

**REPORT TO SAANICH PENINSULA WASTEWATER COMMISSION  
MEETING OF THURSDAY, MAY 15, 2025**

---

**SUBJECT**     **Core Area Biosolids Beneficial Use Strategy**

**ISSUE SUMMARY**

To provide background information on the Core Area biosolids beneficial use strategy.

**BACKGROUND**

In 2011, the Capital Regional District (CRD) Board passed a resolution to ban the land application of biosolids from CRD facilities due to concerns about the accumulation and dispersal of contaminants and based on the precautionary principle; that lack of scientific certainty should not be a reason to postpone preventative measures.

With the commissioning of the core area wastewater treatment project in 2020, the CRD became responsible for management of the Class A biosolids produced from the Residuals Treatment Facility (RTF) located at Hartland Landfill. This new function required a management plan that demonstrates the beneficial use of CRD-produced biosolids to the provincial regulator. The core area consists of Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, View Royal, and the Esquimalt and Songhees Nations.

In 2019, in anticipation of biosolids production, the CRD developed a short-term Biosolids Beneficial Use Strategy (2020-2025). Under this strategy, biosolids were to be transported to Richmond, BC for use as an alternative fuel in a cement kiln. The Minister of Environment and Climate Change Strategy (now referred to as the Minister of Environment and Parks) approved the short-term strategy with the condition that a long-term strategy be implemented by January 1, 2025, and that an options analysis and consultation process be completed in support of this strategy.

In 2023, given operational and logistical challenges with the short-term plan, the CRD Board amended its position to allow limited non-agricultural land application of biosolids as a contingency option. The CRD then began supplying biosolids to an industrial land reclamation project at a quarry near Cassidy, BC.

In preparation to meet the provincial requirements, the CRD prepared a biosolids management options analysis report. This report included an options analysis, an updated review of international biosolids management practices and a summary and evaluation of the advanced thermal (gasification and pyrolysis) pilots completed in 2022 (Appendix A).

The CRD conducted First Nations and public engagement in early 2024 on the various biosolids management options. The process included an interactive website that solicited and posted email questions, media releases, print ads, online and representative surveys, and a virtual open house. The CRD also convened a Technical and Community Advisory Committee (TCAC) to provide consultation advice and input regarding biosolids management and beneficial use. Respondents indicated that the most important consideration was reducing environmental impacts.

After options analysis and public consultation, the CRD developed a Long-Term Biosolids Management Strategy. The strategy calls for a portfolio of options in alignment with the technical assessment and utilizing each option under a prioritization structure. The strategy was endorsed by the CRD Board in June 2024 and acknowledged by the Province in March 2025. The Long-Term Biosolids Management Strategy is included in Appendix A and is summarized below. The response from the Minister of Environment and Parks is attached as Appendix B.

#### Tier 1: Advanced thermal option

The preferred solution for biosolids beneficial use management under the long-term strategy is advanced thermal treatment. Using advanced thermal technology (pyrolysis or gasification) biosolids are heated under reduced oxygen conditions to form a biochar and a synthetic gas (syngas). This process reduces the concentrations of many contaminants, including Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS). The exclusion of oxygen from the thermal process helps prevent the formation of air pollutants like nitrogen and sulphur oxides. Biochar sequesters carbon, and has a range of potential uses, including as a soil amendment. The syngas can subsequently be burned for energy as a renewable fuel.

In support of the preferred Tier 1 option, the CRD issued a Request for Proposals (RFP) on July 10, 2024, for an advanced thermal demonstration plant. The RFP is closed and the CRD Board is in the process of deciding next steps.

#### Tier 2: Out-of-region compliance options

The second tier of options under the long-term strategy constitute measures that the CRD will use to meet its obligation for the beneficial use of biosolids while the Tier 1 thermal processing options are being developed or otherwise unavailable. These are (in priority order):

- (i) Continue alternative fuel combustion in the cement manufacturing facility in Richmond, BC
- (ii) Industrial land reclamation, such as mine and quarry sites
- (iii) Forest fertilization
- (iv) Production of biosolids growing medium and/or feedstock in soil production
- (v) Partnerships with established biosolids programs
- (vi) Explore partnerships with additional industrial partners interested in combustion

The CRD currently has three contracts for the beneficial use of biosolids in alignment with the Tier 2 options above: combustion at a cement kiln, industrial land reclamation at a gravel quarry, and growing medium production at a nursery in the Fraser Valley. CRD staff coordinate the daily management of biosolids across its portfolio of Tier 2 beneficial use options and the CRD has maintained an open procurement for additional Tier 2 options to encourage the market to come forward with cost-effective options to add to the CRD's portfolio.

