

MUNICIPALITY



OF ASSIGINACK

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**SPECIAL MEETING OF COUNCIL
IN CHAMBERS
Tuesday, January 31, 2023 7:00 pm**

AGENDA

For Consideration:

- 1. OPENING**
 - a) Adoption of Agenda
 - b) Disclosure of Pecuniary Interest and General Nature Thereof

- 2. ANNOUNCEMENTS**
 - a) Land Acknowledgement

- 3. ADOPTION OF MINUTES**

- 4. DELEGATIONS**

- 5. REPORTS**

- 6. ACTION REQUIRED ITEMS**
 - a) Waterfront: Norisle
 - Buildings
 - Marina/Beach
 - Hydro

- 7. INFORMATION ITEMS**

- 8. BY-LAWS**

- 9. CLOSED SESSION**

- a) Issues about Identifiable Individuals, including municipal employees

10. ADJOURNMENT

Report on Barn Fire Hazard Posed to Water Treatment Plant

Township of Assiginack

by

Phoenix Emergency Management Logic

Introduction

The Township of Assiginack has a Water Treatment Plant (WTP) located less than 10 metres from an old grain processing and shipping barn.

The location of the barn adjacent to the WTP is seen as a major fire hazard to the WTP.

The purpose of this report is to detail how much of a hazard the barn actually poses, as well as recommend ways to decrease the risk the barn poses to the WTP.

Hazard

A hazard is defined as a phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

The grain barn is seen as a hazard to the WTP because this grain barn fire will cause property damage, loss of services, health impacts, and possibly injury and environmental impacts. Such a fire would be considered a hazard to people who rely on the WTP for their drinking water, hygiene, and health.

Although the exterior of the WTP is mainly metal, cement blocks and bricks, the building still would be susceptible to significant damage when faced with a grain barn fire for several reasons. These reasons include:

- ❖ Proximity of the barn to WTP - The barn is less than 10 metres from the WTP. Significant direct flame impingement on the WTP, is highly likely. Even without direct flame impingement, the radiant heat will be considerable enough to cause significant damage to the WTP.
- ❖ Fire load within the barn - Not only would the structure of the barn be a major fire hazard, but the contents within the barn add to the fire load. Fire load = burnable material, more burnable material = higher heat, higher fire spread rates, harder to control and extinguish, and more damage caused to exposures. Exposures = nearby buildings or infrastructure.
- ❖ Many entry points into the WTP - The fire could easily enter the WTP plant through the soffit, under the metal roof, and other mechanical openings.

- ❖ The WTP doesn't need to be completely burnt to be considered a complete loss - Damage from the substantial amount of heat created by the barn fire will be significant. The heat and flames will cause the bricks, cement blocks, and possibly the foundation to crack, and the metal roof to warp to the point it is no longer provides protection against the weather. Such damage may cause internal WTP systems to fail.
- ❖ The heat generated by this type of barn, with its current fire load will likely be so great that the fire department will not be able to get close enough to fight the fire or to protect the WTP, warehouse/theatre, or marina.
- ❖ The Township of Assiginack's Fire Department has very limited capabilities in responding to and controlling a fire of this scale – If they can get close enough, the fire department would likely be able to only attack the barn fire from the exterior while trying to protect exterior exposures such as the WTP and the nearby warehouse/theatre and marina. With that said, the fire trucks will not likely be able to supply enough water to attack the fire while simultaneously protecting the WTP, the warehouse/theatre and marina.
- ❖ The purpose of the barn also dictates that a fire within it will spread very quickly - Being built mainly of wood many decades ago, not only is the wood very dry and susceptible to ignition and fire spread, but the wooden grain chutes within the barn would quickly spread fire easily throughout the building. The grain chutes would act as pipelines bringing hot gases, flames and smoke to all areas of the barn. Such a fire would be very difficult to control and extinguish.
- ❖ If the wind is in such a direction to push the fire towards the WTP, this will increase the likelihood of damage to the WTP and speed the spread of the fire.

Risk Reduction

The concept of risk reduction is to manage or eliminate the ability of the given risk to pose a threat to life safety, critical services, property, or the environment. Risk reduction can be achieved by:

- ❖ Eliminating the risk;
- ❖ Substituting the risk;
- ❖ Redesign of equipment or process;
- ❖ Separation of the risk from its environment;
- ❖ Introduction of administrative controls;
- ❖ Provide protection against the risk.

