**Property Condition Assessment (PCA) For Pentz Elementary School, 2680 331 Hwy, Pentz, NS**

## FINAL REPORT

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# Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by the South Shore Regional School Board (SSRSB) to perform a property condition assessment (PCA)at Pentz Elementary located at 2680 331 Hwy, Pentz, Nova Scotia. The building is approximately 12,000 sq. ft.

The site observation work was performed on January 20, 2016 by Anneke Lijs (Architectural), Lisa Simpson (Structural), Keith Estey (Mechanical) and Holly White (Electrical). Access to the property was provided by Fred Conrad with SSRSB.

Refer to Appendix "A" Opinion of Probable Costs Tables, Appendix "B" Site Photos, Appendix "C" Areas & Record Drawings, Appendix "D" Aquaterra Report, and Appendix "E" Water Quality Report.

In our opinion, the overall property is in fair to good overall condition as compared to buildings of similar age and construction.

Recommended upgrades items have been prioritized as Immediate Work (<12 months), Short-Term Work (1 to 5 years), Intermediate Work (6 to 10 years) and Long-Term Work (11 to 20 years). Immediate Work includes items that if left unattended, will result in significant deterioration and substantially escalated repair costs/systems failure or life safety. The Short-Term work includes repairs which are required but may be deferred over the next few years. The Intermediate Work and Long-Term Work address those repairs that are not considered urgent. These repairs usually include replacement of equipment or systems that are nearing the end of their life cycle.

Based on our findings, we have identified a total cost of:

$ 27,250 for Immediate Work (<12 months);

$ 136,100 for Short-Term Work (years 1 to 5);

$ 344,950 for Intermediate Work (years 6 to 10) and,

$ 299,100 for Long-Term Work (years 11 to 20)

A total of **$807,400** for maintenance upgrade is required for the next 20 years.

**The following report provides detailed information on our findings and our recommendations. Cost estimates for Required Work are outlined in the tables provided in Appendix A.**

The General Purpose and scope of our work and the limitations to our work are outlined in Section 1 of this report. Opinions of costs presented in this report are intended for general budgeting purposes only. Actual costs can only be determined after preparation of tender documents, understanding of site restrictions, effects of ongoing operations of the buildings and definition of a construction schedule.

# 1.0 GENERAL PURPOSE AND SCOPE OF WORK

The primary purpose of the property condition assessment was to visually review the existing condition of the property, and to identify and quantify major defects in materials or systems, based on our observations, which might significantly affect the value of the property or continued operation of the facility over the next twenty (20) years. The assessment of the building was performed using methods and procedures that are consistent with good commercial and customary practice. Reasonable effort was made to check the accuracy of the data forming the basis of the projection of the life expectancy and replacement costs that were developed for this report. Responsibility cannot be accepted for unknown factors that might adversely affect the accuracy of these projections.

We have estimated current dollar capital cost liabilities to repair components that require replacement or upgrade due to condition or life safety requirements. Required Work costs have been identified for physical deficiencies which we observed that we consider being beyond normal or routine maintenance costs or for maintenance procedures which are currently not enforced but are required to maintain the system under consideration. Required Work also includes provisions for the replacement of building components that will have exceeded their Expected Useful Life during the evaluation period of twenty (20) years.

When preparing the Class C+ Cost Estimates we have no control over the cost of labour, materials, equipment or services provided by others, or over the contractor's methods of determining prices, or over the competitive bidding or market conditions. Therefore, the opinion of probable capital cost estimates are provided based on our best professional judgment, experience and information available to us at the time the estimate is prepared. According to the Association for the Advancement of Cost Engineer International (AACEI) guidelines, this opinion of probable capital cost is a Class C+ estimate based on the conceptual level of study and available information. The expected accuracy of the Class C+ estimates is -15% to +25%. The estimated cost should only be used for project screening, feasibility determination, concept evaluation, and budgeting forecasting purposes.

The findings of our maintenance assessment of this property are based on the areas observed. The scope of our work included visual reviews by professional engineers and technologists to observe and document existing conditions and interviews with site representatives. Our work did not include destructive testing, testing of life safety systems or quantitative testing. The major components and systems observed by Stantec included:

- Building Structure
- Building Envelope
- Roofing
- Electrical Systems
- Site
- Interior Finishes
- Mechanical Systems
- Water Well
- Septic

The recommendations and our opinions of probable costs associated with these recommendations presented in this report are based on portions of the building which were accessible during our investigation. The opinions of costs presented in this report are also based

on information received during interviews with the site representatives. During our assessment, we have attempted to verify information received. However, Stantec cannot be held responsible for incorrect information received during the interview process.

The opinions of cost presented in this report are intended for general budgeting purposes only. Actual costs for work recommended can only be determined after preparation of tender documents, understanding of site restrictions, effects of ongoing operations of the building and definition of the construction schedule. The scope of recapitalization work recommended in this report must be confirmed with a more detailed site investigation prior to implementation. Stantec expressly waives any responsibility for the effects of any action taken as a result of this service unless we are specifically advised and participate in the action, in which case our responsibility will be agreed to at that time. No other warranty, expressed or implied is made.

Hazardous materials (asbestos, lead in paint, PCBs, radioactive materials, halocarbons, mercury, mould, silica, etc.) may be present in the subject buildings. The costs allocated to future capital expenditure projects do not include the identification of or cost for any potential remediation and removal of these hazardous materials, which are regulated under the provisions of the Nova Scotia Occupational Health and Safety Act. If not done so already, a Hazardous Building Materials assessment should be performed for the purpose of quantifying hazardous building materials which will be disturbed during any future renovation or demolition activities.

No legal survey, soil tests, detailed engineering calculations, or quantity surveying compilations were made during this assessment. No responsibility, therefore, is assumed concerning these matters. Stantec did not design or construct the buildings or structures and therefore will not be held responsible for the impact of any design or construction defects, whether or not described in our final report. No evaluation of environmental conditions at the site was carried out within the scope of work.

The information and opinions expressed in this report are solely for the benefit of South Shore Regional School Board. No party shall distribute the final report or any portion or copy thereof without the express written permission of Stantec, except that the client may make copies of the report as are reasonable for their own use. It shall not be relied upon for any purpose other than intended for SSRSB without the express written consent of Stantec.

Any use which a third party makes of this report, or any reliance or decisions to be made based on it, are the responsibility of such third parties. Stantec accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions based on this report.

# 2.0 AUDIT TEAM

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# 3.0 GENERAL PROPERTY DESCRIPTION

Pentz Elementary facilitates a rural elementary school that supports primary to grade 6. The building consists of a single storey with classrooms, washrooms, and a gym area with a small stage, and was constructed in 1965. The reported building area is approximately 12,000 sq. ft. The site has a portable building located at the south east corner. The site has an access road on the West which comes in from the south and exits towards the north. The access road includes teacher and visitor parking along the south side and room for bus pickup and drop-off along the west. There are playing fields to the south and east of the school property.

# 4.0 SYSTEMS DESCRIPTIONS, OBSERVATIONS & RECOMMENDATIONS

## 4.1 BUILDING STRUCTURE

### 4.1.1 Review Criteria

The review of the building structural elements was based on observations of the property focusing on areas where structural systems were visible; primarily the exterior walls, foundations and roof areas. The structural review was limited in other areas due to interior/exterior concealed finishes and hence was not technically exhaustive. The slab on grade floor slab in the main school area was not able to be visually assessed due to the presence of floor coverings. This evaluation did not involve extensive use of measurements, instruments, testing, calculations or other means to develop detailed scientific or engineering findings, conclusions, or recommendations. Intrusive testing and performance calculations were beyond the scope of this assignment. The north orientation has been taken as plan north from the drawings produced by MacDonnell Group Consulting Ltd.

### 4.1.2 Description

Pentz Elementary is a single storey building that was built in 1965. The roof is constructed of heavy timber beams with an exposed timber tongue and groove ceiling. The beam connections are made with steel brackets.

### 4.1.3 Assessment and Recommendations

#### 4.1.1.1 Exterior Structural

The visible exterior of the main school building is in generally good condition. Access to the roof was not possible, nor was it visible from the ground.

Hairline to 1/32” wide foundation cracks were noted on the exposed poured concrete below the windows on the north and south sides of the school (Photo 4.1.1). These cracks appear

approximately every 8 feet along these two walls. Hairline cracks were also noted on the small exposed area of concrete below the block on the southeast side of the building. For all foundation cracks from hairline to ¼" it is recommended that repair be completed by chemical injection. For cracks greater than ¼" and larger areas of concrete loss, the damaged concrete is to be chipped away, if rebar is exposed a corrosion inhibitor is to be applied and then new concrete or mortar is to be applied. Crack repairs are to be done to prevent water infiltration.

Deterioration of the concrete block mortar and fine step shaped cracking was noted on the northeast corner of the building (Photo 4.1.2), southeast side near the door (Photo 4.1.3) and an area of material loss was noted on the southeast corner of the Mechanical Room (Photo 4.1.4). These areas should be repointed and repainted to ensure no water infiltration. A step crack was also noted in the region between the Mechanical Room and the stage on the south side (Photo 4.1.5) which should also be repointed.

The paint covering the mortar of the exterior side of the mechanical room is missing. At locations where the mortar is exposed from paint removal, very minor material loss is present in some of the mortar joints. These joints should be repainted to protect from the elements to prevent further damage.

#### 4.1.1.2 Interior Structural

The interior of the main school building was found to be in very good condition.

In the Mechanical Room cracks were noted in the floor slab which should be repaired to prevent water infiltration (Photo 4.1.6). Concrete spalling was noted in several areas, which should be repaired to prevent further loss of material (Photo 4.1.7). The housekeeping pad below the boiler on the south side of the room showed significant deterioration and exposed rebar and should be repaired to provide a stable support for the boiler (Photo 4.1.8). Corrosion was also noted on the steel stairs inside the boiler room (Photo 4.1.9). The corrosion should be removed, any loss of material reported and repaired followed by the application of primer and paint to prevent further damage.

The portable classroom showed signs of structural concern. There was a significant high point in the floor running along the centerline joint of the building (Photo 4.1.10). Also, there was a corresponding ceiling crack in the drywall running down the centerline of the building (Photo 4.1.11). Further structural investigation via the underside of the structure is required to determine whether the foundations and frost protection are adequate. The cause of the movement will determine the extent of the repairs required. The structural assessment and determination of the remaining useful life should be performed prior to any other updates to the building.

### 4.1.4 Opinion of Cost Summary – BUILDING STRUCTURE

**IMMEDIATE WORK (<12 months)**

| | |
|---|---|
| • Allowance to Perform Structural Assessment of Classroom Portable | $3,750 |

**SHORT-TERM WORK (years 1 to 5)**

| | |
|---|---|
| • Allowance to Repair Reinforced Concrete | $6,000 |
| • Allowance to Repoint Concrete Block Walls | $1,700 |
| • Allowance to Repaint Mechanical Room Stairs | $700 |

**INTERMEDIATE WORK (years 6 to 10)**

| | |
|---|---|
| • Allowance to Repair Reinforced Floors | $2,750 |

**LONG-TERM WORK (years 11 to 20)**

| | |
|---|---|
| • No Repairs or Replacements | $0 |
| **OPINION OF TOTAL COST** | **$ 14,900** |

## 4.2 BUILDING ENVELOPE

### 4.2.1 Review Criteria

Our review of the architectural building envelope elements of this property is based on a visual review of the building exterior.

### 4.2.2 Description

#### 4.2.2.1 Exterior Walls

The exterior wall cladding for the building consists of poured concrete, brick, and concrete block at mechanical room. The poured concrete is located at the window footer section. The brick façade makes up the west face of the building envelope. The portable building at the south east corner is cladded with painted plywood.

#### 4.2.2.2 Windows & Doors

The buildings windows consist of white wood frame, double glaze with 2 lower operable panes. The buildings four (4) primary double-door entrances appear to be in fair condition and consist of aluminum frames and side lights. There is also one metal double-door accessing the boiler room on the east side of the building.

### 4.2.3 Assessment and Recommendations

#### 4.2.3.1 Exterior Walls

The exterior cladding is in overall fair condition, however the concrete block surrounding the boiler room at the east of the school was noted to have peeling paint between the blocks and damages to the block on the south wall. A vertical crack along the mortar seam of the south boiler room block wall was noted and costs have been allocated in the short term to repoint the mortar joints at this location. Costs are allocated in the short term to repaint the exterior of the boiler room block wall when the resealing of the crack is completed.

The poured concrete wall along the north and south sides of the building have some small vertical hair line cracks in many locations. Cost has been allocated in Section 4.1 Building Structure.

The brick façade at the front of the building (West side) appeared to be in good condition.

The portable building located at the south east corner of the school is cladded with painted plywood. The paint has worn off in most areas and the plywood is showing signs of deterioration. Costs have been allocated in the short term of the evaluation period to remove and replace the treated plywood and add vinyl siding. Refer to section 4.1.1.1 Exterior Structure before commencing any replacement.

