October 29, 2021

Report To: Travis Rob, P.Eng., Manager of Operations & Facilities

From: Craig Miller, P.Eng., Environmental Superintendent

SUBJECT: Landfill Expansion Engineering – Informational Update

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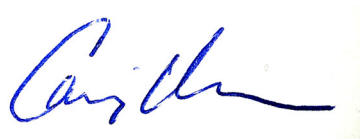
Please find attached an informational memorandum from Azimuth Environmental Consulting, Inc (AEC). AEC has completed a review of data and information supplied to them by the Town for consideration as part of the opening steps towards Landfill Expansion and/or a new Landfill and closure of our existing Landfill.

Next steps include having AEC complete an initial visit to the Town to gather further information, as outlined in the memorandum. As well, AEC will be reaching out to neighbouring communities as there is potential to strategically positional our landfill as a regional landfill.

AEC will be in our district in early November and will coordinate visits and meetings with the Town to gather further information that they require to keep the project moving forward.

After a slow start following tender award in 2020 due to Covid related lockdowns and restrictions, this Landfill project is moving forward and updates will be provided as they are available.

Respectfully submitted,



Craig Miller, P.Eng.
Environmental Superintendent

Technical Memorandum

To: **Craig Miller – Town of Fort Frances**

Re: **Preliminary Information Review – Waste Management Study**

AEC Project 20-128

From: Colin Ross – Azimuth Environmental Consulting, Inc.

Date: October 29, 2021

The purpose of this memorandum is to provide an informal summary of the findings of the preliminary review of the landfill and waste management information provided by the Town, as well as proposed next steps as part of the Waste Management Study. It is noted that these findings may be updated upon receipt of additional data / information or through site visits to confirm some items which have only been assumed at this time.

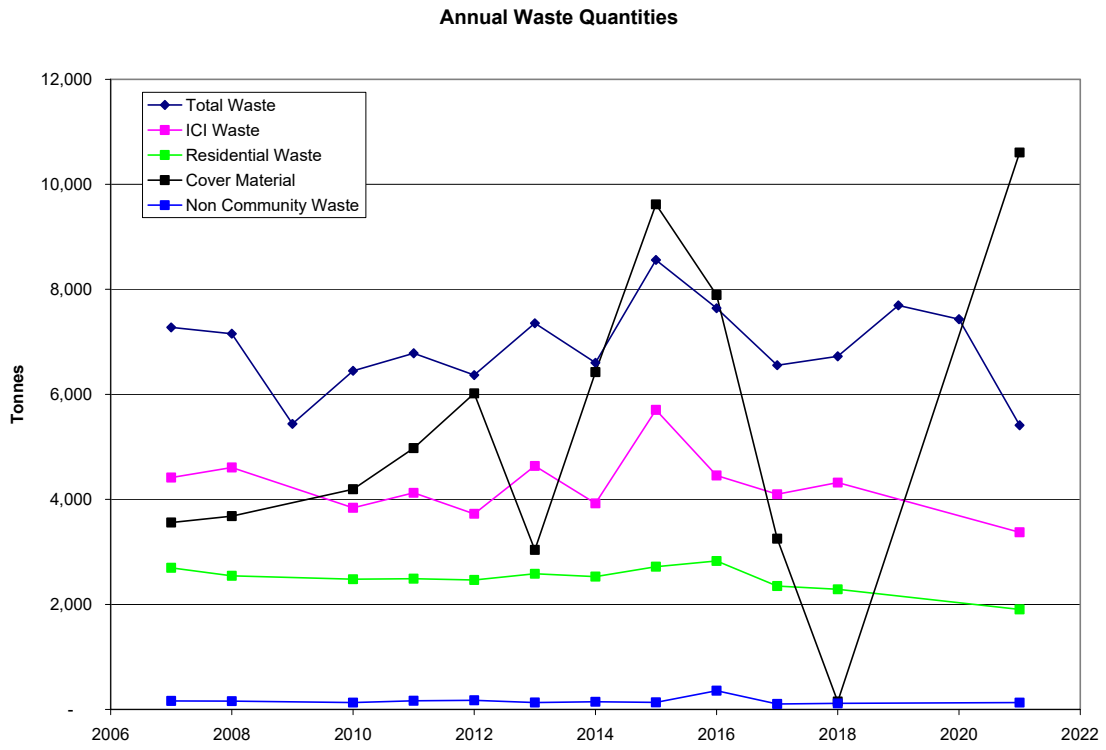
CURRENT LANDFILL SITE

Operations

Although a formal Design & Operations Plan, as is typically required by the MECP is not in place for the Site, it is understood that many of the typical items outlined in these plans is being undertaken by the Town and associated site operators. This includes but is not limited to waste segregation, waste screening, cover material addition, site security, waste diversion, etc. Previous waste capacity studies have provided direction with respect to fill area progress, which based on our limited knowledge of the site appears to be appropriate given the current ECA and environmental setting. However, a site visit to confirm the surrounding environmental setting and current site configuration would be beneficial to confirm this.

