

Beneficial Use of Biosolids at Hartland Landfill

FREQUENTLY ASKED QUESTIONS

Capital Regional District | March 2020

What are biosolids?

Biosolids are a stabilized by-product of wastewater treatment. After wastewater is treated at the McLoughlin Point Wastewater Treatment Plant, the residual solids are conveyed through a 19-kilometre pipe to the Residuals Treatment Facility (RTF) at Hartland Landfill. The solids then undergo a treatment process where they are digested, heated and dried, resulting in Class A biosolids.

Dried Class A biosolids will be dark, dry granular pellets. The Residuals Treatment Facility is expected to produce approximately 7,000 tonnes of Class A biosolids each year, starting in 2021.

What is required by the Province?

The BC Ministry of Environment and Climate Change Strategy establishes and enforces standards for wastewater treatment and the beneficial use of biosolids. Under the core area liquid waste management plan, the CRD was required to submit a “definitive plan” to the Province by June 30, 2019 outlining how the CRD will ensure the beneficial use of biosolids produced at the RTF.

On October 29, 2019 the Minister of Environment and Climate Change Strategy approved the CRD’s short-term (five-year) plan for use of biosolids as an alternative fuel in cement plants, but required submission of a contingency plan by April 30, 2020 that ensures biosolids produced during cement kiln maintenance periods (approximately four weeks per year) are used beneficially. The requirement to submit a contingency plan also strictly prohibited disposing the material in the landfill, and required the CRD to consider land application of biosolids.

What is “beneficial use”?

“Beneficial use” means that the biosolids produced from wastewater treatment will be used for environmental or community benefit. Class A biosolids can be used for a number of beneficial purposes. The Ministry of Environment has presented a variety of biosolids management options considered to be beneficial that can be found [here](#).

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What is being proposed and why?

For the next five years, biosolids will be transported to the Lower Mainland where they will be used as an alternative fuel source to power cement manufacturing plants. Using biosolids as an alternative fuel in cement kilns will reduce their reliance on other non-renewable fuels (primarily coal) that are currently being used.

Of available beneficial use options, land application is the only immediately viable option that can be met by the ministry's April 30, 2020 deadline and commissioning of the RTF in mid-2020. Therefore, for cement plant shut-down periods the CRD has partially rescinded the ban on land application to allow for the beneficial use of biosolids at the Hartland Landfill.

In preparing the CRD 2019 Biosolids Beneficial Use Definitive Plan (Definitive Plan), the CRD reviewed the full spectrum of potential beneficial uses for CRD biosolids, (e.g., pyrolysis, gasification, alternative fuel and land application). 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. Therefore, the CRD must be producing a biosolid to be able to evaluate using pilot and bench scale tests that will ensure pyrolysis and gasification are viable options for processing CRD biosolids. Upon provincial approval of the short-term contingency plan, the CRD will proceed to immediately begin evaluating long-term biosolids management.

What kind of beneficial uses are being considered?

Biosolids produced during short-term cement kiln maintenance periods have the potential for beneficial use at Hartland Landfill as a nutrient additive to improve vegetation growth, and as an engineered cover to mitigate fugitive greenhouse gas (GHG) emissions. The relatively small annual contingency volume (approximately 700 tonnes) can easily be accommodated in active or inactive areas of the landfill without significant impact to landfill operations.

Various options for beneficial use of biosolids at Hartland Landfill will provide environmental improvements that:

- manage odours produced at the landfill

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- mitigate greenhouse gases by reducing fugitive methane emissions
- increase carbon sequestration through the improvement of final cover systems
- improve the health and growth of trees in closed areas of the landfill

How is the landfill site monitored?

Hartland Landfill is highly managed and regulated, activities are monitored routinely and the CRD is required to meet provincial standards under the Environmental Management Act. Engineered controls at Hartland Landfill collect and contain leachate to reduce or eliminate potential effects to groundwater and surface water quality. Since 1990, all landfill leachate has been captured and contained onsite then discharged via pipeline to the sanitary sewer.

An extensive network of over 120 groundwater wells and more than 20 surface water monitoring stations on the Hartland Landfill property and specific offsite locations have been monitored since 1983. The purpose of the groundwater and surface water monitoring program is to assess any potential impacts of landfill operations on water quality and ensure compliance with water quality standards at the property boundary.

In addition to the groundwater and surface water monitoring programs, staff routinely complete sampling of domestic wells surrounding the landfill.

All monitoring results are reviewed by staff and reported annually in accordance with federal and provincial regulatory requirements. Results consistently meet environmental standards at the landfill property boundary and there is no indication of landfill impacts at any monitoring location off the landfill property.

Will additional monitoring be conducted after biosolids are applied?

In addition to the extensive monitoring programs already in place, supplementary monitoring will be conducted to evaluate any potential impacts related to the application of biosolids.

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Are there studies to support the land application of biosolids?

There are numerous peer-reviewed studies that support the application of biosolids to land (including agricultural lands). The Ministry of Environment has completed a review of scientific literature that can be found [here](#).

How will the biosolids be applied? Will they be covered with anything else?

The biosolids will be blended with a mixture of topsoil and wood chips and carefully applied to specific areas of the landfill as interim cover to mitigate fugitive landfill gas emissions, or support tree growth on closed areas where final cover has been established.

How will dust be prevented?

Hartland Landfill does not currently have a significant wind erosion issue that requires management. However, best practices will be implemented to ensure effective dust control during all aspects of handling, blending and application. This will include the addition of water/mist, and covering of stockpiles. Under the BC Landfill Criteria, the landfill has a regulatory responsibility to ensure dust is mitigated on site and dust control practices have already been effectively implemented for aggregate handling, and use of gravel roads throughout the site.

Over how many hectares will the biosolids be applied?

An application plan has not been developed at this time. Application areas will be reviewed and prioritized based on maximizing beneficial uses available at the landfill.