

REGIONAL DISTRICT OF NANAIMO

COMMITTEE OF THE WHOLE

TUESDAY, MAY 13, 2014

7:00 PM

(RDN Board Chambers)

A D D E N D U M

PAGE

LATE DELEGATIONS (Requires Motion)

2 **Lance Nater**, re Town of Qualicum Beach request to amend the Regional Growth Strategy.

CORRESPONDENCE

3-10 **Patrick B. Quealey, Ministry of Justice**, re Province-Wide Earthquake Preparedness Consultation.

11-12 **Phil Turin, School District 68**, re Proposal to Reduce Board of Education from 9 to 7 Trustees.

FINANCE

13-47 2013 Financial Statements and Audit Findings Report.

TRANSPORTATION AND SOLID WASTE

SOLID WASTE

48-51 Regional Landfill Environmental Monitoring Services Contract.

52-128 Review of Draft Landfill Criteria.

Re: Town of Qualicum Beach request to amend the Regional Growth Strategy

From: Lance

Sent: Thursday, May 08, 2014 8:29 AM

Subject: Delegate @ May 13 Committee of the Whole Meeting

Dear Sir,

I am writing to request the opportunity to appear as a delegate at the May 13 meeting of the Committee of the Whole. The subject matter is the Town of Qualicum Beach request to amend the Regional Growth Strategy. Please acknowledge receipt of this request and confirm.

Thank you.

Lance Nater

996 Royal Dornoch Drive

Qualicum Beach, BC V9K 1E1

Phone: 250-752-0946



May 7, 2014

Sent via e-mail
Personalized original to follow

Mayor and Council/Board Chair and Board
Various locations

Dear Mayor and Council/Board Chair and Board:

I am writing to follow-up on the Honourable Suzanne Anton's letter of May 2, 2014, regarding the province-wide Earthquake Preparedness Consultation, chaired by Mr. Henry Renteria (the Chair), former director of California's Office of Emergency Services. The goal of this initiative is to develop recommendations for government on improving British Columbians' preparedness for a disastrous seismic event (See attached Backgrounder document).

A cornerstone of this process will be engagement of local authorities and First Nations through meetings in selected communities between May and July 2014. The goal of these meetings will be to provide the Chair with an opportunity to cooperatively identify top priority issues and recommendations with respect to catastrophic earthquake preparedness. A list of questions which will be used to stimulate discussions during these meetings is attached.

It is worth noting that many coastal communities have already provided extensive valuable feedback to Emergency Management British Columbia (EMBC) regarding earthquake and tsunami preparedness issues and priorities. Most recently, the 2014 Community Earthquake and Tsunami Fora served to highlight the continued need for individual awareness and ongoing preparedness efforts. Specific feedback from these fora, and from previous engagement on this issue, has already been provided by EMBC to the Chair, to help inform further discussion.

Attached is a schedule of upcoming Earthquake Preparedness Consultation meetings in communities. I encourage you to arrange for representation at the meeting closest to your community, and to provide feedback as the consultation process unfolds.

Each meeting will include:

1. An introductory briefing on the Earthquake Preparedness Consultation.
2. Group (and/or small group) discussion beginning with the questions attached.
3. A summary of top issues/recommendations.

.../2

Ministry of Justice

Office of the Assistant Deputy Minister
Emergency Management BC

Mailing Address:
PO Box 9201 STN PROV GOVT
Victoria BC V8W 9J1

Location:
Block A – Suite 200
2261 Keating X Road
Saanichton BC V8M 2A5
Telephone: 250 952-5013
Facsimile: 250 952-4871

Mayor and Council/Board Chair and Board
May 7, 2014
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Please note that in the Capital Regional District, Metro Vancouver, and in the Fraser Valley Regional District, separate meetings have been provided for senior officials/senior representatives due to the large number of expected participants.

RSVPs including name, title, and the specific meeting to be attended, can be sent to the following e-mail: (earthquake.consultation@gov.bc.ca). Please refer to the attached schedule for the maximum number of representatives per organization, and the RSVP deadline for each meeting. If space permits, EMBC staff will contact you to identify additional representatives you may wish to include.

Local authority and First Nations representatives unable to attend at a scheduled community session are encouraged to:

- a) Provide written responses to the attached guiding questions, or submit any other applicable input through earthquake.consultation@gov.bc.ca or,
- b) Contact the EMBC project lead, Mr. Cameron Lewis (250-952-5040 or cameron.lewis@gov.bc.ca) to discuss alternative means of providing feedback.

Any questions regarding this initiative can also be directed to Mr. Lewis.

Preparing British Columbia for a catastrophic earthquake and/or tsunami is a priority activity for EMBC. I look forward to your input as we collectively and jointly work to enhance our preparedness.

Thank you for your support.

Sincerely,

Original signed by

Patrick B. Quealey
Assistant Deputy Minister

Attachments:

- Earthquake Preparedness Consultation Backgrounder
- Community Meeting Schedule
- Earthquake Preparedness Consultation: Discussion Questions

Earthquake Preparedness Consultation: COMMUNITY SESSIONS – Locations and Venues

May – July 2014

	Date		Time	Location	Venue	Groups	Size	RSVP by
May	27	Tues	1:00pm - 3:00pm	Nelson/ Revelstoke/ etc.	<i>Conference Call</i>	Local Govt & First Nations staff reps.	Four (4) representative maximum per local authority or First Nation	May 20, 2014
	28	Wed	10:00am - noon	Prince George/ Ft St. John/ Fraser Ft. George/etc.	<i>Conference Call</i>			May 20, 2014
			1:00pm - 3:00pm	Cariboo/Bella Coola/ etc.	<i>Conference Call</i>			May 20, 2014
	29	Thurs	10:00am - noon	Kelowna	Coast Capri Hotel 1171 Harvey Avenue, Kelowna			May 20, 2014
June	17	Tues	2:00pm - 4:00pm	Terrace	Best Western 4553 Greig Avenue, Terrace,	Local Govt & First Nations staff reps.	Four (4) representative maximum per local authority or First Nation	May 27, 2014
	18	Wed	10:00am - noon	Prince Rupert	Prince Rupert Hotel 118 - 6th St. Prince Rupert			May 27, 2014
	19	Thurs	10:00am - noon	Queen Charlotte	Eric Ross Room Charlotte Community Centre 134 Bay Street			May 27, 2014

- RSVP to Earthquake.Consultation@gov.bc.ca by session RSVP date listed in table above.

Earthquake Preparedness Consultation: COMMUNITY SESSIONS – Locations and Venues Cont.

May – July 2014

		Date	Time	Location	Venue	Group	Size	RSVP by
July	8	Tues	10:00am - 11:30am	Nanaimo	Nanaimo Conference Centre 101 Gordon Street, Nanaimo	Local Govt & First Nations staff reps.	Four (4) representative maximum per local authority or First Nation	June 17, 2014
			3:00pm - 4:30pm	Port Alberni	Best Western Barclay Hotel 4277 Stamp Ave. Port Alberni			June 17, 2014
	9	Wed	8:30am - 10:00am	Courtenay	Comox Valley Regional District 600 Comox Road, Courtenay			June 17, 2014
			3:00pm - 4:30pm	Port McNeill	Port McNeill Regional Arena 2205 Campbell Way, Port McNeill			June 17, 2014
	11	Fri	8:30am - 10:30am	CRD (Morning Session)	Grand Pacific 463 Belleville Street, Victoria	<ul style="list-style-type: none"> • Mayors/ Councillor/ CAO/ • Chief/ Councillor/ Other 	Three (3) representative maximum per local authority or First Nation	June 17, 2014 <i>Please Note: AM Session</i>
			1:00pm - 4:00pm	CRD (Afternoon Session)	Grand Pacific 463 Belleville Street, Victoria		Four (4) representative maximum per local authority or First Nation	June 17, 2014 <i>Please Note: PM Session</i>
	15	Tues	9:00am - noon	New Westminster	Justice Institute of BC 715 McBride Blvd, New Westminster	Local Govt & First Nations staff reps.	Four (4) representative maximum per local authority or First Nation	June 24, 2014
	16	Wed	9:00am - noon	Abbotsford	Ramada Plaza Abbotsford Hotel & Conference Centre			June 24, 2014
21	Mon	10:00am - noon	Chilliwack	Fraser Valley Regional District 45950 Cheam Avenue, Chilliwack	<ul style="list-style-type: none"> • Mayors/ Councillor/ CAO/ • Chief/ Councillor/ Other 	Three (3) representative maximum per local authority or First Nation	June 30, 2014	
22	Tues	10:00am - noon	Burnaby	Metro Vancouver 4330 Kingsway, Burnaby			June 30, 2014	

- RSVP to Earthquake.Consultation@gov.bc.ca by session RSVP date listed in table above.

2014 Earthquake Preparedness Consultation

Discussion Questions

The Earthquake Preparedness Consultation, initiated by the provincial government, is collecting input from stakeholders across British Columbia regarding how British Columbians can become more prepared for a catastrophic earthquake.

The Chair, Mr. Henry Renteria, will be providing recommendations to the provincial government, by December 31, 2014, based on this stakeholder input. While these recommendations will be delivered to the provincial government, preparedness is a shared responsibility between all stakeholders, including the public, all levels of government, non-governmental organizations, and the private sector. Thus, these recommendations are expected to consider actions by a wide variety of agencies and stakeholders.

The questions below are intended to provide a starting place for a discussion of top challenges, opportunities, and priorities with respect to British Columbia's earthquake preparedness.

1. In your opinion, is your community adequately prepared for a catastrophic earthquake?
 - a. If not, what would you say are the top three preparedness gaps or challenges?
 - b. What specific recommendations would you offer to address these gaps or challenges?

2. In your opinion, is British Columbia as a whole adequately prepared for a catastrophic earthquake?
 - a. If not, what would you say are the top three preparedness gaps or challenges?
 - b. What specific recommendations would you offer to address these gaps or challenges?

3. Given the importance of individual and family preparedness for disasters such as a catastrophic earthquake, are there specific recommendations you could offer for increasing the public's preparedness?

4. Are there key policy issues which should be addressed by governments as part of enhancing British Columbians' preparedness for a catastrophic earthquake? (e.g. legislative or regulatory changes, changes to land use planning policies, changes to financial compensation provisions, industry regulation, etc.). If so, what are the top issues, and what recommendations would you offer?

5. How can alignment of disaster preparedness plans and activities between different governments, agencies and stakeholders be enhanced?

6. To ensure that progress and successes to date on enhancing earthquake preparedness in British Columbia are recognized, are there particular projects or best practices that should be acknowledged and built upon?

7. Is there additional information or perspective you would like to bring to the Chair's attention?

Earthquake Preparedness Consultation 2014 Backgrounder

On March 25, 2014, the Auditor General of British Columbia released the report titled “Catastrophic Earthquake Preparedness” which focuses on Emergency Management BC’s (EMBC’s) planning and reporting with respect to this eventuality. The report includes nine recommendations to government. The Ministry of Justice has accepted all nine of the Auditor General’s recommendations and action is being taken to address the recommendations. (See the recommendations and the Ministry of Justice’s responses in the Auditor General’s full report <http://www.bcauditor.com/pubs>).

However, it is worth noting that the Auditor General’s report focuses only on one part of British Columbia’s emergency management system – EMBC. In British Columbia, emergency management is a shared responsibility between the public, all levels of government, and numerous stakeholders. Thus, enhancing British Columbia’s preparedness for a catastrophic earthquake will necessarily involve all parties.

On March 11, 2014, it was announced that during the April to July timeframe, there will be extensive consultation with British Columbia stakeholders regarding issues, priorities, and opportunities in the area of catastrophic earthquake preparedness. These consultations will culminate in a report, with recommendations, to the BC Government by the end of the year. Mr. Henry Renteria (the Chair), former Director of California’s Office of Emergency Services, will lead this consultation.

The following link provides a news release and project Terms of Reference, etc: (<http://www.newsroom.gov.bc.ca/2014/03/earthquake-consultation-to-improve-public-safety.html>). Please feel free to share this news release and the terms of reference with other interested stakeholders.

Work is currently underway to identify the specific stakeholders that the Chair will reach out to. Geographically, the Earthquake Preparedness Consultation (the Consultation) will be focussed on areas at highest risk for catastrophic earthquake, but input from stakeholders across BC is welcomed.

