



The Corporation of the Town of LaSalle

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<b>Date</b>	August 9, 2018	<b>Report No:</b>	PW-22-18
<b>Directed To:</b>	Mayor and Members of Council	<b>Attachments:</b>	
<b>Department:</b>	Public Works	<b>Policy References:</b>	
<b>Prepared By:</b>	Peter Marra, P.Eng. – Director of Public Works & Mark Masanovich – Manager of Facilities		
<b>Subject:</b>	Vollmer Pool Natatorium HVAC Update		

**RECOMMENDATION:**

That Council refer Phase 3, the next step to improving the Vollmer Pool Natatorium HVAC to the 2019 budget deliberations.

**REPORT:**

This report is prepared in response to a Council question providing an update on the Vollmer Pool Natatorium HVAC system upgrades that have occurred over the last few years.

Background

The pool at the Vollmer Centre opened in 2008. The pool was in operation with little to no changes ever since the 2008 opening. The pool natatorium HVAC equipment that was installed as part of the original build is still in operation and regularly maintained.

In early 2015 there were concerns raised about the air quality within the pool natatorium. The Town employed a register industrial hygiene technologist to carry out air sampling and testing within the pool area under various operating conditions.

Operating conditions relates to the various toys, spray features, lazy river, bather load, etc.

The testing results came back that all level of gases with legislated limits within the context of the Ontario Occupational Health and Safety Act were within the regulated exposure limits. Those gases primarily being oxygen, carbon dioxide and chlorine gas.

What was discovered is that the levels of chloramines was elevated within the pool natatorium under various operating conditions. Chloramines are produced when the chlorine within the pool water reacts with nitrogen and this produces what is referred to as chloramines. Nitrogen makes its way into the water from pool users, in the form of perspiration, urine, hair products, etc.

Chloramines are heavier than air and remain relatively close to the water surface and floor within the natatorium. It was discovered at the initial testing stage that keeping the spray features off and limiting the use of the other special features within the pool reduced the chloramine level until a proper solution could be installed to control this airborne irritate.

Chloramines are not addressed with define exposure limit relative the Ontario Occupational Health and Safety Act. However, there are best practice available throughout Europe and one available in Canada, that being British Columbia, on limits of chloramines within an indoor pool environment. The Town has been striving to achieve our chloramine limit within the best practices for a pool environment of this type to be consistent with what is available information from around the world and within Canada.

#### Limitation for Improvements

The pool at the Vollmer is a very popular program within the Culture and Recreation Department of services that the Town provides. Given the popularity, the pool has a once yearly closure to allow maintenance to occur to the pool and the closure typically occurs in September. The closure under normal periods is only about 2 weeks; however, that period can be extended to about 4 weeks. Anything beyond a 4-week closure will begin to affect programming service offered to our residents.

In addition, because the Town publishes a programming guide, this closure needs to be coordinated and communicated by about June/July of any given year so that the fall programming guide can be finalized and published to show the effects on programming for the September maintenance shutdown.

#### Solution Implementation

The Town operated the pool while limiting the features used during pool use beginning immediately in early 2015. In June of 2015, the Town hired Ameresco Consulting, an engineering firm to investigate the issue relative HVAC operations and provide recommendations for improvements. Indoor pool environments are interdependent and unpredictable due to bather loads, bather cleanliness, outdoor temperature, humidity, etc.

The recommendations from Ameresco in 2015, was a three-step process and those being the following;

<b>Improvement</b>	<b>Approx. Cost</b>
Installing a UV disinfection system	\$ 40,000.00
Duct work modifications	\$ 260,000.00
Supplemental HVAC equipment	\$ 465,000.00

The Town's Environmental committee reviewed the three-step process. The thought was to implement one improvement at a time and carry out testing and determine the effectiveness on the level of chloramines within the pool natatorium environment, then progress to next step in order to achieve targets.

#### Phase 1

In 2016, Council approved and UV system was installed. Upon completion of the UV system installation additional air testing occurred. While there was an improvement with respect to lower chloramine levels, the targets were not achieved. Therefore, we continued to operate under limited feature use.

#### Phase 2

In 2017, the Town was successful in receiving a grant to carry out the next phase that being the air duct modification. This work was completed in September of 2017. Upon completion of the air duct modifications additional air testing occurred. While there was again more improvement with respect to lower chloramine levels, the targets were not completely achieved. Therefore, we continued to operate under limited feature use.

Upon completion of the second phase there was about a 25% to 38% reduction in chloramine levels as compared to what was recorded in 2015. It should be noted that under certain operating conditions, the chloramine levels are within best practice guidelines from Europe, but they do not meet the only Canadian best practice guideline from BC.

The Phase 2 work reconfigured the air supply ductwork in order to get a more cyclonic movement of the air from the high-level supplies down to the floor level.

#### Phase 3

The next step is to move forward with implementation of some form of HVAC equipment replacement or supplemental equipment. The new revised estimate is approximately \$900,000.00 (plus HST). Phase 3 can also be broken down into two separate phases, phase 3A being about \$150,000.00 and Phase 3B being about \$750,000.00. Again, air testing would occur after each improvement is implemented to confirm effectiveness.

Phase 3, may require a longer shutdown, because the work involved will disrupt the pool natatorium more so than has ever been contemplated in the past and will need to be well coordinated with programmed services. Furthermore, early into progressing with Phase 3, if Phase 3 was to proceed, pre-ordering equipment will be required to achieve a September closure.

#### Existing HVAC Equipment

As noted the existing HVAC rooftop unit was installed at the time the pool was built in 2008. The unit is now 10 years old and the life expectancy of these units is about 18 to 22 years. The existing unit is manufactured by Pool Pak. We have had an authorized Pool Pak representative visit the site to evaluate the current unit. They have now certified the unit is what was originally designed for space and that the unit is showing representation wear for its age. They estimate that we may be able to get approximately another 10 years of use from the existing unit.

The existing HVAC unit has had and still receives regular maintenance. There have been times, when the drive belts become worn and the unit begins to exhibit a loud squeal. As this occurs, we mobilize our contractor to get the belts changed. While this is a noise nuisance, it has no effect on the air movement capacity of the unit.

During the Ameresco 2015 evaluation, they confirmed that the existing unit is properly designed according to applicable standards for the environment it is intended for. This means that we are getting the required air exchanges as required by the standard, in fact we are achieving approximately 15% more air exchanges. However, there is an indication that the dehumidification load is slightly below what is required from the standards.

#### Financials

The 2018 budget did not have any money set aside for HVAC modification in the pool natatorium. Therefore, any future improvements will need to be budgeted for in future years.

The proposed Phase 3 budget is \$900,000.00 (+ HST). This is a revised price from the original recommendation of \$465,000.00 (+HST). Part in parcel due to the following;

- Original recommendation has an additional ground mounted supplementary unit being installed outside of the Vollmer with additional ductwork, still leaving us with a 10 year old roof top unit;
- The new proposal is a complete replacement of the existing 10 year old roof top unit;

## Recommendation

The recommendation is to carry out Phase 3 as a complete project in 2019, and that this project be referred to the 2019 budget.

We are available for any questions.

Respectfully submitted,



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Reviewed by:							
CAO	Treasury	Clerks	Public Works	Planning	Cult. & Rec.	Building	Fire