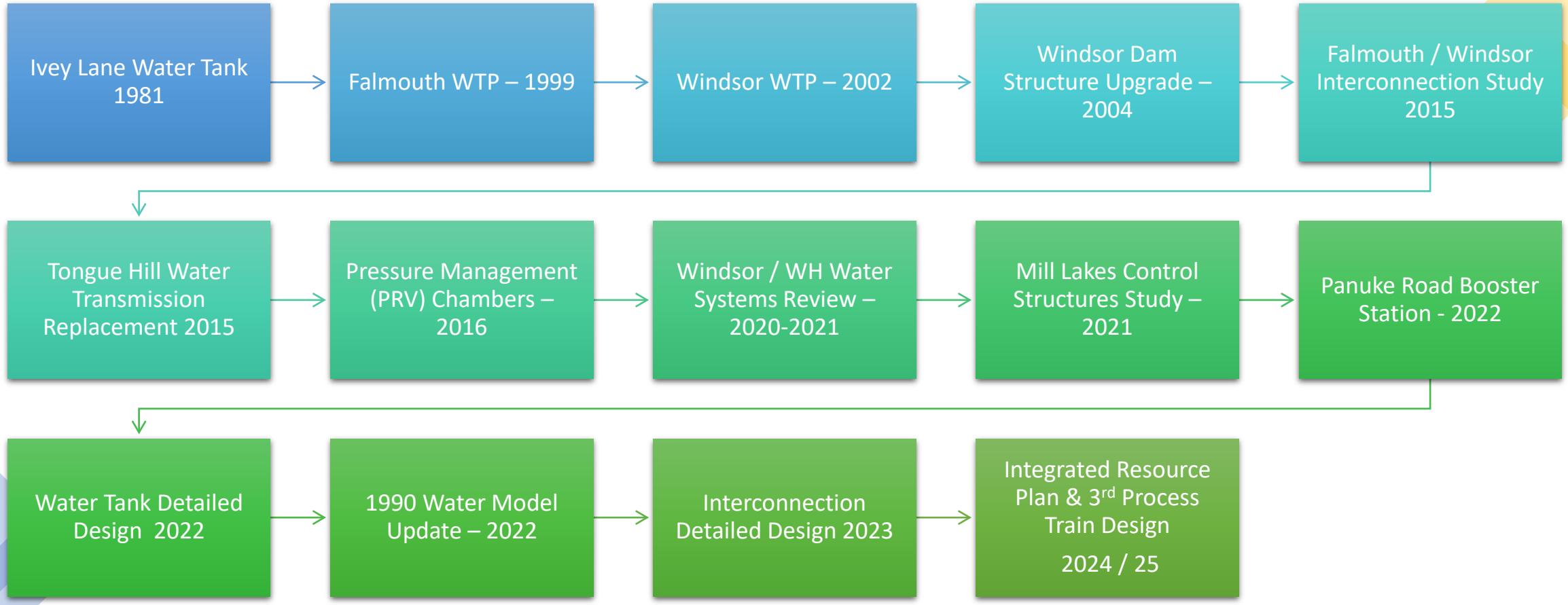
Water & Wastewater System Capacity

something inspiring awaits

Background – History of Systems

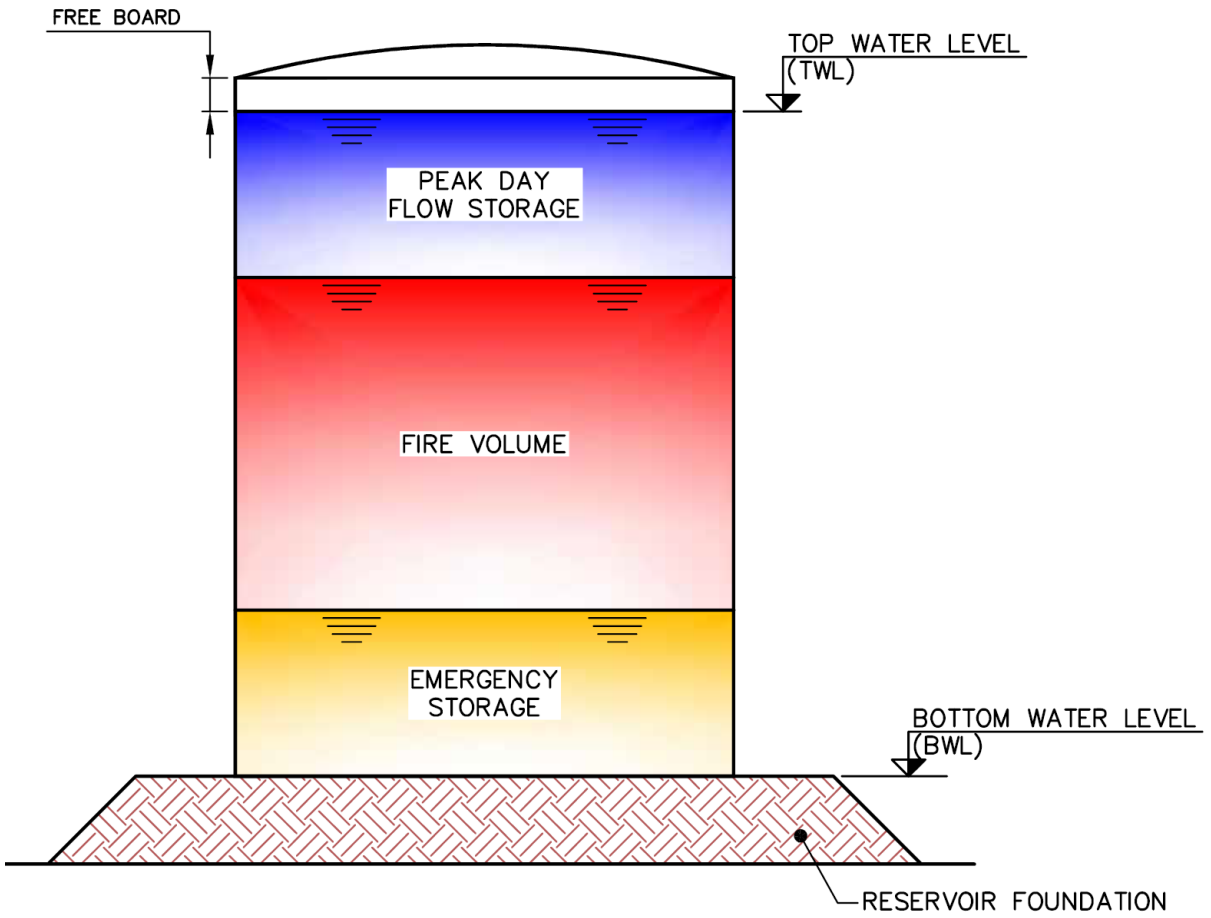
- The Windsor, Falmouth and Hantsport Utilities operate independent water supply systems.
- All surface water
- Windsor (incl TMP) services app. 6,500 residents, constructed 1890
- Falmouth services 1368 residents, constructed in 1969
- Hantsport services 1560 residents, constructed in early 1900’s

High Level Timeline +++



Storage Requirement

4,079 m3 or 4,079,000 liters



RESERVOIR STORAGE SCHEMATIC

Water Demands Windsor- Trend

Table 5: Summary of Historical Demands

Year	Town of Windsor	Three Mile Plains	Windsor WTP		
	ADD (MLD)	ADD (MLD)	ADD (MLD)	MDD (MLD)	MDF
2015	-		3.52	5.67	1.61
2016	2.00	1.12	3.12	5.31	1.71
2017	2.33	1.19	3.52	5.18	1.47
2018	2.10	1.25	3.35	5.61	1.67
2019	2.39	1.36	3.75	5.70	1.52
2020	-	-	3.03	4.28	1.41

Water System Demands

Windsor 52% - TMP 36% (and growing)

Table 6: Summary of Current and Future Demands

Demands	Current (MLD)	Future (2040) (MLD)
Total ADD	**3.38**	**4.13**
Industrial Park (est.)	0.40	0.49
Three Mile Plains	1.21	1.48
Windsor	1.77	2.16
Total MDD	**5.29**	**6.46**
Industrial Park (est.)	0.63	0.77
Three Mile Plains	1.90	2.32
Windsor	2.77	3.38

Falmouth Demands - Trend

Table 1: Summary of Historical Demands

Year	Estimated Population	ADD (MLD)	MDD (MLD)	MDF
2015	-	0.62	1.01	1.64
2016	1,368 (census)	0.65	1.14	1.74
2017	-	0.63	1.66	2.64
2018	-	0.64	1.38	2.16
2019	-	0.71	1.21	1.72
2020	1,585[1]	0.74	1.40	1.88

1. The number of service connections in 2020 is 780. With an estimated population of 1585 based on 3.75% annual growth, this equates to 2.0 persons per connection.