The Consultation is just one line of effort within EMBC that is contributing to enhanced preparedness for a catastrophic earthquake. There are essentially three lines of enhanced effort in this regard, in addition to ongoing EMBC activities that contribute to catastrophic event preparedness:

1. The Consultation chaired by Mr. Henry Renteria (discussed above).
2. A public education campaign focused on earthquake preparedness, to be launched this summer. This campaign will be a joint effort between EMBC and Government Communications and Public Engagement within the provincial government. Planning for

this campaign is underway. Questions can be directed to EMBC's public education coordinator, Ms. Kim Fournier (kim.fournier@gov.bc.ca or 250-952-4914).

3. Development of a specific long term plan for enhancing catastrophic earthquake preparedness in BC. This represents a continuation of EMBC's planning efforts and is being incorporated as a key goal in EMBC's overall Strategic Plan (Spring 2014).

With respect to #1 above, the Consultation, EMBC and the Chair are currently in the process of arranging for meetings and other stakeholder feedback opportunities. Questions or suggestions can be directed to the EMBC project lead, Mr. Cameron Lewis (250-952-5040 or Cameron.Lewis@gov.bc.ca).



**NANAIMO LADYSMITH
PUBLIC SCHOOLS**

From the Office of the Secretary-Treasurer
Phil Turin, CPA, CGA
pturin@sd68.bc.ca

May 7, 2014

Mr. P. Thorkelsson, Chief Administrative Officer
Nanaimo Regional District
VIA EMAIL

Dear Mr. Thorkelsson:

The Board of Education of School District 68 (Nanaimo-Ladysmith) is considering whether it should make a request to the Minister of Education that the size of the Board be reduced.

- Currently the Board of Education has **nine** trustees elected at large from the entire school district once every four years, effective November 2014.
- It is being proposed that the Board of Education consist of **seven** trustees elected at large from the entire school district once every four years (effective November 2014)
- The majority of school districts in British Columbia that are the size of Nanaimo-Ladysmith operate with Boards of Education of seven trustees.
- The total cost savings from reducing the number of trustees by two is estimated to be about \$45,146.

Attached is an information sheet that provides an overview of the Board's rationale for considering such a move, along with comparison with six other school districts that are a similar size to our district.

The Board invites public input on this proposal. There are several ways you can provide your comments to the Board:

- Write to the Board of Education, School District 68 (Nanaimo-Ladysmith), 395 Wakesiah Avenue, Nanaimo, B.C. V9R 3K6 or fax 250 741-5309.
- Send an e-mail to the Board of Education care of ckelt@sd68.bc.ca.
- Make a short presentation to the Board's Business Committee on Wednesday, June 18 at 6 p.m. You must register to make a presentation by calling 741-5238 or e-malling ckelt@sd68.bc.ca by 4 p.m. on Friday, June 13.

Please note that all written input must be received by 4 p.m., Thursday, June 19.

The Board of Education will meet Wednesday, June 25 to discuss the input it has received and to make a decision as to whether it will request that the size of the Board be reduced.

On behalf of the Board, I would like to thank you for your consideration of this proposal.

Yours truly,

Phil Turin, CPA, CGA
Secretary-Treasurer

P.O. Trustees
Administrative Council

Background Information –

Proposal to Reduce School District 68 (Nanaimo-Ladysmith) Board of Education from 9 to 7 Trustees

Rationale:

During the first months after taking office in December 2011, the Trustees of the Board of Education (School District 68 Nanaimo-Ladysmith) made the decision to put into place Board governance policies and administrative procedures that moved the Board into a governance model.

The majority of the working committees were eliminated. Workshops and in-service sessions were held to train the Trustees in the governance model. Policies and procedures have been eliminated and/or rewritten to facilitate the governance model.

This model is significantly different from the management model of involvement that had been previously in effect. The governance model requires Trustees to operate at the policy level and leaves the day-to-day management of the district to the managers.

Given that the Board of Education of School District 68 (Nanaimo-Ladysmith) is now a governance Board and given that the Board must continue to find monies to realize a balanced budget, it is an opportune time to consider reducing the number of Trustees serving the District. The consultation process will offer an opportunity to consider the cost/benefit analysis of Trustees in the Governance model and allow for public input.

Trustee Remuneration Comparisons

<u>SD No.</u>	<u>Name</u>	<u>Estimated Sept</u>		<u>Chair</u>	<u>V/Chair</u>	<u>Trustee</u>
		<u>2014/15</u>	<u>Nos.</u>			
		<u>Enrolment</u>	<u>Trustees</u>			
33	Chilliwack	12,475	7	\$19,800	\$18,900	\$18,000
37	Delta	15,305	7	\$25,931	\$24,616	\$23,469
42	Maple Ridge - Pitt Meadows	13,576	7	\$21,955	\$20,899	\$19,303
44	North Vancouver	14,975	7	\$24,163	\$22,895	\$22,176
57	Prince George	12,494	7	\$17,000	\$15,500	\$14,000
73	Kamloops	13,694	9	<u>\$20,083</u>	<u>\$19,083</u>	<u>\$18,083</u>
	Average	13,753	7.33	\$21,489	\$20,316	\$19,172
68	Nanaimo-Ladysmith	13,150	9	\$17,940	\$15,940	\$15,940

Note: Trustee Benefits and Pro D Allowances vary between all SD's.



RDN REPORT	
CAO APPROVAL	
EAP	<input type="checkbox"/>
COW	<input checked="" type="checkbox"/>
MAY 08 2014	
RHD	<input type="checkbox"/>
BOARD	<input type="checkbox"/>

MEMORANDUM

TO: Wendy Idema
Director of Finance

DATE: April 23, 2014

FROM: Manvir Manhas
Senior Accountant

FILE:

SUBJECT: 2013 Financial Statements and Audit Findings Report

PURPOSE:

To request approval of the 2013 financial statements of the Regional District of Nanaimo (RDN) and to present MNP LLP's audit findings report related to the audit of the Regional District of Nanaimo for the year ended December 31, 2013.

BACKGROUND:

The Canadian Institute of Chartered Accountants auditing standards require that audit firms communicate the results of the audit process to the organization's board of directors as well as to management staff, and that the financial statements of an organization be approved by their board of directors prior to the signing of the audit report.

MNP LLP has completed the audit of the Regional District of Nanaimo for the year ended December 31, 2013 and has submitted the attached audit findings report to the Board to ensure management and the Board's understanding of the important issues and decisions that were made during the audit and financial statement preparation process, as well as the results of the audit.

The approved financial statements will be incorporated into the RDN's Annual Report and Statement of Financial Information to be presented to the Board in June with a further analysis of year end results.

DISCUSSION:

AUDIT FINDINGS REPORT

Attachment 1 to this report is the Audit Findings Report of MNP LLP. The audit findings report summarizes key elements of the audit procedures, the roles and responsibilities of the auditors, and contains a discussion of their conclusions on the information included in the financial statements.

CONSOLIDATED FINANCIAL STATEMENTS

Attachment 2, immediately following the Audit Findings Report, is the consolidated financial statements of the Regional District of Nanaimo (including notes and supporting schedules). The consolidated financial statements allow the Board, the management team, and the public to assess the overall results of all of our activities for the fiscal year ending December 31, 2013. The statements present the financial position of the Regional District as a whole incorporating the operating, reserve and capital funds based on Public Sector Accounting Board standards for governments as legislated under the *Local Government Act*.

INDEPENDENT AUDITORS' DRAFT REPORT

Attachment 3 is the Independent Auditors' draft report to be signed after approval of the financial statements by the Board. The firm of MNP LLP is responsible for reporting to the Board the results of their audit. As in prior years, the auditor's draft report is unqualified, assuring readers that based on the audit procedures conducted; the financial statements are considered to be free of material errors.

ALTERNATIVES:

1. Receive the Audit Findings Report and 2013 Financial Statements and approve the 2013 consolidated financial statements of the Regional District of Nanaimo for final signatures.
2. Receive the Audit Findings Report and provide alternate direction to staff.

FINANCIAL IMPLICATIONS:

The annual audit fee of \$33,000 is included in the Finance Department's budget annually. The post-employment benefit calculation was performed by an independent actuary which cost \$8,000 for 2013. There are no additional costs at this time.

STRATEGIC PLAN IMPLICATIONS:

The Public Sector Accounting Board Standards for financial reporting and auditing require Board approval of final consolidated financial statements prior to the signing of the audit report. Compliance with this requirement directly supports the Board value to *Be Transparent and Accountable*, which demands transparency in financial reporting and that Directors are accountable to the public. Based on feedback from MNP LLP, who have formally acknowledged the excellent cooperation of staff through the audit process, it is evident that this Board value has trickled through the organization, influencing how staff conduct themselves in their work. In addition, the auditors conclude that the financial sustainability of the RDN is healthy and trending in a positive direction. This shows that the RDN is effectively balancing the Board's vision for the region and pursuit of innovation with fiscal responsibility.

SUMMARY/CONCLUSIONS:

The Canadian Institute of Chartered Accountants auditing standards require that audit firms communicate the results of the audit process to the organization's board of directors as well as to management staff, and that the financial statements of an organization be approved by their board of directors prior to the signing of the audit report.


MNP LLP has completed the audit of the Regional District of Nanaimo for the year ended December 31, 2013 and has submitted the attached audit findings report to the Board to ensure management and the Board's understanding of the important issues and decisions that were made during the audit and financial statement preparation process, as well as the results of the audit.

The 2013 Consolidated Financial Statements have been prepared and audited within the framework of the accounting policies applicable to local governments in BC. The statements present, in all significant respects, the financial position of the Regional District of Nanaimo as at December 31, 2013. This is confirmed by the Audit Findings Report and the draft Independent Auditors' Report attached with this report. The approved financial statements will be incorporated into the Regional District's Annual Report and Statement of Financial Information to be presented to the Board in June.


Staff recommend that these reports be received and approved.

RECOMMENDATIONS:

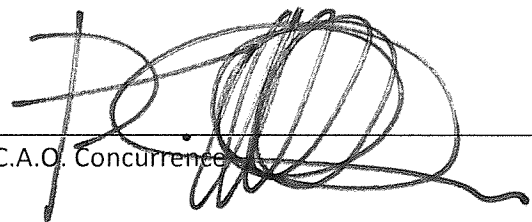
1. That the Audit Findings Report and the financial statements of the Regional District of Nanaimo for the year ended December 31, 2013 be received.
2. That the consolidated financial statements of the Regional District of Nanaimo for the year ended December 31, 2013 be approved as presented.



Report Writer



Director of Finance Concurrence



C.A.O. Concurrence



**REGIONAL DISTRICT OF NANAIMO
AUDIT FINDINGS REPORT**

Year Ending December 31, 2013

For presentation at the Board of Directors Meeting
May 13, 2014



May 13, 2014

Members of the Board of Directors of Regional District of Nanaimo

Dear Members of the Board of Directors:

We are pleased to put forward this report to discuss the results of our audit of the consolidated financial statements of Regional District of Nanaimo ("the Regional District") for the year ended December 31, 2013. In this report, we cover those significant matters which, in our opinion, you should be aware of as members of the Board of Directors.

We have completed our audit of the consolidated financial statements of the Regional District and are prepared to sign our independent auditors' report after the Board of Directors' review and approval of the consolidated financial statements.

Our report will provide an unqualified opinion to the Board of Directors of the Regional District. A draft copy of our proposed independent auditors' report is included as Appendix A to this report.

We would like to express our appreciation for the excellent cooperation we have received from management and employees with whom we worked.

We appreciate having the opportunity to meet with you and to respond to any questions you may have about our audit, and to discuss any other matters that may be of interest to you.

Yours truly,

A handwritten signature in black ink that reads "MNP LLP".

MNP LLP

CV/jvo
encls.

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1. MNP AUDIT PROCESS

As auditors, we report to the Board of Directors on the results of our examination of the Regional District's consolidated financial statements. This report summarizes our audit process and discusses issues that are of relevance to the Board of Directors of the Regional District.

- Our audit was carried out in accordance with Canadian generally accepted auditing standards.
- Our audit procedures included a review of all significant accounting and management reporting systems.
 - Each material year-end balance, key transaction and other event considered significant to the consolidated financial statements was separately examined.
- Our audit process focused on understanding the controls utilized in management's reporting systems to the extent necessary to identify overall and specific financial reporting risks.
 - This risk assessment enabled us to concentrate our audit procedures on the areas where differences were most likely to arise.
 - Where possible, reliance was placed on the controls within these systems to reduce the extent of our testing of transactions and year-end balances.
- Our assessment was not, nor was it intended to be, sufficient to conclude on the effectiveness or efficiency of internal controls.