#### 4.2.3.2 Windows & Doors

The windows are in good condition. The exact date of when the windows were last replaced is not known. The doors appear to be in fair condition, however the date of installation is not known. The doors should be replaced in 15 years based on their current condition and the expected useful life.

Window, door sealant and building control joints require to be replaced every 10 years. The buildings sealants are in fair condition. Costs for sealant replacement for doors and windows are recommended in the intermediate term of the evaluation period.

### 4.2.4 OPINION OF COST SUMMARY – BUILDING ENVELOPE

**IMMEDIATE WORK (<12 months)**

- No repairs or replacements $0

**SHORT-TERM WORK (years 1 to 5)**

- Repainting of boiler room block wall $1,800
- Repainting of poured concrete walls on North and South walls $1,000
- Replace facade of portable building with vinyl siding $12,500

**INTERMEDIATE WORK (years 6 to 10)**

- Replace window and door sealants (main school building only) $3,550

**LONG-TERM WORK (years 11 to 20)**

- Exterior Double Door Replacement (metal, per door) $18,000
- Window replacement (vinyl) $35,500

**OPINION OF TOTAL COST** **$ 72,350**

## 4.3 ROOFING

### 4.3.1 Review Criteria

The review performed was of a visual nature and accordingly was not technically exhaustive and did not involve cut tests, extensive use of measurements, instruments, testing, calculations, and other means to develop scientific or engineering findings, conclusions, and recommendations. Intrusive testing and performance calculations were beyond the scope of this assignment.

### 4.3.2 Description

There are three (3) roofs associated with the subject building; a sloped main roof (9,700 $ft^2$), a sloped roof over the portable building (approximately 830 $ft^2$) and flat roof over the Boiler Room (approximately 500 $ft^2$). The total roof surface area is estimated at 11,050 $ft^2$. No information was provided on the last roof replacement.

### 4.3.3 Assessment and Recommendations

At the time of the site visit, the roof was covered in snow/ice and a full visual review could not be completed. No significant leaks were noted within the subject building that may be associated with the current roof envelope. Roof repairs should be performed every 5 years and a cost for roof repairs has been allocated for year 5 and 10 of the evaluation period. We have allocated a roof replacement in the long term to ensure a cost is allocated for replacement. Once the roof is clear of snow, an assessment should be completed. The time of the roof replacement may change depending on the results of the future assessment.

### 4.3.4 OPINION OF COST SUMMARY - ROOFING

**IMMEDIATE WORK (<12 months)**

- No repairs or replacements

**SHORT-TERM WORK (years 1 to 5)**

- Allowance for roof repairs $4,250

**INTERMEDIATE WORK (years 6 to 10)**

- Allowance for roof repairs $4,250

**LONG-TERM WORK (years 11 to 20)**

- Allowance for full roof replacement $85,000

**OPINION OF TOTAL COST** **$ 93,500**

## 4.4 MECHANICAL SYSTEMS

### 4.4.1 Review Criteria

Our review of the mechanical systems at this property was based on observations including the heating, ventilation, and plumbing systems and equipment.

The scope of this evaluation was limited to a visual assessment of the conditions present and was limited to accessible equipment. The control schematics of the existing operation of the mechanical systems were not reviewed in the context of this study. Calculations were not made to verify the adequacy of the mechanical systems' performance.

Quantitative measurements for space temperature, humidity, and air quality were not taken. Sanitary and domestic water pipe sizes and capacities were not evaluated. Intrusive (destructive testing) and non-destructive testing were not performed as they are beyond the scope of this assignment.

### 4.4.2 Description

#### 4.4.1.1 Heating, Ventilation and Air Conditioning (HVAC)

#### 4.4.2.1.1 Heating System

Heating for the school is produced via an oil fired Buderus Boiler (model number G315, serial number 2530-012-000148-5178840) equipped with a Riello burner (model R40 F15), which is located in the mechanical room on the South West side of the school. Fuel for the boiler is stored in two Roth tanks (Type 1000L) located in the same mechanical. Each tank has a rated holding capacity of 1000 liters. Heating water produced from the boiler is then distributed via two Grundfos pumps to two (2) zones. One zone runs along the east side of the building in an enclosed service cavity built into the corridor wall, and the other zone runs along the west side of the building in a similar service cavity. The sizes of these pumps were noted to be ¾ horsepower each, and have electronic speed control that automatically adjusts to the heating system's demand. The heating water feeds perimeter fin-tube baseboards and one unit heater in the mechanical room.

It was noted that the heating pipes in the mechanical room were not insulated; however, it could not be determined on site, if the rest of the distribution piping is insulated.

Heating control for the school is via pneumatic thermostats and control valves, except for the unit heater in the mechanical room which utilizes an electrical thermostat and control valve. Compressed air for the control system is produced via a portable compressor that is manufactured by Porter Cable (model: PXCML1683066, serial: M12310202A). The tank is rated for 150 psi and 30 US gal.

Heating for the portable building is via electric baseboard heaters located below the windows on the southwest side of the building. The baseboards are controlled by one electronic thermostat.

#### 4.4.2.1.2 Ventilation

Ventilation for the building is provided by two exhaust fans that services the kitchen, janitor closet, and washrooms. It was noted that these units run continuously.

Ventilation for the portable building is provided via a heat recovery ventilator (HRV), manufactured by LifeBreath (Model: RNC-10, Serial: CRGE 112101081). Control of the unit is via a wall mounted humidistat.

### 4.4.2.2 Plumbing

#### 4.4.2.2.1 Domestic and Sanitary Services

The domestic water is provided by a drilled well that is located to the south of the school building. A submersible pump is located within the well that pumps water to the building's Flex 2 pressure tank (model H2P80). The pressure tank is rated for 307 litres and a maximum pressure of 125 psi. It was reported that the well and pump are original to the building but the pressure tank was manufactured in 2013. Also, there are two Myer's water conditioners that condition the water before leaving the mechanical room. It was noted on site that the controllers were rebuilt in 2012 and 2015 for these two conditioners.

The domestic water is distributed via copper and plastic piping. The copper piping is original to the building; however, the plastic piping is approximately five years old. It was noted that visible domestic hot water piping is insulated; however, the majority of piping is within wall cavities and therefore not able to be observed.

Domestic hot water is generated by an electric domestic hot water tank manufactured by Sepco StoneSteel (model C100DTE, serial H-865), and is rated for 364 liters. It was reported that the tank is original to the building's construction but has had repairs throughout its service life.

The sanitary piping for the building is a mixture of cast iron and plastic piping. The age of the piping varies throughout the building; however, the cast iron is most likely original to the building.

#### 4.4.2.2.2 Plumbing Fixtures

The washroom fixtures consist of vitreous china urinals (3), water closets (12), and lavatories (3). Also, there are stainless steel sinks within the washrooms and kitchens (12).

In the janitors closet, there is a plastic utility sink and in the east and west corridors, there are refrigerated water fountains.

### 4.4.2.3 Life Safety

The school and portable building have wall mounted fire extinguishers located throughout the two buildings, which were last inspected by Cumings' Fire & Safety Equipment Limited in September, 2015.

## 4.4.3 Assessment and Recommendations

This section details our assessment and recommendations for the systems noted in section 4.4 above. All allowances for replacement and repairs have been included in the Section 4.4.4 Opinion of Cost Summary.

### 4.4.3.1 Heating, Ventilation and Air Conditioning (HVAC)

#### 4.4.3.1.1 Heating System

The Buderus boiler appeared to be in good condition with no reported issues with providing heating to the school building. It was reported that the unit was installed in 2014. The expected useful life of these boilers is typically twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated during the evaluation period.

The Roth fuel oil storage tanks are in good condition with no reported issues with the tanks. Based on the name plate, the tanks were manufactured in 2014. The expected useful life of these tanks is typically fifteen years; however, depending insurance requirements, these tanks can be replaced prematurely. Based on the observed condition and estimated remaining useful life, a replacement is anticipated during the long term of the evaluation period. If there is an insurance requirement, the year of replacement should be adjusted to meet this requirement.

The Grundfos circulation pumps appeared to be in good condition and were reported to be no more than a few years old. The expected useful life for these pumps is typically twenty to

twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated during the evaluation period.

The heating distribution piping and the perimeter baseboards appeared to be in fair condition with no reported issues of line pin-holes or lack of heat in the building; however, they are original to the building. The expected useful life of these two components is typically thirty-five to forty years, which they have surpassed. Since these components have surpassed their expected useful life and are still functioning properly, replacements are not anticipated until the intermediate term of the evaluation period.

The unit heater in the mechanical room appeared to be in good condition with no reported issues with providing heat in the dedicated space. The unit heater was reported to have been installed during the boiler installation in 2014. The expected useful life for these units is twenty to twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated.

The building's controls appeared to be in fair to good condition with no reported issues; however, it was reported that the majority of the thermostats and control valves have been replaced within the last five years. Typically, these controls have an expected useful life of twenty to twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated during the evaluation period.

The electric baseboards in the portable building appeared to be in fair to good condition with no reported heating issues. The age of the heating system was not reported, but it is most likely more than twenty years old. Typically, the expected useful life of these components is typically thirty to thirty-five years. Based on the observed condition and estimated remaining useful life a replacement is anticipated during the long term of the evaluation period. The replacement cost that has been included in the opinion of probable cost also includes the cost for replacing the thermostat.

#### 4.4.3.1.2 Ventilation System

The exhaust fans in the school were reported to be in fair condition; however, they have been replaced / repaired within the last five to seven years. The exterior housings are original to the building. The expected useful life for these fans is twenty to twenty-five years. Based on the observed condition and estimated remaining useful life a replacement of the fans is not anticipated. It is recommended that the exterior housing be checked on an annual basis to determine condition and to help prevent water infiltration.

As the building only has limited ventilation, which relies on natural air infiltration for supplying outdoor air, it is recommended that a new ventilation system with dedicated fresh air intake be considered. It is recommended that a professional mechanical engineer or engineering firm that is experienced in ventilation systems, review the building and existing mechanical system. From this review, the consultant would propose options for new ventilation systems and their associated estimated costs to meet current building code requirements with respect to ventilation. It is recommended that this review be completed within the short term of the evaluation period.

We have also included a cost based on total building area for a simple packaged heat recovery unit with constant volume air flow. This would include all work to design and complete the renovation (equipment, ducting, time of day controls, and installation). We have included this work in the intermediate term, but can be done at any time as there is no dedicated ventilation system presently.

The out building HRV appeared to be in good condition with no reported issues with supplying air to the building. The age of the unit was not reported; however, it is assumed to be approximately five years old. Typically, the expected useful life for these units is twenty years. Based on the observed condition and estimated remaining useful life a replacement is anticipated during the long term of the evaluation period.

### 4.4.3.2 Plumbing

The condition of the well and septic system will be discussed in the following section 4.7.

The domestic and sanitary distribution piping appeared to be in fair condition for its age as there have been no reported issues with these systems. It was reported that the majority of these pipes are original to the building; however, there have been changes to some of the plumbing fixtures supply and sanitary (drains) piping throughout. The expected useful life for these systems is typically forty years or more. Based on the observed conditions, it is recommended that a

contractor be retained to scope the sanitary lines to get a better understanding of the interior condition of the pipes. Also, it is recommended that a sample number of sections within the main domestic water lines be cut so the interior of the pipes can be investigated for condition. It is recommended that these investigations be completed in the short term of the evaluation period. Due to the piping's age, repairs are anticipated during the long term of the evaluation period; however, depending the on results of the investigations, the timing of these repairs may need to be adjusted.

The water treatment system appeared to be in fair to good condition with no reported issues. It was noted on site that this equipment is less than five years old. Typically, the expected useful life of this equipment is twenty years old. Based on the observed condition and estimated remaining useful life a replacement of the system is anticipated during the long term of the evaluation period.

The domestic hot water tank appeared to be in good condition for its age, yet, it is original to the building and has had repairs throughout its life. The expected useful life of this type of tank is twenty-five to thirty years as they are more robust than a typical domestic hot water tank. Since the tank is still operational, a replacement is not anticipated until the end of the intermediate term of the evaluation period. It is noted that the cost for replacement does not include a replacement of an as like product, as this style of tank is not available.

#### 4.4.3.2.1 Plumbing Fixtures

The majority of the plumbing fixtures appeared to be in good condition with no reported issues. The age of these fixtures is most likely less than twenty years old based on the observed condition. The expected useful life of these fixtures is typically thirty-five years for the vitreous china fixtures and forty years for the stainless steel fixtures. Based on the observed condition and estimated remaining useful life, replacements are anticipated near the end of the evaluation period.

The plastic utility sink appeared to be in fair to good condition; however, the age of the unit was not reported at the time of the site visit. Based on the observed condition, it is most likely less than ten years old. The expected useful life for these fixtures is typically thirty to thirty-five years. Based on the observed condition and estimated remaining useful life a replacement is not anticipated.

The water fountains in the east and west corridors appeared to be in fair to good condition with no reported issues; however, the age of these units was not available. It is assumed that these fixtures are not more than twenty years old. Typically, these fixtures have an expected useful life

of twenty to twenty-five years. Based on the observed condition and estimated remaining useful life a replacement is anticipated during the intermediate term of the evaluation period.

