



Memorandum

Date: November 13, 2019

From: Winston Wang
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To: Councilor Ferguson
Councilor Ward 12

Topic: Brief History of Ancaster Water Service and Summary of Financial Analysis by WSP

Brief History of Ancaster Water Service:

From information obtained in Hamilton Central Library, it is understood that from 1930s to 1970s, water service was provided through nine (9) community wells and three (3) water towers in Ancaster community. When the water towers reached their life span of 30 to 40 years, they were torn down one by one.

In 1979, the pumping station at Highway 53 (Garner Road) was constructed and water service was switched to a lake-based system, pumping from Woodward Avenue water treatment plant for serving a much larger population. The wells and existing water towers were abandoned at the time in favor of a pumping station. It is understood that climate change and green-house gas were not a significant consideration. Electricity supply and costs were also not a concern.

Water Servicing Financial Analysis Conducted by WSP:

In 2016, WSP Canada Inc helped Hamilton Water Division with a financial analysis on water servicing in Ancaster, which includes the following options below. The preferred option was alternative 2 – Water Tower plus Pumping Station Refurbishment

- **Alternative 0: Do Nothing**, which includes maintaining the current mode of operation at the Garner Road Pumping Station (PS), with high energy costs and insufficient capacity for fire protection

- **Alternative 1: Pumping Station (PS) Upgrade Only**, which includes replacing pumps with large capacities to achieve firm capacity and modification of the existing in-ground reservoir
- **Alternative 2: Water Tower plus Pumping Station (PS) Refurbishment**, which includes the construction of a water tower for maintaining adequate system pressure, plus a minor upgrade of the pumping station
- **Alternative 3: Pumping Station (PS) Upgrade and New Booster Station**, which includes higher pumping capacity plus a new booster pumping station at the areas of high elevation
- **Alternative 4: Pumping Station (PS) Upgrade, New Booster Station and In-ground Reservoir**, which includes large capacity pumping station, a new booster pumping station for servicing areas of high elevation, as well as a new in-ground reservoir

In the WSP Technical Memorandum, the alternative costs comparison, in 2015 dollars and at a 60-year planning horizon, is summarized in the following table and relevant rationales were provided.

Category	Alternative 0	Alternative 1	Alternative 2 (preferred)	Alternative 3	Alternative 4
Initial Cost (\$)	2M	20M	20.3M	22.6M	23.4M
Energy Cost (\$)	19.3M	7.2M	4.4M	6.1M	6.1M
Operation Cost (\$)	1.3M	489.6K	489.6K	979.2K	979.2K
Green House Gas (GHG) (tons)	12,613	7,515	5,681	6,332	6,332
Rationale	Unsustainable operation, does not meet MECP requirements for firm capacity and fire flow protection, high operations and energy costs	Can satisfy technical requirements; however, results in high energy costs. PS remains the sole source of supply.	Least risky approach. Most robust operation, not as vulnerable to failures in the pressure district. Most efficient operation, reduced energy costs and	Dependence on PS to maintain supply; increased energy costs; requires greater capacity to ensure firm capacity; high lifecycle costs	Dependence on PS to maintain supply; increased energy costs; requires greater capacity to ensure firm capacity; high lifecycle costs

		Any failure in the station would result in complete loss of supply	greenhouse gas emissions		
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Notes:

1. An inflation rate for construction cost was 3% and a discount rate for net present value (NPV) calculation was 4.5%, as suggested by staff from **Deloitte Canada**.
2. A sensitivity analysis for 40-year, 60-year and 100-year planning horizons was conducted. Data are available in WSP's **Project File Report** on the project website at:
<https://www.hamilton.ca/city-planning/master-plans-class-eas/ancaster-elevated-water-reservoir>
3. Energy costs include the consideration of hourly water supply during off-peak, mid-peak and on-peak for comparing different alternatives. A sensitivity analysis of energy increase rate at both 6% and 7% was performed in WSP's report. An energy increase rate of 6% was used for the above table.