- During the course of our audit, we have:
 - Examined, on a test basis, evidence supporting the amounts and disclosures in the consolidated financial statements;
 - Assessed the accounting principles used and significant estimates made by management;
 - Obtained an understanding of the Regional District and its environment, including management's internal controls (regardless of whether we relied on them for the purpose of the audit), sufficient to identify and assess the risks of material misstatement of the consolidated financial statements and to design and perform audit procedures;
 - Reviewed and assessed those accounting systems deemed necessary to support our audit opinion;
 - Evaluated the overall consolidated financial statement presentation;
 - Performed a subsequent events review with management;
 - Reviewed and assessed the status of contingencies, commitments and guarantees;
 - Reviewed and assessed exposure to environmental liabilities.
- We have obtained written representations from management in order to confirm oral representations given to us and reduce the possibility of misunderstanding. Specifically, we have obtained written confirmation of significant representations provided on matters that are:
 - Directly related to items that are material, either individually or in the aggregate, to the consolidated financial statements;
 - Not directly related to items that are material to the consolidated financial statements, but are significant, either individually or in the aggregate, to the engagement; and
 - Matters relevant to management judgments or estimates that are material, either individually or in the aggregate, to the consolidated financial statements.

2. SIGNIFICANT AUDIT FINDINGS

As a part of our commitment to providing superior client service we strive to maintain effective two-way communication. To aid the Board of Directors in its role overseeing the financial reporting process, including its review and approval of the consolidated financial statements and reporting thereon to the Board of Directors, we are pleased to provide you with the following significant findings:

AREAS OF AUDIT EMPHASIS

- The following lists the key areas of our audit emphasis for your Regional District:
 - The completeness of grant revenue for capital projects.
 - The completeness of accounts payable for capital projects.
 - The reasonableness of the estimate of the liability for landfill closure and post-closure maintenance costs.
 - The reasonableness of the estimate of the liability for the employee retirement benefits.
 - Detailed information on Areas of Audit Emphasis is included as Appendix B to this report.

FINAL MATERIALITY

- Final materiality used to assess the significance of misstatements or omissions identified during the audit and determine the level of audit testing performed was \$1,000,000.

DIFFICULTIES ENCOUNTERED - NONE

- We have satisfactorily completed our audit procedures for each of the significant account balances and transaction streams. No significant limitations were placed on the scope or timing of our audit.

SIGNIFICANT DEFICIENCIES IN INTERNAL CONTROL - NONE

- While our review of controls was not sufficient to express an opinion as to their effectiveness or efficiency, no significant deficiencies in internal control have come to our attention. However, we may not be aware of all the significant deficiencies in internal control that do, in fact, exist.

IDENTIFIED OR SUSPECTED FRAUD - NONE

- No incidents of fraud, or suspected fraud, came to our attention in the course of our audit.

IDENTIFIED OR SUSPECTED NON-COMPLIANCE WITH LAWS AND REGULATIONS - NONE

- Nothing has come to our attention that would suggest there is non-compliance with laws and regulations that would have a material effect on the financial statements.

MATTERS ARISING IN CONNECTION WITH RELATED PARTIES - NONE

- All related party transactions identified were in the normal course of business.
- During the course of our audit, we selected a sample of expense claims submitted by the Board and Council and by Senior Management of the Regional District of Nanaimo and reviewed those expense claims for approvals and compliance with the related bylaws or policies. We did not find any issues or irregularities to bring to your attention.

GOING CONCERN

- We have not identified any material uncertainties related to events or conditions that may cast significant doubt on the entity's ability to continue as a going concern.

SIGNIFICANT ACCOUNTING POLICIES

- The accounting policies used by the entity are appropriate and have been consistently applied.
- Aside from accounting policy changes for new accounting standards for Government Transfers and Tax Revenue, and the item noted below, no significant changes to accounting policies were noted.

SIGNIFICANT MANAGEMENT ESTIMATES

- The preparation of the consolidated financial statements is subject to significant accounting estimates made by management. All significant management estimates were reviewed for the current period and no material differences were noted.
- The following is a summary of significant management estimates and provisions:
 - Allowance for doubtful accounts –no provision deemed necessary.
 - Provision for legal contingencies – no provision deemed necessary.
 - Amortization period of tangible capital assets – amortized over the estimated useful life of the respective assets.

- Fair value measurement of in-kind additions to tangible capital assets – fair value estimated using BCAA assessed values for land. Total for 2013 was \$0 (2012 - \$1,475,000 for land).
- The unfunded liabilities for landfill closure costs and post-closure monitoring costs represent a significant liability in the Regional District's financial statements. For 2013 the estimate for landfill closure costs was \$6,206,141 (2012 - \$6,252,913), and for post closure maintenance costs was \$3,541,694 (2012 - \$3,827,321) for a total landfill liability of \$9,747,835 (2012 - \$10,080,234). These costs are an estimate, based on factors such as landfill capacity, remaining unused capacity, projected future costs to close and to monitor the site, and an appropriate discount rate used to determine a present value of these future costs. It is important to note that the landfill remaining unused capacity amount used in the calculation is based on the impact of board-approved capital projects as at the reporting date. Projects not yet approved that may further increase capacity and useful life are not factored into the calculation. Changes to the underlying assumptions and estimates or legislative changes in the new term could have a material impact on the provision recognized. We have concluded that the accounting related to the Landfill Closure and Post-Closure Liabilities was appropriate.
- Employee retirement benefits include payouts of accumulated, unused sick leave upon an employee's retirement. As at December 31, 2013, estimated sick leave reserve and management severance reserve was \$1,681,452 (2012 - \$1,573,129). An expense and corresponding liability is recorded now for the estimate of the future costs of these payouts, related to current service by current employees. This liability is an estimate, based on factors such as number of current employees in various age groups, number of recent employees over age 40 who have been employed with the Regional District until retirement, and an appropriate discount rate used to determine a present value of these future costs. Changes to the underlying assumptions and estimates or union contract changes in the new term could have a material impact on the reserve recorded. The estimate also includes assumptions regarding retirement dates, hours worked and sick time. We have concluded that the accounting related to Employee Retirement Benefits was appropriate. In 2013 this estimate was calculated by an Actuary. In 2012 and in prior years it was calculated by management.

MATTERS ARISING FROM MANAGEMENT DISCUSSIONS

- We would like to formally acknowledge the excellent cooperation and assistance we received from the management and staff.
- There were no disagreements with management, significant difficulties or other irregularities encountered during the course of our audit.

DIFFERENCES

- One significant difference was noted by us and discussed with management with respect to the December 31, 2013 consolidated financial statements. This item was corrected.

- A summary of differences, adjusted and unadjusted, is included as Appendix C to this report.

MODIFICATIONS TO THE INDEPENDENT AUDITORS' REPORT

- Our independent auditors' report will provide an unqualified opinion to the Board of Directors.
- An 'other matter' paragraph was included in the independent auditors' report, to highlight that the Gas Tax Revenue Transfer Programs schedule and the General Revenue Fund schedules are unaudited.

INDEPENDENCE

- We confirm to the Board of Directors that we are independent of the Regional District.
- Our letter to the Board of Directors discussing our independence is included as Appendix D in this report.

At our upcoming meeting we would also be pleased to discuss any other issues and/or concerns of the Board of Directors.



APPENDIX A: DRAFT INDEPENDENT AUDITORS' REPORT

To the Members of the Board of the Regional District of Nanaimo:

We have audited the accompanying consolidated financial statements of the Regional District of Nanaimo, which comprise the consolidated statement of financial position as at December 31, 2013 and the consolidated statements of operations and accumulated surplus, change in net financial assets and cash flows and related schedules for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Regional District of Nanaimo as at December 31, 2013 and the results of its operations, change in net financial assets and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Other Matter

The supplementary information on pages 20 to 30 has been subjected to the auditing procedures applied to the consolidated financial statements and, in our opinion, this supplementary information is presented fairly, in all material respects, in relation to the consolidated financial statements taken as a whole.

The supplementary information on pages 31 to 46 have been presented for purposes of additional analysis and are unaudited. We do not express an opinion on these schedules because our examination did not extend to the detailed information therein.

Nanaimo, British Columbia

[To be signed]

[To be dated]

Chartered Accountants

APPENDIX B: AREAS OF AUDIT EMPHASIS

The completeness of grant revenue for capital projects: We reviewed the funding for significant capital asset additions for 2013, considering whether the projects should be funded by a new grant or whether funding is from existing deferred grant revenue, reserves or other funding sources. We did not note any unrecorded grant revenues.

The completeness of accounts payable for capital projects: In our search for unrecorded liabilities, we reviewed invoice payments made between January 2014 and early April 2014. We did not note any significant unrecorded liabilities.

The reasonableness of the estimate of the liability for landfill closure and post-closure maintenance costs: We reviewed the data and assumptions for the calculation with management in the finance and solid waste departments. We noted that the liability is based on consultants' current data. We did not note any errors in this liability amount other than two issues concerning discount rates. See Appendix C for more information on this.

APPENDIX C: SUMMARY OF DIFFERENCES

SIGNIFICANT ADJUSTED DIFFERENCES

DIFFERENCES NOTED	CONSOLIDATED FINANCIAL STATEMENT ITEMS AFFECTED	INCREASE (DECREASE) TO SURPLUS FOR THE YEAR
Incorrect amounts were recorded from Actuary report on post employment benefits.	Total liabilities increased, payroll expenses increased, surplus for the year and ending accumulated surplus decreased.	\$(217,815)
TOTAL ADJUSTED DIFFERENCES (INCOME EFFECT)		\$(217,815)

SIGNIFICANT UNADJUSTED DIFFERENCES – NONE NOTED

APPENDIX D: AUDITOR INDEPENDENCE LETTER

May 13, 2014

The Board of Directors
Regional District of Nanaimo
6300 Hammond Bay Rd.
Nanaimo, BC V9T 6N2

Dear Members of the Board of Directors:

We have been engaged to audit the consolidated financial statements of Regional District of Nanaimo ("the Regional District") for the year ending December 31, 2013.

CAS 260 Communication With Those Charged With Governance ("the Standard"), requires that we communicate at least annually with you regarding all relationships between the Regional District and MNP LLP ("MNP") that, in our professional judgment, may reasonably be thought to bear on our independence. In determining which relationships to report, we are required to consider relevant rules and related interpretations prescribed by the appropriate provincial institute and applicable legislation, covering such matters as:

- (a) Holding a financial interest, either directly or indirectly, in a client;
- (b) Holding a position, either directly or indirectly, that gives the right or responsibility to exert significant influence over the financial or accounting policies of a client;
- (c) Personal or business relationships of immediate family, close relatives, partners or retired partners, either directly or indirectly, with a client;
- (d) Economic dependence on a client; and
- (e) Provision of services in addition to the audit engagement.

We are not aware of any relationship between the Regional District and MNP LLP that, in our professional judgment, may reasonably be thought to bear on our independence, which have occurred from January 1, 2013 to May 13, 2014.

Generally Accepted Auditing Standards require that we confirm our independence to the Board of Directors. Accordingly, we hereby confirm that MNP is independent with respect to the Regional District within the meaning of the Rules of Professional Conduct of the Institute of Chartered Accountants of British Columbia as of May 13, 2014.

The total fees charged to the Regional District for audit services relating to the 2013 audit were \$26,400 (with a remaining \$6,600 to be invoiced, for a total of \$33,000). The total fees charged to the Regional District for audit services relating to the 2012 audit were \$32,400, of which \$6,480 was charged in the period from May 13, 2013 to May 13, 2014.

This report is intended solely for the use of the Board of Directors, management and others within the Regional District and should not be used for any other purposes.