#### 4.4.3.3 Life Safety

The fire extinguishers appeared to be in good condition and have up to date inspection tags, typically these items are replaced as they fail yearly inspections and completed through regular operations budgets. No costs have been included for these items.

### 4.4.4 OPINION OF COST SUMMARY - MECHANICAL

**IMMEDIATE WORK (<12 months)**

- No repairs or replacement

**SHORT TERM WORK (years 1 to 5)**

- Scoping sanitary piping and investigating DCW piping $7,500
- Ventilation study $5,000

**INTERMEDIATE TERM WORK (years 6 to 10)**

- Replacing baseboards and heating water distribution piping $67,200
- Allowance to replace corridor water fountains $7,500
- Allowance to replace DHWT $ 4,500
- Allowance for a simple packaged heat recovery unit with constant volume air flow (design and build) $220,00

**LONG TERM WORK (years 11 to 20)**

- Replace Roth Tanks $7,500
- Out building electric baseboards heaters and thermostat $5,400
- Allowance for repairing sanitary and DCW piping $47,200
- Allowance to replace plumbing fixtures $41,200
- Allowance to replace HRV $4,500

- Allowance to replace water treatment equipment $ 3,800

**OPINION OF TOTAL COST** **$421,300**

## 4.5 ELECTRICAL SYSTEMS

### 4.5.1 Review Criteria

Our review of the electrical systems at this property was based on visual conditions and interviews with the building operations personnel. The review included the main service, distribution equipment, lighting, fire alarm, and security systems.

The scope of the review was limited to an assessment of the existing conditions and only to accessible equipment. The electrical consumption was not investigated.

### 4.5.2 Description

#### 4.5.2.1 Main Service

The building is equipped with a 1-phase, 3-wire, 120/240V, 400A electrical service from Nova Scotia Power Inc. (NSPI). The service enters an Amalgamated Electric 400A main disconnect switch before metering and distribution through a splitter. The splitter feeds further disconnect switches and a panel, all of which is located in the boiler room on the ground floor. The main feed is run via overhead lines from the 50 kVA single-phase pole-mounted utility transformer located at the rear of the building (Photo 4.5.1). The overhead lines are routed overhead from the utility pole to the electrical weatherhead on the building and penetrates through the ceiling into the disconnect switch in the boiler room (Photo 4.5.2). Access is provided from the exterior of the building via the separate boiler room entrance.

Overhead lines also run from the utility pole to the electrical weatherhead on the portable classroom building at the rear of the school. Utility metering is located on the exterior wall of the portable classroom, adjacent the boiler room (Photo 4.5.3).

#### 4.5.2.2 Distribution

A 400A, 120/240V, 1-phase, 3-wire disconnect switch feeds a splitter which feeds three disconnect switches and a distribution panel in the boiler room (Photo 4.5.4).

A 100A, 120/240V, 1-phase, 3-wire fuse panel is located in the portable classroom and feeds the loads of the detached building (Photo 4.5.5).

The branch circuit panelboards located throughout the school vary in brands. A 100A, 120/240V, 1-phase, 3-wire Amalgamated Electric brand panel labeled ‘Panel C’ is located in the boiler room(Photo 4.5.6), 200A, 120/240V, 1-phase, 3-wire Federal Pacific panels ‘A’ and ‘B’ located in each of the corridors within the school (Photo 4.5.7), and a 125A, 120/240V, 1-phase, 3-wire Siemens panel is located outside the kitchen, labeled ‘Panel C’ (Photo 4.5.8). Panel ‘A’ located

in the school corridor and Panel 'C' in the Boiler room are missing some filler plates that would otherwise prevent inadvertent contact with energized surfaces inside the panelboard

Mechanical equipment loads appear to be fed generally from the boiler room panel.

#### 4.5.2.3 Wiring

Wiring throughout the building appears to be a combination of BX cable and building wiring in metallic conduit. Wiring has been strapped to the walls and ceiling where new devices such as overhead projectors have been installed. Wiremold is also commonly used in areas throughout the building (Photo 4.5.9).

#### 4.5.2.4 Lighting

Interior lighting has all been upgraded to T8 fluorescent based luminaires. The lighting is 120V and is controlled via wall-mounted toggle switches.

There are several types of luminaires within the building:

- Corridors are illuminated with 1'x4' recessed fluorescent fixtures (Photo 4.5.10).
- Typical classroom lighting is provided by 1'x4' suspended fluorescent fixtures (Photo 4.5.11).
- The gymnasium has surface-mounted 2'x4' fluorescent fixtures (Photo 4.5.12).
- The stage is illuminated by surface-mounted 1'x4' fluorescent fixtures.
- Small washrooms, janitor and storage rooms are illuminated with standard incandescent luminaires (Photo 4.5.13).
- The offices have suspended 1'x4' fluorescent luminaires (Photo 4.5.14) with a 1'x4' surface-mounted fluorescent luminaire in the small kitchenette within the reception office (Photo 4.5.15).
- The kitchen has recessed 2'x4' fluorescent fixtures (Photo 4.5.16).
- The boys and girls washrooms have surface-mounted 1'x4' fluorescent fixtures (Photo 4.5.17).

Exterior lighting consists of wall-mounted compact fluorescents with jar style lenses, mounted over the entrances (Photo 4.5.18) and wall-mounted HID fixtures around the perimeter of the school (Photo 4.5.19) as well as a wall-mounted HID at the rear entrance to the portable classroom (Photo 4.5.20).

#### 4.5.2.5 Emergency Power

The building has no central emergency power source. Emergency lighting is provided via battery units with integrated heads and remote lighting heads (Photos 4.5.21 – 4.5.22).

Exit signs are all in good condition. Areas which are required to have exit signage are equipped with them (Photo 4.5.23).

#### 4.5.2.6 Life Safety

A fire alarm system is present, with the main control panel located in the corridor near the main entrance (Photo 4.5.6). The make of the panel is GE EST - FireShield. The system was last inspected on Aug. 18th, 2015. Nova Alarms provides remote monitoring for this building (Photo 4.5.24).

Alarm bells are located throughout the school. The fire alarm system is inspected annually (Photo 4.5.25).

There is a security system present with the main control panel located outside the Principal's office (Photo 4.5.26). A security keypad is located at the main entrance (Photo 4.5.27) and motion sensors are strstegically located throughout the building (4.5.28). The exterior of the building is equipped with dome-style surveillance cameras. The interior is not under surveillance.

### 4.5.3 Assessment and Recommendations

#### 4.5.3.1 Main Service

The main service and distribution equipment appear to be in fine physical condition with the exception of some surface rusting on the disconnect switches for panels 'A', 'B' and 'C'. Most of the electrical service equipment is nearing or past the end of its expected life of generally forty (40) years. It is recommended that the service equipment be upgraded.

A single-line diagram was not found on site and it is recommended to have one developed and for this to be installed within the main electrical room, mounted under plexiglass.

#### 4.5.3.2 Distribution

The 100A fuse panel in the portable classroom has reached its end of life. It is recommended that the panel be upgraded to a breaker panel.

Panelboards 'A' and 'B', which are located in the corridors, and Panel 'C' which is located in the Boiler Room, are original to the building (1965) and should be upgraded to allow for more circuits and spare capacity (Photo 4.5.7 and Photo 4.5.8). In addition, the new panels should be equipped with a locking door to prevent unauthorized access. Updated panel directories should be provided for all panels, existing and new.

In the interim, new filler plates should be added to Panels 'A' and 'C' to make the panelboards safe.

#### 4.5.3.3 Wiring

The wiring and conduit that was visible throughout the building appeared to be in good condition.

All wiring devices within the building appear to be in good condition. Painted wiremold located in the principal's office has not been secured properly and should be repaired to make safe (Photo 4.5.29).

#### 4.5.3.4 Lighting

Overall the lighting appeared to be functioning and in good physical condition. Consideration should be given into upgrading the exterior lighting to LED wall packs.

New lenses to replace the cracked and broken ones in the boy's washroom and office area should be provided (Photos 4.5.30 – 4.5.32).

In the Janitor room, a ceiling tile in which the light is mounted is badly damaged. The fixture should be checked to ensure there are no moisture/corrosion issues (Photo 4.5.33).

No further maintenance beyond re-lamping and cleaning is expected during the evaluation period.

#### 4.5.3.5 Emergency Power

Emergency lighting and exit signage appear to be functioning properly. The lighting levels should be evaluated to ensure the units are providing adequate coverage for the building. It is recommended to continue testing as part of regular maintenance procedures. As part of regular maintenance, the emergency lighting battery packs may have to be replaced when they can no longer endure the required testing and operational period.

#### 4.5.3.6 Life Safety

The life safety systems present within this building all appear in good physical and working condition. Regular testing should be continued as part of regular maintenance procedures.

### 4.5.4 OPINION OF COST SUMMARY - ELECTRICAL

**IMMEDIATE WORK (<12 months)**

- Replacement of 1'x4' surface-mounted & suspended lighting lenses $300
- Preventive maintenance on distribution equipment $1,100

**SHORT TERM WORK (years 1 to 5)**

- Develop single line diagram for electrical room $2,400
- Allowance to upgrade outdated electrical distribution equipment $26,000

**INTERMEDIATE TERM WORK (years 6 to 10)**

- Upgrade exterior lighting to LED $6,000
- Upgrade emergency lighting $1,000

**LONG TERM WORK (years 11 to 20)**

- No repair or replacement

**OPINION OF TOTAL COST** **$36,800**

## 4.6 SITE FINISHES

### 4.6.1 Review Criteria

The review of the site finishes of this property is based on a walk around and visual review of the property. Significant snowfall had recently occurred and as a result much of the site was covered with snow, making assessment difficult. Review of the smaller ancillary buildings was not performed. The north orientation has been taken as plan north from the drawings produced by MacDonnell Group Consulting Ltd.

### 4.6.2 Description

The school is located at 2680 Highway 331 in Pentz, Nova Scotia and has a U shaped asphalt driveway at the front of the school (east side) that acts as the bus loop and provides some additional parking. Asphalt is also located along the north side and portions of the east side. The remaining areas of the east side, and the south side of the building are covered with gravel. A playing field is located south of the school and there are playgrounds located on the east and south sides of the school.

### 4.6.3 Assessment and Recommendations

The presence of snow made the assessment of the parking areas and school perimeter difficult. The only areas that were fully visible were the asphalt bus loop and the asphalt areas on the east side of the school. The asphalt in the bus loop area was in poor condition (Photos 4.6.1 and 4.6.2) and showed significant areas of deterioration. It is recommended that this areas be resurfaced. The asphalt on the east side was uneven and should also be resurfaced (Photos 4.6.3 and 4.6.4), however due to the lack of vehicle traffic this is not a critical of an area as the bus loop. The gravel/dirt areas on the east side of the building should also be considered to be paved allowing for easier snow removal in the area (Photo 4.6.5). No costing allowance has been provided for this area.

The exterior door stops show signs of corrosion. These should be stripped and repainted to prevent further deterioration.

The wooden landing at the top of the ramp/stairs on the west side of the Classroom Portable has some areas of rot (Photo 4.6.6) and should be repaired immediately. The wooden steps on the west (Photo 4.6.7) and east sides (4.6.8) of the portable classroom have varying rises and runs between steps which can be a tripping hazard and as a result these should be replaced. The bottom concrete step on the east side is also damaged and requires replacement.

### 4.6.4 Opinion of Cost Summary – SITE FINISHES

**IMMEDIATE WORK (<12 months)**

| | |
|---|---|
| • Allowance to Repair Classroom Portable Stair Landing | $ 750 |

**SHORT-TERM WORK (years 1 to 5)**

| | |
|---|---|
| • Allowance to Resurface Bus Loop Asphalt | $ 58,800 |
| • Allowance to Repaint Exterior Door Stop | $450 |
| • Allowance to Replace Classroom Portable Stairs | $3,000 |

**INTERMEDIATE WORK (years 6 to 10)**

| | |
|---|---|
| • Allowance to Resurface Rear Asphalt | $ 18,000 |

**LONG-TERM WORK (years 11 to 20)**

| | |
|---|---|
| • No repairs or replacement | $ 0 |
| **OPINION OF TOTAL COST** | **$ 81,000** |

## 4.7 WATER WELL AND SEPTIC

### 4.7.1 Review Criteria

#### Well Water

Our review of the water well at this property is based on a site visit conducted by Aquaterra Resource Services on January 15, 2016, a description of existing conditions provided by Mr. Fred Conrad (SSRSB property services supervisor), and the last round of water samples results provided for bacteriological and general chemistry. A well record was not found in the Provincial well logs database (Nova Scotia Environment (NSE), 2015). The proposed pumping test to evaluate the performance of the existing well was not conducted due to the condition of the well.

### 4.7.2 Description

#### Well Water

The construction of the existing well (depth, length of casing, etc.) is not known. Notes and photos from the site inspection conducted by Aquaterra Resource Services Ltd. (Appendix D) indicate the following existing conditions:

- The well head is located inside a concrete enclosure.
- Surface water can enter the enclosure and the water level in the past may have been one or two feet above the top of the well seal. No drainage or functional drainage is present in the enclosure.