In this situation, with the risk being a barn fire adjacent to the WTP, the best option is to eliminate the risk and/or separation of the risk from its environment. This

would involve disassembly of and removing the barn completely. This would reduce the risk of a barn fire impacting the WTP to zero. A reduction of any risk to zero is the ideal goal. The barn could be re-assembled in a different location if desired.

Removing the fire load inside the barn would reduce the risk of a barn fire starting, of spreading and ultimately to the WTP. This would involve removing all materials within the barn (theatre props, equipment, building material, books, etc.) along with the removal of all grain apparatus (grain chutes, grain bins, etc.). All material would need to be removed completely and the barn no longer used for storage of any kind. This fire load reduction would not eliminate the risk of a barn fire to the WTP but would reduce it somewhat. The structure itself would still be considered a hazard to the WTP.

Repurposing the barn in a manner that would reduce the fire load in the barn and reduce its risk of a significant fire could be considered. Transforming the barn into an open-air gazebo or event venue, with only a cement pad, beams and a small roof would significantly reduce the hazard posed by the barn.

Other steps that could be taken to reduce the risk the barn poses would be to disconnect the barn from the electrical grid. By having no power to the barn, it reduces the source of ignition by electrical failure.

Also the installation of steel security screens on all exterior openings including all windows and doors would reduce the risk of ignition by vandalism or arson.

If electricity is maintained in the barn, a recommendation would be to install a remotely monitored fire alarm system within the barn. Such a system should include smoke and heat detectors, motion sensors, video cameras, and security alarms.

The installation of a fire sprinkler system throughout the building that works in combination with the alarm system would also reduce the risk of the barn to the WTP.

The barn should also be equipped with a grounded lightning rod to help reduce the chance of a lightning strike starting a barn fire.

Resourcing the fire department with the proper training and equipment to fight such a fire would also reduce the risk the grain barn poses to the WTP. Better pumps that provide a higher volume of water, along with hoses and nozzles to accommodate the higher volumes would need to be purchased. Training of fire fighters on how to use the equipment and on fire fighting techniques would also help to reduce, but not eliminate the risk. However, the ability of the WTP to supply the appropriate amounts of water would need to be determined before any new fire fighting equipment is purchased.

Any future changes to the barn should consider fire proofing measures to help reduce the risk of fire ignition and spread.

All these steps come at a cost, but this cost will be less than the cost to replace the WTP. It is recommended that if money is to be spent on risk reduction, it should be spent to reduce the risk to zero. Some of the money spent on the disassembly of the barn may be recouped through architectural salvage.

Impacts

Impacts created by a barn fire will be more than the loss of the WTP. Although the loss of the WTP would be considered significant and cost millions of dollars to replace, there are other impacts that will be created by a fire of this magnitude and location.

The runoff from the fighting the fire will cause the WTP to shutdown for a significant period of time. The shutdown will be caused by the runoff likely containing foam additives used to fight the fire. With the WTP intake approximately within 100' of the barn, it is likely that the foam additives will enter the WTP and make the water undrinkable. The WTP will be shutdown until the system is cleaned, flushed and repairs made.

Damage to the nearby warehouse/theatre could be significant to the point of a complete loss.

Also damage to the adjacent Norisle and marina infrastructure could be significant to the point of a complete loss. With the marina fuel tanks nearby, a barn fire would pose a considerable threat to these tanks.

Any boats moored in the marina will also be at a significant risk of loss during such a fire.

As well, it is not just the loss of the WTP but the impacts of this loss that need to be considered. Without a working WTP citizens will have no potable water to drink, cook or clean with. A plan will need to be developed to deliver potable water to all citizens affected by the WTP loss. This plan will likely need to be in place for months or even years, until a new WTP can be built. Such a loss will impact property values, force people to leave the community, affect tourism negatively, and close other services such as the school, medical centre, and restaurants.

Conclusion

It is obvious the barn is a significant fire hazard to the water treatment plant. Although there are many ways to reduce the hazard somewhat, the only way to reduce the hazard to zero, is to remove the barn completely via disassembly. Based on the reasons provided above, it is recommended by Phoenix Emergency Management Logic that the barn be disassembled completely and removed from its current site.