A review of the waste quantity data for the Town has illustrated relative consistency in volumes for the various types including residential, ICI and outside community wastes, which is expected given the relatively steady population statistics. The one item of note is the large and variable cover material quantities accepted at the site over time. As illustrated in the following graph, the amounts can represent similar values to the total waste accepted, although the more elevated values and variability is likely representative of the timing with respect to availability and various times when increased cover material is required to cover or close areas of the waste mound. However, overall the ratio of cover material to waste appears to be very high at 77% for the period of record, where as 20-30% are more typical targets. As every tonne / cubic meter of cover material added as interim cover represents a loss of available waste acceptance capacity, lowering this ratio could have a significant impact to the current site or future site capacities. One possible way to extend the existing site capacity is to screen the waste to remove daily cover. This

re-creates this volume and the old daily cover can be re-used.



It is understood that cover material is derived from various sources, included highway construction projects, contaminated fill, and sewage sludge, such that some, if not most of the material could be considered a waste material, but the lifespan of the site could be extended by minimizing the amount of clean / inert fill utilized as cover material.

Environmental Impact

It is understood from the information and site figures provided that a ground and surface water monitoring program had been established historically, although historical data are not available, including water quality data, borehole logs or historical reports if completed. Ground water quality data from the 6 monitoring wells has been collected semi-annually by the Town since 2015. The data was compiled, graphed and reviewed by Azimuth, which indicated that a measureable influence is present in the ground water surrounding the waste mound; however, the leachate influence is consistent over time and more limited at locations not adjacent to the waste. The results indicate a steady state condition has established, which is not surprising given the site has been in operation since at least 1975, accepts relatively low waste volumes annually and is located within an environmental setting which is conducive for attenuation of leachate (*i.e.* clay and peat soils).

Based on the fact there were surface water monitoring locations established historically, and the aerial photography illustrates ponds and drainage channels west of the site, there is the potential for leachate impacted waters to be migrating via surface runoff. It is also noted that the low permeability of the clay and peat soils underlying and surrounding the waste mound could create a preferred leachate migration pathway within the surface water surrounding the site. As such, it would be beneficial to implement a surface water monitoring program to confirm the surface water quality and compliance with provincial guidelines (*i.e*. Provincial Water Quality Objectives – PWQO). This information would assist in determining the viability of the site in both the short and long term if expansion of the site is considered. The specific monitoring program could utilize historical locations identified on the KGS site plan; however, it would be beneficial to potentially refine these locations based on a site visit to confirm the presence and flow direction of surface water surrounding the site.

POTENTIAL ALTERNATIVE LANDFILL SITES

Based on the municipal land holdings map provided by the Town, a cursory and desktop preliminary review of these sites was completed to assess potential for use as a landfill site. Overall, some limitations exist with respect to the properties to the north in proximity to the airport and residential property (assumed based on Google Earth imagery). Given the potential for increased avian presence associated with the landfill (seagulls, vultures), there is a potential for an increase in bird strikes at the airport if the landfill is located in close proximity. As such, locating the landfill on any property adjacent to the airport would not be recommended. Similarly, locating a landfill on a property adjacent to a residential property could create nuisance issues which could require additional operational considerations to control noise, odour, vector / vermin, etc. As such, location of any new landfill site in close proximity to a residence would not be recommended.

The remaining properties to the southeast of the current landfill site, as well as west of the Resolute Forest Products lagoons would be the most optimal locations to investigate further. A preliminary review of these sites did not indicate any obvious limitations. However, items which would dictate viability of these sites and will need to be investigated further include:

Environmental Setting

A review of these sites via Google Earth would indicate there was no obvious wetland or surface water features, but saturated ground surfaces may present limitations through requirement of fill import to facilitate construction of the site or could create environmental limitations with these conditions represent habitat for Species At Risk (SAR). A preliminary review of these properties through a site visit would assist in

determining potential limitations or benefits of a given site.

Site Size

The sizes of the properties identified in the mapping are of comparable size to the current landfill site, while there may be potential to combine two adjacent properties to increase the area to facilitate a larger landfill. The size requirements for the site will be very reliant on the participation from additional communities (municipal and First Nations). A better understanding of the number of communities and their associated annual waste requirements would be needed to better assess the viability of these sites with respect to area.

Alternative to Municipal Land Holdings

Beyond the municipal properties identified, alternative sites could include crown land under a land use permit or purchase of private lands. A review of the Crown Land inventory mapping did not indicate any viable properties (either smaller than municipal parcels or no road access) in close proximity to Town, although larger tracts approximately 20 km north with roads intersecting them could represent potential area for future landfill location, assuming lands are available with no existing land use permit.

NEXT STEPS

Based on the information presented above, it is recommended that a letter be issued soliciting participation and information regarding current waste management demands for surrounding communities, including municipal and first nations (draft letter attached). This information will be required to assess waste volumes and associated site size requirements.

In the interim, it would be beneficial for Azimuth to complete a site visit at the current landfill site to gain a better understanding or the current operations and potential for future use. Similarly, a cursory inspection of the most viable municipal owned properties could be completed to assess viability / limitations for each. If possible and weather permitting, this site visit could occur early November or potentially spring of 2022 following snow melt.

It is assumed that the Town has provided all available information regarding the current landfill site, but if there is additional historical information / documentation for the site which can be obtained, this would benefit the process (i.e. historical reports, borehole logs, ground and surface water data [assumed early 1990's]).