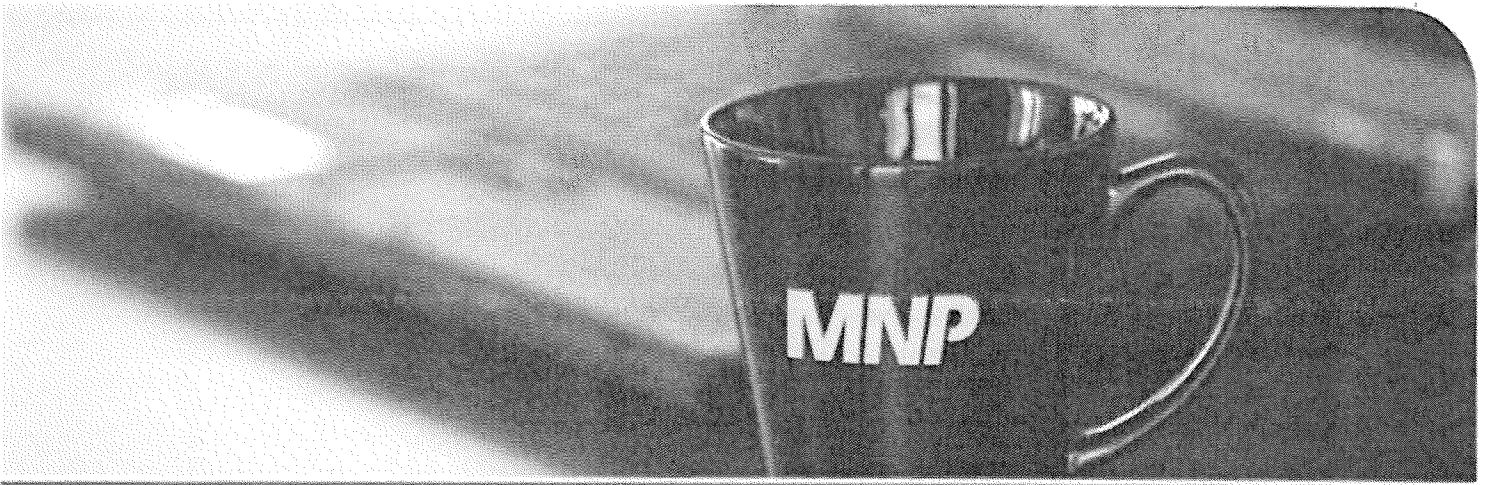
We look forward to discussing with you the matters addressed in this letter as well as other matters that may be of interest to you. We will be prepared to answer any questions you may have regarding our independence as well as other matters.

Yours truly,

MNP LLP

MNP LLP

CV/jvo



ABOUT MNP

MNP is one of the largest chartered accountancy and business consulting firms in Canada. For more than 65 years, we have proudly served and responded to the needs of our clients in the public, private and not-for-profit sectors. Through partner-led engagements, we provide a cost-effective approach to doing business and personalized strategies to help you succeed.

It's knowing your vision, your business and you.



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Praxity, AISBL, is a global alliance of independent firms. Organised as an international not-for-profit entity under Belgium law, Praxity has its administrative office in London. As an alliance, Praxity does not practice the profession of public accountancy or provide audit, tax, consulting or other professional services of any type to third parties. The alliance does not constitute a joint venture, partnership or network between participating firms. Because the alliance firms are independent, Praxity does not guarantee the services or the quality of services provided by participating firms.

**REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AS AT DECEMBER 31, 2013**

		<u>2013</u>	<u>2012</u>
Financial Assets			
Cash and short-term deposits	(Note 2)	\$ 51,867,495	\$ 38,552,617
Accounts receivable	(Note 3)	\$ 3,794,065	7,302,072
Investments	(Note 4)	\$ 20,104,371	25,241,225
Other jurisdictions debt receivable	(Note 12)	\$ 62,222,825	42,805,447
Other assets	(Note 5)	\$ 13,739	13,739
		<u>\$ 138,002,495</u>	<u>113,915,100</u>
Financial Liabilities			
Short term loans	(Note 6)	\$ 2,895,000	2,437,653
Accounts payable	(Note 7)	\$ 4,213,499	6,280,619
Other liabilities	(Note 8)	\$ 4,480,947	4,220,171
Unfunded liabilities	(Note 9)	\$ 9,545,108	9,935,870
Deferred revenue	(Note 10)	\$ 16,097,394	18,697,842
Obligation under capital lease	(Note 13)	\$ 900,726	1,205,499
Long-term debt	(Note 11)	\$ 75,138,413	54,996,955
		<u>\$ 113,271,087</u>	<u>97,774,609</u>
Net Financial Assets		<u>\$ 24,731,408</u>	16,140,491
Non-financial Assets			
Tangible capital assets	(Note 14)	\$ 175,540,459	173,018,966
Prepaid expenses		\$ 454,809	401,843
Inventories		\$ 29,421	32,638
		<u>\$ 176,024,689</u>	<u>173,453,447</u>
Accumulated Surplus	(Note 15)	<u>\$ 200,756,097</u>	<u>\$ 189,593,938</u>

APPROVED:

W. Idema, CPA, CGA
Director of Finance

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED STATEMENT OF OPERATIONS AND ACCUMULATED SURPLUS
FOR THE YEAR ENDED DECEMBER 31, 2013**

	<u>Budget</u> (Note 18)	<u>2013</u>	<u>2012</u> (Restated- Note 25)
Revenue			
Property taxes	\$ 38,398,015	\$ 38,357,564	\$ 36,572,915
Operating revenues	20,896,184	20,891,235	20,149,347
Operating & other grants	7,270,042	6,819,458	6,911,392
Developer contributions	5,775,273	4,356,188	9,117,231
Other	743,654	887,904	907,467
Interest on investments	150,000	1,070,287	1,025,738
Grants in lieu of taxes	144,145	278,947	259,546
	<u>73,377,313</u>	<u>72,661,583</u>	<u>74,943,636</u>
Expenses			
General Government	1,966,165	1,515,275	1,340,401
Strategic & Community Development	3,682,273	3,199,919	3,566,228
Wastewater & Solid Waste management	18,341,671	20,331,212	17,311,785
Water, Sewer & Street lighting	4,547,351	4,906,528	4,737,210
Public Transportation	18,283,152	17,476,189	15,907,321
Protective Services	3,763,397	4,047,770	3,973,328
Parks, Recreation & Culture	9,449,748	10,022,531	9,240,641
	<u>60,033,757</u>	<u>61,499,424</u>	<u>56,076,914</u>
Surplus for the year	\$ 13,343,556	\$ 11,162,159	\$ 18,866,722
Accumulated surplus, Beginning of the year	189,593,938	189,593,938	170,727,216
Accumulated surplus, End of the year	(Note 15) <u>\$ 202,937,494</u>	<u>\$ 200,756,097</u>	<u>\$ 189,593,938</u>

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED STATEMENT OF CHANGE IN NET FINANCIAL ASSETS
FOR THE YEAR ENDED DECEMBER 31, 2013**

	<u>Budget</u> (Note 18)	<u>2013</u>	<u>2012</u>
Surplus for the year	\$ 13,343,556	\$ 11,162,159	\$ 18,866,722
Acquisition of tangible capital assets	(19,360,572)	(8,981,278)	(17,860,026)
Amortization of tangible capital assets	-	6,459,785	5,908,569
Proceeds on disposal of tangible capital assets	-	17,429	80,344
Loss on disposal of tangible capital assets	-	(17,429)	(9,522)
Change in prepaid expenses	-	(52,966)	(73,329)
Change in inventories	-	3,217	(3,706)
Increase (decrease) in Net Financial Assets	(6,017,016)	8,590,917	6,909,052
Net Financial Assets, Beginning of the year	16,140,491	16,140,491	9,231,439
Net Financial Assets, End of the year (Pg. 3)	<u>\$ 10,123,475</u>	<u>\$ 24,731,408</u>	<u>\$ 16,140,491</u>

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED DECEMBER 31, 2013**

	<u>2013</u>	<u>2012</u>
Operating Transactions		
Surplus for the year	\$ 11,162,159	\$ 18,866,722
Non-cash items included in surplus		
Amortization of tangible capital assets	6,459,785	5,908,569
Contributed tangible capital assets	-	(1,475,000)
Gain on disposal of tangible capital assets	(17,429)	(9,522)
Debt actuarial adjustments	(495,658)	(431,798)
Change in non-cash working capital balances related to operations		
(Increase) Decrease in accounts receivable	3,508,007	(1,507,923)
Decrease in accounts payable	(2,067,121)	(95,665)
Decrease in deferred revenues	(2,600,448)	(3,933,671)
Increase in other liabilities	260,776	491,661
Increase in prepaid expenses	(52,966)	(73,329)
Decrease (Increase) in inventory	3,217	(3,706)
Decrease in unfunded liabilities	(390,762)	(2,704,052)
	15,769,560	15,032,286
Capital Transactions		
Acquisition of tangible capital assets	(8,981,278)	(16,385,026)
Proceeds on disposal of tangible capital assets	17,429	80,344
	(8,963,849)	(16,304,682)
Investment Transactions		
Decrease in long-term investments	5,136,854	154,725
Other jurisdictions debt receivable	(8,604,294)	-
	(3,467,440)	154,725
Financing Transactions		
Short and long term debt issued	13,663,653	-
(Decrease) Increase in capital lease obligation	(304,773)	55,575
Repayment of short and long-term debt	(3,382,273)	(1,244,275)
	9,976,607	(1,188,700)
Cash provided by (used in) financing transactions	9,976,607	(1,188,700)
Net change in cash and short-term deposits	13,314,878	(2,306,371)
Cash and short-term deposits, Beginning of the year	38,552,617	40,858,988
Cash and short-term deposits, End of the year (Pg. 3)	(Note 2) \$ 51,867,495	\$ 38,552,617

See notes to consolidated financial statements

REGIONAL DISTRICT OF NANAIMO
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
for the year ended December 31, 2013

The Regional District was incorporated in 1967 under the provisions of the British Columbia Municipal Act. Its principal activities are the provision of district wide local government services to the residents of seven electoral areas and four municipalities within its boundaries. These services include general government administration, bylaw enforcement, planning and development services, building inspection, fire protection and emergency response planning, public transportation, parks and recreation, water supply and sewage collection, wastewater disposal, solid waste collection and disposal, and street lighting.

The financial operations of the Regional District are divided into three funds; capital fund, general revenue fund and reserve fund. For accounting purposes each fund is treated as a separate entity.

General Revenue Fund – represents the accumulated operating surplus of the Regional District which has not otherwise been allocated by the Board as reserves for special purposes.

Capital Fund – represents amounts which have been expended by or returned to the General Revenue Fund or a Reserve Fund for the acquisition of tangible capital assets and includes related debt and refunds of debenture debt sinking fund surpluses.

Reserves - represents that portion of the accumulated operating surplus that has been set aside to fund future expenditures. It includes both statutory reserves created by bylaw under the authority of the *Local Government Act* and reserve accounts, which may be used by the Board without legislative restrictions.

1. SIGNIFICANT ACCOUNTING POLICIES

(a) Principles of Consolidation

The Regional District follows Canadian public sector accounting standards issued by the Public Sector Accounting Board (PSAB) of the Canadian Institute of Chartered Accountants (CICA).

Consolidated financial statements have been prepared in accordance with the recommendations of the Public Sector Accounting Board (PSAB). The consolidated financial statements include the activities related to all funds belonging to the one economic entity of the Regional District. In accordance with those standards inter-departmental and inter-fund transactions have been removed to ensure financial activities are recorded on a gross basis. The consolidated financial statements have been prepared on a going concern basis.

(b) Short-term deposits

Short-term deposits are carried at the lower of cost and market value.

(c) Long-term investments

Long-term investments are carried at cost less any amortized premium. It is the intention of the Regional District to hold these instruments to maturity. Any premium has been amortized on a straight-line basis using the earlier of the date of maturity or call date.

(d) Non-Financial Assets

Non-financial assets are not available to discharge existing liabilities and are held for use in the provision of services. They have useful lives extending beyond the current year and are not intended for sale in the ordinary course of operations.

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

1. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

i. Tangible capital assets

Tangible capital assets are physical assets that are to be used on a continuing basis, are not for sale in the ordinary course of operations and have useful economic lives extending beyond a single year. Section 3150 of Public Sector Accounting Handbook requires governments to record and amortize the assets over their estimated useful lives. Tangible capital assets are reported at historical cost and include assets financed through operating budgets, short-term and long-term debt, and leases. Tangible capital assets when acquired are recorded at cost which includes all amounts that are directly attributable to the acquisition, construction, development or betterment of the asset. Tangible capital asset cost less any estimated residual value, is amortized on a straight-line basis over estimated useful lives as follows:

Asset Category	Useful Life Range (years)
Land	n/a
Land Improvements	15 - 50
Building	20 - 50
Equipment, Furniture & Vehicles	5 - 20
Engineering Structures	
Water	25 - 75
Sewer	45 - 75
Wastewater	30 - 75
Solid Waste	20 - 50
Transportation	20 - 50

In the year of acquisition and in the year of disposal, amortization is recorded as half of the annual expense for that year. Assets under construction are not amortized until the asset is available for productive use.

ii. Contributions of tangible capital assets

Tangible capital assets received as contributions (examples are parklands as a result of subdivision, donated land and infrastructure built by property developers which is transferred to the Regional District) are recorded as assets and revenues at their fair value at the date of receipt.

iii. Leases

Leases are classified as capital or operating leases. Leases which transfer substantially all of the benefits and risks incidental to ownership of a property are accounted for as capital leases. All other leases are accounted for as operating leases and the related lease payments are charged to expenses as incurred.

iv. Inventories

Inventories held for consumption are recorded at the lower of cost and replacement cost.