- The pump control box in the basement was dated 1986. It is assumed that the pump is the same age and would therefore be well beyond the typical lifespan.
- The casing is a smaller diameter than what is used today (6.25-inch-diameter).

The well was not opened during the site visit because of the standing water in the enclosure and the general condition of the wellhead. There is no available information on the well yield.

Fred Conrad noted that this school has never had a water quality or quantity issue associated with the well. The only work to be conducted on the water system was the installation of a pressure tank, backwash filter and the water softener. The condition of the water softener and indoor plumbing was not part of the scope of work.

### Septic

The sanitary piping for the building is cast iron that is connected to an onsite septic disposal system which consists of two septic tanks, an onsite lift station and a C3 raised contour system. The age of this system is approximately 25 years old.

#### 4.7.2.1 Water Quantity

Stantec originally proposed to conduct a 48- to 72-hour pumping test on the well to determine the long-term yield. This was removed from the work plan following the onsite visit by Aquaterra Resource Services Ltd. on January 15, 2016 where it was determined that numerous repairs and upgrades would be needed before this type of test could be performed. This included upgrading the casing to bring the wellhead up to surface. It was communicated that a new pump and an exterior plumbing upgrade would likely be needed to bring the well back into service after the test because of its age and condition.

#### 4.7.2.2 Water Quality

Stantec's original proposal included collecting samples at the beginning and end of the pumping test to evaluate the "raw water" quality. This was removed from the work plan for the reason stated above.

One round of routine water sample results was provided for review by the client (results in Appendix E). The laboratory report includes a comparison of each tested parameter with the currently accepted Guideline for Canadian Drinking Water Quality (GCDWQ) standard for that parameter from Health Canada (2014). A "yes" is denoted when the tested parameter is higher than the GCDWQ value. A "no" indicates when the value is within the acceptable GCDWQ range. This sample represents treated (e.g. softened) water; water chemistry for a sample collected directly from the well is not available.

Microbiological parameters were tested on a sample collected from the staffroom tap on September 2, 2015 and December 2, 2015. The results indicate that both *E. coli* and total coliform were absent and in compliance with the health objectives stipulated in the GCDWQ.

This sample would be a point-of-use treated sample, and does not represent the raw groundwater.

Physical and chemical parameters were tested on a sample collected from the staffroom tap on September 2, 2015. The results indicate that all parameters were in compliance (i.e., no exceedances) with the GCDWQ health and aesthetic criteria, as identified in the report. The chemistry is consistent with softened groundwater.

### 4.7.3 Assessment and Recommendations

#### Well Water

This section details our assessment and recommendations for the well noted above. All allowances for replacement and repairs have been included in Section 1.1.6 Opinion of Cost Summary.

The location of the wellhead inside the enclosure is not to current Well Construction Regulations (Sections 66 and 110 of the Environment Act) for new wells in Nova Scotia (NSE, 2013). The pooling surface water over the wellhead is particularly problematic as this is a direct source of well contamination and is evidence that the enclosure is not draining properly.

Numerous repairs and upgrades are needed to update the equipment and bring the well construction up to code. The associated cost is often similar to drilling a new well. It is possible that attempts to pull the existing casing would be unsuccessful and a new well would be necessary.

Stantec recommends that a new 152-mm-diameter, 76-m-deep well be drilled on the property as part of the immediate work, and sited and constructed according to the current Well Construction Regulations (NSE, 2013). The current standard is a well casing that is at least 6.1 m long that extends 0.6 m above surface. For public institutions, Stantec recommends that the casing be extended a minimum of 3 m into bedrock and sealed with grout from the drive shoe to the bedrock-overburden interface. A new one horsepower pump (or similar size as determined by the installer based on the pump setting) should be installed in the well and plumbed to a pitless adapter and into the building using polyethylene pipe.

The existing well must be decommissioned according to Sections 45 and 47 of the well drilling regulation. Removing the concrete enclosure is not necessary, though it would serve no purpose. The removal and disposal of the enclosure is at the discretion of SSRSB and is not included in the Opinion of Cost. Records of all drilling, pump installation and decommissioning activities must be submitted to the Department of the Environment.

A 72-hour pumping test should be conducted on the new well to quantify the yield and water chemistry prior to service. Stantec recommends that the drilling and commissioning test be performed during summer shutdown to avoid interference with normal operations. However, the condition of this well is such that it warrants immediate attention, and could be constructed prior to decommissioning of the old well.

The recent water quality report reviewed by Stantec was for a sample collected from the staff room tap – a point in the plumbing after the water softener. In consideration of the effects of the water softening process, the results suggest that the water quality in the aquifer is suitable for use. It is expected that the water quality and quantity in a new well will be similar to the existing well, but this cannot be guaranteed. A sample of the untreated water would further confirm this assumption. This will have to be confirmed prior to the new well being brought into service during a pumping test. Stantec recommends that a sampling tap be installed prior to any treatment and storage equipment in the school basement so that a "raw water" sample can be collected as part of the water quality monitoring program. This type of sample is more useful for detecting problems with a well and differentiating between source water and plumbing problems in the event of a failed water quality test.

**Septic**

During a site visit, the condition of the septic system was assessed and determined to be in good condition and in good working order. Operating staff report no functional issues with the system. Confirmation that all greywater is being discharged into the septic system, as it should in accordance with the Guideline, could not be made at the time of the visit. Further investigation to confirm this is recommended.

### 4.7.4 OPINION OF COST SUMMARY – WATER WELL AND SEPTIC

This well water cost summary assumes that the drilling contractor/pump installer will bring the water pipe and electrical wiring from the new wellhead into the building and a SSRSB electrician will perform the necessary connection to electrical service in the building. The cost of drilling the new well is based on an assumed depth and length of casing. The actual cost will depend on the conditions encountered during drilling.

**IMMEDIATE WORK (<12 months)**

- Well Water-Drilling new well (76 m deep with 15 m of grouted casing and drive shoe) $6,300
- Well Water-1 HP submersible pump with control box $1,100
- Well Water-Plumbing labour and materials $2,500
- Well Water-Decommission existing well (grout placement by pump) $2,500
- Well Water-Commissioning test (72-hour pumping test with chemistry analysis) $7,750
- Well Water-Interpretation of testing results and letter report for records (Stantec) $1,200

**SHORT TERM WORK (years 1 to 5)**

- Well Water-None (continue routine water quality monitoring per current protocol)
- Septic-Re-route greywater to septic system $5,000

### INTERMEDIATE TERM WORK (years 6 to 10)

- Well Water-None (continue routine water quality monitoring per current protocol)

### LONG TERM WORK (years 11 to 20)

- Well Water-Pump inspection/servicing and specific capacity test to confirm yield and determine if any additional maintenance work is required $2,000

**OPINION OF TOTAL COST $28,350**

### References

Health Canada (2014). Guidelines for Canadian Drinking Water Quality. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment, October 2014.

NSE (2013). Well Construction Regulations made under Sections 66 and 110 of the Environment Act S.N.S. 1994-95, c. 1 O.I.C. 2007-483 (September 7, 2007), N.S. Reg. 382/2007. Updated October 18, 2013.

NSE (2015). On-Line Well Logs Database.
http://www.novascotia.ca/nse/welldatabase/wellsearch.asp

## 4.8 INTERIOR FINISHES

### 4.8.1 Review Criteria

Our review was based on walk-through of the interiors building spaces and of a visual nature. It was not technically exhaustive and did not involve extensive use of measurements, instruments, testing, calculations, and other means to develop scientific or engineering findings, conclusions, and recommendations. Intrusive testing and performance calculations were beyond the scope of this assignment.

### 4.8.2 Description

The building consists of a single storey with classrooms, offices, kitchenettes, washrooms, and a gym area with a small stage. The corridors have suspended ceiling tile and wood paneling on walls. The washrooms have painted walls with a tiled backsplash at the counter, terrazzo flooring and suspended ceiling tile. Flooring throughout the remainder of the building is vinyl tile. The ceilings in the offices, gymnasium and classrooms have a wood finish and the ceilings are vaulted following the roof line.

### 4.8.3 Assessment and Recommendations

The suspended ceiling tiles appeared to be in good condition with only a few tiles in the janitor closet. Suspended ceiling tiles have an expected useful life of twenty to twenty-five years. Typically, a full replacement does not happen but tiles are replaced as they start to fail or damaged by water. Replacement of ceiling tiles is considered part of regular maintenance.

The drywall wall finishes appeared to be in good condition overall. The expected useful life of drywall walls is typically seventy-five year or more with re-coating of paint every five to seven years. Based on the observed condition, space use and estimated remaining useful life, a replacement of is not anticipated, however, It is anticipated that there will be a recoating of paint required during the intermediate term of the evaluation period.

The vinyl tile flooring appeared to be in fair condition overall. The expected useful life for vinyl tile flooring is typically twenty to twenty-five years. Based on the observed condition and estimated remaining useful life of the flooring, a replacement is anticipated in the long term of the evaluation period.

The interior doors and door frames appeared to be in good condition. The expected useful life for these doors is typically sixty years or more with hardware replacements throughout its useful life. Based on the observed condition and estimated remaining useful life a replacement is not anticipated.

The portable building was in poor condition overall. Please refer to section 4.1.1.1 Structural for more details. Flooring and wall finishes would be determined after a structural assessment is completed. The wall paint and flooring were in fair condition however the floor itself was uneven and the exterior cladding of the walls is deteriorating.

### 4.8.4 OPINION OF COST SUMMARY – INTERIOR FINISHES

**IMMEDIATE WORK (<12 months)**

- No repairs or replacements

**SHORT-TERM WORK (years 1 to 5)**

- Painting of walls and ceilings $10,200

**INTERMEDIATE WORK (years 6 to 10)**

- No repairs or replacements

**LONG-TERM WORK (years 11 to 20)**

- Replace Vinyl Tile $49,000

**OPINION OF TOTAL COST** **$ 59,200**

# 5.0 APPENDICES

**APPENDIX A – OPINIONS OF PROBABLE COSTS**

**APPENDIX B – PHOTOS**

**APPENDIX C – AREA AND REFERENCED DOCUMENTS**

**APPENDIX D – AQUATERRA REPORT**

**APPENDIX E – WATER QUALITY REPORT**

# APPENDIX A-
# OPINION OF PROBABLE COSTS TABLES

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# OPINION OF PROBABLE COST

| Pentz Elementary Component SUMMARY As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Long Term | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1 -5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| **4.1 BUILDING STRUCTURE** | $ 3,750 | $ 8,400 | $ 2,750 | $ - | **$ 14,900** | $ 1,700 | $ 6,700 | $ - | $ - | $ - |
| **4.2 BUILDING ENVELOPE** | $ - | $ 15,300 | $ 3,550 | $ 53,500 | **$ 72,350** | $ - | $ - | $ 1,800 | $ - | $ 13,500 |
| **4.3 ROOFING** | $ - | $ 4,250 | $ 4,250 | $ 85,000 | **$ 93,500** | $ - | $ - | $ - | $ - | $ 4,250 |
| **4.4 MECHANICAL** | $ - | $ 12,500 | $ 299,200 | $ 109,600 | **$ 421,300** | $ 7,500 | $ 5,000 | $ - | $ - | $ - |
| **4.5 ELECTRICAL** | $ 1,400 | $ 28,400 | $ 7,000 | $ - | **$ 36,800** | $ 2,400 | $ 26,000 | $ - | $ - | $ - |
| **4.6 SITE** | $ 750 | $ 62,250 | $ 18,000 | $ - | **$ 81,000** | $ 61,800 | $ - | $ 450 | $ - | $ - |
| **4.7 WATER WELL & SEPTIC** | $ 21,350 | $ 5,000 | $ - | $ 2,000 | **$ 28,350** | $ - | $ - | $ - | $ - | $ 5,000 |
| **4.8 INTERIOR FINISHES** | $ - | $ - | $ 10,200 | $ 49,000 | **$ 59,200** | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ 27,250** | **$ 136,100** | **$ 344,950** | **$ 299,100** | **$ 807,400** | **$ 73,400** | **$ 37,700** | **$ 2,250** | **$ -** | **$ 22,750** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

