Managing Growth and Sustainability:

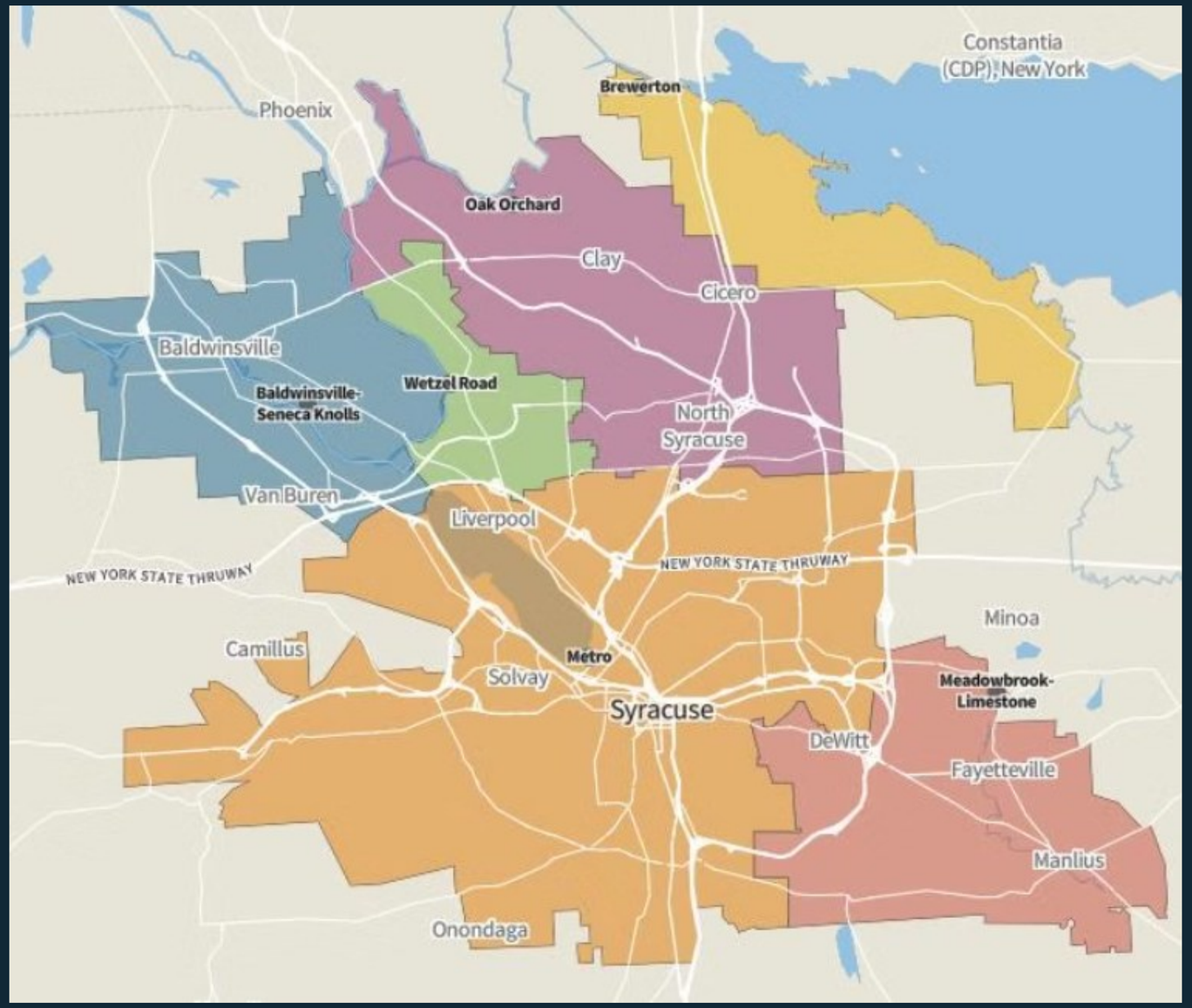
Sewer Infrastructure and Capacity Planning in Onondaga County

Presented by Shannon L. Harty, P.E., Commissioner and Ray Schofield, P.E., Collections System Director

A comprehensive overview of wastewater infrastructure management and capacity planning strategies for sustainable community development.

Onondaga County Department of
WATER ENVIRONMENT PROTECTION

Who We Are



Our Team

A diverse workforce of 360+ skilled professionals handling multiple service areas.

- Treatment and conveyance systems
- Regulatory services and NYSDOH certified laboratory
- Asset management and capital programs

Our Infrastructure

County-owned public sewer utility serving approximately 75% of the County.