#### Tier 3: In-region contingency options

The third tier options constitute contingency options of last resort to ensure compliance with regulatory requirements for the beneficial use of biosolids. The CRD would implement Tier 3 options on a contingency basis, only when options within the Tier 2 portfolio are unavailable and only after receiving explicit consent from the CRD Board and consulting and engaging with any affected First Nations, should the need for Tier 3 arise.

On August 9, 2023, the CRD Board directed staff to commission a literature review by an independent academic researcher to examine the human health and environmental risks and benefits of biosolids land application. Based on recent research, the review concluded that Contaminants Of Emerging Concern (COEC's) present in CRD biosolids pose a negligible to low risk to human health and the environment. However, it also identified significant sources of uncertainty in this risk assessment. To address this uncertainty, the review recommended an adaptive management framework that includes exercising caution and exploring emerging technologies. The CRD's long-term strategy aligns with these conclusions by prioritizing the development of an advanced thermal facility and excluding agricultural land application from consideration. Staff will continue to monitor evolving science and have initiated enhanced monitoring of COEC's in biosolids semi-annually to inform future decision-making. The literature review was prepared by Dr. Christopher J. Kennedy and is attached as Appendix C.

## **IMPLICATIONS**

### *Financial Implications*

Annual biosolids beneficial use management costs are in the range of \$2.2M to \$2.5M based on current options and trends.

On March 12, 2025, the Board gave final approval of the CRD 2025 financial plan, inclusive of the Liquid Waste Management Plan Core Area and Western Communities Service five-year (2025-2029) capital plan. As is the case each year following plan approval, staff prepare necessary loan authorization bylaws and security issuing bylaws. The Liquid Waste Management Plan Core Area and Western Communities Service capital plan includes planned infrastructure and improvements totalling \$10 million, which requires borrowing of \$9 million. These capital projects include a Biosolids Advanced Thermal Demonstration Plant construction.

The financial plan includes a \$10 million budget for the advanced thermal demonstration plant. Actual costs are yet to be determined and will depend on vendor proposals and contract negotiations with the preferred proponent, pending direction from the CRD Board on a decision anticipated in 2025.

Biosolids beneficial use management and the development of technology options are funded through the Core Area Liquid Waste Management budget.

## **CONCLUSION**

The CRD manages the beneficial use of Class A biosolids produced through the Core Area wastewater treatment system, to meet its regulatory obligations under the provincially approved Liquid Waste Management Plan. The beneficial use of biosolids is informed through the Long-Term Biosolids Management Strategy that currently consists of a portfolio of out-of-region non-agricultural beneficial use options while actively exploring the preferred option of advanced thermal technology solutions.

## **RECOMMENDATION**

There is no recommendation. This report is for information only.

Submitted by:	Rory Tooke, Ph.D., Senior Manager, Environmental Innovation
Concurrence:	Luisa Jones, MBA, General Manager, Parks, Recreation & Environmental Services
Concurrence	Alicia Fraser, P. Eng., General Manager, Infrastructure and Water Services
Concurrence:	Nelson Chan, MBA, FCPA, FCMA, Chief Financial Officer, GM Finance & IT
Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

## **ATTACHMENTS**

Appendix A: Long-Term Biosolids Management Strategy – Letter to the Ministry of Environment and Climate Change Strategy (June 18, 2024)

Appendix B: Acknowledgement of Receipt of the Long-Term Biosolids Management Strategy – Letter from the Minister of Environment and Parks (March 19, 2025)

Appendix C: Biosolids Land Application – An Updated Review of Human Health and Environmental Risks by Dr. Christopher J. Kennedy (December 12, 2024)