

**DATE:** October 31, 2016 **FILE:** 5360-20/CV

**TO:** Chair and directors  
Comox Valley Regional District (Comox Strathcona waste management) board

**FROM:** Debra Oakman, CPA, CMA  
Chief Administrative Officer

**RE:** Project status report - November 2016  
CVWMC new engineered landfill - cell 1 construction and leachate treatment facility

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### **Purpose**

To provide a project status report for the Comox Valley waste management centre (CVWMC) new engineered landfill - cell 1 construction (cell 1) and the leachate treatment facility design and construction up to October 19, 2016.

### **Policy analysis**

At the June 16, 2016 Comox Valley Regional District, Comox Strathcona waste management board (CSWM board) meeting the board approved the following resolution:

*THAT a contract be awarded to New Lining Solutions Inc. for the Comox Strathcona waste management service new engineered landfill – cell 1 project in an amount not to exceed \$5,756,081.30 plus applicable taxes;*

*AND FURTHER THAT in the event that New Lining Solutions Inc. does not execute the contract within ten days of its receipt of the Notice to Award in accordance with the Instructions to Tenderers, that a contract be awarded to the second lowest bidder, Wacor Holdings Ltd., for the Comox Strathcona waste management service new engineered landfill – cell 1 project in an amount not to exceed \$5,808,830.12 plus applicable taxes;*

A contract was executed with Wacor Holdings Ltd (Wacor) on July 13, 2016 for the cell 1 construction.

At the September 15, 2016 CSWM board meeting the board approved the following resolution:

*THAT as a result of a competitive process the contract for the design and construction of the Comox Valley waste management centre leachate treatment facility be awarded to Maple Reinders Inc. in an amount not to exceed \$7,444,600 plus applicable taxes;*

### **Executive summary**

The expansion of the CVWMC is a large and complex project required to provide additional air-space volume to the Comox Strathcona solid waste service. The project is included in the 2012 Comox Strathcona solid waste management plan (CS-SWMP) and meets or exceeds all of the current provincial requirements for landfill design, construction, and operation. The project is made up of two main components – cell 1 construction and the leachate treatment facility. The following sections highlight project progress for each of the main components.

### **Cell 1 construction:**

The cell 1 construction is a large capital project with a tight construction schedule. The project is essentially an earthworks project consisting of the excavation of a 430,000m<sup>3</sup> cell (four times the size

of the large infiltration pond built as part of CVWMC phase 1 closure), the installation of a 66,000m<sup>2</sup> geomembrane liner system, the installation of a leachate collection and pumping system as well as a new service access roads.

The construction portion of this project is scheduled to be completed by the end of 2016. In support of Wacor's contract for the construction of the new landfill cell, Tetra Tech EBA (TT) is providing construction management and construction quality assurance services.

Work completed since the beginning of the cell 1 contract includes:

- Clearing and grubbing of area for cell 1,
- Bulk excavation of cell 1 and construction of stockpiles 1, 2, 3 and 4,
- Screening and production of subgrade material for cell 1 and equalization pond,
- Placement of subgrade material for cell 1,
- Berm and ditch construction.

Work underway includes:

- Installation of the cell 1 liner system,
- Leak detection CQA for the liner system,
- Equalization pond construction,
- Access road construction.

Upcoming work includes:

- Installation of the equalization pond liner system,
- Leachate collection pipe installation,
- Leachate force main installation.

### **Leachate Treatment Facility:**

The leachate treatment facility is based on membrane bio reactor (MBR) technology, and includes a bioreactor, followed by membrane filtration, and finally a metals removal stage before effluent is discharged to an onsite infiltration bed. This particular technology is proposed because of its ability to treat leachate to strict effluent quality guidelines, and the compactness, robustness, and flexibility of the system.

In September 2016 the CVRD worked with Maple Reinders (MR) and TT to begin the design process for the new system. Over the next several months MR will complete detailed design and Ministry of Environment permitting approval for the new treatment system. It is expected that design work will be complete by year end and that construction will begin in early 2017 followed by commissioning of the new systems in later summer/fall of 2017.

The working project Gantt chart for cell 1 construction and the leachate treatment facility can be seen in appendix A.

### **Project Costs**

The cell 1 construction project consists of detailed engineering design, construction works, construction management, construction quality assurance and overall project management. The project includes specific contingencies for construction and for engineering services as well as contingency for the overall project. Total project costs are estimated at \$7,593,820.

The cost for the design, construction, and full commissioning of the leachate treatment facility including construction management, construction quality assurance, and contingency is estimated to be completed at \$8,545,000.