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# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.1 BUILDING STRUCTURE**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.1.01 Allowance to Repair Reinforced Concrete | $ - | $ 6,000 | $ - | $ - | $ 6,000 | $ - | $ 6,000 | $ - | $ - | $ - |
| 4.1.02 Allowance to Repoint Concrete Block Walls | $ - | $ 1,700 | $ - | $ - | $ 1,700 | $ 1,700 | $ - | $ - | $ - | $ - |
| 4.1.03 Allowance to Repaint Mechanical Room Stairs | $ - | $ 700 | $ - | $ - | $ 700 | $ - | $ 700 | $ - | $ - | $ - |
| 4.1.04 Allowance to Perform Structural Assessment of Classroom Portable | $ 3,750 | $ - | $ - | $ - | $ 3,750 | $ - | $ - | $ - | $ - | $ - |
| 4.1.05 Allowance to Repair Reinforced Floors | $ - | $ - | $ 2,750 | $ - | $ 2,750 | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ 3,750** | **$ 8,400** | **$ 2,750** | **$ -** | **$ 14,900** | **$ 1,700** | **$ 6,700** | **$ -** | **$ -** | **$ -** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.2 BUILDING ENVELOPE**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.2.01 Repainting of boiler room block wall | $ - | $ 1,800 | $ - | $ - | $ 1,800 | $ - | $ - | $ 1,800 | $ - | $ - |
| 4.2.02 Repainting of poured concrete walls on North and South walls | $ - | $ 1,000 | $ - | $ - | $ 1,000 | $ - | $ - | $ - | $ - | $ 1,000 |
| 4.2.03 Replace facade of portable building. New treated plywood with vinyl siding | $ - | $ 12,500 | $ - | $ - | $ 12,500 | $ - | $ - | $ - | $ - | $ 12,500 |
| 4.2.04 Window replacement (vinyl) | $ - | $ - | $ - | $ 35,500 | $ 35,500 | $ - | $ - | $ - | $ - | $ - |
| 4.2.05 Exterior Double Door Replacement (metal, each single door) | $ - | $ - | $ - | $ 18,000 | $ 18,000 | $ - | $ - | $ - | $ - | $ - |
| 4.2.06 Replace window and door sealants | $ - | $ - | $ 3,550 | $ - | $ 3,550 | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ -** | **$ 15,300** | **$ 3,550** | **$ 53,500** | **$ 72,350** | **$ -** | **$ -** | **$ 1,800** | **$ -** | **$ 13,500** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.3 ROOFING**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.3.01 Allowance for roof repairs | $ - | $ 4,250 | $ 4,250 | $ - | $ 8,500 | $ - | $ - | $ - | $ - | $ 4,250 |
| 4.3.02 Allowance for full roof replacement | $ - | $ - | $ - | $ 85,000 | $ 85,000 | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ -** | **$ 4,250** | **$ 4,250** | **$ 85,000** | **$ 93,500** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 4,250** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

Stantec

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.4 MECHANICAL**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.4.01 Replacing Roth Tanks | $ - | $ - | $ - | $ 7,500 | $ 7,500 | $ - | $ - | $ - | $ - | $ - |
| 4.4.02 Replacing baseboards and heating water distribution piping | $ - | $ - | $ 67,200 | $ - | $ 67,200 | $ - | $ - | $ - | $ - | $ - |
| 4.4.03 Out building electric baseboards heaters and thermostat | $ - | $ - | $ - | $ 5,400 | $ 5,400 | $ - | $ - | $ - | $ - | $ - |
| 4.4.04 Ventilation study | $ - | $ 5,000 | $ - | $ - | $ 5,000 | $ - | $ 5,000 | $ - | $ - | $ - |
| 4.4.05 Scoping sanitary piping and investigating DCW piping | $ - | $ 7,500 | $ - | $ - | $ 7,500 | $ 7,500 | $ - | $ - | $ - | $ - |
| 4.4.06 Allowance for repairing sanitary and DCW piping | $ - | $ - | $ - | $ 47,200 | $ 47,200 | $ - | $ - | $ - | $ - | $ - |
| 4.4.07 Allowance to replace plumbing fixtures | $ - | $ - | $ - | $ 41,200 | $ 41,200 | $ - | $ - | $ - | $ - | $ - |
| 4.4.08 Allowance to replace corridor water fountains | $ - | $ - | $ 7,500 | $ - | $ 7,500 | $ - | $ - | $ - | $ - | $ - |
| 4.4.09 Allowance to replace HRV | $ - | $ - | $ - | $ 4,500 | $ 4,500 | $ - | $ - | $ - | $ - | $ - |
| 4.4.10 Allowance to replace water treatment equipment | $ - | $ - | $ - | $ 3,800 | $ 3,800 | $ - | $ - | $ - | $ - | $ - |
| 4.4.11 Allowance to replace DHWT | $ - | $ - | $ 4,500 | $ - | $ 4,500 | $ - | $ - | $ - | $ - | $ - |
| 4.4.12 Allowance for a simple packaged heat recovery unit with constant volume air flow (design and build) | $ - | $ - | $ 220,000 | $ - | $ 220,000 | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ -** | **$ 12,500** | **$ 299,200** | **$ 109,600** | **$ 421,300** | **$ 7,500** | **$ 5,000** | **$ -** | **$ -** | **$ -** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.5 ELECTRICAL**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.5.01 Preventive maintenance on distribution equipment | $ 1,100 | $ - | $ - | $ - | $ 1,100 | $ - | $ - | $ - | $ - | $ - |
| 4.5.02 Misc Maintenance - Repair/replacement of luminaire parts | $ 300 | $ - | $ - | $ - | $ 300 | $ - | $ - | $ - | $ - | $ - |
| 4.5.03 Develop single line diagram for electrical room | $ - | $ 2,400 | $ - | $ - | $ 2,400 | $ 2,400 | $ - | $ - | $ - | $ - |
| 4.5.04 Allowance to upgrade outdated electrical distribution equipment | $ - | $ 26,000 | $ - | $ - | $ 26,000 | $ - | $ 26,000 | $ - | $ - | $ - |
| 4.5.05 Upgrade exterior lighting to LED | $ - | $ - | $ 6,000 | $ - | $ 6,000 | $ - | $ - | $ - | $ - | $ - |
| 4.5.06 Allowance to upgrade emergency lighting units | $ - | $ - | $ 1,000 | $ - | $ 1,000 | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ 1,400** | **$ 28,400** | **$ 7,000** | **$ -** | **$ 36,800** | **$ 2,400** | **$ 26,000** | **$ -** | **$ -** | **$ -** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

Stantec

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.6 SITE**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.6.01 Allowance to Resurface Bus Loop Asphalt | $ - | $ 58,800 | $ - | $ - | $ 58,800 | $ 58,800 | $ - | $ - | $ - | $ - |
| 4.6.02 Allowance to Resurface Rear Asphalt | $ - | $ - | $ 18,000 | $ - | $ 18,000 | $ - | $ - | $ - | $ - | $ - |
| 4.6.03 Allowance to Repaint Exterior Door Stops | $ - | $ 450 | $ - | $ - | $ 450 | $ - | $ - | $ 450 | $ - | $ - |
| 4.6.04 Allowance to Repair Classroom Portable Stair Landing | $ 750 | $ - | $ - | $ - | $ 750 | $ - | $ - | $ - | $ - | $ - |
| 4.6.05 Allowance to Replace Classroom Portable Stairs | $ - | $ 3,000 | $ - | $ - | $ 3,000 | $ 3,000 | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ 750** | **$ 62,250** | **$ 18,000** | **$ -** | **$ 81,000** | **$ 61,800** | **$ -** | **$ 450** | **$ -** | **$ -** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.7 WATER WELL & SEPTIC**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.7.01 Well Water-Drilling new well (76 m deep with 15 m of grouted casing and drive shoe) | $ 6,300 | $ - | $ - | $ - | $ 6,300 | $ - | $ - | $ - | $ - | $ - |
| 4.7.02 Well Water-1 HP submersible pump with control box | $ 1,100 | $ - | $ - | $ - | $ 1,100 | $ - | $ - | $ - | $ - | $ - |
| 4.7.03 Well Water-Plumbing labour and materials | $ 2,500 | $ - | $ - | $ - | $ 2,500 | $ - | $ - | $ - | $ - | $ - |
| 4.7.04 Well Water-Decommission existing well (grout placement by pump) | $ 2,500 | $ - | $ - | $ - | $ 2,500 | $ - | $ - | $ - | $ - | $ - |
| 4.7.05 Well Water-Commissioning test (72-hour pumping test with chemistry analysis) | $ 7,750 | $ - | $ - | $ - | $ 7,750 | $ - | $ - | $ - | $ - | $ - |
| 4.7.06 Well Water-Interpretation of testing results and letter report for records (Stantec) | $ 1,200 | $ - | $ - | $ - | $ 1,200 | $ - | $ - | $ - | $ - | $ - |
| 4.7.07 Well Water-Pump inspection/servicing and specific capacity test to confirm yield and determine if any additional maintenance work is required | $ - | $ - | $ - | $ 2,000 | $ 2,000 | $ - | $ - | $ - | $ - | $ - |
| 4.7.08 Septic-Re-route greywater to septic system | $ - | $ 5,000 | $ - | $ - | $ 5,000 | $ - | $ - | $ - | $ - | $ 5,000 |
| **TOTALS** | **$ 21,350** | **$ 5,000** | **$ -** | **$ 2,000** | **$ 28,350** | **$ -** | **$ -** | **$ -** | **$ -** | **$ 5,000** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

Stantec

# OPINION OF PROBABLE COST

| Pentz Elementary<br>**4.8 INTERIOR FINISHES**<br>As of Jan. 20, 2016 | Estimated Costs | | | | | Short Term Repair/Replacement Analysis | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Immediate | Short Term | Intermediate | Long Term | Total | Annual Reserve | | | | |
| | <12 months | 1- 5 years | 6 -10 years | 11 -20 years | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
| 4.8.01 Painting of walls and ceilings | $ - | $ - | $ 10,200 | $ - | $ 10,200 | $ - | $ - | $ - | $ - | $ - |
| 4.8.02 Replace Vinyl Tile | $ - | $ - | $ - | $ 49,000 | $ 49,000 | $ - | $ - | $ - | $ - | $ - |
| **TOTALS** | **$ -** | **$ -** | **$ 10,200** | **$ 49,000** | **$ 59,200** | **$ -** | **$ -** | **$ -** | **$ -** | **$ -** |

**All costs in 2016 dollars. Costs adjusted by 0.00%**

# APPENDIX B-
# SITE PHOTOS

**PENTZ ELEMENTARY SCHOOL**

## 4.1 BUILDING STRUCTURE

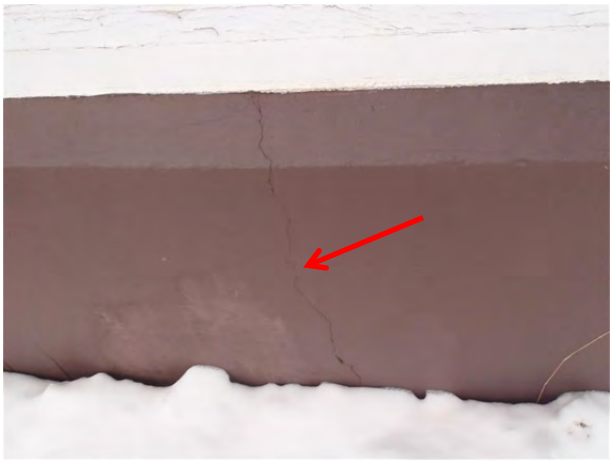


Photo 4.1.1 – Cracking below windows on north and south sides

Photo 4.1.2 – Cracks and deteriorated mortar on northeast corner

Photo 4.1.3 – Step crack in block mortar on southeast side

Photo 4.1.4 – Exposed grout and area of material loss. Southeast corner of mechanical room

Photo 4.1.5 – Cracks in block mortar at area between the mechanical room and stage

Photo 4.1.6 – Crack in mechanical room floor

**PENTZ ELEMENTARY SCHOOL**

## 4.1 BUILDING STRUCTURE

Photo 4.1.7 – Concrete spalling on interior of mechanical room fondation

Photo 4.1.8 – Deteriorated housekeeping pad below boiler

Photo 4.1.9 – Corroded stair into mechanical room

Photo 4.1.10 – High point in classroom portable floor

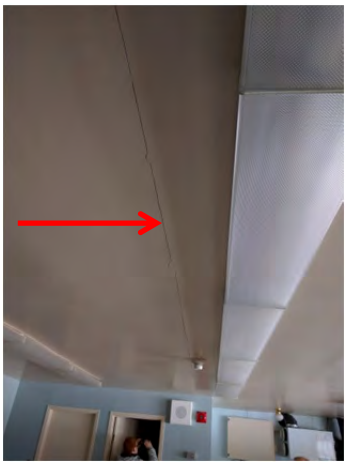


Photo 4.1.11 – Ceiling crack along centreline of classroom portable ceiling

**PENTZ ELEMENTARY SCHOOL**

## 4.2 CLADDING

Photo 4.2.1 – North face at west corner. Cladding consists of brick, concrete and glazing.

Photo 4.2.2 – North face, roof edge. Underside of roof overhang finished with wood

Photo 4.2.3 – North face, concrete wall under windows.

Photo 4.2.4 – Wood framed windows along the north face. Some paint peeling.

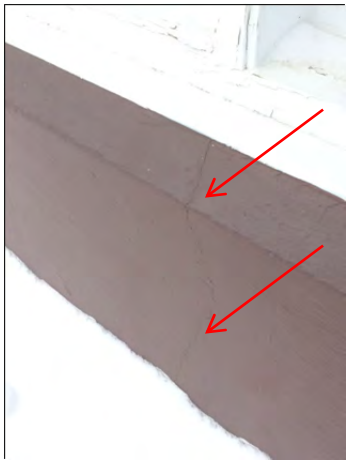


Photo 4.2.5 – Vertical crack in concrete wall. Smaller vertical cracks are typical along wall.

