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HALIFAX WATER: INTEGRATED RESOURCE PLAN

Technical Conference #3 14th December, 2011 - Notes

1. This document includes a progression in logic and methodology for the development of the preliminary alternative Resource Plans.

2. The High Level Plan (sheets 2 and 3) outlines the strategic components (drivers, goals, objectives) and the tactical components (programs, projects, metrics).

3. The Objectives - Details (sheets 4, 5, and 6) further defines the objectives by providing a description of the objective, expected qualitative benefits, and variations to the objective.

4. The Resource Plans - Summary (sheet 7) illustrates the objectives, the variations and provides an initial look at possible alternative Resource Plans for consideration.

5. P1 to P7 (sheets 8 through 14) show the various preliminary alternative Resource Plans and the variations associated with the "theme". This provides a different way of illustrating the various plans.

6. With 8 objectives having variations, there are a vast number of plan combinations (> 50) that can be considered. The intention is to identify the most meaningful alternative Resource Plans and bring those forward for detailed economic analysis.

7. As well, there are some variations in technology that may be applicable to certain objectives such as the overflow abatement program. For example, we may consider at source controls, end of pipe controls, or a combination of both to manage the overflow abatement program. This will allow for further refinement of alternative Resource Plans such that if we choose Plan 4, the technology variations for one of the objectives may result in Plan 4.1, Plan 4.2, Plan 4.3 for future analysis. Given the time available to complete the Integrated Resource Plan, we need to keep the total number of alternative Resource Plans to a practical limit.

Further information:

www.halifaxwater.ca
Links – bottom left hand corner
Integrated Resource Plan
Technical Conference 3, December 14, 2011
IRP Resource Plans Matrix

Strategic				Tactical		
Driver	Goal	Objective		Programs	Projects	Program Metrics / LOS
Regulatory Compliance	Achieve compliance with all regulatory requirements	1	Meet current Nova Scotia Environment (NSE) WWTF permit to operate requirements	Continue program for meeting current WWTF compliance requirements	Continue implementation of specific WWTF compliance projects based on study area watershed priorities	Current permit to operate effluent requirements
		2	Meet current NSE WSP permit to operate requirements	Continue program needed for meeting WSP compliance requirements	Continue implementation of specific WSP compliance projects	Current permit to operate treated water requirements
		3	Meet current overflow compliance requirements	Expand overflow monitoring	Implement monitoring at additional sites	Number of monitored active overflows
				Provide floatables management for overflows	Implement screening at specific sites	Number of of active overflows with screening
				Ensure no dry weather overflows	Eliminate all dry weather overflows (e.g. Lyle Street weir)	Number of sites with dry weather overflows
				Ensure no increase in overflows due to growth without an approved management plan	Develop and implement an overflow management plan based on study area watershed priorities	Number of overflows at active overflow sites compared to baseline overflow values
				Balance wastewater flows among facilities to accommodate optimal use of available capacity	Implement specific flow diversion projects	Overall facility capacity utilization
		4	Meet future WWTF effluent requirements	Provide secondary level wastewater treatment for harbour facilities	Upgrade Halifax WWTF to secondary treatment	Future effluent requirements consistent with secondary treatment
					Upgrade Dartmouth WWTF to secondary treatment	Future effluent requirements consistent with secondary treatment
					Upgrade Herring Cove WWTF to secondary treatment	Future effluent requirements consistent with secondary treatment
				Provide enhanced nutrient removal for WWTFs discharging to sensitive or limited receiving waters	Implement specific nitrogen (N) & phosphorus (P) reduction projects based on study area watershed priorities	Future effluent requirements consistent with enhanced nutrient removal
				Provide effluent requirements for "toxics"	Implement specific "toxics" management projects	Future effluent requirements consistent with removal of "toxics"
		5	Meet future NSE/Health Canada drinking water quality requirements	Meet expected drinking water quality requirements	Upgrade WSPs and well systems to meet expected drinking water quality requirements	Enhanced drinking water quality requirements
		6	Meet future regulations for overflow volume and frequency	Develop wet weather flow management program including CSO, SSO, and WWTF by-pass reduction based on study area watershed priorities	Implement specific capacity increase/storage/flow reduction (I/I and sewer separation) projects	- CSO frequency e.g. events per year or season - WWTF bypass frequency in wet weather - SSO frequency e.g. frequency of occurrence based on 1:5 year design storm
					Implement specific deep storm installation projects to facilitate I/I reduction program	
					Implement real time controls to allow for flow optimization	
		7	Meet future stormwater quality compliance requirements	Develop stormwater quality management program	Implement specific retrofit and new development stormwater quality projects	Stormwater treatment requirements based on technology (e.g. BMPs and/or water quality)

