

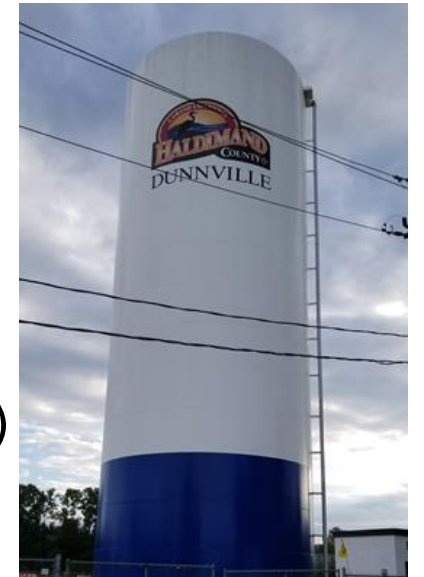
Water and Wastewater Program Overview



Water and Wastewater Overview

Infrastructure Summary

- Water Infrastructure
 - ✓ 3 drinking water systems (distribution and transmission)
 - ✓ 2 raw water low lift pumping stations
 - ✓ 2 water treatment plants
 - ✓ 5 standpipes / elevated tanks
 - ✓ 3 booster station / reservoirs
 - ✓ 7 water distribution systems
 - ~ 150 km distribution water mains
 - ~ 52 km transmission water mains
 - ~ 1,648 water valves
 - ~ 898 fire hydrants
 - ✓ 4 industrial raw water supplies (Stelco, Imperial Oil, Innophos and Mosaic)
 - ~ 23 km raw water transmission mains