Photo 4.2.6 – North face at east corner.

## PENTZ ELEMENTARY SCHOOL

### 4.2 CLADDING

Photo 4.2.7 – Small wooden shed located at the north east corner of the school

Photo 4.2.8 – East face of the building, looking towards vestibule 118. Concrete block cladding.

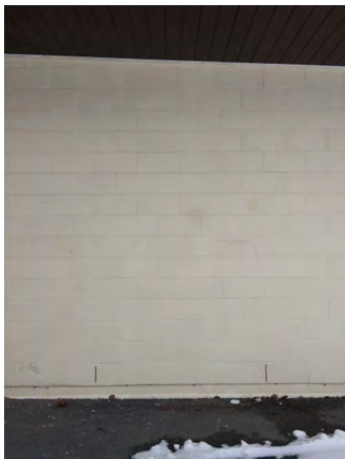


Photo 4.2.9 – East face at north side. Painted concrete block in good condition

Photo 4.2.10 – East entrance at north side, vestibule 118

Photo 4.2.11 – North face of boiler room. Located at east side of school. Painted joints in concrete bock peeling

Photo 4.2.12 – East face of the boiler room. Painted joints in concrete block peeling

**PENTZ ELEMENTARY SCHOOL**

## 4.2 CLADDING

Photo 4.2.13 – East face of school. Above the stage

Photo 4.2.14 – South east corner of boiler room. Damages to surface paint and to the concrete block

Photo 4.2.15 – South face of boiler room. Paint peeling between concrete block joints and damage to block

Photo 4.2.16 – Chimney at south east corner over stage area

Photo 4.2.17 – Damage at connection between chimney and roof over stage area

Photo 4.2.18 – East entrance at south corner, vestibule 121

## PENTZ ELEMENTARY SCHOOL

### 4.2 CLADDING

Photo 4.2.19 – West elevation of portable building

Photo 4.2.20 – East elevation of portable building

Photo 4.2.21 – South elevation of portable building

Photo 4.2.22 – North elevation of portable building.

Photo 4.2.23 – west entry ramp for portable building

Photo 4.2.24 – East stair entry for portable building

## PENTZ ELEMENTARY SCHOOL

### 4.2 CLADDING

Photo 4.2.25 – South elevation school

Photo 4.2.26 – West elevation school

**PENTZ ELEMENTARY SCHOOL**

## 4.3 ROOFING

Photo 4.3.1 – View of roof facing North. Access to roof was not available

Photo 4.3.2 – View of roof at East end.

**PENTZ ELEMENTARY SCHOOL**

## 4.4 MECHANICAL


Photo 4.4.1 – Roth fuel storage tank for the building's heating system.


Photo 4.4.2 – Buderus oil fired boiler

Photo 4.4.3 – Heating circulation pumps

Photo 4.4.4 – Mechanical room unit heater

Photo 4.4.5 – Typical hot water baseboard heater

Photo 4.4.6 – Out building electric baseboard heaters

**PENTZ ELEMENTARY SCHOOL**

## 4.4 MECHANICAL

Photo 4.4.7 – Out building Thermostat and humidistat controls

Photo 4.4.8 – Typical exhaust grill for exhaust fans


Photo 4.4.9 – Out building heat recovery ventilator (HRV)


Photo 4.4.10 – Typical fire extinguisher throughout the buildings

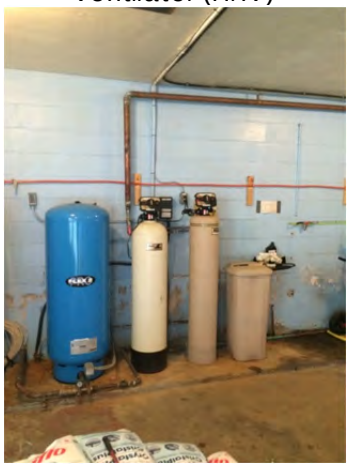


Photo 4.4.11 – Domestic water entrance equipment included pressure tank and water conditioners

Photo 4.4.12 – Domestic hot water tank

**PENTZ ELEMENTARY SCHOOL**

## 4.4 MECHANICAL

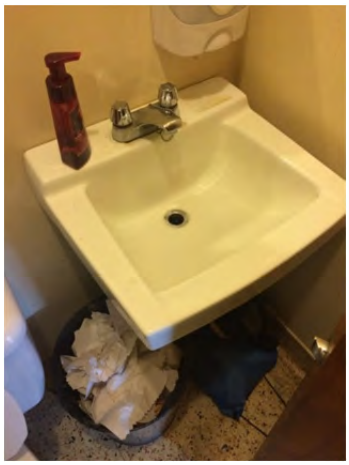


Photo 4.4.13 – Unit heater within the boiler room

Photo 4.4.14 – New compressor for controls

Photo 4.4.15 – Unit heater within the boiler room

Photo 4.4.16 – New compressor for controls

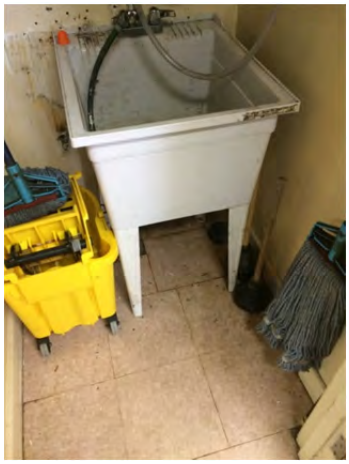


Photo 4.4.17 – Unit heater within the boiler room

Photo 4.4.18 – New compressor for controls

**PENTZ ELEMENTARY SCHOOL**

## 4.5 ELECTRICAL

Photo 4.5.1 – 50 kVA single-phase pole mounted utility transformer

Photo 4.5.2 – Overhead power lines for school service into boiler room

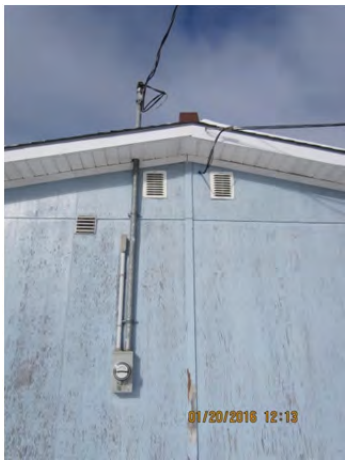


Photo 4.5.3 – Overhead power lines for portable classroom service

Photo 4.5.4 – Main distribution equipment

Photo 4.5.5 –100A, 120/240V, 1-phase main fuse panel located in Portable Classroom

Photo 4.5.6 – 200A, 120/240V, 1-phase, 3-wire panel located in the Boiler Room

## PENTZ ELEMENTARY SCHOOL

### 4.5 ELECTRICAL


Photo 4.5.7 – Typical 100A, 120/240V, 1-phase, 3-wire Federal Pioneer distribution panel located in the school corridor


Photo 4.5.8 – 100A, 120/240V, 1-phase, 3-wire Siemens panel


Photo 4.5.9 – Typical wiremold and wiring for ceiling suspended projectors


Photo 4.5.10 – Typical 1'x4' recessed fluorescent corridor luminaires


Photo 4.5.11 – Typical suspended 1'x4' fluorescent luminaires in the classrooms


Photo 4.5.12 – 2'x4', 4-lamp fluorescent surface-mounted luminaires in gymnasium

## PENTZ ELEMENTARY SCHOOL

### 4.5 ELECTRICAL


Photo 4.5.13 – Typical A19 luminaires in Janitor, storage and small washrooms


Photo 4.5.14 – Typical 1'x4' suspended fluorescent luminaires in office area

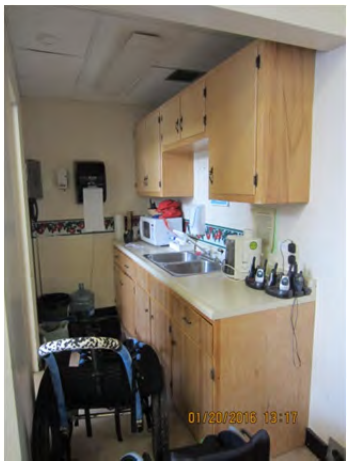


Photo 4.5.15 – Surface-mounted 1'x4' luminaire in the office kitchenette


Photo 4.5.16 – Typical 2'x4' recessed fluorescent luminaires in the kitchen


Photo 4.5.17 – Typical surface-mounted 1'x4' fluorescent luminaires in the washrooms


Photo 4.5.18 – Typical wall-mounted luminaires at the school entrances

**PENTZ ELEMENTARY SCHOOL**

## 4.5 ELECTRICAL


Photo 4.5.19 – Typical wall-mounted HID luminaires mounted on school perimeter


Photo 4.5.20 – Wall-mounted HID luminaire mounted at portable classroom entrance

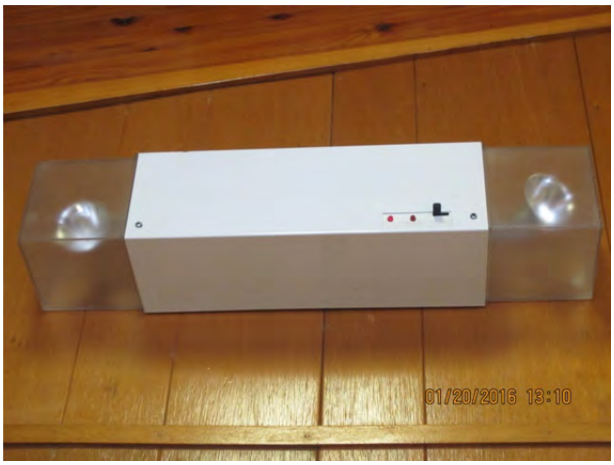



Photo 4.5.21 – Dual head emergency lighting unit


Photo 4.5.22 – Single remote head emergency lighting

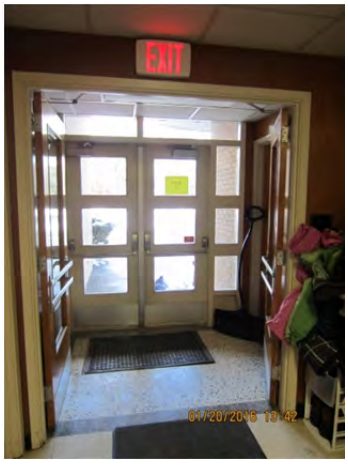



Photo 4.5.23 – Typical LED exit sign


Photo 4.5.24 – GE EST – Fireshield Fire Alarm Control Panel

**PENTZ ELEMENTARY SCHOOL**

## 4.5 ELECTRICAL


Photo 4.5.25 – Typical fire alarm bell

Photo 4.5.26 – Security system control panel


Photo 4.5.27 – Security keypad at main entrance

Photo 4.5.28 – Typical wall mounted motion sensor

Photo 4.5.29 – Unsecured wiremold in Principal's office

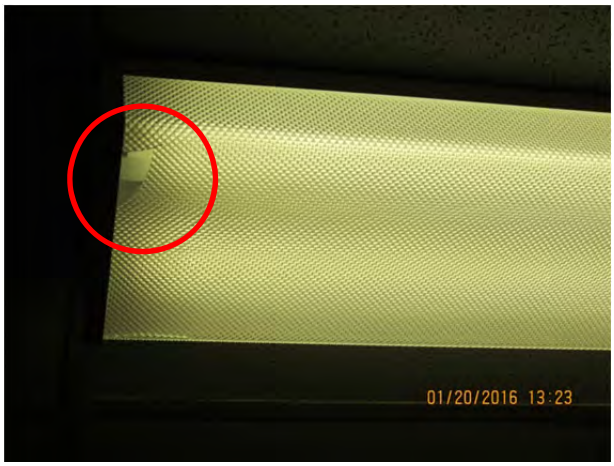



Photo 4.5.30 – Crack in lens of 1'x4' fluorescent luminaire in the boys washroom

## PENTZ ELEMENTARY SCHOOL

### 4.5 ELECTRICAL


Photo 4.5.31 – Additional cracked lens on 1'x4' surface-mounted fluorescent luminaire in boys washroom


Photo 4.5.32 – Cracked lens of suspended 1'x4' luminaire in Principals office


Photo 4.5.33 – Damaged ceiling tile in Janitor's Room

## PENTZ ELEMENTARY SCHOOL

### 4.6 SITE FINISHES


Photo 4.6.1 – Cracking in asphalt on bus loop

Photo 4.6.2 – Significant cracking in asphalt on bus loop

Photo 4.6.3 – Uneven asphalt on northeast side of school

Photo 4.6.4 – Uneven asphalt on southeast side of school

Photo 4.6.5 – Unpaved area on east side of school

Photo 4.6.6 – Rotted area at top landing of portable classroom stair/ramp

**PENTZ ELEMENTARY SCHOOL**

## 4.6 SITE FINISHES

Photo 4.6.7 – Stair on west side of portable classroom

Photo 4.6.8 – Stair on east side of portable classroom

## PENTZ ELEMENTARY SCHOOL

### 4.8 INTERIOR FINISHES

Photo 4.8.1 – Typical classroom finishes. Linoleum tile floor, painted walls, wood finished ceiling.

