



Municipality of Wawa

MONTHLY REPORT – NOVEMBER 2023

Department of Infrastructure Services

Prepared By: Becca Weatherall	Report No: RW 2023-17
Agenda Date: December 12, 2023	File No: C11

Purpose

The purpose of this report is to provide Council with an overview of the Infrastructure Services work completed during the month of November 2023.

Aerodrome Operations

- We began cross-training one of our fulltime staff in aerodrome operations. Training is going well, and staff will continue to trial cross-training for an additional four months before deciding on whether this position will become permanent;
- The Loomex Group completed an informal audit of Wawa's aerodrome. A report has been provided to staff identifying areas for improvement and illustrated that the aerodrome facilities are well maintained. The Loomex Group will continue to be engaged in supporting staff in implementing the recommendations identified in the report;
- Completed routine maintenance activities; and
- A Thunder Air aircraft was involved in an accident at the aerodrome while in the process of landing. No major injuries came as a result of the accident. Jet A1 fuel was spilled adjacent to the runway, Green for Life (GFL) and their cleanup crew has been initiated and Spills Action Centre has been notified of all updates. The Transportation Safety Board conducted an investigation, results of the investigation will take several months. In the meantime, staff are working with Thunder Air and their insurer to ensure that the wrecked aircraft is returned.

Cemetery Operations

- Continued routine maintenance activities; and
- Cemetery closure as per bylaw on November 30.

Landfill Operations

- Municipal Staff are continuing ongoing routine maintenance and operations; and
- Began ditching and other winter preparation for the new landfill site.

Road Operations

- With a staff member taking a leave, an internal hire was used to replace that staff member. A temporary truck driver posting was made internally and externally, and the management team will be interviewing for the four-month temporary position;
- Continued routine maintenance of gravel roads, preparing gravel roads for winter operations and adding more material to Harbour Road;
- Winter maintenance activities started, which has included grading, plowing, sanding, and hauling snow;
- Continued to clean out culverts and ditching to prepare for winter season; and
- Continued brushing on outside roads to minimize heavy truck contact with branches from overgrown trees.

Water and Sewer Operations

- Staff has begun compiling data to put together annual reports;
- Continued routine water treatment plant and lagoon facility operations and maintenance; and
- Continued ongoing distribution and collection system maintenance.

Capital Projects

- Intake Project – Kresin Engineering Corp. will be submitting a memo in December on the design alternatives for the intake pipe replacement/rehabilitation project;
- Landfill Expansion – J. Provost Contracting is scheduled to return to the landfill in December to address required changes.
- Cemetery – Expansion Project went out to tender, awaiting tender review results from Tulloch Engineering.

- Airport funding round II Application has been submitted for terminal upgrades and sand dome.
- Water Distribution Upgrades – Landmark was engaged to complete water tower remediation work which includes ladder inspections, new access hatches, fall arrest system upgrades, and equipment rehabilitation.
- Began process of receiving quotes to secure Capital Projects for 2024 to 2027.

Month Ahead

Forecasted for December:

- Complete routine winter maintenance activities;
- Assisting with community events such as the parade and ice candle celebration; and
- Water / Sewer regular maintenance.

Recommendation

That Council acknowledges receipt of Infrastructure Services Monthly Report DB-RW 2023-15 submitted by Becca Weatherall dated December 12, 2023, for information.

Respectfully submitted by:
Becca Weatherall

Memorandum

To: Rebecca Weatherall, P. Eng.
Municipality of Wawa – Acting Director, Infrastructure Services

From: Ryan Wilson, P. Eng.

Date: December 5, 2023

KEC Ref: 2219.01

**Re: Municipality of Wawa Municipal Water Supply Intake Replacement
Intake Pipe Interior Inspection**

The purpose of this memorandum is to present a summary and our interpretation of the results from the inspections of the duty and emergency raw water intake pipes and structures as well as to present a recommendation for the Municipality's consideration.

1.0 Background

The Municipality is undertaking a capital project to construct improvements to its raw water intake structure, intake pipe and low lift wet well. Review of available video from an exterior inspection of the duty raw water intake pipe and structure conducted in September 2020 revealed:

1. Sections of corrugated steel pipe (CSP) anchored to the lake bottom by concrete blocks and chains at locations along its length;
2. The CSP terminated at an intake structure situated within a timber crib; and,
3. A number of the pipe anchors were observed to have failed.

No information describing the emergency raw water intake pipe or structure is available.

Following review of the September 2020 video, Kresin Engineering Corporation (KEC) recommended that both exterior and interior inspections of the duty and emergency intake pipes and intake structures be completed to support their assessment and the development of alternative remedial approaches. Completion of a lake bed survey was also recommended to allow for the establishment of existing and the review of alternative intake pipe alignments. The Municipality accepted KEC's recommendation.

2.0 Site Work

Watech Services Inc. (Watech) was retained by KEC to complete the exterior and interior inspections as well as the lake bed survey. Watech proposed to employ a diving crew in conjunction with a remotely operated vehicle (ROV) to complete the video inspections while the lake bed survey would be completed using boat mounted sonar equipment.

2.1 Initial Site Visit

Watech arrived at the low lift pumping station (LLPS) site on June 5th, 2023 and dove on the duty and emergency intake pipes and intake structures to conduct exterior condition assessments while also completing the lake bed survey. On June 6th, 2023, representatives from the Municipality, Watech and KEC attended at the LLPS to initiate the interior inspection work.