(e) Debt servicing cost

Interest is recorded on an accrual basis.

Long-term debt is obtained through the Municipal Finance Authority (MFA) whose policy is to issue debt denominated in Canadian dollars.

1. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

(f) Financial Instruments

Financial instruments consist of cash and short-term deposits, accounts receivable, investments, other jurisdictions debt receivable, short-term loans, accounts payable, other liabilities and long-term debt. Unless otherwise noted, it is management's opinion that the Regional District is not exposed to significant interest, currency or credit risk arising from these financial instruments.

(g) Revenue recognition

Revenues are recorded on an accrual basis and are recognized in the period in which they are earned.

Property tax revenues and grants in lieu are recognized as revenue when levied. Operating revenues such as user fees, tipping fees, garbage, and recycling collection fees are recognized when charged to the customer, when amounts are measurable and when collectability is reasonably assured. Interest on investments is recorded when earned on an accrual basis. Developer contributions are recorded as deferred revenues when received and recognized as revenue in the year in which the associated expenditures are incurred. Donations of tangible assets are recognized as revenue on the date of receipt. Other revenues are recognized as revenue when amounts can be reasonably estimated and collectability is reasonably assured.

The Regional District recognizes a government transfer as revenue when the transfer is authorized and all eligibility criteria, if any, have been met. A government transfer with stipulations giving rise to an obligation that meets the definition of a liability is recognized as a liability. In such circumstances, the Regional District recognizes revenue as the liability is settled. Transfers of non-depreciable assets are recognized in revenue when received or receivable.

(h) Expense recognition

Operating expenses are recorded on an accrual basis.

Estimates of employee future benefits are recorded as expenses in the year they are earned. Landfill closure and post closure costs are recognized as costs as landfill capacity is used.

(i) Contingent liabilities

Contingent liabilities are recognized in accordance with PS 3300, which requires that an estimate be recorded when it is likely that a future event will confirm that a liability has been incurred by the financial statement date and that the amount can be reasonably estimated.

(j) Use of Estimates

The preparation of financial statements in conformity with Canadian public sector accounting standards requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported amounts of revenues and expenses during the reporting period. Significant areas requiring management estimates are the determination of employee retirement benefits, landfill closure and post closure liabilities, likelihood of collection of accounts receivable, useful lives of tangible capital assets and provisions for contingencies. Actual results may vary from those estimates and adjustments will be reported in operations as they become known. Changes to the underlying assumptions and estimates or legislative changes in the near term could have a material impact on the provisions recognized.

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

1. SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

(k) Change in Accounting Estimates

Effective for the fiscal year ending December 31, 2013, the Regional District's post-employment benefits calculation is performed by an independent actuary. See Note 9 (a) i for details.

(l) Recent accounting pronouncements

In June 2010, the Public Sector Accounting Board (PSAB) issued PS 3260 *Liability for Contaminated Sites* to establish recognition, measurement and disclosure standards for liabilities associated with the remediation of contaminated sites. The new section defines activities included in a liability for remediation, establishes when to recognize and how to measure a liability for remediation, and provides the related financial statement presentation and disclosure requirements. PS 3260 is effective for fiscal years beginning on or after April 1, 2014. The Regional District expects to apply PS 3260 for its consolidated financial statements dated December 31, 2015. The Regional District has not yet determined the effect of the new section on its consolidated financial statements.

2. CASH AND SHORT-TERM DEPOSITS

In 2013, all cash and short-term deposits were held by the General Revenue Fund. Interest income has been allocated to restricted receipt accounts (development cost charges), reserve accounts/funds and unexpended loan proceeds for capital projects based on the relative equity.

3. ACCOUNTS RECEIVABLE

	<u>2013</u>	<u>2012</u>
Province of British Columbia	\$ 75,754	\$ 51,283
Government of Canada	555,802	1,108,614
Regional and local governments	743,503	1,356,058
Gas Tax Revenue Transfer program	123,208	858,613
BC Transit Annual Operating Agreement	390,053	1,695,436
Accrued investment interest	165,082	204,818
Solid Waste commercial accounts	455,172	615,708
Utility services customers	451,029	439,231
Developer DCC instalments	66,841	316,454
Other trade receivables	767,621	655,857
	<u>\$ 3,794,065</u>	<u>\$ 7,302,072</u>

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

4. INVESTMENTS

All investments are held by the General Revenue Fund and consist of term notes and bonds with varying yields and extendible maturity dates ranging from 2014 to 2021.

	<u>2013</u>	<u>2012</u>
Investments at cost less amortized premium	\$ <u>20,104,371</u>	\$ <u>25,241,225</u>

As at December 31, 2013, the following investments were held by the Regional District:

Investment	Amortized Purchase Price	Accrued Interest	Total Book Value	Market Value at December 31, 2013
CWB 1.55% deposit note	\$2,802,000	31,294	2,833,294	2,802,000
RBC 2.05% deposit note	\$5,000,000	10,952	5,010,952	5,000,000
RBC 2.15% extendible note	\$3,500,000	29,688	3,529,688	3,502,843
BNS 2.55% extendible note	\$1,960,000	12,888	1,972,888	1,972,888
CIBC 3.70% extendible note	\$2,050,289	11,962	2,062,251	2,060,106
BMO 3.98% extendible note	\$2,724,581	49,885	2,774,466	2,762,992
MUN 4.15% deposit note	\$2,067,501	18,414	2,085,915	2,168,882
	<u>\$ 20,104,371</u>	<u>\$ 165,083</u>	<u>\$ 20,269,454</u>	<u>\$ 20,269,711</u>

5. OTHER ASSETS

	<u>2013</u>	<u>2012</u>
Security deposits for building or development permit applications	\$ <u>13,739</u>	\$ <u>13,739</u>

6. SHORT TERM LOANS

Municipal Finance Authority interim financing program loans totalling \$3,000,000 (2012, \$2,437,653) with interest only payable monthly, to fund the construction of the Nanoose Bay Volunteer Fire Hall. During 2013, the principal amount of this short term loan was reduced by \$105,000 to \$2,895,000. Interest rate at December 31, 2013 was 1.72%, a decrease of 0.01% from 1.73%, the rate at January 1, 2013.

7. ACCOUNTS PAYABLE

	<u>2013</u>	<u>2012</u>
Payable to Provincial Government	\$ 328,579	\$ 277,124
Payable to other local governments	409,104	414,779
Trade and other payables	3,475,816	5,588,716
	<u>\$ 4,213,499</u>	<u>\$ 6,280,619</u>

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

8. OTHER LIABILITIES

	<u>2013</u>	<u>2012</u>
Wages and benefits payable	\$ 1,798,830	\$ 1,623,989
Retirement benefits payable - see note 9(a) i	2,179,164	1,944,367
Other benefits payable	149,388	141,904
Permit deposits	353,565	509,911
	<u>\$ 4,480,947</u>	<u>\$ 4,220,171</u>

9. UNFUNDED LIABILITIES

Unfunded liabilities represent the estimated amount of cumulative future expenditures required to meet obligations which result from current operations. These liabilities are related to contractual employment obligations, and landfill operations which are governed by Provincial statute. Special reserves which have been set aside to meet those obligations are described below.

(a) Employee Benefits

- i. Retirement Benefits - The Regional District provides vested sick leave benefits to its employees who retire where they can qualify for a one time payout of up to 60 days of their accumulated unused sick leave. The amount recorded for these benefits is based on an actuarial evaluation done by an independent firm using a projected benefit actuarial valuation method prorated on service. The actuarial valuation was calculated at December 31, 2013.

The accrued post-employment benefits are as follows:

	<u>2013</u>
Balance, beginning of year	\$ 1,573,129
Current service costs	121,853
Benefits paid	(75,040)
Interest cost	61,510
Balance, end of year	<u>\$ 1,681,452</u>

The significant actuarial assumptions adopted in measuring the Regional District's post-employment benefits are as follows:

	<u>2013</u>
Discount Rate	3.90%
Expected Inflation Rate and Wage & Salary Increases	2.50%

	<u>2013</u>
Balance reported in Note 8	
Retirement benefits payable	\$ 2,179,164
Consolidation adjustment for actuarial valuation	(497,712)
Accrued benefit balance, end of year	<u>\$ 1,681,452</u>

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

9. UNFUNDED LIABILITIES (CONTINUED)

- ii. Other – Includes vacation pay adjustments and statutory and other benefits provided for in the collective agreement and which are paid in the normal course of business in the following year. The vacation pay liability at December 31, 2013 is \$108,255 (2012, \$100,442). The statutory benefits liability at December 31, 2013 is \$186,730 (2012, \$126,432).

(b) Landfill Closure and Post Closure Maintenance Costs

In accordance with PS 3270 liabilities with respect to permanently closing and monitoring a landfill are incurred as landfill capacity is used. Landfill Closure costs include placing a permanent cover over the face of the landfill. Post Closure Maintenance costs include landfill gas monitoring, leachate collection system operation and general site maintenance for a period of 25 years after the landfill is permanently closed.

- i. Landfill Closure costs - are estimated based on the open area of the remaining unused capacity of the landfill site. In 2009 a revised design and operations plan was approved for the landfill which provides additional airspace for future needs. This plan extended the estimated life of the landfill to 2030 which has since been updated to 2036 based on most recent usage data. The plan includes remediation and reuse of previously filled areas as well as extending perimeter berms for the development of new airspace.

At December 31, 2013, there were approximately 1,891,239 cubic meters of airspace available for waste and daily cover. Landfill Closure costs are estimated at \$6,206,141 (2012, \$6,252,913). As at December 31, 2013, \$1,418,974 (2012, \$1,394,240) has been set aside in reserves for this purpose. The balance of Landfill Closure costs are expected to be funded by a combination of future reserve account contributions, operating budgets and/or borrowing.

- ii. Post Closure Maintenance costs – are costs estimated to manage the closed landfill for a statutory period of 25 years. Post Closure Maintenance costs are estimated using a number of factors including the percentage of landfill capacity already filled, the probable closure date, the regulated monitoring period, the estimated annual maintenance costs and a present value discount rate which is the difference between the long-term MFA borrowing rate and the 5 year average Consumer Price Index. The current estimate for annual Post Closure Maintenance costs is \$575,000 (2012, \$575,000). Total Post Closure Maintenance costs are estimated to be \$3,541,694 (2012, \$3,827,321) based on 60% of the total landfill capacity being filled at this date, a 23 year lifespan to 2036, final closure in 2036, and a discount rate of 2.55%. Post Closure Maintenance costs are expected to be funded by annual budget appropriations in the years in which they are incurred.

<u>Unfunded Liability Balances</u>	<u>2013</u>	<u>2012</u>
Employee Retirement Benefits	\$ (497,712)	\$ (371,238)
Employee Other Benefits	294,985	226,874
Landfill Closure Costs	6,206,141	6,252,913
Post Closure Maintenance Costs	3,541,694	3,827,321
Unfunded Liability	<u>\$ 9,545,108</u>	<u>\$ 9,935,870</u>
Reserves On Hand	<u>\$ 1,418,974</u>	<u>\$ 1,394,240</u>

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

10. DEFERRED REVENUE

	<u>2013</u>	<u>2012</u>
Parkland Cash-in-Lieu receipts	\$ 1,604,970	\$ 1,565,009
Development Cost Charges	9,040,748	11,965,183
Subtotal (Pg. 30)	<u>10,645,718</u>	<u>13,530,192</u>
Gas Tax Revenue Transfer program – Community Works Fund	4,920,058	4,104,552
Community Recreation Grant Program	145,566	575,480
Towns for Tomorrow Grant Program	-	99,702
General Revenue Fund	386,052	387,916
	<u>\$ 16,097,394</u>	<u>\$ 18,697,842</u>

Parkland Cash-in-Lieu - are amounts collected from developers under the authority of Section 941 of the Local Government Act, where the Board has determined that cash rather than land for parkland purposes may be accepted as a condition of subdivision. These funds are held for the purpose of purchasing parkland.

Development Cost Charges - are amounts collected or payable as a result of new subdivision or building developments under the authority of Section 933 of the *Local Government Act*. The purpose of Section 933 is to collect funds for infrastructure which will be built as a result of population growth. Development Cost Charge bylaws have been enacted for the future expansion of wastewater treatment facilities and a bulk water system.

Community Works Fund - is a program component of the federal government's "New Deal for Cities and Communities" which was established to transfer a portion of gas tax revenues to local governments to address infrastructure deficits. Additional information on the Regional District of Nanaimo's use of the Community Works Fund grants is included in the schedule on Pg. 31.