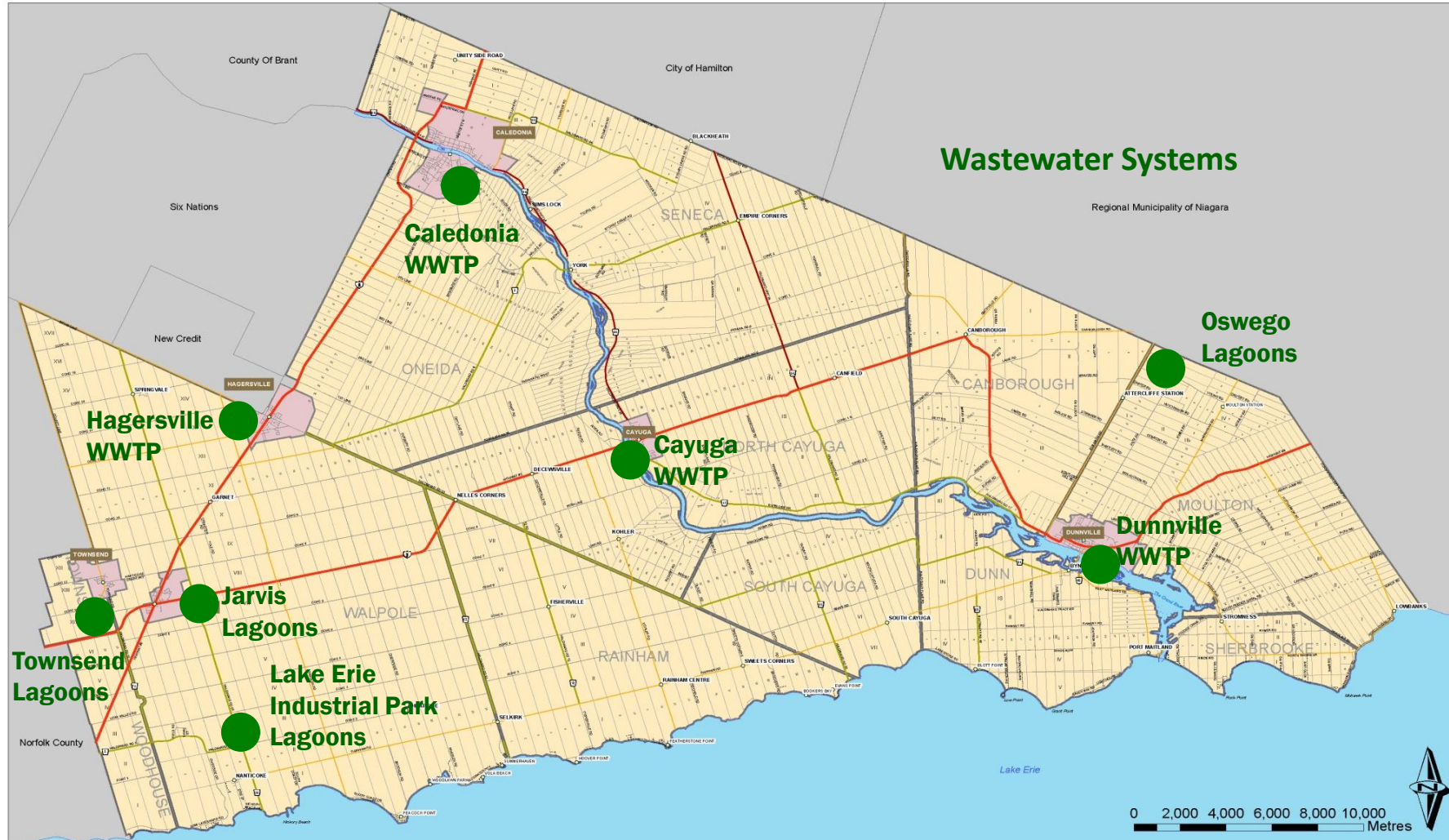
Water and Wastewater Overview

Infrastructure Summary

- Wastewater Infrastructure
 - ✓ 4 mechanical treatment plants
 - ✓ 4 lagoon systems
 - ✓ 21 pumping stations
 - ✓ 8 collection systems
 - ~ 150 km wastewater collection mains
 - ~ 1,880 manholes



Water and Wastewater Overview



Water and Wastewater Operations Team

Haldimand County Staff

- All water distribution systems and wastewater collection systems
- Caledonia and Cayuga reservoirs and standpipes

Veolia Contract Operators

- Nanticoke and Dunnville Water Treatment Plants, transmission mains and system standpipes
- Wastewater treatment facilities, lagoons, pump stations and forcemains



Water and Wastewater Program

Program Fundamentals

- Protect the environment and health of the public
- Ensure that regulatory requirements are consistently achieved & demonstrate “due diligence”
- Tap full capacity of facilities and staff
- Avoid unnecessary capital expenditures through effective planning of upgrades or expansions
- Improve practices throughout County i.e. data-based decision-making etc.
- Focus on staff skills development



Water and Wastewater - SCADA

What is SCADA?

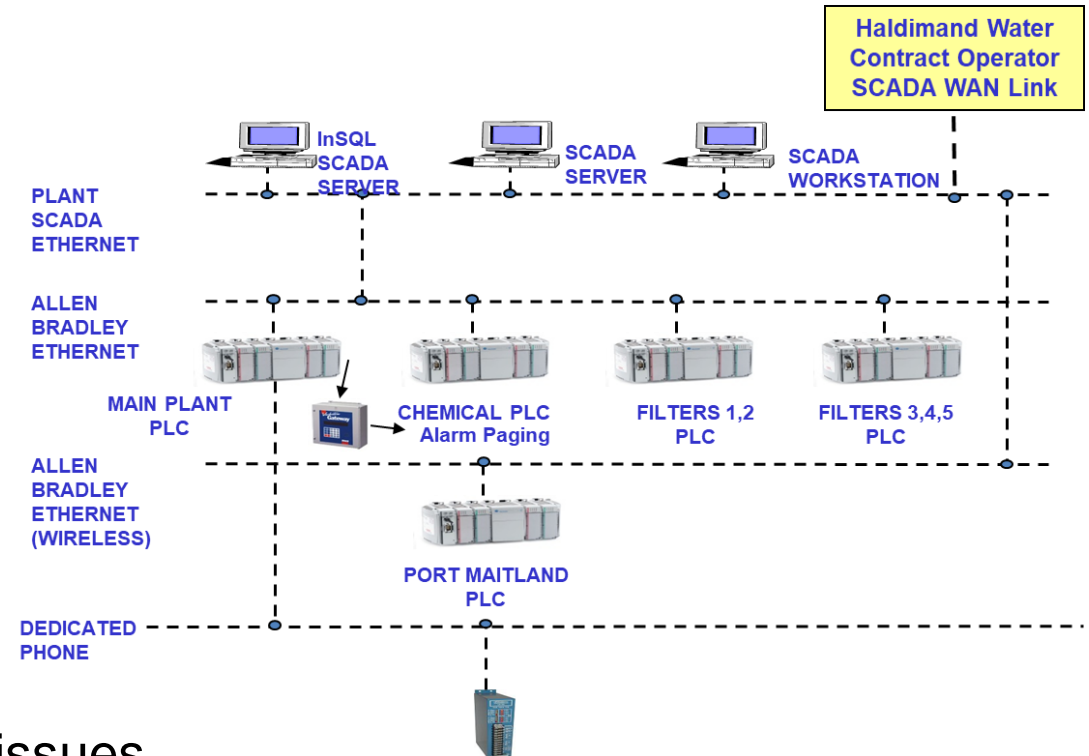
Supervisory Control And Data Acquisition

- Computers and Software
- Programmable Logic Controllers (PLC's)
- Networking Equipment
- Wide Area Network (WAN) Links

Why is it important?

