



Regulations, Policies and Guidelines = One Water ???

Canadian Water Network – Blue Cities

May 17, 2017



Delivering Quality & Value
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CCME Canada-wide Strategy for the Management of Municipal Wastewater Effluent

- **The Canadian Council of Ministers of the Environment (CCME) developed the Wastewater Strategy following national consultations with stakeholders**
 - Signed by the CCME Ministers on February 17, 2009
- **The Strategy set:**
 - National Performance Standards for TSS, CBOD, TRC
 - National objectives for CSOs and SSOs
- **The Strategy has no legal force, must be implemented by jurisdictions: Federal and Provincial governments**



Federal Wastewater System Effluent Regulations (WSER) – Discharge Limits

- **Published Canada Gazette Part 2 – July 18, 2012**
- **Basic requirements:**
 - CBOD, TSS, residual chlorine and un-ionized ammonia cannot be discharged except in accordance with standards:

✓ CBOD	25 mg/L
✓ TSS	25 mg/L
✓ Residual chlorine	0.02 mg/L
✓ Un-ionized ammonia (NH ³)	1.25 mg/L (as N, at 15°C)

 - Calculated from Total Ammonia, pH, Temperature
 - pH must be done in lab at 15°C
 - ✓ Effluent cannot be toxic (trout acute toxicity test)
- Limits apply January 1, 2015, except:
 - ✓ TRC limit for WWTFs <5000m³/day applies Jan. 1, 2021
- **All determinations by accredited labs**



Federal Wastewater System Effluent Regulations (WSER) – Reporting

- **Identification Report – was submitted prior to the due date May 15, 2013**
- **Monitoring Reports – Quarterly, due 45 days after Quarter**
 - CBOD, TSS, Un-ionized ammonia, Lethality
 - All submitted via ERRIS – Effluent Regulatory Reporting Information System
- **Combined Sewer Overflow Report**
 - Due February 15 each year for preceding year
 - For each CSO: # of days overflowed and estimated daily volume (m³) of deposit



Federal Wastewater System Effluent Regulations (WSER) – **Transitional Authorization (TA)**

- **For those WWTFs discharging effluent > limits (25/25)**
 - CBOD or TSS only
- **Applications were due by June 30, 2014**
- **Duration of Authorization determined by environmental risk**
 - Points allocated to WWTF and CSOs
 - ✓ Low risk – compliant by 2040
 - ✓ Medium Risk – compliant by 2030
 - ✓ High Risk – compliant by 2020
 - ✓ Medium & High Risk extended to 2040 if one CSO risk > WWTF risk



Federal Wastewater System Effluent Regulations (WSER) – **Transitional Authorization**

- **Halifax, Dartmouth granted TAs with higher discharge limits**
- **Herring Cove is compliant with 25/25 TSS/CBOD but must remain compliant or be upgraded**
- **Eastern Passage – upgrade completed**
- **For those WWTFs discharging un-ionized ammonia**
 - >1.25 mg/L, or
 - Toxicity is primarily due to un-ionized ammonia
- **We do have toxic effluents! Must address these ASAP:**
 - BLT – likely due to chlorine. Limit applies in 2021, toxicity in 2015
 - ✓ De-chlorination trial in progress 2017
 - Aerotech – possibly due to total ammonia. Upgrade in progress.



NS Environment – Municipal Wastewater Standard

- In draft form as of 2017
- Designed to be consistent with WSER
- Will result in updated, consistent Approvals for all WWTFs
- NSE has now updated old Approvals for consistency
- **Equivalency Agreements:**
 - If federal govt. determines provincial regime equivalent to WSER
 - Equivalency Agreement would be signed
 - WSER does not apply in that province
 - One-Window for operators – NSE
 - Still under consideration



Federal Wastewater System Effluent Regulations (WSER) – Current Cost Estimate for Halifax Water

- **Studies and Monitoring**
 - CSO Overflow Event Monitoring - **\$200,000** (calibration of sensors, data collection via SCADA)
 - Environmental Risk Assessments - **> \$1million** total
 - ✓ One ERA study for each treatment plant discharge – 15 for Halifax Water
 - ✓ Not a WSER requirement, but CCME / NSE
 - ✓ ERAs completed for 10 of 15 WWTFs as of 2017
 - ✓ NSE now reviewing policy & requirements for remaining WWTFs
 - Environmental Effects Monitoring – requirements to be determined