- Six wastewater treatment plants
- 2,000+ miles of sewers
- 185 pump stations and 32,000 manholes

Sewer 101: From Source to Discharge

The journey of wastewater through our infrastructure system:

Private Property

Plumbing systems connect to lateral lines under local regulatory oversight.

Local Sewers

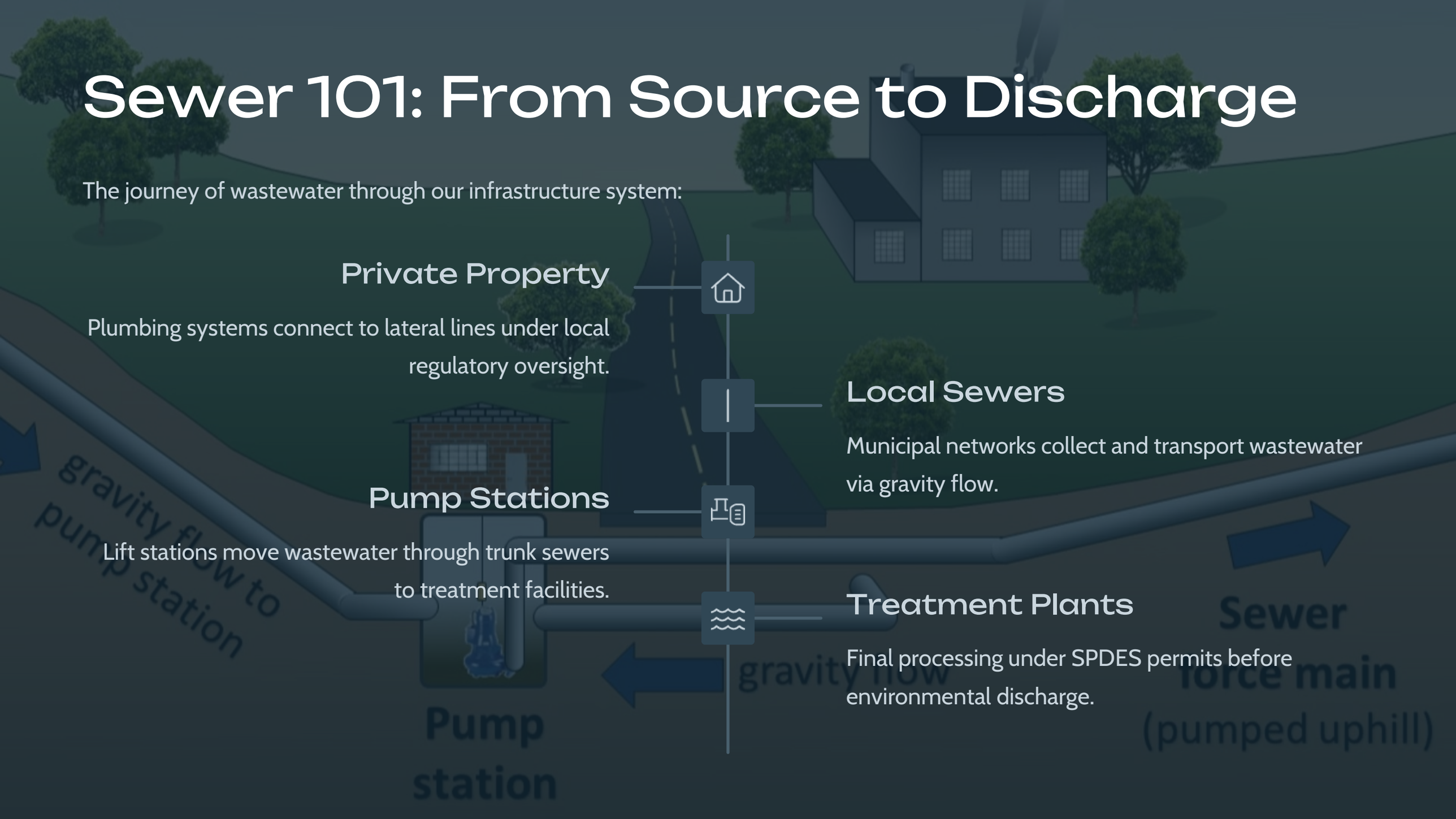
Municipal networks collect and transport wastewater via gravity flow.

Pump Stations

Lift stations move wastewater through trunk sewers to treatment facilities.

Treatment Plants

Final processing under SPDES permits before environmental discharge.



Collection System Operational Issues

Wet Weather Surcharging

Stormwater infiltration overwhelms system capacity during heavy rainfall events.

Blockages and Obstructions

Roots, grease, and disposable wipes create persistent maintenance challenges.