Falmouth System Demands - 2040

Table 2: Current and Future Demands

Year	Current	Future (2040)
ADD (MLD)	0.74	1.22
MDD (MLD)	1.40	2.40
MDF	1.88	1.97

Interconnecting Falmouth & Windsor

Table 13: Combined System Flow Balancing Table

Scenario	Windsor	Falmouth	Combined	Windsor to Falmouth Net Flow (m^3)	
				(FWTP @ 1.0 MLD)	(FWTP @ 2.2 MLD)
Current ADD (MLD)	3.38	0.74	4.12	-0.26	-1.46
Current MDD (MLD)	5.29	1.40	6.69	0.40	-0.80
5-Year Projection					
Population	3,834	1,793	5,627	-	-
Future ADD (MLD)	3.55	0.84	4.39	-0.16	-1.36
Future MDD (MLD)	5.56	1.58	7.15	0.58	-0.62
20-Year Projection					
Population	4,451	2,597	7,048	-	-
Future ADD (MLD)	4.13	1.22	5.34	0.22	-0.99
Future MDD (MLD)	6.46	2.39	8.85	1.39	0.19
Available Average WTP Flow (MLD)	5.40	1.00	6.40		
Maximum Available Daily WTP Flow (MLD)	6.80	2.20	9.00		

Planning for the future growth

- Additional Storage Tank in Windsor
- Dam upgrades and meeting DFO regulations
- Interconnect Windsor and Falmouth Distribution systems
- 3rd Process Train at the Windsor Treatment Facility
- Water Conservation efforts and leak detection
- Pressure Management
- 20-year master integrated resource plan – Water, WW and Storm
- Exploring additional potable water source of supplies – (Dal Students)
- Exploring potential to increase existing yield in current watersheds

Development Reviews

Windsor WTP

Max Design Flow	6792m³/day
Storage Capacity	Clearwell 1818m³, Standpipe 1400m³
Withdrawl Limits	6800m³/day

	2018	2019	2020	2021	2022	*Average Usage with Projected Development
Annual Average Daily Flow m³	3365	3761	2977	3107	3460	5567
Annual Total Flow ³	1228304	1373027	1086628	1133940	1262790	2031904
% Maximum Design Capacity	49.5	55.3	43.8	45.7	50.9	81.9
% Withdrawal Rate	49.5	55.3	43.8	45.7	50.9	81.9

* Based on most recent annual average data and projected annual usage from new development

Development Reviews

Falmouth WTP						
Max Design Flow	2160m³/day					
Storage Capacity	Clearwell 205m³, Standpipe 2942m³					
Withdrawl Limits	1000m3/day					
	2018	2019	2020	2021	2022	*Average Usage with Projected Development
Annual Average Daily Flow m³	631	706	720	757	859	947
Annual Total Flow ³	230139	257714	262958	276478	313520	308666
% Maximum Design Capacity	29.2	32.7	33.3	35.1	39.7	43.9
% Withdrawal Rate	63.1	70.6	72	75.75	85.9	94.7

* Based on most recent annual average data and projected annual usage from new development

Development Reviews

Hantsport WTP

Max Design Flow	1365m³/day
Storage Capacity	Clearwell 136m³, Standpipe 1052m³
Withdrawl Limits	850m³/day

	2018	2019	2020	2021	2022	*Average Usage with Projected Development
Annual Average Daily Flow m³	634	581	535	636	550	757
Annual Total Flow ³	231589	212272	195172	232454	200789	259341
% Maximum Design Capacity	46.4	42.5	39.2	46.6	40.3	55.4
% Withdrawal Rate	74.5	68.4	62.9	74.8	64.7	89.0

* Based on most recent annual average data and projected annual usage from new development

Development Reviews

Windsor Headworks Wastewater Facility						
Max Design Flow	18545m³/day					
	2018	2019	2020	2021	2022	* Average Usage with Projected Development
Annual Average Daily Flow m³	2606.34	2694.96	1975.08	2466.48	2298.23	2371.14
Annual Total Flow ³	951314	983659	720903	758378	838854	865466.88
% Maximum Design Capacity	14.05%	14.53%	10.65%	13.30%	12.39%	12.79%

Development Reviews

Windsor Lagoons Wastewater Facility

Max Design Flow 9400m³/day

	2018	2019	2020	2021	2022	* Average Usage with Projected Development
Annual Average Daily Flow m³	2806.77	2511.33	2226.07	2466.48	2650.76	3132.78
Annual Total Flow ³	1024470	916637	812517	900265	967526	1143462.94
% Maximum Design Capacity	29.86%	26.72%	23.68%	26.24%	28.20%	33.33%

