (Self-Healing)



No Single Points of Failure

Security and Remote Access

How City Staff Remotely Access the SCADA System



3. Asset Management Program

Foundation

Asset Management Plan

- Program structure
- Asset hierarchy
- Assets to be included
- Attributes

Current Practice

NEXGEN AM tool

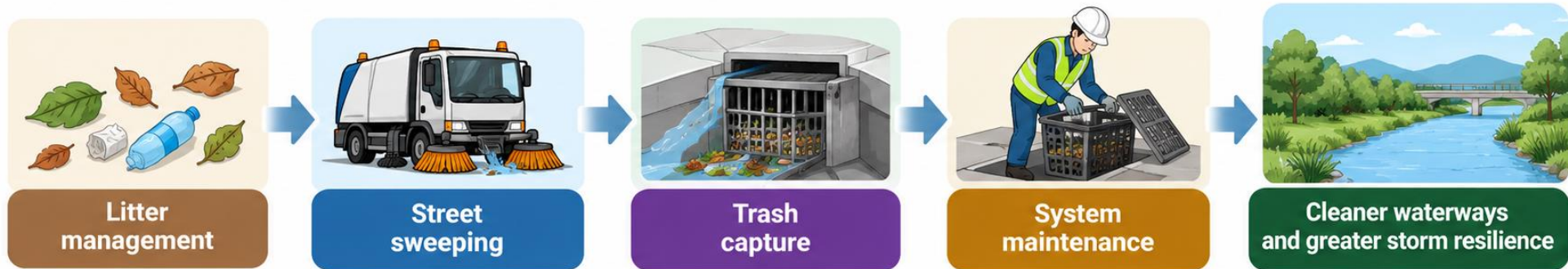
- Manage service requests and work orders
- Automate scheduling and intervals
- Track condition and costs
- Scope CIP/Maintenance projects based on the risk

Risk = Consequence of Failure × Likelihood of Failure

Condition assessment is the link between inventory data, risk, and investment decisions.

AM Example: Stormwater Management

The City's Stormwater Management Practice



Trash Load Reduction Progress



Regulatory Compliance

Trash Capture Devices (TCD)



460+
installations

New Asset Registry

TCD Maintenance Frequency

Small TCD	Semiannual
Large TCD (Net Tech Device)	Every two months
Large TCD (Bio Clean-Stanley)	Quarterly

Condition Assessment



Condition Assessment: Keeping the Stormwater System Working

The City regularly inspects storm drain pipes and outfalls to identify issues early, prevent blockages and damage, and keep our waterways clean and resilient.

Clogged pipeline
(Pole-camera inspection)



Debris is partially blocking the storm drain pipe.

Damaged outfall



Riprap is failing and the outfall is damaged, with erosion undercutting the concrete.

Outfall with vegetation overgrowth



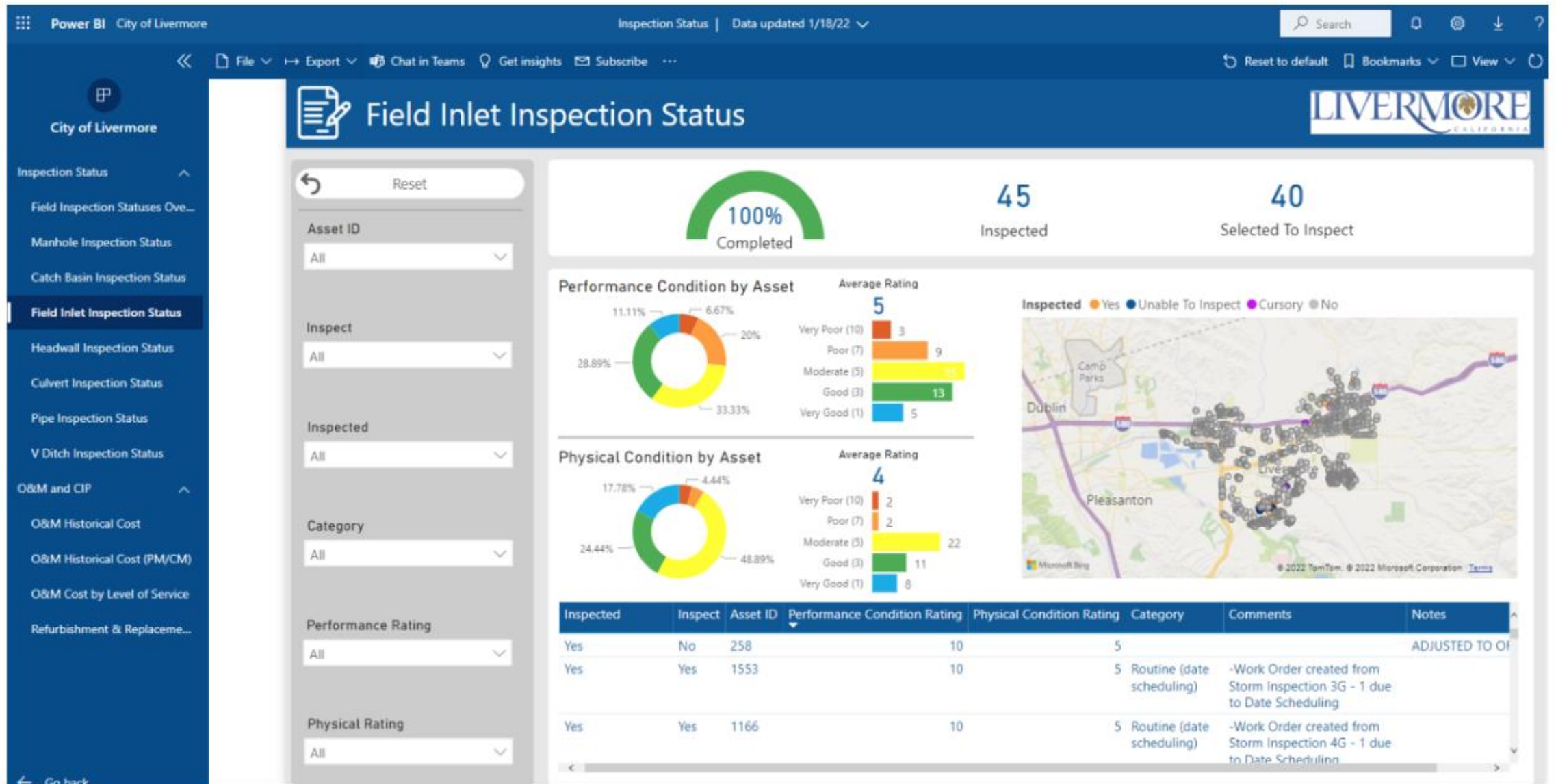
Sediment, debris, and overgrown vegetation are partially blocking the outfall.



These inspections help the City prioritize maintenance and repairs, prevent flooding, and protect our waterways.



Combining Fieldwork with Accessible Reporting



Thank you! Questions?

Livermore's Best Practices for Proactive Investment in Utility Infrastructure



Recycled Water Program



Conserve water and increase drought resiliency.



Offset wastewater nutrient discharge.



SCADA System



Reliable and resilient servers, network, and control systems.



Efficient operations and minimal system downtime



Asset Management



Manage O&M activities using the NEXGEN Asset Management Tool.



Scope capital projects based on data-driven risk assessment.

Individual Technology

System Integration

Strategic Framework