A summary of the projects’ budget up to October 19, 2016 is provided in appendix B. As the project progresses towards completion the attached cost summary table will be updated to show actual costs as well as the estimate to complete. In this way an up to date estimated final cost for the project will be maintained.

**Communications**

In an effort to provide timely project information to the CSWM board and the community, a “project update” newsletter will be regularly published on the Comox Valley Regional District website throughout the project until completion. The latest project update newsletter is attached as appendix C.

**Recommendation from the chief administrative officer:**

This report is for information purposes only.

Respectfully:

*D. Oakman*

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Debra Oakman, CPA, CMA  
Chief Administrative Officer

Concurrence:

*C. Makinson*

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Cole Makinson, EIT  
Engineering Analyst

Concurrence:

*G. Bau Baiges*

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Gabriel Bau Baiges, P.Eng  
Manager of CSWM Projects

Concurrence:

*M. Rutten*

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Marc Rutten, P. Eng.  
General Manager of  
Engineering Services

Attachments: Appendix A – “CVWMC Cell 1 and Leachate Treatment Gantt Chart”  
Appendix B – “CVWMC Cell 1 and Leachate Treatment Cost Summary”  
Appendix C – “Project Update Newsletter”

### Cell 1 Construction and Leachate Treatment Facility Project Schedule

ID	Task Name	Duration	% Complete	Start	Finish	May '16	Jun '16	Jul '16	Aug '16	Sep '16	Oct '16	Nov '16	Dec '16	Jan '17	Feb '17	Mar '17	Apr '17	May '17	Jun '17	Jul '17	Aug '17	Sep '17						
1	<b>Cell1 Construction</b>	<b>78 days</b>	<b>90%</b>	<b>Wed 13/07/16</b>	<b>Fri 28/10/16</b>			[Progress Bar]																				
2	✓ Clearing and Grubbing	23 days	100%	Wed 13/07/16	Fri 12/08/16			[Task Bar]																				
3	✓ Cell Excavation	40 days	100%	Mon 25/07/16	Fri 16/09/16			[Task Bar]																				
4	✓ Perimeter Berm	11 days	100%	Mon 29/08/16	Mon 12/09/16				[Task Bar]																			
5	✓ Anchor Trench	12 days	100%	Mon 19/09/16	Tue 04/10/16					[Task Bar]																		
6	[Grid] Engineered Liner System	30 days	60%	Mon 19/09/16	Fri 28/10/16			[Task Bar]																				
7																												
8	<b>Road Construction</b>	<b>73 days</b>	<b>88%</b>	<b>Sat 25/06/16</b>	<b>Tue 04/10/16</b>			[Progress Bar]																				
9	✓ Cell Access Road	40 days	100%	Sat 25/06/16	Thu 18/08/16			[Task Bar]																				
10	[Grid] Service Roads	12 days	50%	Mon 19/09/16	Tue 04/10/16					[Task Bar]																		
11																												
12	<b>Leachate Collection</b>	<b>41 days</b>	<b>20%</b>	<b>Fri 14/10/16</b>	<b>Fri 09/12/16</b>						[Progress Bar]																	
13	[Grid] Piping Installation in Cell	12 days	20%	Fri 14/10/16	Mon 31/10/16					[Task Bar]																		
14	[Grid] Force Main Installation	30 days	0%	Mon 31/10/16	Fri 09/12/16						[Task Bar]																	
15	[Grid] Equalization Pond Construction	30 days	40%	Mon 31/10/16	Fri 09/12/16					[Task Bar]																		
16																												
17	<b>Leachate Facility Design</b>	<b>85 days</b>	<b>2%</b>	<b>Tue 27/09/16</b>	<b>Mon 23/01/17</b>					[Progress Bar]																		
18	[Grid] Leachate Pre-Design	20 days	10%	Tue 27/09/16	Mon 24/10/16					[Task Bar]																		
19	Review Period	5 days	0%	Tue 25/10/16	Mon 31/10/16					[Task Bar]																		
20	MoE Approvals	25 days	0%	Tue 01/11/16	Mon 05/12/16					[Task Bar]																		
21	[Grid] Foundation Permit	5 days	0%	Tue 15/11/16	Mon 21/11/16					[Task Bar]																		
22	[Grid] Finalize Design	60 days	0%	Tue 01/11/16	Mon 23/01/17					[Task Bar]																		
23																												
24	<b>Leachate Facility Construction</b>	<b>160 days</b>	<b>0%</b>	<b>Tue 22/11/16</b>	<b>Mon 03/07/17</b>					[Progress Bar]																		
25	[Grid] Site Preparation	10 days	0%	Tue 22/11/16	Mon 05/12/16					[Task Bar]																		
26	Concrete Work (slabs, walls, etc.)	40 days	0%	Tue 06/12/16	Mon 30/01/17					[Task Bar]																		
27	[Grid] Building Permits	10 days	0%	Tue 10/01/17	Mon 23/01/17					[Task Bar]																		
28	Building Construction	50 days	0%	Tue 24/01/17	Mon 03/04/17					[Task Bar]																		
29	Process Equipment Installation	40 days	0%	Tue 04/04/17	Mon 29/05/17						[Task Bar]																	
30	[Grid] Infiltration Bed Construction	30 days	0%	Tue 18/04/17	Mon 29/05/17					[Task Bar]																		
31	[Grid] Site grading and roadworks	25 days	0%	Tue 30/05/17	Mon 03/07/17					[Task Bar]																		
32																												
33	<b>Start-Up and Commissioning</b>	<b>54 days</b>	<b>0%</b>	<b>Tue 30/05/17</b>	<b>Fri 11/08/17</b>													[Progress Bar]										
34	[Grid] Equipment Start-Up and Testing	14 days	0%	Tue 30/05/17	Fri 16/06/17					[Task Bar]																		
35	Tentative Process Conditioning	20 days	0%	Mon 19/06/17	Fri 14/07/17					[Task Bar]																		
36	Tentative Sludge Dewatering	10 days	0%	Mon 17/07/17	Fri 28/07/17					[Task Bar]																		
37	[Grid] Tentative Performance Testing	20 days	0%	Mon 17/07/17	Fri 11/08/17					[Task Bar]																		
38	[Grid] Substantial Completion	0 days	0%	Fri 16/06/17	Fri 16/06/17																							