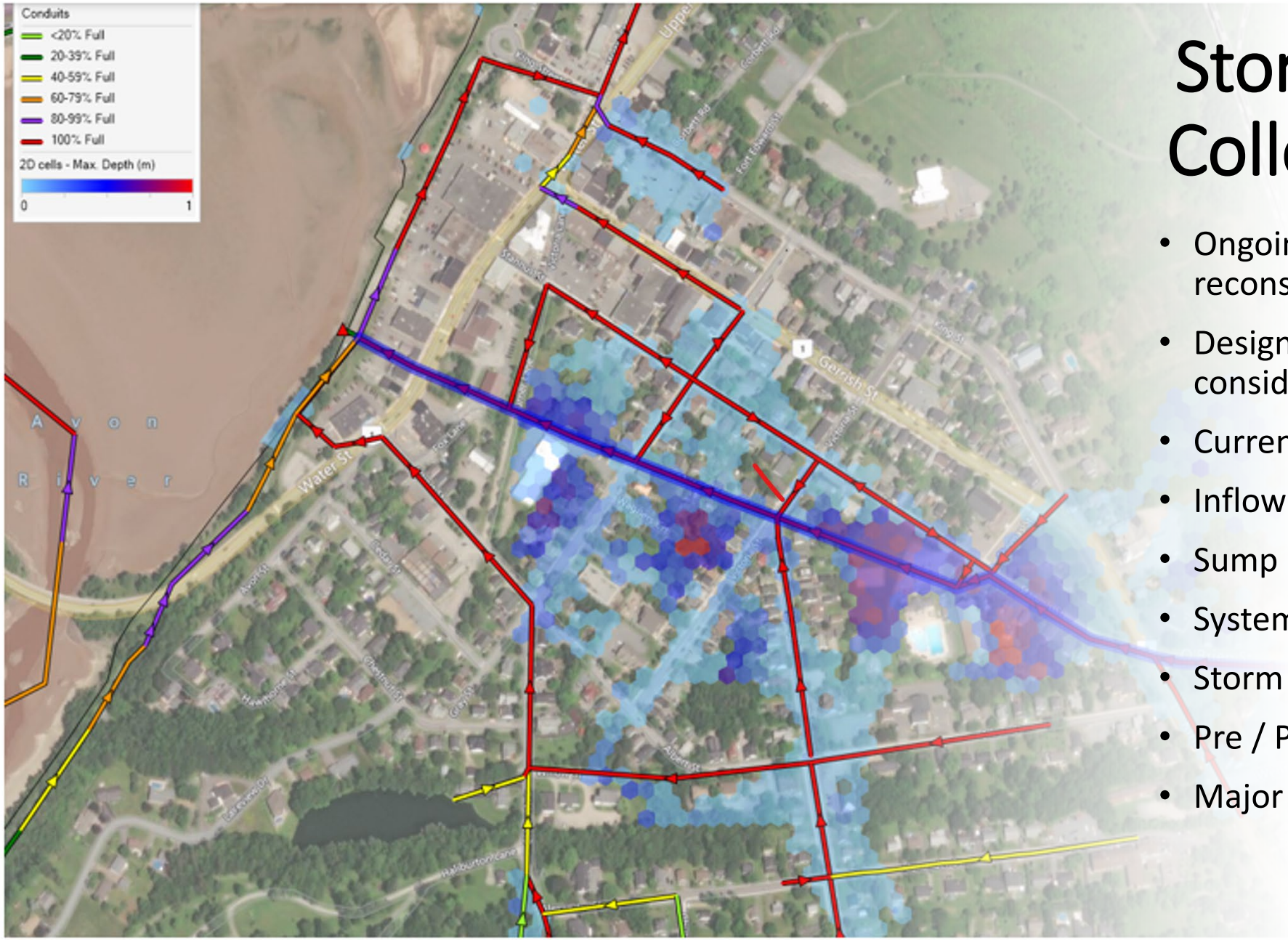
Development Reviews

Falmouth Wastewater Facility

Max Design Flow 723.5m³/day

	2018	2019	2020	2021	2022	* Average Usage with Projected Development
Annual Average Daily Flow m³	687.64	569.74	556.95	418.59	558.41	624.29
Annual Total Flow ³	250987	207955	203285	152785	203820	227864.38
% Maximum Design Capacity	95.04%	78.75%	76.98%	57.86%	77.18%	86.29%

Existing System 1:100 Year CC



Storm Water and Collection System

- Ongoing work to separate and reconstruct aging infrastructure
- Design with Climate Change considerations
- Current storm water study
- Inflow and Infiltration reduction
- Sump pumps, foundation leaks
- System Maintenance
- Storm Water Management
- Pre / Post Development
- Major Infrastructure Investments

Questions?