Integral part of Day to Day Operations

- MOE Compliance - Data Collection
- Auto responses and alarms for operational issues
- Reduces ongoing labor and chemical costs
- Improved operating reliability and reporting capability



Water and Wastewater Capital Projects

Capital Project Prioritization

- Score projects using weighted criteria:
 - Public health/Environmental protection
 - Employee health and safety/Site security
 - Necessary replacement
 - Legislative requirement
 - Operational improvement
 - Preserve/Sustain infrastructure
 - Addresses growth pressure
 - Achieves cost or energy savings
 - Results in increased operational cost (-1)
- Use forecasted budget from previous year to establish "cut line"
- Can apply a price per point analysis

WATER		Public Health and/or Environmental Protection	Employee Health, Safety and Security	Necessary Replacement	Legislative Requirements	Operational Improvements	Preserve and/or Sustain Infrastructure	Development for Growth Pressures	Cost and/or Energy Savings	Increase in Operational Cost		
Nanticoke	Egewash & Shower Replacements	\$30,000	0 0	2 6	1 3	1 3	0 0	0 0	0 0	0 0	12	#REF!
Caledonia	Elevated Tank EA	\$115,000	1 3	0 0	0 0	1 3	2 4	0 0	1 2	0 0	12	\$3,583
Caguga	Reservoir Online Analyser Replacements	\$25,000	1 3	0 0	2 6	1 3	0 0	0 0	0 0	0 0	12	\$2,083
Dunville	Filters 1&2 Media Change Out	\$135,000	1 3	0 0	2 6	0 0	1 2	0 0	0 0	0 0	11	\$10,455
Nanticoke	IPS Roof Access Hatches - Replacements	\$325,000	0 0	1 3	2 6	0 0	0 0	1 2	0 0	0 0	11	\$2,083
PT Maitland	LF Upgrades Final Phase	\$1,250,000	0 0	0 0	2 6	0 0	1 2	1 2	0 0	1 1	10	\$3,125
Caguga	Reservoir Pump/Motor Replacements & VFD's	\$150,000	1 3	0 0	0 0	0 0	2 4	0 0	1 2	1 1	10	\$15,000
PT Maitland	Sample Line & Chlorine Dosing Line Replacements	\$30,000	0 0	0 0	2 6	0 0	1 2	1 2	0 0	0 0	10	\$3,000
Dunville	Static/Power Mixer	\$50,000	0 0	0 0	2 6	0 0	1 2	0 0	0 0	1 1	9	\$5,556
Dunville	Back Wash Valves 1&2 Replacements	\$40,000	0 0	0 0	2 6	0 0	1 2	0 0	0 0	0 0	8	#REF!
Nanticoke	Highlit Pumps 2&3 motors and VFD's	\$285,000	1 3	0 0	0 0	0 0	2 4	0 0	0 0	1 1	8	#DIV/0!
Hagersville	Tuscarora Roof Replacement	\$10,000	0 0	0 0	2 6	0 0	0 0	1 2	0 0	0 0	8	\$5,000
Nanticoke	Lowlit Online Analyser Replacements	\$25,000	0 0	0 0	2 6	0 0	1 2	0 0	0 0	0 0	8	\$35,825
Dunville	Back Wash Flow Meter Replacement	\$25,000	0 0	0 0	2 6	0 0	1 2	0 0	0 0	0 0	8	\$3,125
Nanticoke	Concrete Curb & Sidewalk Repairs	\$15,000	0 0	2 6	0 0	0 0	0 0	1 2	0 0	0 0	8	\$3,125
Nanticoke	IPS Wet Well Piping and Valve Replacements Phase 2	\$225,000	0 0	0 0	2 6	0 0	1 2	0 0	0 0	0 0	8	\$3,125
Dunville	Raw Water Isolation Valve	\$20,000	0 0	0 0	2 6	0 0	1 2	0 0	0 0	0 0	8	\$2,500
Hagersville	Booster Station Roof Replacement	\$33,000	0 0	0 0	1 3	0 0	0 0	2 4	0 0	0 0	7	#REF!