Towns for Tomorrow Grant Program – is a provincial program providing funding towards sustainability initiatives in smaller communities.

General Revenue Fund - consists of payments in advance for recreation programs, unredeemed recreation program awards, facility rental deposits and miscellaneous deferred revenue.

11. LONG-TERM DEBT

Debt is recorded and payable in Canadian dollars. It is the current policy of the Municipal Finance Authority to secure debt repayable only in Canadian dollars.

Details of long-term debt, including debt issue numbers, maturity dates, interest rates and outstanding amounts, are summarized in the Schedule of Long-Term Debt on pages 24 to 27.

	<u>2013</u>	<u>2012</u>
Long-term debt - Regional District services	\$ 12,915,588	\$ 12,191,508
Vancouver Island Regional Library	16,319,013	7,857,359
Member municipalities	45,903,812	34,948,088
Total Long-term Debt	<u>\$ 75,138,413</u>	<u>\$ 54,996,955</u>

Payments of principal on issued debt of the Regional District, not including member municipalities, for the next five years are:

<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>TOTAL</u>
\$1,129,001	\$1,129,098	\$985,861	\$976,973	\$977,078	<u>\$ 5,198,011</u>

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

12. OTHER JURISDICTIONS DEBT RECEIVABLE

Pursuant to the *Local Government Act*, the Regional District acts as the agency through which its member municipalities and other jurisdictions borrow funds from the Municipal Finance Authority. The annual cost of servicing this debt is recovered entirely from the borrowing jurisdiction. However, the Regional District is joint and severally liable for this debt in the event of default.

	<u>2013</u>	<u>2012</u>
City of Parksville	\$ 2,759,856	\$ 3,093,834
City of Nanaimo	43,143,956	31,854,254
Vancouver Island Regional Library	16,319,013	7,857,359
	<u>\$ 62,222,825</u>	<u>\$ 42,805,447</u>

13. OPERATING AND CAPITAL LEASES

The Regional District has financed assets under capital leases in the amount of \$1,104,449 (2012, \$1,375,073). The assets include two fire trucks, one road vehicle, landfill site mobile equipment and photocopiers. The 2013 capital lease principal payments totalled \$304,775 (2012, \$379,775). The outstanding obligation balance for leased capital assets as at December 31, 2013 was \$900,726 (2012, \$1,205,499).

All capital leases are held by the MFA Leasing Corporation. While payments are fixed for the term of the lease, interest rates are variable daily based upon the Canadian prime rate minus 1.0%. An interest adjustment is made at the time of the final payment. In 2013, interest expenditures related to lease liabilities were \$22,192 (2012, \$20,695).

Lease payment commitments for the next five years are:

Capital Leases

<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>TOTAL</u>
\$255,883	\$477,151	\$196,312	\$0	\$0	\$ 929,346
	Less: Imputed Interest				(28,620)
	Net Obligation under Capital Lease (Pg. 3)				<u>\$ 900,726</u>

Operating Leases – there are no operating lease commitments as at December 31, 2013.

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

14. TANGIBLE CAPITAL ASSETS

Net Book Value	<u>2013</u>	<u>2012</u>
Land	\$ 37,957,795	\$ 37,954,882
Land improvements	4,535,606	3,997,934
Buildings	32,152,213	33,027,851
Engineered structures	89,163,815	77,669,005
Equipment, furniture and vehicles	9,482,318	9,399,429
Assets under construction	2,248,712	10,969,865
	<u>\$ 175,540,459</u>	<u>\$ 173,018,966</u>
Owned tangible capital assets	\$ 174,436,010	\$ 171,643,893
Leased assets	1,104,449	1,375,073
	<u>\$ 175,540,459</u>	<u>\$ 173,018,966</u>

In 2013, no assets were accepted or recorded as contributed assets. During 2012 parkland dedications valued at \$1,475,000 were accepted and recorded as contributed assets.

The Consolidated Schedule of Tangible Capital Assets (Pg. 23) provides details of acquisitions, disposals and amortization for the year.

15. ACCUMULATED SURPLUS

The Accumulated Surplus consists of individual fund surpluses (deficits) and reserves as follows:

Surplus	<u>2013</u>	<u>2012</u>
General Revenue Fund Net Operating Surplus (Note 16)	\$ 10,056,262	\$ 9,385,386
Net investment in Tangible capital assets (Note 17)	158,829,145	157,184,306
Capital Fund advances	(995,924)	(3,990,217)
Unfunded liabilities	(9,545,108)	(9,935,870)
	<u>158,344,375</u>	<u>152,643,605</u>
General Revenue Fund Reserve Accounts		
Landfill expansion	267,338	262,678
Landfill closure	1,418,975	1,394,240
Property insurance deductible-fire departments	34,871	37,535
Liability insurance deductible	144,033	141,523
Regional Sustainability Initiatives	89,182	97,787
VIHA Homelessness Grant	188,000	-
Island Corridor Foundation	404,500	-
Regional parks and trails donations	11,704	12,027
Vehicle fleet replacement (various departments)	523,378	502,681
	<u>3,081,981</u>	<u>2,448,471</u>
Statutory Reserve Funds (Pg. 29)	\$ 39,329,741	\$ 34,501,862
Total Reserves	<u>\$ 42,411,722</u>	<u>\$ 36,950,333</u>
Accumulated Surplus (Pg. 3)	<u>\$ 200,756,097</u>	<u>\$ 189,593,938</u>

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

16. CONSOLIDATION ADJUSTMENTS

The figures reported in the consolidated financial statements differ from the supporting schedules due to differences in grouping and presentation as well as the elimination of inter-fund and inter-departmental transactions. The Net Operating Surplus in the General Revenue Fund Schedule of Revenue and Expenditures has been adjusted as follows to conform to PSAB requirements:

	<u>2013</u>	<u>2012</u>
Net Operating Surplus (Pg. 32)	\$ 9,916,380	\$ 9,264,932
Add: Water User Fee Revenue year end accrual (billed May 2014)	139,882	120,454
Net Operating Surplus adjusted for statement presentation (Note 15)	<u>\$ 10,056,262</u>	<u>\$ 9,385,386</u>

17. NET INVESTMENT IN TANGIBLE CAPITAL ASSETS

Net investment in Tangible capital assets represents the historic cost of capital expenditures less debt obligations incurred to purchase and develop the infrastructure.

	<u>2013</u>	<u>2012</u>
Tangible capital assets (Pg. 3)	\$ 175,540,459	\$ 173,018,966
Short term loans (Pg. 3)	(2,895,000)	(2,437,653)
Obligation under capital lease (Pg. 3)	(900,726)	(1,205,499)
Long-term debt - Regional District only (Note 11)	(12,915,588)	(12,191,508)
Net investment in Tangible capital assets (Note 15)	<u>\$ 158,829,145</u>	<u>\$ 157,184,306</u>

18. BUDGET FIGURES

Budget figures represent the Financial Plan Bylaw adopted by the Board on March 26, 2013. The financial plan includes capital expenditures but does not include amortization expense. The financial plan forms the basis for taxation and fees and charges rates which may be required for a particular year. The following reconciliation of the budgeted "Surplus for the year" shown on Pg. 4 is provided to show which items must be added or removed to reflect to the budgeted financial plan values which are shown compared to actual expenditures on Pg.32 (General Revenue Fund Schedule of Revenue and Expenditures).

	<u>2013 Budget</u>
Budgeted Surplus for the year (Pg. 4)	\$ 13,343,556
Add:	
Transfers from reserves	8,394,848
Proceeds of borrowing	1,245,000
Prior year operating surplus	9,077,070
Less:	
Capital expenditures	(19,360,572)
Debt principal repayments/actuarial adjustments	
Budgeted principal payments	3,833,495
Add: Actuarial Adjustments	495,658
Less: Principal payments for member municipalities	<u>(1,819,745)</u>
Capital lease principal payments included in equipment operating expenditure	(304,775)
Transfer to reserves	<u>(5,356,933)</u>
Consolidated Budgeted Surplus, per Regional District of Nanaimo Financial Plan Bylaw No.1676 (Pg. 33)	<u>\$ 4,528,786</u>

REGIONAL DISTRICT OF NANAIMO
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
for the year ended December 31, 2013

19. MUNICIPAL FINANCE AUTHORITY RESERVE DEPOSITS

The Regional District secures its long term borrowing through the Municipal Finance Authority. As a condition of these borrowings a portion of the debenture proceeds are retained by the Authority as a debt reserve fund. As at December 31, 2013 the Regional District had debt reserve funds of \$349,855 (2012, \$365,431).

20. NORTH ISLAND 9-1-1 CORPORATION

A 9-1-1 emergency call answering service is provided by the North Island 9-1-1 Corporation, which is owned by the Regional Districts of Comox Valley, Strathcona, Mount Waddington, Alberni Clayoquot, Nanaimo and Powell River. The shares in the corporation are owned as follows:

Alberni Clayoquot	3 shares
Comox Valley	6 shares
Strathcona	4 shares
Mount Waddington	1 share
Nanaimo	5 shares
Powell River	2 shares

The Regional District's investment in shares of the North Island 911 Corporation is recorded at cost as it does not fall under the definition of a government partnership (PS3060.06). The Regional District's share of the corporation is equal to 23.8% and the degree of control is proportionate to the ownership share. As no benefits are expected from the ownership, it has not been accounted for as an equity investment.

21. PENSION LIABILITY

The Regional District of Nanaimo and its employees contribute to the Municipal Pension Plan (the Plan), a jointly trustee pension plan. The Board of Trustees, representing plan members and employers, is responsible for overseeing the management of the Plan, including investment of the assets and administration of benefits. The Plan is a multi-employer contributory pension plan. Basic pension benefits provided are based on a formula. The Plan has about 179,000 active members and approximately 71,000 retired members. Active members include approximately 315 contributors from the Regional District of Nanaimo.

The most recent actuarial valuation as at December 31, 2012 indicated an unfunded liability of \$1.370 billion funding deficit for basic pension benefits. The next valuation will be as at December 31, 2015 with results available in 2016. Employers participating in the Plan record their pension expense as the amount of employer contributions made during the fiscal year (defined contribution pension plan accounting). This is because the Plan records accrued liabilities and accrued assets for the Plan in aggregate with the result that there is no consistent and reliable basis for allocating the obligation, assets and cost to the individual employers participating in the Plan.

The Regional District of Nanaimo paid \$1,635,703 (2012, \$1,534,741) for employer contributions to the Plan in fiscal 2013.

22. CONTINGENT LIABILITIES

Contingent liabilities are recognized by the Regional District in accordance with PS3300.15. As at December 31, 2013 there were outstanding claims against the Regional District, however, no liability has been accrued because amounts are undeterminable and the likelihood of the Regional District having to make payment is uncertain.

REGIONAL DISTRICT OF NANAIMO
 NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
 for the year ended December 31, 2013

23. ENVIRONMENTAL REGULATIONS

The Regional District is subject to environmental regulations which apply to a number of its operations. These regulations may require future expenditures to meet applicable standards and subject the Regional District to possible penalties for violations. Amounts required to meet these obligations will be charged to operations when incurred and/or when they can be reasonably estimated.

24. EXPENDITURES BY OBJECT

	<u>Budget</u>	<u>2013</u>	<u>2012</u>
Operating goods and services	\$ 31,356,936	\$ 27,802,363	\$ 26,991,251
Wages and benefits	27,489,848	26,441,064	24,739,747
Debt interest	1,186,973	1,186,973	1,141,399
Amortization expense	-	6,459,787	5,908,569
Unfunded expenditures (Note 9)	-	(390,763)	(2,704,052)
Total Expenditures by Object	<u>\$ 60,033,757</u>	<u>\$ 61,499,424</u>	<u>\$ 56,076,914</u>

25. PRIOR PERIOD ADJUSTMENT

The Nanaimo Regional District has restated its 2012 financial statements to adjust for the tax requisition raised on behalf of the Vancouver Island Regional Library (VIRL) and transferred to them annually. Per the Public Sector Accounting Board (PSAB) Guidelines 3510, flow through taxation revenues should only be reported by the agency with the taxing authority.

	<u>Previously Stated 2012</u>	<u>Adjustment 2012</u>	<u>Restated 2012</u>
Revenue			
Property taxes	\$ 38,223,043	\$ (1,650,128)	\$ 36,572,915
Expenses			
Parks, Recreation & Culture (Pg. 21)	\$ 10,890,770	\$ (1,650,128)	\$ 9,240,642

26. COMPARATIVE FIGURES

Certain comparative figures have been reclassified to conform to the presentation adopted in the current year.

REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED SCHEDULE OF REVENUE AND EXPENSES BY SEGMENT
as at December 31, 2013

PS2700 requires that governments define and disclose additional information related to its activities, by segment. Regional Districts are required by the Local Government Act to charge or allocate all expenses directly or reasonably attributable to a service, to that service. The information in these financial statements conforms in all respects to the requirements of the Local Government Act.

For the purposes of PS2700 the segmented information above corresponds to the classification of expenses shown on the Consolidated Statement of Operations. The expense classifications on the Consolidated Statement of Operations represent the major activities provided by the Regional District of Nanaimo.

The following activities are included in the segments shown on Pg. 21:

General Government includes overall administration, legislative services including elections and feasibility studies. These services are paid for by multiple member jurisdictions of the Regional District and affect most taxpayers residing in the Regional District of Nanaimo. Schedule A on Pg. 34 of this report provides additional details with respect to revenues and expenditures for services falling under General Government.

Planning & Development includes community and regional land use planning, house numbering and building inspection. Planning & Development services are largely paid for by Electoral Areas of the Regional District of Nanaimo. Schedules B and B-1 on Pgs. 37-38 of this report provide additional details with respect to revenues and expenditures for each of these services.

Wastewater & Solid Waste includes sewage treatment plants and solid waste disposal activities, including programs for garbage collection and recycling. The Regional District operates two treatment plants in both the northern and southern portions of the Regional District. A solid waste landfill and transfer station are funded at a regional level, with garbage collection & recycling services provided in areas outside of the City of Nanaimo. Detailed revenue and expenditure information on wastewater treatment plants is found on Schedule C-1, Pg. 40 of this report. Detailed revenue and expenditure information on solid waste management is found on Schedule E, Pg. 46.

Water, Sewer & Street lighting includes neighbourhood water supply, sewage collection systems and street lights. Only taxpayers within these areas pay for the service. Detailed revenue and expenditure information on these services can be found on Schedules C-2, C-3 and C-4 (Pgs. 41-43) of this report.

Public Transportation includes conventional and HandyDart bus service. Public transit services are available to the City of Nanaimo, City of Parksville, Town of Qualicum Beach, Electoral Area G and portions of Electoral Areas A, E and C. Detailed revenue and expenditure information on transportation services is found on Schedule E, Pg. 46 of this report.

Protective Services includes volunteer and contract fire protection services, emergency planning, bylaw enforcement and the Regional District's participation in E911 services. Detailed revenue and expenditure information on protective services is found on Schedules A-1 and A-2, Pgs. 35-36 of this report.

Parks, Recreation & Culture includes operations and development of community and regional parks, provision of recreation programming, operation of a multiplex arena and aquatic centre and includes some services provided by agreement with municipalities within the Regional District of Nanaimo. Detailed revenue and expenditure information on parks, recreation & culture services is found on Schedules D and D-1, Pgs. 44-45 of this report.

See notes to consolidated financial statements

REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED SCHEDULE OF REVENUE AND EXPENSES BY SEGMENT
as at December 31, 2013

	General Government	Planning & Development	Wastewater & Solid Waste	Water, Sewer & Street Lighting	Public Transportation	Protective Services	Parks, Recreation & Culture	2013 Total	2012 Total (Restated - Note 25)
Revenues									
Property taxes	\$ 1,656,860	\$ 1,958,780	\$ 9,498,031	\$ 3,540,645	\$ 7,986,509	\$ 4,248,909	\$ 9,467,830	\$ 38,357,564	\$ 36,572,915
Operating revenues	-	1,213,764	12,200,287	1,322,777	4,586,541	38,501	1,529,365	20,891,235	20,149,347
Operating grants	66,475	52,537	72,876	364,340	5,529,027	6,436	727,767	6,819,458	6,911,392
Developer contributions	-	-	4,170,183	84,403	-	3,329	98,273	4,356,188	9,117,231
Other	210,925	8,303	129,386	100,376	-	45,603	393,311	887,904	907,467
Interest on investments	330,044	5,272	470,284	52,222	23,760	154,798	33,907	1,070,287	1,025,738
Grants in lieu	66,078	7,733	81,973	7,027	90,894	13,981	11,261	278,947	259,546
	2,330,382	3,246,389	26,623,020	5,471,790	18,216,731	4,511,557	12,261,714	72,661,583	74,943,636
Expenses									
Operating goods & services	(2,311,265)	1,256,197	11,892,248	2,512,683	7,083,657	3,018,077	4,350,766	27,802,363	26,991,251
Wages and benefits	3,454,419	1,912,478	5,362,518	1,328,266	9,985,370	322,672	4,075,341	26,441,064	24,739,747
Debt interest	-	-	86,583	278,962	-	139,362	682,066	1,186,973	1,141,399
Amortization expense	430,484	31,244	3,322,263	786,617	407,162	567,659	914,358	6,459,787	5,908,569
Unfunded expenses	(58,363)	-	(332,400)	-	-	-	-	(390,763)	(2,704,052)
	1,515,275	3,199,919	20,331,212	4,906,528	17,476,189	4,047,770	10,022,531	61,499,424	56,076,914
Surplus for the year	\$ 815,107	\$ 46,470	\$ 6,291,808	\$ 565,262	\$ 740,542	\$ 463,787	\$ 2,239,183	\$ 11,162,159	\$ 18,866,722

REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED SCHEDULE OF REVENUE AND EXPENSES BY SEGMENT
as at December 31, 2012

	General Government	Planning & Development	Wastewater & Solid Waste	Water, Sewer & Street Lighting	Public Transportation	Protective Services	Parks, Recreation & Culture	2012 Total (Restated - Note 25)	2011 Total
Revenues									
Property taxes	\$ 1,176,878	\$ 1,893,783	\$ 9,246,149	\$ 3,629,862	\$ 7,474,780	\$ 4,041,105	\$ 9,110,358	\$ 36,572,915	\$ 36,009,344
Operating revenues	-	1,202,692	11,760,659	1,229,632	4,426,374	85,629	1,444,361	20,149,347	19,383,685
Operating grants	50,000	883,958	78,891	311,244	5,349,952	59,716	177,631	6,911,392	7,040,436
Developer contributions	-	-	7,503,315	112,350	-	1,566	1,500,000	9,117,231	3,607,263
Other	306,497	820	114,437	93,390	47,210	15,547	329,566	907,467	796,701
Interest on investments	335,480	7,751	486,846	57,597	1,981	102,970	33,113	1,025,738	879,971
Grants in lieu	59,021	7,634	81,552	3,232	84,033	13,477	10,597	259,546	226,696
	1,927,876	3,996,638	29,271,849	5,437,307	17,384,330	4,320,010	12,605,626	74,943,636	67,944,096
Expenses									
Operating goods & services	(2,022,732)	1,722,933	11,610,268	2,409,435	6,436,842	3,003,880	3,830,625	26,991,251	29,600,852
Wages and benefits	3,216,498	1,813,113	5,011,445	1,326,723	9,132,568	318,560	3,920,840	24,739,747	23,933,486
Debt interest	-	-	118,363	270,331	-	125,023	627,682	1,141,399	1,181,659
Amortization expense	404,198	30,182	3,018,197	730,721	337,911	525,865	861,495	5,908,569	5,591,354
Unfunded expenses	(257,564)	-	(2,446,488)	-	-	-	-	(2,704,052)	2,585,831
	1,340,400	3,566,228	17,311,785	4,737,210	15,907,321	3,973,328	9,240,642	56,076,914	62,893,182
Surplus for the year	\$ 587,476	\$ 430,410	\$ 11,960,064	\$ 700,097	\$ 1,477,009	\$ 346,682	\$ 3,364,984	\$ 18,866,722	\$ 5,050,914

See notes to consolidated financial statements

REGIONAL DISTRICT OF NANAIMO
CONSOLIDATED SCHEDULE OF TANGIBLE CAPITAL ASSETS
AS AT DECEMBER 31, 2013

	Land	Land Improvements	Buildings	Engineered Structures	Equipment, Furniture & Vehicles	Assets Under Construction	Total 2013	Total 2012
COST								
Balance, beginning of year	\$ 37,954,882	\$ 4,984,265	\$ 45,836,814	\$ 123,727,268	\$ 18,961,394	\$ 10,969,865	\$ 242,434,488	\$ 225,145,306
Add:								
Additions	2,913	797,154	517,958	14,540,593	1,843,813	(8,721,153)	8,981,278	17,860,026
Less:								
Disposals	-	-	-	-	327,160	-	327,160	570,844
Balance, end of year	37,957,795	5,781,419	46,354,772	138,267,861	20,478,047	2,248,712	251,088,606	242,434,488
ACCUMULATED AMORTIZATION								
Balance, beginning of year	\$ -	\$ 986,331	\$ 12,808,963	\$ 46,058,263	\$ 9,561,965	\$ -	\$ 69,415,522	\$ 64,006,972
Add:								
Amortization	-	259,482	1,393,596	3,045,783	1,760,924	-	6,459,785	5,908,569
Less:								
Accumulated amortization on disposals	-	-	-	-	327,160	-	327,160	500,019
Balance, end of year	-	1,245,813	14,202,559	49,104,046	10,995,729	-	75,548,147	69,415,522
NET BOOK VALUE OF TANGIBLE CAPITAL ASSETS	\$ 37,957,795	\$ 4,535,606	\$ 32,152,213	\$ 89,163,815	\$ 9,482,318	\$ 2,248,712	\$ 175,540,459	\$ 173,018,966

	Owned capital assets	Leased assets
	\$ 174,436,010	\$ 171,643,893
	1,104,449	1,375,073
	<u>\$ 175,540,459</u>	<u>\$ 173,018,966</u>

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
LONG-TERM DEBT SUMMARY BY FUNCTION
DECEMBER 31, 2013**

	<u>2009</u>		<u>2010</u>		<u>2011</u>		<u>2012</u>		<u>2013</u>
REGIONAL DISTRICT									
RAVENSONG AQUATIC CENTRE	1,669,319	\$	1,423,900	\$	1,166,210		895,635	\$	611,532
OCEANSIDE PLACE ARENA	5,618,288		5,311,142		4,991,710		4,659,501		4,314,003
REGIONAL PARKS	-		-		-		-		2,053,653
COMMUNITY PARKS	418,734		398,776		377,962		356,256		333,617
WASTEWATER MANAGEMENT - Northern Community (District 69)	1,925,401		730,684		498,905		255,536		-
FIRE PROTECTION	168,997		1,918,946		1,834,993		1,747,681		1,656,878
SEWER SERVICES	1,957,794		2,119,818		2,090,564		2,004,725		1,915,450
WATER SUPPLY SERVICES	2,877,367		2,670,530		2,502,490		2,272,174		2,030,455
VANCOUVER ISLAND REGIONAL LIBRARY					8,000,000		7,857,359		16,319,013
TOTAL REGIONAL DISTRICT	14,635,900		14,573,796		21,462,834		20,048,868		29,234,601
MEMBER MUNICIPALITIES	42,921,851		40,342,070		37,196,676		34,948,088		45,903,812
TOTAL LONG-TERM DEBT (Pg. 3)	57,557,751	\$	54,915,866		58,659,510		54,996,956	\$	75,138,413

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
SCHEDULE OF LONG-TERM DEBT
DECEMBER 31, 2013**