Photo 4.8.2 – Typical washroom finishes, terrazzo floor, tile backsplash at counter, painted walls with suspended ceiling tile.

Photo 4.8.3 – Janitor Closet. Water damage to wall and floor.

Photo 4.8.4 – Janitor Closet ceiling tile damaged and should be replaced.

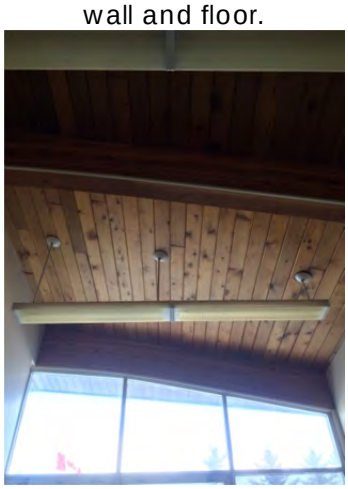


Photo 4.8.5 – Ceiling finish typical throughout

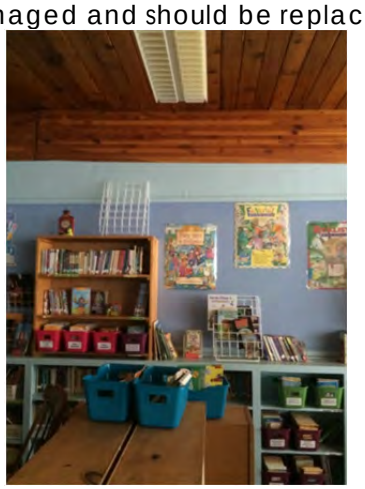


Photo 4.8.6 – Classroom finishes

**PENTZ ELEMENTARY SCHOOL**

## 4.8 INTERIOR FINISHES

Photo 4.8.7 – Gymnasium finishes. vinyl tile floor, wood panel walls, wood finish ceiling.

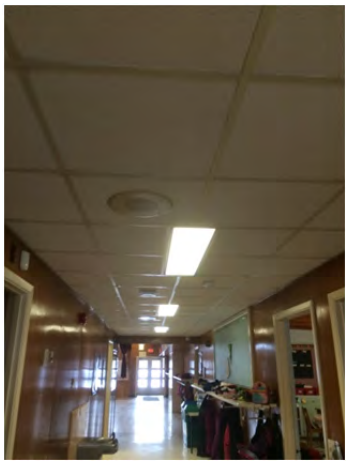


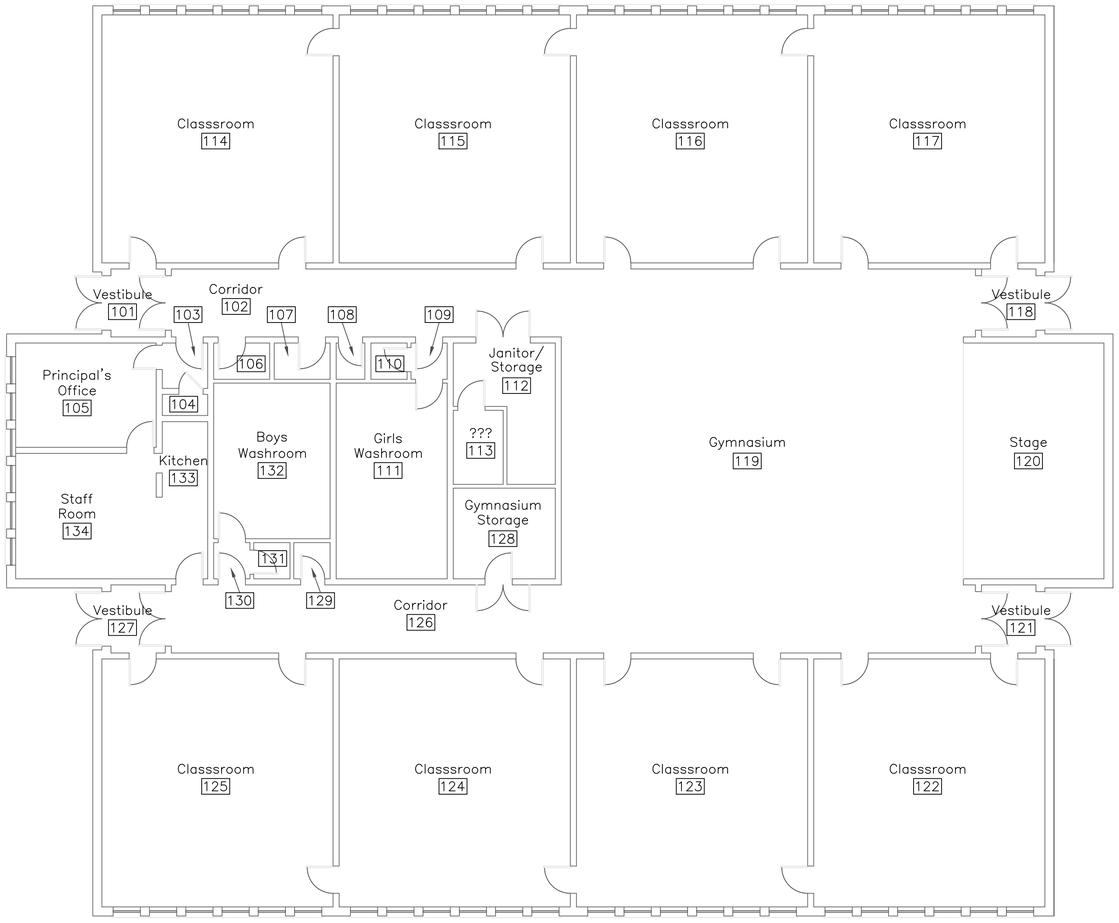
Photo 4.8.8 – Corridor finishes, vinyl tile floor, suspended ceiling tile, wood panel walls.

Photo 4.8.9 – Kitchen finishes.

# APPENDIX C-
# AREAS & REFERENCE DOCUMENTS

| Pentz Elementary School Room Areas | | | | |
|---|---|---|---|---|
| | | | | |
| Room # | Room Name | length | width | area (sq ft) |
| 101 | Vestiblue 101 | 5.5 | 7.5 | 41.25 |
| 102 | Corridor 102 | - | - | - |
| 103 | Alcove to Principal's Office | 5 | 5.5 | 27.5 |
| 104 | Closet | - | - | - |
| 105 | Principal's Office | 16 | 10.7 | 171.2 |
| 106 | Staff Washroom | 5.9 | 3.8 | 22.42 |
| 107 | Staff Washroom | 6.2 | 3.8 | 23.56 |
| 108 | Janitor's Closet | 3.1 | 3.8 | 11.78 |
| 109 | Alcove to Girl's Washroom | 3.7 | 3.8 | 14.06 |
| 110 | Washroom | 4.4 | 4 | 17.6 |
| 111 | Girl's Washroom | 13.5 | 22 | 297 |
| 112 | Janitor Storage | - | - | - |
| 113 | Upstairs to Janitor Storage | - | - | - |
| 114 | Classroom | 25.6 | 27.6 | 706.56 |
| 115 | Classroom | 25.6 | 27.6 | 706.56 |
| 116 | Classroom | 25.6 | 27.6 | 706.56 |
| 117 | Classroom | 25.6 | 27.6 | 706.56 |
| 118 | Vestibule 118 | 6.1 | 7.1 | 43.31 |
| 119 | Gynmasium | 44.66 | 41.57 | 1856.5162 |
| 120 | Stage | 15.68 | 25.55 | 400.624 |
| 121 | Vestibule 121 | 6.1 | 7.1 | 43.31 |
| 122 | Classroom | 25.6 | 27.6 | 706.56 |
| 123 | Classroom | 25.6 | 27.6 | 706.56 |
| 124 | Classroom | 25.6 | 27.6 | 706.56 |
| 125 | Classroom | 25.6 | 27.6 | 706.56 |
| 126 | Corridor 126 | - | - | - |
| 127 | Vestibule 127 | 5.5 | 7.5 | 41.25 |
| 128 | Kitchen (was Gymnasium Storage) | 10.64 | 9.86 | 104.9104 |
| 129 | Closet | - | - | - |
| 130 | Alcove Boy's Washroom | 3.7 | 3.8 | 14.06 |
| 131 | Washroom | 4.4 | 4 | 17.6 |
| 132 | Boy's Washroom | 12.3 | 17.6 | 216.48 |
| 133+134 | Kitchen and staff room | 21.36 | 14.6 | 311.856 |
| | | | | |
| Portable | | 35.34 | 23.44 | 828.3696 |
| | | | | |
| Total: | | | | 10157.1362 |

NORTH




## Additional Noted Areas

- 103 Alcove Principal's Office
- 104 Closet??
- 106 Staff Washroom
- 107 Staff Washroom
- 108 Janitor's Closet
- 109 Alcove Girl's Washroom
- 110 Washroom
- 129 Closet
- 130 Alcove Boy's Washroom
- 131 Washroom


MacDonnell Group

**MacDonnell Group Consulting Ltd**
*1505 Barrington Street*
*Halifax, Nova Scotia*
*Canada B3J 3K5*
*Phone: 902.425.3999*
*Fax: 902.423.7593*


CLIENT

SOUTHWEST CENTRAL SCHOOL BOARD

PROJECT TITLE

PENTZ ELEMENTARY SCHOOL

YARMOUTH COUNTY NOVA SCOTIA

DRAWING TITLE

EXISTING GROUND FLOOR LAYOUT

| | |
|---|---|
| DATE | 02–07–04 |
| CHECKED | JF |
| DRAWN | MT |
| DESIGNED | -- |
| SURVEYED | -- |
| SCALE | NTS |

STAMP

APPROVED 20 _____

APPROVED 20 _____

JOB NO. 1022

SHEET SK1

# APPENDIX D-
# AQUATERRA REPORT

**Kozuskanich, John**

**From:** Mike Rushton <mike.rushton101@gmail.com>
**Sent:** January-15-16 3:22 PM
**To:** Kozuskanich, John
**Subject:** Fwd:

Mike Rushton, CET
President
Aquaterra Resource Services Ltd.
21 Old Cobequid Rd, Waverley N.S.
Tel (902) 861-3866 Fax (902) 860-0869
mike.rushton101@gmail.com
Web - aquaterra-allswell.com

John
Site visit to Pentz Elementary school this am.
The well is located inside a concrete enclosure. Water level inside the enclosure slightly covered the well seal.
The 1 hp submersible pump control ( pump control in the mechanical room) was dated 1986. The pump is probably 29 yrs old. According to Fred Conrad (30 yrs with the board) did not recall any work being completed on this system besides the pressure tank, backwash filter and the water softener. There had been no problems with either quantity and based on scheduled sampling intervals quality.
From appearances we think the pump is on 1 1/4" poly pipe although the fittings coming out of the well seal are either steel or copper.
The two tall pipes in the bottom photo are the cable conduit (left side) from the school and the cable conduit (right side - taller pipe) going to the submersible pump.
The high water level in the enclosure in the past has been 1 or 2 ft over the well seal.

Issues
1. We can not guarantee any surface water from entering the well once the seal is removed. The
2. It can be difficult removing a well seal particularly if the well hasn't been touched in almost 30 years.
3. Insuring a good seal once the well seal is re-installed is questionably. We have had seals damaged while attempting to access the well. The rubber gasket is usually the problem. The seal looked like it was already damaged although it was difficult to see. We are not always sure what casing was used back 30 or 40 yrs ago. For example we may need a 6" seal instead of the 6 1/4" seal sized for today casing.
The well located inside the enclosure is not to existing well drilling regulations.

4. The submersible pump is well beyond its life span. New pumps come with control boxes so if a new pump had been installed at some time, then there should have been a new control box installed at the same time.