Strategic				Tactical		
Driver	Goal	Objective		Programs	Projects	Program Metrics / LOS
Asset Renewal	Maintain infrastructure serviceability	8	Implement optimal level of asset reinvestment (all asset classes)	Develop asset class renewal program for each asset class	Annual renewal projects for each asset class	Asset renewal rate based on asset risk profile
	Maintain adequate system security	9	Enhance reliability of critical assets	Develop the water transmission security program	Implement the specific transmission main security projects	Reduction in transmission main failure risk
				Enhance system reliability including needs for enhancements to firm capacity for treatment and pumping systems, back-up for critical water and wastewater facilities and alarm systems	Implement back up power at specific overflow locations as well as redundancy/protection projects	Reduction in system failure risk
		10	Ensure exisiting storm system is adequately sized for minor storm conveyance	Identify possible storm capacity constraints and locations	Conduct storm system capacity assessments	Number storm system capacity upgrade projects identified
		11	Adapt to future climate change	Adapt to changes in storm flooding particularly with respect to climate change	Implement specific storm system renewal or upgrade projects	System resilience measured by ability to mitigate future flood risk
	Assess and implement energy efficiency initiatives	12	Reduce energy consumption, operating costs, and reduce greenhouse gas (GHG) contributions	Develop pumping station elimination program	Implement specific pumping station elimination/consolidation projects	Number of stations eliminated or consolidated
				Develop pumping station optimization program (looking at energy optimization, optimizing the number of pumping stations, and right-sizing forcemains for optimal performance)	Implement pumping station optimization projects including variable frequency drive (VFD) implementation	Energy savings realized by pumping station optimization
				Identify feasible heat/energy recovery programs	Implement feasible specific heat/energy recovery projects	Return on investment
				Identify feasibility for wind generation program	Implement feasible specific wind generation sites/projects	Return on investment
				Develop water and wastewater treatment facility energy optimization program	Implement treatment facility energy optimization projects including optimization of aeration systems	Return on investment
				Identify potential biogas implementations	Implement feasible specific biogas projects	Return on investment
				Develop energy efficiency design elements for use in pumping station, wastewater treatment facility, pressure reducing valve, and water supply plant designs that consider whole life cost analysis	Implement enhanced pumping station design standards including application of variable frequency drives (VFDs)	Return on investment based on energy savings
					Implement enhanced pressure reducing valve (PRV) design standards	Return on investment based on energy savings
					Implement enhanced wastewater treatment facility design standards incluidng high efficiency aeration systems	Return on investment based on energy savings
					Implement enhanced water supply plant design standards	Return on investment based on energy savings
Growth	Support planned growth within the HRM communities	13	Provide regional water, wastewater, and stormwater infrastructure needed to support planned growth	Determine regional water, wastewater and stormwater infrastructure expansion	Implement the specific growth related projects	Timely expansion to permit continued growth.
				Secure long term water supply for the airport lands	Implement water supply project for airport lands	Adequate supply to meet future needs
		14	Manage flow capacity allocations	Divert wastewater flows to accommodate optimal management of capacity	Implement specific flow diversion projects	Timely flow management to permit continued approved growth
				Continue water and wastewater demand reduction practices	Implement enhanced water conservation and I/I reduction programs	Reduction in required infrastructure capacity due to water conservation and I/I reduction programs