Nanticoke	2nd Back Wash Pump	\$35,000	1 3	0 0	0 0	0 0	2 4	0 0	0 0	0 0	7	\$2,500
PT Maitland	Transmission Main VC Rehab	\$35,000	0 0	1 3	0 0	0 0	0 0	2 4	0 0	0 0	7	\$5,000
Nanticoke	Transmission Main VC Rehab	\$35,000	0 0	1 3	0 0	0 0	0 0	2 4	0 0	0 0	7	\$5,000
Nanticoke	Lagoon Inspection & Repair	\$20,000	1 3	0 0	0 0	0 0	0 0	2 4	0 0	0 0	7	\$5,000
Dunville	SCADA Wiring Replacements	\$10,000	0 0	1 3	0 0	0 0	2 4	0 0	0 0	0 0	7	\$1,429
Nanticoke	Halocyclone Modifications	\$20,000	0 0	1 3	0 0	0 0	2 4	0 0	0 0	0 0	7	\$2,857
Nanticoke	Valvehouse Recirc Pump Rebuild	\$25,000	0 0	0 0	0 0	0 0	1 2	2 4	0 0	0 0	6	\$1,429
Nanticoke	Highlit Sump Pumps (2) Rebuild	\$20,000	0 0	0 0	0 0	0 0	1 2	2 4	0 0	0 0	6	\$2,857
Nanticoke	Valvehouse Sump Pump & chamber Rebuild	\$30,000	0 0	0 0	0 0	0 0	1 2	2 4	0 0	0 0	6	\$4,167
Nanticoke	Control Room Windows	\$50,000	0 0	2 6	0 0	0 0	0 0	0 0	0 0	0 0	6	\$3,333
Nanticoke	Hydraulic Studg	\$15,000	0 0	0 0	0 0	0 0	2 4	0 0	1 2	0 0	6	\$5,000
Nanticoke	Suspended Ceiling in Lab/Control Room	\$7,000	0 0	2 6	0 0	0 0	0 0	0 0	0 0	0 0	6	\$8,333
Nanticoke	SCADA Computer Network Replacement	\$11,000	0 0	0 0	2 6	0 0	0 0	0 0	0 0	0 0	6	
Nanticoke	IPS Automation Improvements Phase 2	\$35,000	0 0	0 0	0 0	0 0	2 4	0 0	0 0	1 1	5	\$1,167
Nanticoke	Purchase LCA	\$7,000	0 0	0 0	0 0	0 0	2 4	0 0	0 0	1 1	5	\$1,833
Nanticoke	Maturation Tank Lighting	\$5,000	0 0	0 0	0 0	0 0	2 4	0 0	0 0	0 0	4	\$7,000
Caledonia	Standpipe Rehab	\$120,000	0 0	0 0	0 0	0 0	0 0	2 4	0 0	0 0	4	\$1,250
Nanticoke	IPS Traveling Screen Refurbishment	\$70,000	0 0	0 0	0 0	0 0	0 0	2 4	0 0	0 0	4	#DIV/0!
Nanticoke	Structural Repairs	\$50,000	0 0	0 0	0 0	0 0	0 0	2 4	0 0	0 0	4	\$3,333
Dunville	Pre-Treatment Upgrades	\$200,000	0 0	0 0	0 0	0 0	2 4	0 0	0 0	1 1	3	\$66,667
Dunville	Interior Refurbishment	\$25,000	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0	#DIV/0!



Water and Wastewater Program Status

- A lot of work has been done over the past decade to renew existing plant infrastructure and address process limitations
- Program is beginning to shift to a more proactive focus to ensure plant capability (preventative maintenance, increasing the horizon for planned replacements and planned expansions)
 - Sewage Pumping Station Rehabilitation Program
- Continuation of a joint engineering and operations approach in pursuit of Optimization
 - Re-rated Hagersville WWTP and Cayuga WWTP
 - Additional 1,800 homes and deferred \$12M
- Major capital projects will be driven and funded by development (i.e. new Caledonia WWTP)
- Water and wastewater servicing (timing and feasibility) are key inputs to the County's Growth Strategy
 - Master Servicing Plans
 - Development Charges Study