Project: Project Schedule  
Date: Tue 18/10/16

Task Summary [Blue Bar] Manual Summary Rollup [Black Arrow] Deadline [Green Arrow]

Milestone [Black Diamond] Project Summary [Grey Arrow] Progress [Grey Arrow]

Appendix B

New Engineered Landfill Cell 1, including the Leachate Treatment Facility, Loan Authorization (Bylaw No. 351, 2014)

\$21,550,000

Key Task Description	Project Status	Actual Costs to Date (A)	Estimate to Complete (B)	Estimate at Completion (A+B)
<b>Wacor - Contract for New Engineered Landfill Cell 1 Construction</b>				
General Construction and Civil Works	In progress (contract signed July 13, 2016)	\$ 1,727,513.30	\$ 3,581,316.82	\$ 5,308,830.12
Provisionals (equalization pond, force main)	CO executed with Wacor	\$ -	\$ 600,000.00	\$ 600,000.00
Contingency		0	\$ 500,000.00	\$ 500,000.00
<b>Sub Total</b>		<b>\$ 1,727,513.30</b>	<b>\$ 4,681,316.82</b>	<b>\$ 6,408,830.12</b>
<b>Tetra Tech EBA - Contract for Construction Management and Construction Quality Assurance</b>				
Project Management	In progress (contract signed July 26, 2016)	\$ 3,963.90	\$ 17,147.06	\$ 21,110.96
Contract Management	In progress	\$ 58,881.38	\$ 29,830.44	\$ 88,711.82
CQA	In progress	\$ 49,335.28	\$ 164,150.24	\$ 213,485.52
Reporting	In progress	\$ 402.27	\$ 28,205.01	\$ 28,607.28
Contingency for Provisional Items	CO to be signed	\$ 1,859.78	\$ 101,987.60	\$ 103,847.38
<b>Sub Total</b>		<b>\$ 114,442.61</b>	<b>\$ 341,320.35</b>	<b>\$ 455,762.96</b>
<b>Other</b>				
Other Consulting Services (design, tender preparation and review)	Complete	\$ 229,227.00	\$ -	\$ 229,227.00
Project Contingency	TBD	\$ -	\$ 500,000.00	\$ 500,000.00
<b>Sub Total</b>		<b>\$ -</b>	<b>\$ 500,000.00</b>	<b>\$ 729,227.00</b>
<b>Total</b>		<b>\$ 1,841,955.91</b>	<b>\$ 5,522,637.17</b>	<b>\$ 7,593,820.08</b>

Key Task Description	Project Status	Actual Costs to Date (A)	Estimate to Complete (B)	Estimate at Completion (A+B)
<b>Leachate Treatment Facility</b>				
Maple Reinders DB Leachate Treatment Facility	Contract to be signed	\$ -	\$ 7,444,600.00	\$ 7,444,600.00
Contingency (10%)	TBD	\$ -	\$ 744,460.00	\$ 744,460.00
Engineering Services (CM/CQA and other)	RFP in progress	\$ -	\$ 355,940.00	\$ 355,940.00
<b>Total</b>		<b>\$ -</b>	<b>\$ 8,545,000.00</b>	<b>\$ 8,545,000.00</b>