Federal Wastewater System Effluent Regulations (WSER) – Current Cost Estimate for Halifax Water

Capital Upgrades

- Treatment Plant Upgrades – Halifax/Dartmouth/Herring Cove
up to \$420 million
- Collection system (new storm sewer & storage)
 - ✓ SSO Elimination: **\$100s of millions**
 - Federal and provincial requirements not yet defined
 - ✓ CSO Reduction: Cost unknown
 - Cost depends on degree of “reduction” required
 - **“Elimination” no longer in federal regulation**
 - Management/operating costs not estimated
- **Operating Cost increase – 25%**



Temporary Authorization – Plant Results

Halifax

2016	Average		Quarterly Avg.	
	BOD ₅	SS	BOD ₅	SS
January	36.2	21.7		
February	34.2	26.2		
March	29.7	24.1	33.4	24.0
April	24.4	16.5		
May	27.6	16.5		
June	24.8	15.1	25.6	16.0
July	30.3	15.9		
August	28.6	10.5		
September	35.1	13.0	31.3	13.1
October	32.5	11.2		
November	27.4	21.0		
December	23.5	30.9	27.8	21.0
Yearly 2016 Average			29.5	18.6

Dartmouth

2016	Average		Quarterly Avg.	
	BOD ₅	SS	BOD ₅	SS
January	27.8	35.9		
February	32.1	58.3		
March	25.9	34.6	28.6	42.9
April	33.3	43.4		
May	18.1	8.6		
June	26.0	20.1	25.8	24.1
July	23.4	7.7		
August	42.1	12.4		
September	44.5	17.3	36.7	12.5
October	24.0	19.5		
November	18.6	14.3		
December	18.0	24.9	20.2	19.6
Yearly 2016 Average			27.8	24.8

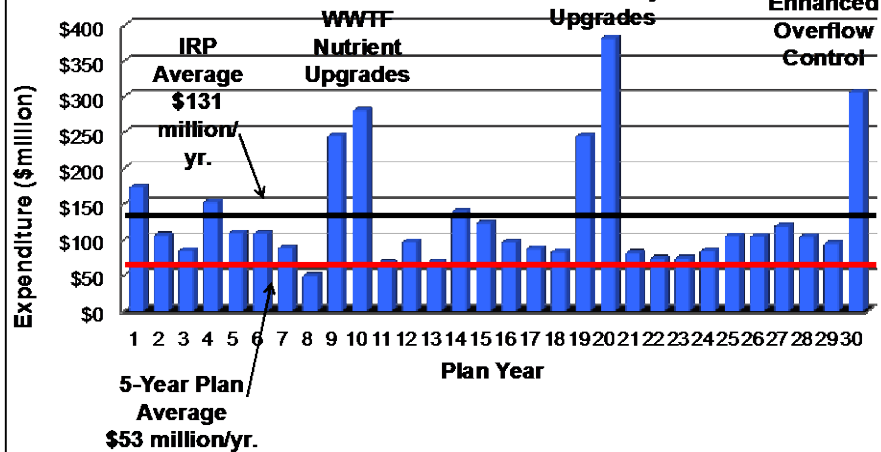
2017	Average		Quarterly Avg.	
	BOD ₅	Solids	BOD ₅	Solids
January	31.5	35.5		
February	40.8	14.5		
March	35.1	22.5	35.8	24.2

2017	Average		Quarterly Avg.	
	BOD ₅	Solids	BOD ₅	Solids
January	27.6	29.7		
February	37.7	26.2		
March	34.8	33.9	33.3	29.9

