

**REPORT TO CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, FEBRUARY 12, 2020**

SUBJECT **Beneficial Use of Biosolids – Contingency Planning**

ISSUE SUMMARY

The Capital Regional District (CRD) requires a contingency plan for beneficial use of biosolids generated at the Residuals Treatment Facility (RTF) by April 30, 2020, as a condition of the Ministry of Environment and Climate Change Strategy (ENV) approval of the CRD 2019 Biosolids Beneficial Use Definitive Plan (Definitive Plan).

BACKGROUND

The RTF will start the production of dry biosolids by mid-2020, as part of the overall liquid waste management plan for the core area. In October 2019, ENV provided conditional approval (Appendix A) of the CRD's Definitive Plan over the short term (2020-2025) for the use of dried biosolids as an alternative fuel source at cement kilns. As a condition of the approval, ENV required submission of a contingency plan that commits to beneficial use of biosolids during cement kiln shut-down periods (anticipated at approximately one month per year) and explores land application.

The CRD must submit a contingency plan to ENV by April 30, 2020 that addresses ENV's October 29, 2019 letter, and also have regulatory approvals in place by the time biosolids production commences.

In preparing the Definitive Plan, the CRD reviewed the full spectrum of potential beneficial uses for CRD biosolids, e.g., pyrolysis, gasification, alternative fuel and land application. In support of the April 24, 2019 Parks & Environment Committee closed meeting, the committee was provided with complete submission packages received in response to the CRD's Request for Qualifications for Biosolids Beneficial Use Services and the responses were summarized in the report. Two of the six responses proposed advanced technology solutions involving pyrolysis and gasification. As stated in the staff report, "Although pyrolysis and gasification are now proven thermal processing technologies for individual waste streams such as woody biomass, its use for processing biosolids is still in the early stages and its success is dependent on the characteristics and consistency of the feedstock to be processed."

Although it was also evaluated in preparing the Definitive Plan, land application was not recommended due to the CRD Board 2011 policy banning land application. For the short-term plan, biosolids produced during month-long cement kiln shut-down periods require alternate management. The Definitive Plan feasibility assessments thoroughly reviewed the breadth of beneficial use options, except land application, and eliminated all uses except for alternative fuels. As a result, only land application remains both viable and consistent with ENV beneficial use requirements, given the ENV April 30, 2020 deadline and commissioning of the RTF in mid-2020.

ALTERNATIVES

Alternative 1

1. That the Capital Regional District Board partially rescind its policy to prohibit land application as a beneficial use of biosolids at Hartland Landfill only; and
2. That land application of biosolids be approved as a contingency plan for beneficial use at Hartland Landfill.

Alternative 2

1. That the Capital Regional District Board rescind its policy to prohibit land application as a beneficial use of biosolids; and
2. That land application of biosolids be approved as a contingency plan for beneficial use at Hartland Landfill.

IMPLICATIONS

Environmental & Climate Implications

Biosolids produced during RTF short-term operations have the potential for beneficial use at Hartland Landfill as a nutrient additive to improve vegetation growth, and as temporary engineered cover to mitigate fugitive greenhouse gas (GHG) emissions. The small annual contingency volume can easily be accommodated in active or inactive areas of the landfill without significant operational impact. The proposed contingency plan will reduce overall GHG emissions and improve the vegetative cover at the landfill.

In accordance with provincial best management practices, dry biosolids mixed with organic material could be used as interim (temporary) cover in active cells at the landfill. With this interim cover, fugitive landfill gas passively migrates through the cover where bacteria oxidize methane into carbon dioxide. Through this transformation, GHG emissions are significantly reduced, since carbon dioxide is a much less potent GHG than methane.

The use of the dry biosolids in a final engineered cover at the landfill is directly in accordance with ENV's beneficial use principles to decrease fugitive GHG emissions at the landfill and reduce GHG emissions associated with the transportation of biosolids. The approach may also qualify for GHG emission offset units against the CRD's corporate emissions inventory.

Current vegetation at the landfill is suffering from limited nutrients in the final top cover. Dry biosolids have a long history of use as a nutrient additive in planted areas and would improve vegetative growth within the landfill footprint. This, in turn, enhances the final cover and closure of specific landfill cells.

The use of biosolids at the landfill will require regulatory approval to ensure consistency with several regulations under the *Environmental Management Act*. Given the Province's deadline of April 30, 2020, there is a tight timeline to develop a plan that includes operational details and community engagement to satisfy the Minister's requirement.

The Definitive Plan commits to considering advanced technological solutions in the development of the long-term plan. These solutions can be evaluated once biosolids are being produced

consistently and pilot testing is performed to determine the most applicable technology. This evaluation of long-term options is scheduled for 2021-2022. At that point, detailed specifications can be determined to establish project costs and timelines to design, procure and construct the required large-scale processing plant.

Intergovernmental Implications

ENV's conditional approval of the short-term Definitive Plan for beneficial use of dry biosolids explicitly requires inclusion of land application options. This short-term contingency proposal will enable the CRD to meet this requirement.

Community and First Nations engagement prior to April 30 will be required for regulatory approval. The parameters for that engagement will be developed with regulatory input after Board direction is received.

Financial Implications

Overall cost savings are anticipated during contingency periods. Costs associated with cement kiln transportation and acceptance will not be incurred during contingency periods; however, there will be some costs to manage biosolids that are anticipated to be in the range of \$50-\$90/tonne. The financial implications are anticipated to be minimal because of the small volume requiring management and because the logistics of biosolids management are similar to those already in place at the landfill (e.g., interim cover procedures).

Reductions in GHG emissions could be used to offset CRD corporate GHG emissions to meet our Climate Action Charter Commitment to carbon neutrality. Alternatively, emissions reductions could be monetized through the sale of Greenhouse Gas Offset Units to ENV through an existing provincial offset procurement that will remain open until July 19, 2021. Staff will investigate this opportunity.

CONCLUSION

The conditional approval of the CRD's Definitive Plan requires a contingency plan to address biosolids management during cement kiln shut-down periods to be submitted to the Ministry of Environment and Climate Change Strategy (ENV) by April 30, 2020. Staff recommend that dried biosolids be incorporated into an engineered cover at the landfill to reduce fugitive greenhouse gas emissions, as well as a nutrient supplement to the final vegetative cover over inactive landfill cells. Staff recommend that the Board partially rescind the Board policy banning land application as a beneficial use of biosolids to allow biosolids to be applied at the landfill only. Following Board approval, staff will respond to ENV with the submission of a contingency plan that commits to beneficial use of biosolids during cement kiln shut-down periods, as proposed in the recommendation.

RECOMMENDATION

1. That the Capital Regional District Board partially rescind its policy to prohibit land application as a beneficial use of biosolids at Hartland Landfill only; and
2. That land application of biosolids be approved as a contingency plan for beneficial use at Hartland Landfill.

Submitted by:	Peter Kickham, M.E.T., R.P.Bio., Acting Senior Manager, Environmental Protection
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

- Appendix A: Minister George Heyman’s (ENV) Biosolids Beneficial Use Strategy Letter – October 29, 2019
- Appendix B: Photograph of final cover on Phase 1 of Hartland Landfill