The fact that the system has been reportedly operating without any issues for so long and considering satisfactory water analysis tends to indicated that its a good system. Going into the well at this time could create problems due to the old well seal, old pump and the well seal location. My suggestion would be and this would have to happen during March break would be to replace the pump and potentially the cable and riser pipe, bring the well head up to surface complete with a pitless adapter and approved well cap.
Mike

Begin forwarded message:

**From:** Mike Rushton <mike.rushton101@gmail.com>
**Date:** 15 January, 2016 2:20:55 PM AST
**To:** mike rushton <merushton@eastlink.ca>


FLEX2


FLEX2

Sent from my iPhone

# APPENDIX E-
# WATER QUALITY REPORT

AQUA-CHECK

# Water Sample Results Report
## CONFIDENTIAL

**Aqua-Check**
1801 Hollis Street, Suite 1220
Halifax, NS, B3J 3N4
p. (902) 423-6030
p. (866) 423-6030 (Toll free)
f. (902) 423-6047

**Test Name:** P/A

**Company:** **South Shore Regional School Board**
69 Wentzell Drive
Bridgewater, NS, B4V0A2

**Registration No.** 2001-018453

**Sample ID:** AC 55761
**Sample Location** staffroom tap
**Sample Date:** 2 Dec 2015
**Sample Time:** 13:55:00

**Building:** **Pentz Elementary**
2680 Highway 331
LeHave, NS, B0R1C0

**Company Contact:** **Fred Conrad**
p. 902-542-3081
f. 902-541-3049

**Building Contact:** DOE- Bridgewater
p. 902-543-4685
f. 902-527-5480
e.

This sample meets the health objective guidelines for Canadian Drinking Water Quality for the parameters below. (See **Exceeds** column below)

| Parameter | Value | Units | Exceeds | GCDWQ Level | Health Objective |
|---|---|---|---|---|---|
| E Coli | ABSENT | p/a | No | | MAC |
| Total Coliform | ABSENT | p/a | No | | MAC |

GCDWQ = Guidelines for Canadian Drinking Water Quality
MAC = Maximum Allowable Concentration, IMAC = Interim Maximum Allowable Concentration, AO = Aesthetic Objective

PRIVATE RESIDENCE

1. If any COLIFORMS (E.coli or Total) are present, water source should be disinfected or water boiled prior to consumption. Health Canada recommends that water contaminated with any coliforms be maintained at a rolling boil for at least 1 minutes prior to being consumed.

2. Refer to the provided information regarding suggested safety measures. After disinfection, resample at all regular sampling locations as soon as possible.

3. Contact the NS Department of Health or the NS Department of Environment for additional information, including disinfection instructions or check their website (http://www.gov.ns.ca/nse/water/privatewells.asp).

NSDE REGISTERED PUBLIC DRINKING WATER SOURCES

1. Owners of Registered public drinking water supplies are required to immediately report positive results to their local Department of Environment (NSDE) office. If the local office cannot be reached, the NSDE Environmental toll free number is 1-877-936-8476. Registed public drinking water sources are also required to resample withing 24-hours of receiving notification of presence of any coliforms and forward results immediately to NSDE.

2. If any COLIFORMS (E.coli or Total) are present initiate a BOIL WATER ADVISORY. Health Canada recommends that water contaminated with any coliforms be maintained at a rolling boil for at least 1 minutes prior to being consumed.

3. Contact the NS Department of Health or the NS Department of Environment for additional information, including disinfection instructions or check their website (http://www.gov.ns.ca/nse/).

----------END OF REPORT----------

Maxxam Job #: B508403
Report Date: 2015/12/04

Aqua-Check Inc
Sampler Initials: GS

## MICROBIOLOGY COLILERT (DRINKING WATER)

| | | |
|---|---|---|
| Maxxam ID | | BLO945 |
| Sampling Date | | 2015/12/02 13:55 |
| COC Number | | 193245 |
| Registration # | | 2001-018453 |
| | **UNITS** | **AC55761** |
| **Microbiological** | | |
| Escherichia coli | P-A/100mL | ND |
| Total Coliforms | P-A/100mL | ND |
| ND = Not detected | | |



Maxxam Analytics International Corporation o/a Maxxam Analytics 200 Bluewater Rd. Suite 105, Bedford, Nova Scotia Canada B4B 1G9 Tel: 902-420-0203 Toll-free: 800-565-7227 Fax: 902-420-8612 www.maxxamanalytics.com

# Water Sample Results Report
## CONFIDENTIAL

**Aqua-Check**
1801 Hollis Street, Suite 1220
Halifax, NS, B3J 3N4
p. (902) 423-6030
p. (866) 423-6030 (Toll free)
f. (902) 423-6047

**Test Name:** P/A

**Company:** **South Shore Regional School Board**
69 Wentzell Drive
Bridgewater, NS, B4V0A2

**Registration No.** 2001-018453

**Sample ID:** AC 55306
**Sample Location** staffroom tap
**Sample Date:** 2 Sep 2015
**Sample Time:** 14:55:00

**Building:** **Pentz Elementary**
2680 Highway 331
LeHave, NS. B0R1C0

**Company Contact:** **Fred Conrad**
p. 902-542-3081
f. 902-541-3049

**Building Contact:** DOE- Bridgewater
p. 902-543-4685
f. 902-527-5480
e.

This sample meets the health objective guidelines for Canadian Drinking Water Quality for the parameters below. (See **Exceeds** column below)

| Parameter | Value | Units | Exceeds | GCDWQ Level | Health Objective |
|---|---|---|---|---|---|
| E Coli | ABSENT | p/a | No | | MAC |
| Total Coliform | ABSENT | p/a | No | | MAC |

GCDWQ = Guidelines for Canadian Drinking Water Quality
MAC = Maximum Allowable Concentration, IMAC = Interim Maximum Allowable Concentration, AO = Aesthetic Objective

PRIVATE RESIDENCE

1. If any COLIFORMS (E.coli or Total) are present, water source should be disinfected or water boiled prior to consumption. Health Canada recommends that water contaminated with any coliforms be maintained at a rolling boil for at least 1 minutes prior to being consumed.

2. Refer to the provided information regarding suggested safety measures. After disinfection, resample at all regular sampling locations as soon as possible.

3. Contact the NS Department of Health or the NS Department of Environment for additional information, including disinfection instructions or check their website (http://www.gov.ns.ca/nse/water/privatewells.asp).

NSDE REGISTERED PUBLIC DRINKING WATER SOURCES

1. Owners of Registered public drinking water supplies are required to immediately report positive results to their local Department of Environment (NSDE) office. If the local office cannot be reached, the NSDE Environmental toll free number is 1-877-936-8476. Registed public drinking water sources are also required to resample withing 24-hours of receiving notification of presence of any coliforms and forward results immediately to NSDE.

2. If any COLIFORMS (E.coli or Total) are present initiate a BOIL WATER ADVISORY. Health Canada recommends that water contaminated with any coliforms be maintained at a rolling boil for at least 1 minutes prior to being consumed.

3. Contact the NS Department of Health or the NS Department of Environment for additional information, including disinfection instructions or check their website (http://www.gov.ns.ca/nse/).

----------END OF REPORT----------

# Water Sample Results Report
## CONFIDENTIAL

**Aqua-Check**
1801 Hollis Street, Suite 1220
Halifax, NS, B3J 3N4
p. (902) 423-6030
p. (866) 423-6030 (Toll free)
f. (902) 423-6047

**Test Name:** Full Chemical

**Company:** **South Shore Regional School Board**
69 Wentzell Drive
Bridgewater, NS, B4V0A2

**Registration No.** 2001-018453

**Sample ID:** AC 55307
**Sample Location** staffroom tap
**Sample Date:** 2 Sep 2015
**Sample Time:** 14:55:00

**Building:** **Pentz Elementary**
2680 Highway 331
LeHave, NS, B0R1C0

**Company Contact:** **Fred Conrad**
p. 902-542-3081
f. 902-541-3049

**Building Contact:** DOE- Bridgewater
p. 902-543-4685
f. 902-527-5480
e

This sample meets the health objective guidelines for Canadian Drinking Water Quality for the parameters below. (See **Exceeds** column below)

| Parameter | Value | Units | Exceeds | GCDWQ Level | Health Objective |
|---|---|---|---|---|---|
| Sodium | 110000 | ug/L | | 0.000 to 200000.000 ug/L | AO |
| Potassium | 120 | ug/L | | n/a | n/a |
| Calcium | 1900 | ug/L | | n/a | n/a |
| Magnesium | 160 | ug/L | | n/a | n/a |
| Alkalinity (as CaCO3) | 110 | mg/L | | n/a | n/a |
| Sulfate | 8.8 | mg/L | | 0.000 to 500.000 mg/L | AO |
| Chloride | 100 | mg/L | | 0.000 to 250.000 mg/L | AO |
| Reactive Silica (as SiO2) | 15 | mg/L | | n/a | n/a |
| Ortho Phosphate (as P) | 0.20 | mg/L | | n/a | n/a |
| Nitrite (as N) | <0.010 | mg/L | | n/a | n/a |
| Nitrate + Nitrite (as N) | <0.050 | mg/L | | 0.000 to 10.000 mg/L | n/a |
| Nitrate (as N) | <0.050 | mg/L | | 0.000 to 10.000 mg/L | MAC |
| Ammonia (as N) | <0.050 | mg/L | | n/a | n/a |
| Color | 6.7 | TCU | | 0.000 to 15.000 TCU | AO |
| Turbidity (at tap) | 0.71 | NTU | | 0.000 to 5.000 NTU | AO |
| Conductance (RCAp) | 530 | uS/cm | | n/a | n/a |
| pH | 8.00 | pH | | 6.500 to 8.500 pH | AO |
| Hardness (as CaCO3) | 5.3 | mg/L | | n/a | n/a |
| Bicarbonate (as CaCO3) | 110 | mg/L | | n/a | n/a |
| Carbonate (as CaCO3) | 1.0 | mg/L | | n/a | n/a |
| TDS (Calculated) | 310 | mg/L | | 0.000 to 500.000 mg/L | AO |
| Cation Sum | 5.02 | me/L | | n/a | n/a |
| Anion Sum | 5.29 | me/L | | n/a | n/a |
| Ion Balance (% difference) | 2.62 | % | | n/a | n/a |
| Langlier Index (@ 4C) | -1.37 | N/A | | n/a | n/a |
| Langlier Index (@ 20C) | -1.12 | N/A | | n/a | n/a |
| Saturation pH (@ 4C) | 9.37 | N/A | | n/a | n/a |
| Saturation pH (@20C) | 9.12 | N/A | | n/a | n/a |
| Fluoride (F-) | 0.40 | mg/L | | 0.000 to 1.500 mg/L | MAC |

| | | | | |
|---|---|---|---|---|
| Aluminum | 7.2 | ug/L | 0.000 to 100.000 ug/L | OGV |
| Antimony | <1.0 | ug/L | 0.000 to 6.000 ug/L | IMAC |
| Arsenic | <1.0 | ug/L | 0.000 to 10.000 ug/L | IMAC |
| Barium | <1.0 | ug/L | 0.000 to 1000.000 ug/L | MAC |
| Beryllium | <1.0 | ug/L | n/a | n/a |
| Bismuth | <2.0 | ug/L | n/a | n/a |
| Boron | <50 | ug/L | 0.000 to 5000.000 ug/L | IMAC |
| Cadmium | <0.010 | ug/L | 0.000 to 5.000 ug/L | MAC |
| Chromium | <1.0 | ug/L | 0.000 to 50.000 ug/L | MAC |
| Cobalt | <0.40 | ug/L | n/a | n/a |
| Copper | <2.0 | ug/L | 0.000 to 1000.000 ug/L | AO |
| Iron | 190 | ug/L | 0.000 to 300.000 ug/L | AO |
| Lead | 0.77 | ug/L | 0.000 to 10.000 ug/L | MAC |
| Manganese | 8.0 | ug/L | 0.000 to 50.000 ug/L | AO |
| Molybdenum | <2.0 | ug/L | n/a | n/a |
| Nickel | <2.0 | ug/L | n/a | n/a |
| Selenium | <1.0 | ug/L | 0.000 to 10.000 ug/L | MAC |
| Silver | <0.10 | ug/L | n/a | n/a |
| Strontium | 3.7 | ug/L | n/a | n/a |
| Thallium | <0.10 | ug/L | n/a | n/a |
| Tin | <2.0 | ug/L | n/a | n/a |
| Titanium | <2.0 | ug/L | n/a | n/a |
| Uranium | 0.29 | ug/L | 0.000 to 20.000 ug/L | IMAC |
| Vanadium | <2.0 | ug/L | n/a | n/a |
| Zinc | <5.0 | ug/L | 0.000 to 5000.000 ug/L | AO |
| Phosphorus | 440 | ug/L | n/a | n/a |
| Total Organic Carbon | <0.50 | mg/L | n/a | n/a |

For further information, please check the Nova Scotia Department of Environment Water website or contact your closest Department of Environment office.
http://www.gov.ns.ca/nse/water

1 mg/L = 1000 µg/L 1µg/L = 0.001 mg/L

PARAMETER = indicates which chemicals your water was analyzed for.

VALUE = indicates the analyzed result for your water.

REPORTED UNITS= concentration unit for chemical analyzed. mg/L = parts per million.

µg/L = parts per billion.

EXCEEDS STANDARD = "Yes" indicates the tested parameter was higher than currently accepted GCDWQ standard for that parameter. "No" indicates result within accepted GCDWQ standard.

GCDWQ LEVEL = Identified Standard for that parameter under Guidelines for Canadian Drinking Water Quality.

**Health Objectives identified in the GCDWQ include:
MAC = Maximum Allowable Concentration
IMAC = Interim Maximum Allowable Concentration
AO = Aesthetic Objective
OGV = Operational Guideline Value

When analytical results for chemical parameters exceed the quoted MAC or IMAC GCDWQ standard, the owner of a Registered water supply is responsible to immediately notify NSDE and forward copies of these results to the local NSDE office. http://www.gov.ns.ca/nse/

----------END OF REPORT----------