

Report to Council



Date: November 23, 2020

To: Council

From: City Manager

Subject: Budget Amendment – Sludge Management at Regional Biosolids Composting

Department: Infrastructure Delivery

Recommendation:

THAT Council receives, for information, the report from Infrastructure Delivery dated November 23, 2020, regarding the Regional Biosolids Composting Facility (RBCF) – Biosolids Leachate Containment Project;

AND THAT Council authorize the additional expenditure totaling \$320,000 for the RBCF -Biosolids Leachate Containment Project;

AND FURTHER THAT the 2020 Financial Plan be amended to increase the budget of the RBCF - Biosolids Leachate Containment Project by \$320,000 with \$106,667 being funded from the City of Vernon (Vernon) and \$213,333 being funded from the City of Kelowna Wastewater Utility.

Purpose:

To update Council on the budget amendment request and Financial Plan amendment for the Regional Biosolids Composting Facility leachate containment project.

Background:

The RBCF is jointly owned with the City of Vernon and operated by the City of Kelowna. In 2017 the Ministry of Environment required that the facility's leachate management system be upgraded due to concerns over the risk of contamination from leachate reaching the nearby waterways from the existing unlined detention pond through ground saturation.

Drainage from the site runs to the leachate settling pond before being discharged to Vernon's sewer system. The leachate settling pond was a regional septage pond operated by the Regional District of North Okanagan for an unknown period of time prior to construction of the RBCF. As a result, its exact contents and size were approximated prior to the start of this project.

With assistance from our engineering consultant, a design for installing a liner in the existing settling pond and runoff trench was developed. Draining the low-concentrate leachate and stripping the pond

of accumulated sludge was an integral part of the plan. Installation of the liner was undertaken in 2019 and early 2020.

The budget for this project was \$800,000, which was to include design, construction, contract administration/inspections and environmental monitoring. Unfortunately, this project encountered many challenges that stressed and eventually over-ran the budget; resulting in a need for additional funds. The table below outlines the major challenges to the project budget.

Challenge	Issue	Result
Limited understanding of the characteristics of the existing sludge	The sludge had a higher solids content than initial testing showed, was double the expected volume and contaminated with plastics, metals and textiles believed to have originated from historical use of the pond prior to the current operations.	Contractor was unable to pump the sludge into the containment system as planned, creating large, perched, hastily constructed sludge pits adjacent to the pond. (\$33,000 for having to move double the expected volume of sludge)
Intense storm event	The pond outflow was restricted to accommodate pumping attempts when a high intensity storm event caused large surface runoff into the pond and turbidity in the pond increased beyond the levels allowed by the City of Vernon to discharge into McKay Reservoir	Pond dewatered by pumping and trucking to the Vernon Wastewater Treatment Plant. (\$63,000)
Painted Turtles	Original efforts by Associated Environmental were not successful at keeping the turtles out of the pond	The presence of painted turtles, a protected species, limited the style of pump, and was in part responsible for the sludge being excavated rather than pumped per the original plan. The requirement for turtle retrieval and alternative desludging methodology, pushed the environmental monitoring costs well over the original estimate and caused delays to the project. (\$9,000)
Installation of a French Drain	Unanticipated groundwater found flowing through floor of pond threatened liner integrity	Installation of a French drain and pumping system. (\$22,000)
Consulting Costs	The above challenges required numerous changes to the construction plan and design.	The time dedicated to this project by the consultant for administering the contract, dealing with multiple change orders, plan changes, design changes, inspection requirements was well beyond the original estimates. (\$20,000)

The above challenges have resulted in the total project cost to be \$920,000, requiring an increase of \$120,000 to the budget. Unfortunately, while the requirements of the operating permit have been satisfied with the successful lining of the leachate detention pond, the resulting sludge pits must be

dealt with as they pose a risk to staff, the public and the environment - should people or animals try to cross them or should one of the earthen walls fail.

The original plan to deal with the sludge from the pond was to pump it into mesh bags (geo-tubes), that would dewater the sludge over time. The dewatered sludge would then be worked back into the composting operations as feedstock or moved offsite to a landfill. As the sludge would have been safely contained in the bags, on a pad lined with the same material as the pond, removal of the dried sludge could be completed over the course of many years as operational budgets allowed. However, with the sludge being contaminated with debris from historical septage receiving, it cannot be used as a feedstock for commercial compost. Because of the potential high nutrient content, staff attempted to find alternative uses for the sludge.

Associated Environmental was hired to fully characterize the sludge, determine potential uses for the material and to devise a plan to safely remove the material from inside the fragile, perched, earthen berms. Chemical analysis determined that the material could not be used in land application due to presence of contaminants such as salts, hydrocarbons and metals. Treating the material for reuse on site was not feasible due to site constraints. In the end, the only use for the product is as daily cover at the Greater Vernon Diversion & Disposal Facility, providing the material is dry enough. Drying can be achieved partially through time and through addition of material such as soil or wood waste. The cost to relocate the material to the landfill is estimated at \$200,000 over three years. The plan is to remove the material in stages to allow for additional drying time, which will reduce treatment and transport costs.

While the removal of the sludge was never considered to be part of the original project budget, the requirement to remove the material in a much shorter time frame is a direct result of the events that occurred during the lining project.

As the facility is a shared service between the City of Vernon and City of Kelowna, this capital request would be proportioned accordingly, with the City of Kelowna share coming from the Wastewater Utility.

Contributor	Pond Lining Project	Sludge Removal Costs	Total Contribution
City of Vernon (1/3)	\$40,000	\$66,667	\$106,667
City of Kelowna (2/3)	\$80,000	\$133,333	\$213,333
TOTAL	\$120,000	\$200,000	\$320,000

Internal Circulation:

Divisional Director, Infrastructure

Budget Supervisor

Infrastructure Delivery Dept Manager

Utility Planning Manager

Utility Services Manager

Landfill and Compost Operations Manager

Considerations applicable to this report:

Financial/Budgetary Considerations:

Additional budget of \$320,000 is requested to cover project cost overruns and new costs associated with the removal of sludge from the site. The additional budget will be cost shared 1/3 (\$106,667) from the City of Vernon and the remaining 2/3 (\$213,333) from the City of Kelowna Wastewater Utility.

Considerations not applicable to this report:

Legal/Statutory Authority:

Legal/Statutory Procedural Requirements:

Existing Policy:

External Agency/Public Comments:

Communications Comments:

Submitted by:

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Approved for inclusion:



A. Newcombe, Divisional Director, Infrastructure

cc: Deputy City Manager
Divisional Director, Infrastructure
Director, Financial Services
Divisional Director, Corporate Strategic Services
Manager, Utility Services