Private Inflow Sources

Older neighborhoods contribute excessive flow from outdated plumbing connections.

Aging Infrastructure

Deteriorating pipelines and facilities require extensive rehabilitation.

WWTP Operational Considerations

Wet Weather Operations

Treatment plants must manage flow volumes that can increase tenfold during storms.

High flows risk overwhelming biological treatment processes.

Emergency Readiness

Backup power systems and redundant equipment ensure continuous operation.

Staff must respond rapidly to system failures.

Construction Coordination

Capital projects temporarily reduce treatment capacity while upgrading facilities.

Flow management becomes critical during construction phases.

Growth Management

New development strains existing capacity limits at treatment facilities.

Strategic planning balances growth with infrastructure constraints.

What is WEP Doing?

Sewer Consolidation

Long-term lease agreements with municipalities extend capital investments into local systems.

Capital Investments

Increased investment in improvements of owned and leased collection system assets and treatment plants

Industrial Pretreatment

On-site processing of high-strength waste reduces WWTP loading and prevents blockages.

CMOM Program

Preventative maintenance and proactive rehabilitation improve system reliability.

CMOM Program - Current

Data Collection Systems

Pump station flow monitoring provides continuous operational metrics. Level sensors and flow meters track system performance in real-time.

Trouble Area Mapping

Geographic tracking of CSOs, SSOs, and basement backups identifies critical intervention zones. Historical incident data guides maintenance priorities.

Performance Analysis

Advanced analytics convert house call data into actionable maintenance insights. Trend analysis helps predict potential system failures.

CMOM Program - Future

AI-Powered Data Collection and Analysis

AI evaluation of CCTV and other existing data sets to expedite capital improvement planning and implementation

Smart Sewer Monitoring

IoT sensors provide real-time data on flow, capacity, and system health.

System-Wide Hydraulic Modeling

Digital twin simulation enables accurate capacity planning and what-if scenarios.

AI-Powered Predictive Maintenance

Machine learning algorithms anticipate system failures before they occur.

Evaluating New Sewer Connection Requests: *Capacity Assurance*

Project Location

Is the project located in the CSD? Which treatment plant service area>

Service Status

Is this a new sewer service or redevelopment of an existing?

Project type

What will be built under the project?

Calculate Projected Flow

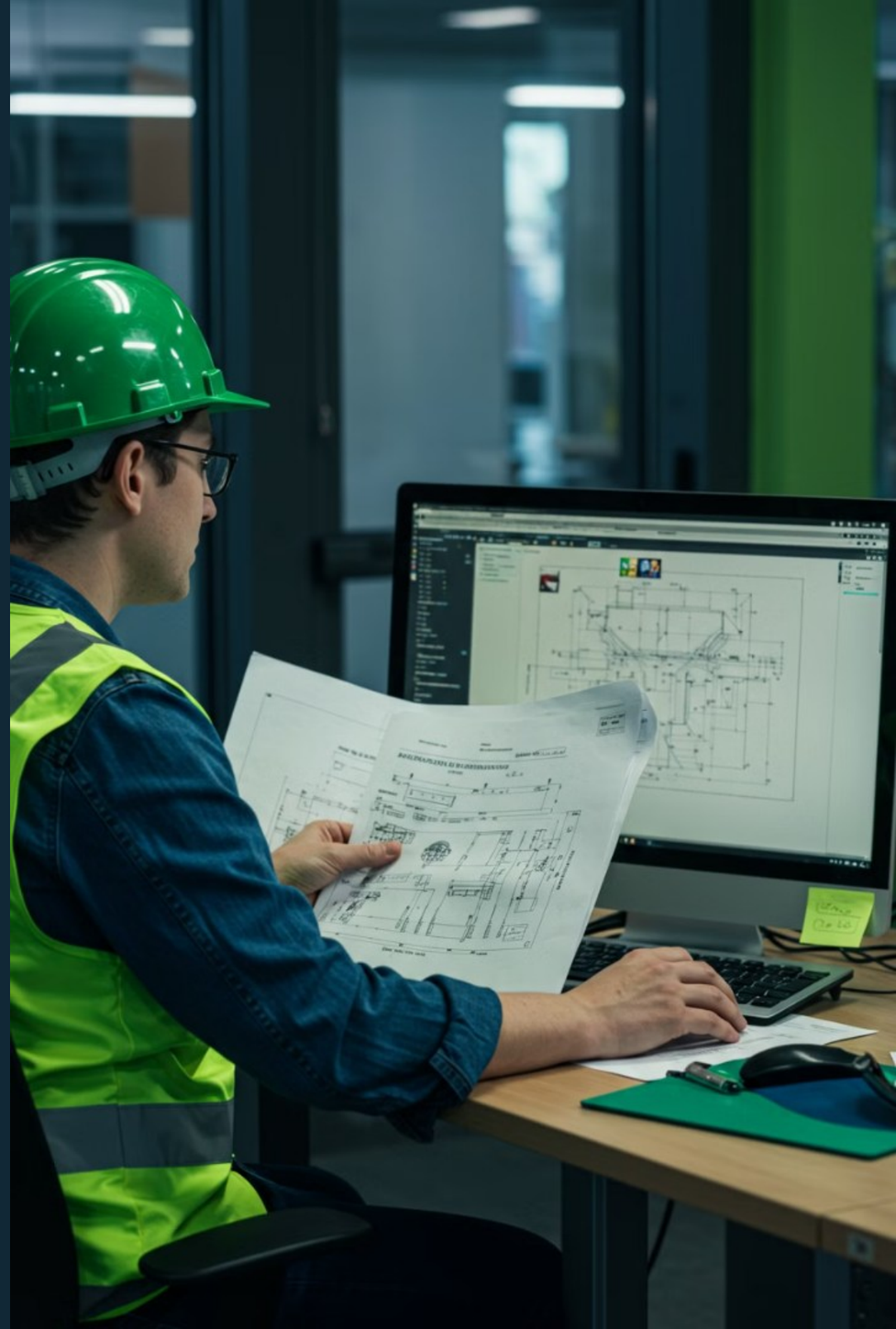
How much sanitary sewage will the project create?