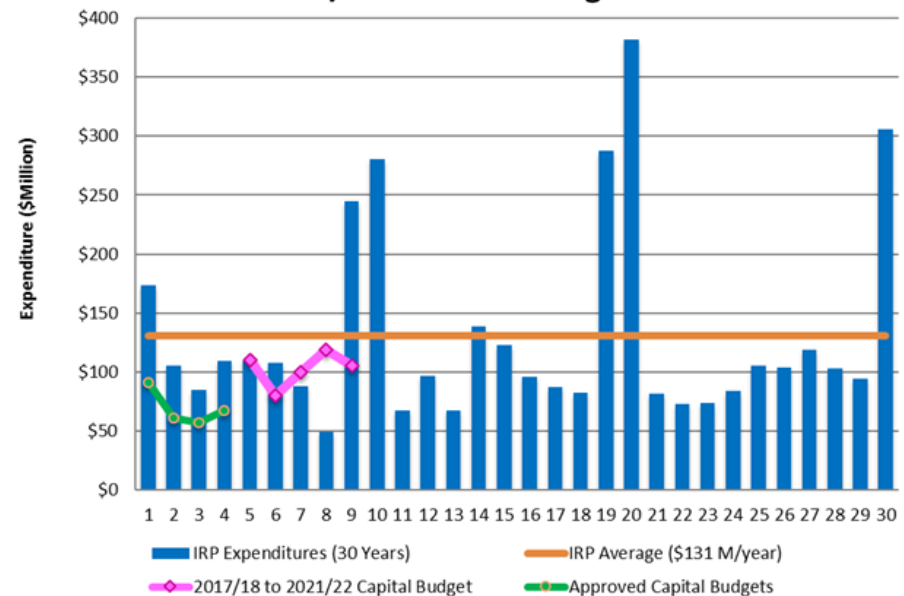


Integrated Resource Plan - Expenditures

2012/2013 Five Year Budget

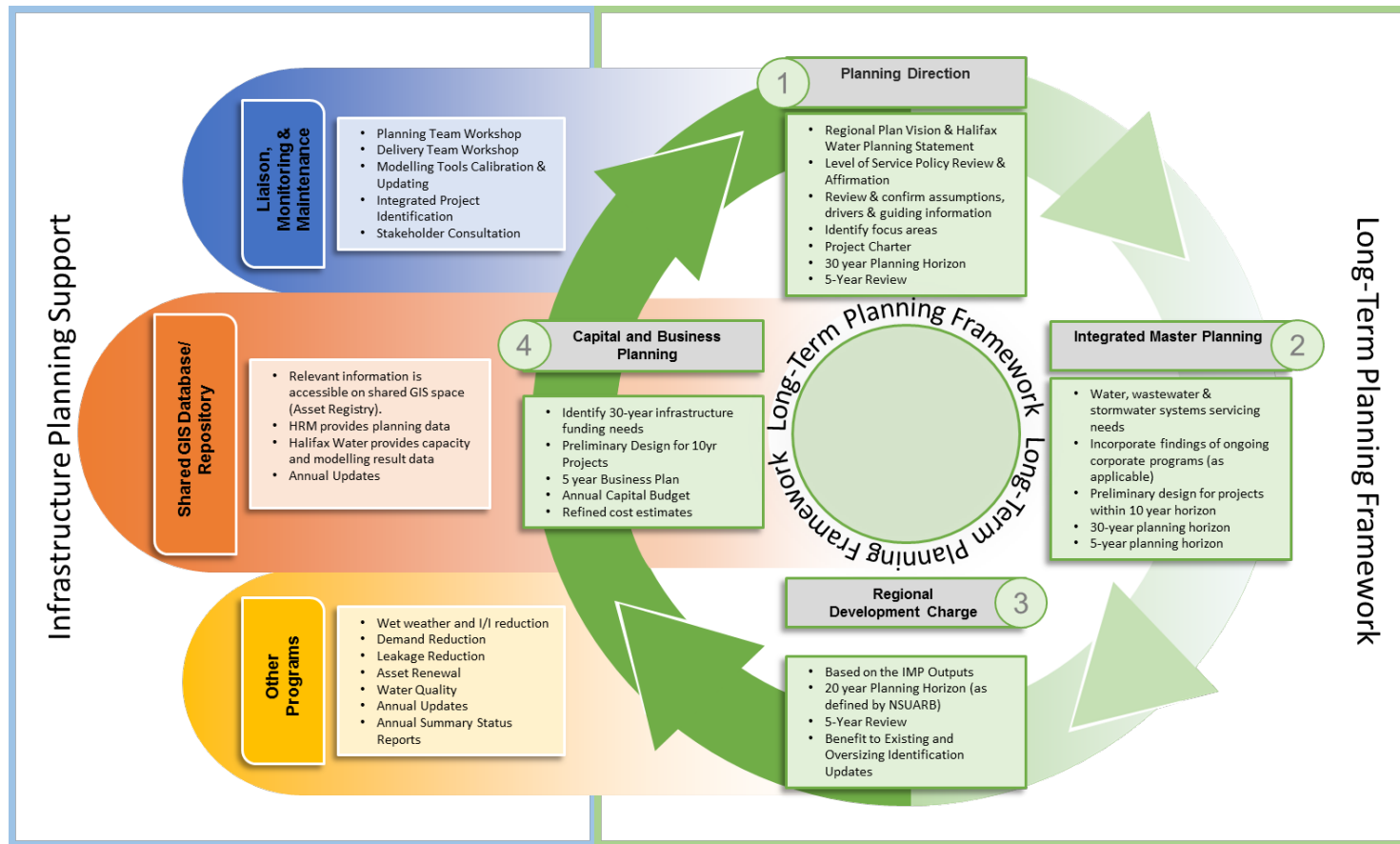


IRP Projected Expenditures Versus 2017/18 Five-Year Budget





Long Term Planning – Integrated Resource Plan





Infrastructure Plans

PRE-DEFINED PROJECTS

WET WEATHER FLOW MANAGEMENT STUDY

- Flow Monitor analysis identified I/I reduction potential
- High priority area identified in Sewer Separation Feasibility Study

BLT DIVERSION

- Diversion of all BLT flow to Fairview Cove, Halifax Peninsula
- Decommissioning of the BLT WWTF

PREVIOUS AND ONGOING STUDIES

- Northwest Arm Sewer Lining and Reconfiguration of Armdale PS
- Rehabilitation of Fairfield Holding Tank

ATLANTIC SUPERSTORE LANDS

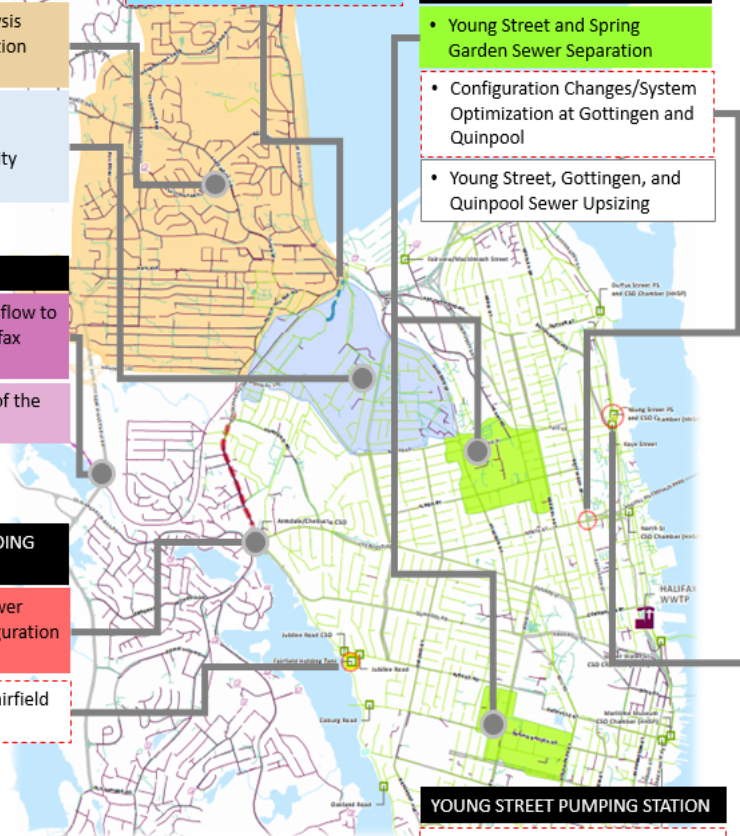
- Upsizing required to meet sizing policy and resolve flooding issues

LOCAL WASTEWATER SERVING CAPACITY ANALYSIS (LoWSCA)

- Young Street and Spring Garden Sewer Separation
- Configuration Changes/System Optimization at Gottingen and Quinpool
- Young Street, Gottingen, and Quinpool Sewer Upsizing

YOUNG STREET PUMPING STATION

- Growth causes capacity constraints under dry weather conditions; requires upsizing



ALTERNATIVES



PREFERRED



STRATEGY



One Water - Questions

- Are we really achieving the environmental/social benefits from the implementation of WSER?
- What are the users/system operators saying about CCME/WSER; is there a need to calibrate?
- Is receiving water health a concern versus end of pipe discharge?
- Are we targeting our investments prudently?
- What would a compliance framework look like under a holistic approach?
- CCME National Performance Standard is a good start but should more consideration be given to the EQOs?