Duty Intake Pipe and Structure

The exposed section of the duty intake pipe revealed CSP anchored to the lake bottom by concrete blocks and chains along its length, which the previous exterior inspection in September 2020 also identified. The exterior of the CSP is coated in a thin layer of marine growth where the pipe material is still visible. The CSP appears to be in generally good condition. With respect to the duty intake structure, Watech noted that the timbers are in fair condition with some softness and splitting evident. The lid and screen fasteners at the duty intake structure are heavily corroded and the lid could therefore not be removed to insert the ROV.

During the initial inspection, the ROV was piloted a distance of approximately 85m into the duty intake pipe from the LLPS, limited by the length of tether included with the ROV to roughly half the length of the duty intake pipe. Minimal sediment and marine growth were observed along the length of the pipe inspected. No obvious signs of pipe failure were observed. The inspection revealed that the pipe material is CSP, which differs from the materials noted in available documentation (i.e. cast iron and asbestos cement).

Emergency Intake Pipe and Structure

The exposed section of emergency intake pipe (suspected to be cast iron) revealed offset joints in some locations (Photograph 1). The intake structure was observed to consist of an intake bell mouth fitted with bar screens within a timber crib. Watech noted the bars to be inundated with zebra mussels (Photograph 2) as well as some softness in the timbers. Watech identified the timber crib base as comprised of “wooden boards” with some boards either missing or broken.

During the video inspection of the LLPS wet well, a mechanical plug was observed to be in-place inside the emergency intake pipe.



Photograph 1: Offset Joint in Emergency Intake Pipe



Photograph 2: Marine and Zebra Mussel Growth on Emergency Intake Bar Screen

2.2 Follow-Up Inspection – Duty Intake Pipe

Due to the heavily corroded fasteners precluding easy access to at the duty intake structure, Watech proposed to complete the interior inspection of the duty intake pipe from the LLPS using a larger ROV equipped with a longer tether. The Municipality accepted Watech’s proposal.

On August 15th, 2023, representatives from the Municipality, Watech and KEC attended at the LLPS to initiate the follow-up interior inspection work. As with the initial inspection, no obvious indications of pipe failure were observed during the follow-up inspection pipe material was confirmed to be CSP along its entire length. The pipe wall appeared to be in good condition along its entire length with minimal sediment buildup at the invert (Photograph 3) as well as a possible pipe puncture observed at the obvert of the pipe (Photograph 4). Areas of apparent surface rust are visible throughout. Ultimately, the ROV was piloted approximately 165m from the LLPS up the 90° section located at the intake structure (Photograph 5). What appeared to be particles resembling dislodged rust particles were observed along the pipe including a build-up located at the bottom of the 90° section (Photograph 6).



Photograph 3: Duty Intake Pipe – Minimal Sediment Along Invert



Photograph 4: Possible Pipe Puncture Observed at the Obvert (top) of the Duty Intake Pipe



Photograph 5: 90° Section at Duty Intake Structure



Photograph 6: Potential Dislodged Rust Particles at 90° Section of Duty Intake

3.0 Conclusion

The entire length of duty intake pipe is CSP which differs from the available documentation identifying a combination of cast iron and asbestos cement pipe. It appears that the duty intake pipe is in fair condition with no obvious indications of pipe wall failure (with the exception of a possible puncture) or offset joints; however, evidence of corrosion (i.e. rust spots) is observed throughout. Some pipe anchors, securing the intake pipe to the lake bottom, were observed to have failed. The intake structure also appears to be in fair condition with some deterioration of timbers (cracking and softness).

The emergency intake pipe is in poor condition as offset joints are visible along the exposed section of pipe and it appears to have been abandoned by insertion of a mechanical plug. The intake structure appears to be intact but deteriorated with the bar screens on the intake bell mouth being inundated with zebra mussels.

Recommendations

CSP is susceptible to and is showing signs of corrosion which will lead to pipe failure. It is recommended that the duty intake pipe be replaced. There are slip lining options available for CSP pipe which can be explored and will have the added benefit of mitigating disturbance of lake bottom sediments.

It has previously been noted that the potential for the timbers being treated with an organic-based preservative presented the potential to exacerbate trihalomethane (THM) formation in treated drinking water. Based on the level of corrosion of the duty intake structure's lid and screen fastenings as well as the condition of the timbers, it is recommended that the duty intake structure also be replaced.

As results from the external inspection of the emergency intake pipe and intake structure indicate that this infrastructure is in poor condition, it is recommended that the emergency intake is decommissioned.

Next Steps

Following confirmation from the Municipality that the recommendations presented have been accepted, KEC will finalize a list of alternative solutions and proceed with an initial screening to identify a viable alternative(s). A detailed evaluation of the viable alternative(s) will then be developed with input from the Municipality. This will include the preparation of an evaluation matrix considering technical, environmental and cost criteria and a preliminary preferred solution will be identified. This approach will facilitate compliance with Environmental Assessment Act requirements.

Closure

Please contact the undersigned if you would like to discuss the contents of this Memorandum.

Yours very truly,

Kresin Engineering Corporation

A handwritten signature in blue ink, appearing to read "Ryan Wilson".

Ryan Wilson, P.Eng.
Project Engineer

2219 memo re interior intake inspection