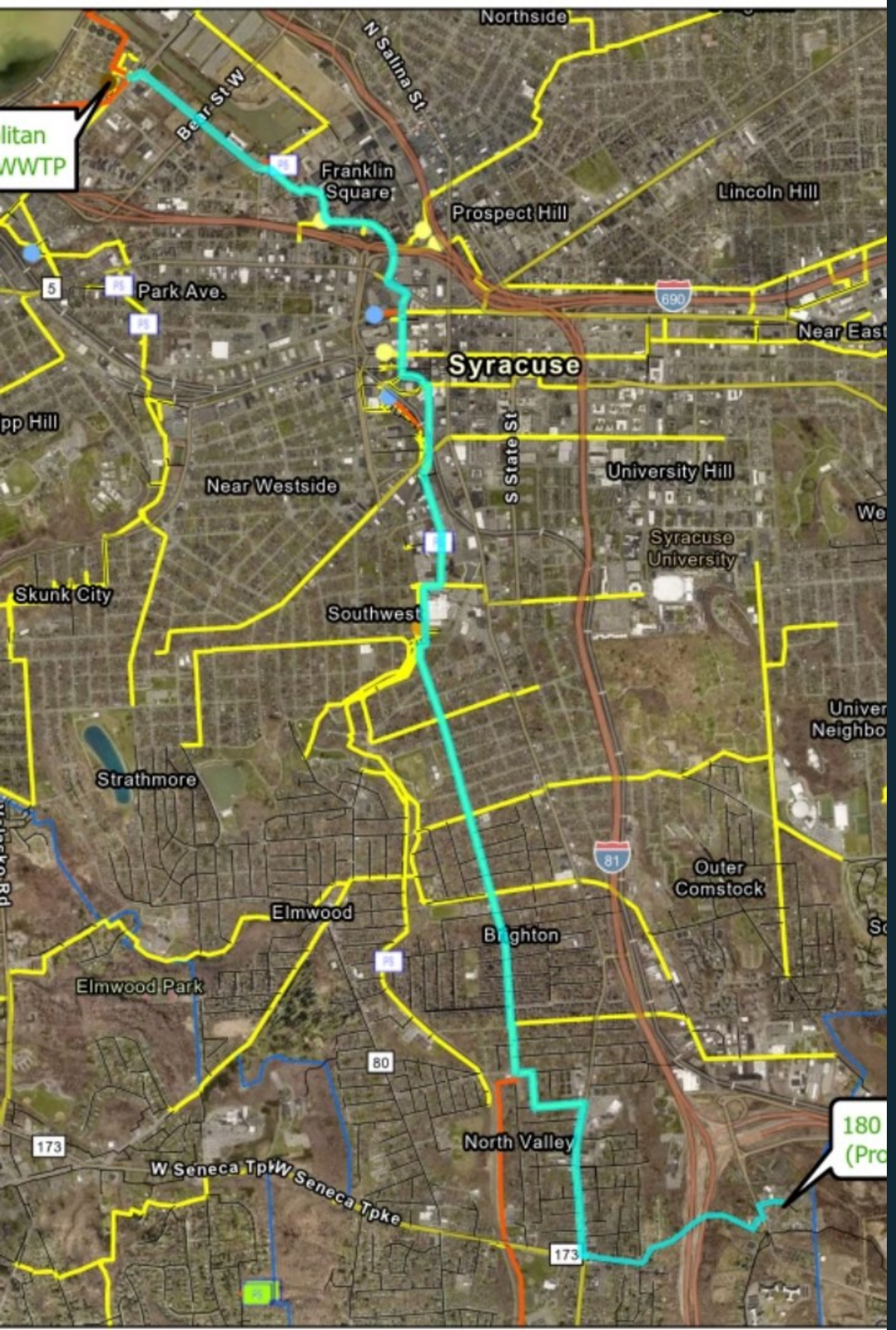
Non-sanitary waste

Will the project create non-domestic waste?

New Sewer

Does the project need new sewers extended to it? Will it be building new sewers?





Capacity Request Review Process

Initial Inspection

For redevelopment projects, building lateral conditions are assessed for integrity.

Flow Routing Analysis

Engineers map the path wastewater will follow through the collection system.

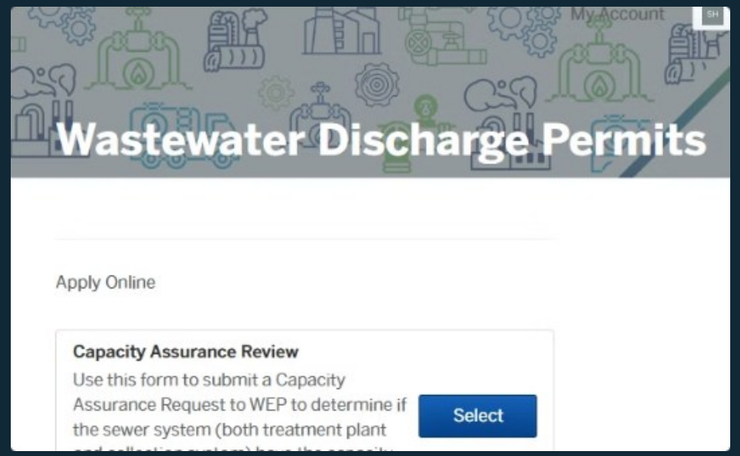
Capacity Evaluation

Both collection system and WWTP available capacity undergo thorough assessment.

Determination and Mitigation

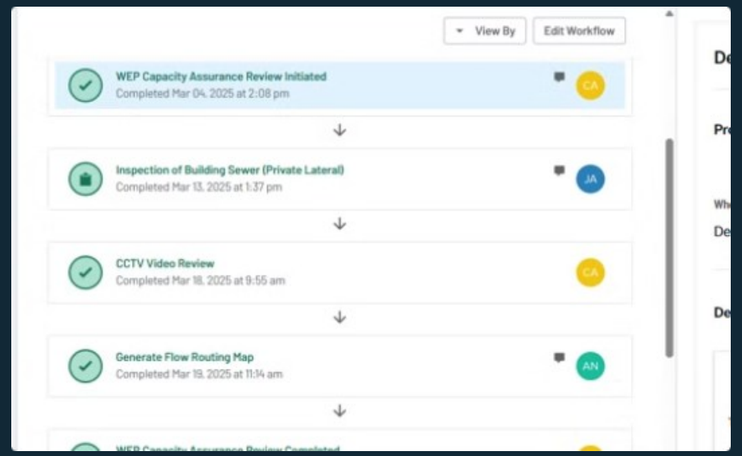
Final capacity determination includes extraneous flow offset requirements if needed.

OpenGov Application System



Online Submission

Complete and submit Capacity Assurance applications through the OpenGov portal for streamlined processing.



Application Tracking

Monitor your application status in real-time through the digital tracking system.

Approval Process

Approvals remain valid for 2 years and require coordination with WEP/DOH for successful implementation.

Residential Development Design Considerations

Site Planning

Separate storm and sanitary systems with connections for each property.

Infrastructure Design

Proper sewer depth relative to basement elevations prevents gravity flow issues.

Lot-Level Prevention

Clean-outs for access and basement ejector systems protect against backups.

Prohibited connections

Sump pumps and footer drains are not allowed to discharge to sanitary system

Strategic placement of access points and strict adherence to local ordinances safeguard residential properties from sewer-related flooding incidents.

Questions?

2,000+

Miles of Sewers

Maintained throughout Onondaga County

185

Pump Stations

Ensuring reliable wastewater transport

32,000

Manholes

Providing critical system access

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http://ongov.net/wep/