<b>Remaining unallocated Debt</b>				<b>\$ 5,411,179.92</b>
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Date: October 19, 2016

# Update

September 2016  
on the Comox Valley Waste Management Centre Engineered Landfill Cell 1 Construction

## Overview:

**According to the 2012 Solid Waste Management Plan, the Comox Strathcona waste management (CSWM) service is responsible for construction of a new engineered landfill at the Comox Valley waste management centre (CVWMC) to serve the region.**

## Latest News:

The construction of the new engineered landfill at the CVWMC is now underway, adjacent to the existing landfill which is nearing final capacity. Cell 1 includes the excavation of 430,000m<sup>3</sup> of soil (equivalent to 172 Olympic sized swimming pools).

The cell will be lined with 66,000m<sup>2</sup> (equivalent to 11 CFL playing fields) of a high-density polyethylene (HDPE) double-sided textured geomembrane and a lower secondary geosynthetic clay liner (GCL). To ensure protection of the surrounding groundwater, the liner will act as a barrier preventing any stormwater that comes in contact with the waste entering the environment. Any leachate generated will be pumped out and treated at the onsite leachate treatment plant to be built early next year.

Cell 1 is budgeted for \$7.5 Million and planned to be built with an aggressive construction schedule with substantial completion by November 2016.

The cell layout can be seen in the drawing below. **(See Photo 1)**

The cell excavation can be seen in photos on the right. **(See Photos 2-8)**

The cell ranges in depth from 8-16 meters sloping to the South West. At the low point of the cell, leachate will be collected and pumped to the future onsite treatment facility.



**2** Cell excavation



**3** Cell excavation



**4** Cell excavation looking SW



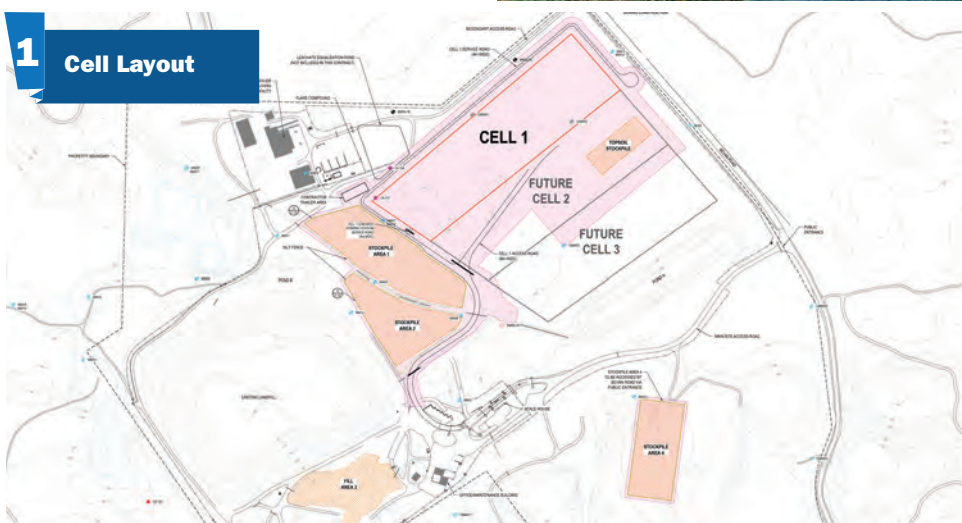
**5** Stockpile 1 and 2 in the foreground, with cell excavation occurring in the background.



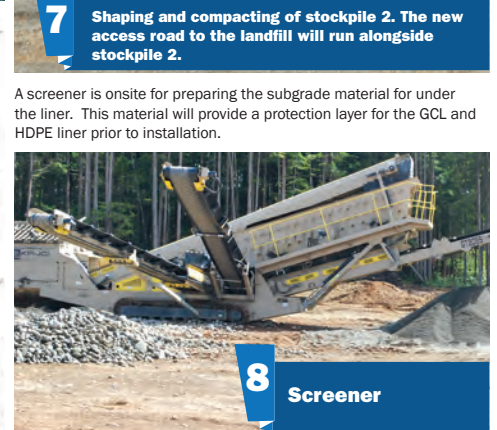
**6** Stockpile 3 being compacted



**7** Shaping and compacting of stockpile 2. The new access road to the landfill will run alongside stockpile 2.



**1** Cell Layout



**8** Screener

A screener is onsite for preparing the subgrade material for under the liner. This material will provide a protection layer for the GCL and HDPE liner prior to installation.