

### A Lift Station Calibration that Tells How Much Money is Wasted



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## LIFT STATION EVALUATION REPORT for: LS 123

Organization:	City of Montreal	Phone:	450-123-4567
Contact:	John Smith	Title:	Sewer system superintendant
Evaluation period from (mmddyy):	05-08-07 To: 05-16-07	Email:	John.Smith@Montreal.city.qc.ca

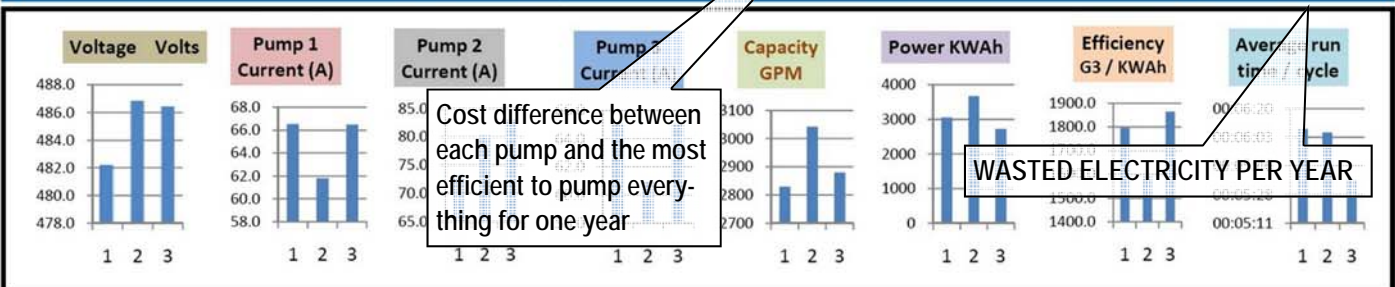
Dimensions			
Geometry of well:	Rectangular	Width (in)	120
		Length (in)	120
Distance between start level for one pump and stop level			89.67
Distance between start level for two pumps and start level of one pump			86.67
Distance between start level for three pumps and start level of two pumps			
Volume			
Volume between stop and start of one pump	Number of abnormal starts and stops	Average Voltage & Current + % of variation between each phase and average	Gallons
Volume between start of one pump and start of second pump		Run Time + Number of starts	Gallons
Volume between start of second pump and start of third pump			Gallons

Electricity											
Voltage is taken manually if more than 2 pumps.											
	Suspicious Events	Phase 1	% Var	Phase 2	% Var	Phase 3	% Var	Run time			Starts
<b>Voltage (Volts)</b>		482.19	0.6	486.77	0.3	486.36	0.3	H	M	S	Events
Pump 1 - Current (Amps)	2	66.55	2.5	61.81	4.8	66.50	2.4	32	24	20	317
Pump 2 - Current (Amps)	12	73.26	7.1	80.28	1.8	82.96	5.2	32	0	35	315
Pump 3 - Current (Amps)	0	65.03	2.1	60.93	4.3	65.03	2.1	29	29	54	315
Combination Average pump capacity (GPM)		Pump 1	% Var	Pump 2	% Var	Pump 3	% Var	H	M	S	Events
Pump 1 & 2 - Current (Amps)	4232	194.86	9.7	236.50				2			20
Pump 1 & 3 - Current (Amps)	4091	194.86	1.0					1			9
Pump 2 & 3 - Current (Amps)	4296			236.50				0			5
All Pumps - Current (Amps)		194.86	6.1	236.50				0			0

Efficiency											
Pumped volume = Capacity X Run time											
	Pump capacity		Pumped volume		Power consumption		Efficiency		Avg run time/Cycle		
	GPM	% Var	Gal.x1000	% Var	KVAh	% Var	Gal/ KVAh	% var	hh:mm:ss	% Var	
Pump 1	2830	3.0	5502	0.4	3063	3.0	1796	2.6	00:06:08	3.1	
Pump 2	3042	4.3	5842	6.6	3673	16.4	1591	9.1	00:06:06	2.5	
Pump 3	2880	1.3	5097	7.0	2733	13.4	1865	6.5	00:05:37	5.6	
<b>Total / Average</b>			2917	16442	5481	3156	1751		00:05:57		

Annual Energy Cost							
Cost per KVAh	0.07	Cost if single <sup>1</sup>	% Var	\$ Variation / Best	Actual Cost	% Var	\$ Equal Run Time <sup>2</sup>
Pump 1		\$29 231	3.0	\$1 078	\$9 782	3.0	\$359
Pump 2		\$33 015	9.6	\$4 861	\$11 731	16.4	\$1 620
Pump 3		\$28 153	6.6	\$0	\$8 728	13.4	\$0
<b>Total / Average</b>		\$30 133		\$1 980	30 241	10 080	

**Total annual extra cost of electricity if no modification occurs \$2 088**



<sup>1</sup> Cost if single: Cost if only one pump would pump everything  
<sup>2</sup> \$ Equal Run Time: Extra cost of electricity if each pump pumps the same volume of water  
 This analysis is for constant speed pumps only. The hydraulic data are based on volumes between the levels of operation of the pumps. If the levels of operation are defective, the data could not be valid. It is not the responsibility of MAID Labs to correct the operation of the lift station. This analysis allows to discover anomalies undetectable otherwise. © MAID Labs Inc. 2008