FUNCTION	ISSUER	FUNDS	BYLAW NUMBER	MATURITY DATE	INTEREST RATE	ORIGINAL VALUE	2013 DEBT O/S	2012 DEBT O/S
RAVENSONG AQUATIC CENTRE								
	MFA 61	CDN	981	Dec 01,2015	5.970	4,098,635	\$ 611,532	\$ 895,635
TOTAL RAVENSONG AQUATIC CENTRE						<u>4,098,635</u>	<u>611,532</u>	<u>895,635</u>
OCEANSIDE PLACE ARENA								
	MFA 97	CDN	1365	Apr 19,2023	4.830	6,470,646	4,314,003	4,659,501
TOTAL OCEANSIDE PLACE ARENA						<u>6,470,646</u>	<u>4,314,003</u>	<u>4,659,501</u>
REGIONAL PARKS								
	MFA 126	CDN	1629	Sep 26,2033	3.850	2,053,653	2,053,653	-
TOTAL OCEANSIDE PLACE ARENA						<u>2,053,653</u>	<u>2,053,653</u>	<u>-</u>
COMMUNITY PARKS ELECTORAL AREA B								
	MFA 78	CDN	1299	Dec 03, 2022	5.250	100,000	57,035	61,961
	MFA 79	CDN	1303	Jun 03, 2023	5.250	80,000	49,569	53,322
	MFA 81	CDN	1304	Apr 22, 2024	4.900	80,000	53,322	56,897
	MFA 93	CDN	1305	Apr 06, 2025	5.100	80,000	52,730	56,446
	MFA 97	CDN	1306	Apr 19, 2026	4.660	80,000	58,781	62,180
	MFA 101	CDN	1307	Apr 11, 2027	4.520	80,000	62,180	65,450
TOTAL COMMUNITY PARKS						<u>500,000</u>	<u>333,617</u>	<u>356,256</u>
FIRE PROTECTION SERVICES								
MEADOWOOD FIRE								
	MFA 110	CDN	1587	Apr 08, 2030	4.500	1,773,410	1,587,506	1,651,919
COOMBS HILLIERS FIRE								
	MFA 92	CDN	1396	Apr 06,2015	4.550	232,725	54,118	79,625
NANAIMO RIVER FIRE								
	MFA 99	CDN	1488	Apr 19,2027	4.430	20,761	15,254	16,137
TOTAL FIRE PROTECTION SERVICES						<u>2,026,896</u>	<u>1,656,878</u>	<u>1,747,681</u>
NORTHERN COMMUNITY WASTEWATER								
	MFA 69	CDN	1101	Sep 24,2013	4.250	2,785,000	-	255,536
TOTAL NORTHERN COMMUNITY WASTEWATER						<u>\$ 2,785,000</u>	<u>\$ -</u>	<u>\$ 255,536</u>
SEWER SERVICES								
BARCLAY CRESCENT SEWER								
	MFA 102	CDN	1486	Dec 01, 2027	4.820	895,781	696,248	732,848
CEDAR SEWER								
	MFA 106	CDN	1571	Oct 13, 2029	4.130	926,180	794,103	829,090
	MFA 106	CDN	1572	Oct 13, 2029	4.130	27,200	23,321	24,349
	MFA 106	CDN	1573	Oct 13, 2029	4.130	108,800	93,285	97,395
	MFA 106	CDN	1574	Oct 13, 2029	4.130	61,200	52,473	54,784
	MFA 110	CDN	1584	Apr 08, 2030	4.500	232,286	207,936	216,373
	MFA 117	CDN	1626	Oct 12, 2031	3.250	51,620	48,084	49,886
TOTAL SEWER SERVICES						<u>1,407,286</u>	<u>1,219,202</u>	<u>1,271,877</u>
TOTAL SEWER SERVICES						<u>\$ 2,303,067</u>	<u>\$ 1,915,450</u>	<u>\$ 2,004,725</u>

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
SCHEDULE OF LONG-TERM DEBT
DECEMBER 31, 2013**

FUNCTION	ISSUER	FUNDS	BYLAW NUMBER	MATURITY DATE	INTEREST RATE	ORIGINAL VALUE	2013 DEBT O/S	2012 DEBT O/S	
WATER - SAN PAREIL									
	MFA74	CDN	1221	Jun 01, 2016	5.900	193,979	50,893	66,268	
	MFA81	CDN	1367	Apr 22, 2019	4.900	89,476	43,754	49,880	
	MFA97	CDN	1395	Apr 19, 2021	4.660	40,000	24,222	26,750	
	MFA106	CDN	1395	Oct 13, 2024	4.130	94,439	74,411	79,716	
	MFA 117	CDN	1395	Oct 12, 2026	3.250	49,056	44,058	46,606	
						<u>466,950</u>	<u>237,338</u>	<u>269,220</u>	
WATER - DRIFTWOOD									
	MFA80	CDN	1301	Oct 03, 2023	4.900	100,614	62,341	67,062	
						<u>100,614</u>	<u>62,341</u>	<u>67,062</u>	
WATER - MELROSE TERRACE									
	MFA103	CDN	1539	Apr 23, 2018	4.650	14,349	7,876	9,274	
						<u>14,349</u>	<u>7,876</u>	<u>9,274</u>	
BULK WATER - FRENCH CREEK									
	MFA69	CDN	1127	Sep 24, 2018	4.650	503,655	174,974	205,132	
						<u>503,655</u>	<u>174,974</u>	<u>205,132</u>	
BULK WATER - NANOOSE									
	MFA69	CDN	1128	Sep 24, 2018	4.650	864,095	300,194	351,934	
	MFA74	CDN	1226	Jun 01, 2021	5.900	2,195,223	1,138,498	1,252,046	
	MFA80	CDN	1239	Oct 03, 2023	4.900	176,295	109,234	117,506	
						<u>3,235,613</u>	<u>1,547,926</u>	<u>1,721,486</u>	
	TOTAL WATER SUPPLY MANAGEMENT						<u>4,321,181</u>	<u>2,030,455</u>	<u>2,272,174</u>
DEBT HELD FOR OTHER JURISDICTIONS									
VANCOUVER ISLAND REGIONAL LIBRARY									
	MFA 117	CDN	1634	Oct 12, 2041	3.250	8,000,000	7,709,013	7,857,359	
	MFA 126	CDN	1674	Sep 26, 2038	3.850	8,610,000	8,610,000	-	
	TOTAL - VANCOUVER ISLAND REGIONAL LIBRARY						<u>\$ 16,610,000</u>	<u>\$ 16,319,013</u>	<u>\$ 7,857,359</u>
TOTAL LONG-TERM DEBT - REGIONAL DISTRICT							<u>\$ 41,169,078</u>	<u>\$ 29,234,601</u>	<u>\$ 20,048,868</u>

See notes to consolidated financial statements

**REGIONAL DISTRICT OF NANAIMO
SCHEDULE OF LONG-TERM DEBT
DECEMBER 31, 2013**

FUNCTION	ISSUER	FUNDS	BYLAW NUMBER	MATURITY DATE	INTEREST RATE	ORIGINAL VALUE	2013 DEBT O/S	2012 DEBT O/S
CITY OF PARKSVILLE								
	MFA68	CDN	1109	Mar 24, 2018	4.650	1,200,000	416,890	488,744
	MFA69	CDN	1129	Sep 24, 2018	4.650	1,970,000	684,394	802,355
	MFA74	CDN	1227	Jun 01, 2021	5.900	290,000	150,401	165,402
	MFA75	CDN	1238	Dec 01, 2021	5.690	1,050,000	544,556	598,867
	MFA78	CDN	1283	Dec 03, 2022	5.250	765,000	436,318	474,003
	MFA93	CDN	1420	Apr 06, 2025	5.100	800,000	527,297	564,463
TOTAL CITY OF PARKSVILLE						6,075,000	2,759,856	3,093,834
CITY OF NANAIMO								
	MFA61	CDN	GNWD 50	Dec 01, 2015	4.000	1,166,086	244,632	358,282
	MFA72	CDN	1197	Jun 01, 2020	6.450	4,500,000	2,072,295	2,319,585
	MFA73	CDN	1219	Dec 01, 2020	6.360	4,100,000	1,888,091	2,113,400
	MFA73	CDN	1220	Dec 01, 2015	6.360	247,947	44,021	64,621
	MFA99	CDN	1489	Oct 19, 2026	4.430	15,000,000	11,021,422	11,658,796
	MFA101	CDN	1489	Apr 11, 2027	4.520	15,000,000	11,658,796	12,271,656
	MFA 102	CDN	1530	Dec 01, 2027	4.820	3,750,000	2,914,699	3,067,914
	MFA 126	CDN	1688	Sep26, 2033	3.850	13,300,000	13,300,000	-
TOTAL CITY OF NANAIMO						57,064,033	43,143,956	31,854,254
TOTAL LONG-TERM DEBT - MEMBER MUNICIPALITIES						\$ 63,139,033	\$ 45,903,812	\$ 34,948,088
TOTAL LONG-TERM DEBT						\$ 104,308,111	\$ 75,138,413	\$ 54,996,956

See notes to consolidated financial statements

RESERVE ACCOUNT ACTIVITY - 2013
SCHEDULE OF STATUTORY RESERVE FUND ACTIVITY AND FUND BALANCES
AS AT DECEMBER 31, 2013

	Balance January 1, 2013	Interest Income	Contributions by Developers & Others	MFA surplus and refunds	Contributions from/(to) Operating Fund	Transfers to Capital Funds	Feasibility, legal & other costs or transfers	Balance December 31, 2013
2013 ACTIVITY								
Feasibility Studies	\$ 67,079	-	-	-	(186)	-	-	\$ 66,893
Administration Information Systems/Building	\$ 1,553,771	28,088	-	-	132,945	-	-	\$ 1,714,804
Local Government Elections	\$ 50,447	895	-	-	-	-	-	\$ 51,342
Regional Growth Strategy	\$ 46	187	-	-	25,500	-	-	\$ 25,733
Building Inspection	\$ 241,328	4,346	-	-	10,000	-	-	\$ 255,674
Planning legal	\$ 33,253	729	-	-	20,000	-	-	\$ 53,982
Carbon Action Revenue Incentive Program	\$ 173,794	4,147	99,836	-	(2,241)	(64,042)	-	\$ 211,494
Carbon Neutral	\$ 42,448	753	-	-	-	-	-	\$ 43,201
	\$ 2,162,166	\$ 39,145	\$ 99,836	\$ -	\$ 186,018	\$ (64,042)	\$ -	\$ 2,423,123
Wastewater & Solid Waste Management								
Solid Waste Management	\$ 3,654,997	63,602	-	-	-	-	-	\$ 3,718,599
Nanosee Wastewater	\$ 486,884	9,054	-	-	56,925	-	-	\$ 552,863
Northern Community Wastewater	\$ 3,840,125	69,151	4,162	-	983,405	(398,943)	-	\$ 4,497,900
Southern Community Wastewater	\$ 15,970,623	349,576	-	-	2,073,445	(64,160)	-	\$ 18,329,484
Duke Point Wastewater	\$ 96,510	1,896	-	-	25,000	-	-	\$ 123,406
	\$ 24,049,139	\$ 493,279	\$ 4,162	\$ -	\$ 3,138,775	\$ (463,103)	\$ -	\$ 27,222,252
Water, Sewer & Street lighting								
Surfside Sewer	\$ 52,383	529	1,224	-	-	(54,136)	-	\$ 22,213
Pacific Shores Sewer	\$ 2,051	162	-	-	20,000	-	-	\$ 475,364
French Creek Sewer	\$ 535,535	9,277	726	-	-	(70,174)	-	\$ 10,060
Cedar Sewer Collection	\$ -	60	-	-	10,000	-	-	\$ 2,118
Barclay Cres Sewer DCCs	\$ 1,059	-	1,059	-	-	-	-	\$ 9,054
Cedar Estates Stormwater	\$ 3,000	54	-	-	6,000	-	-	\$ 12,204
Englishman River Stormwater	\$ 7,047	157	-	-	5,000	-	-	\$ 144,084
French Creek Water	\$ 140,583	2,501	-	-	1,000	-	-	\$ 202,173
Madrona Water	\$ 198,649	3,524	-	-	-	-	-	\$ 11,834
Fairwinds Water	\$ -	-	-	-	-	-	-	\$ -
Surfside Water	\$ 10,650	184	-	-	1,000	-	-	\$ 40,841
Arbutus Park Estates Water	\$ -	-	-	-	-	-	-	\$ 10,130
West Bay Estates Water	\$ 40,138	703	-	-	3,000	-	-	\$ 1,000
Decourcy Water	\$ 7,006	124	-	-	-	-	-	\$ 478,360
Melrose Water	\$ 1,000	-	-	-	-	-	-	\$ 210,753
Nanosee Bay Peninsula Water	\$ 446,937	8,083	-	-	23,340	-	-	\$ 215,359
Nanosee Bay Water	\$ 207,080	3,673	-	-	-	-	-	\$ -
Englishman River Water	\$ 208,635	3,724	-	-	3,000	-	-	\$ -

See notes to consolidated financial statements

RESERVE ACCOUNT ACTIVITY - 2013
SCHEDULE OF STATUTORY RESERVE FUND ACTIVITY AND FUND BALANCES
AS AT DECEMBER 31, 2013

	Balance January 1, 2013	Interest Income	Contributions by Developers & Others	MFA surplus and refunds	Contributions from/(to) Operating Fund	Transfers to Capital Funds	Feasibility, legal & other costs or transfers	Balance December 31, 2013
San Pareil Water	\$ 9,716	161	-	-	-	-	-	\$ 9,877
Whiskey Creek Water	\$ 70,726	1,041	-	-	4,500	(65,340)	-	\$ 10,927
Nanoose AWS Bulk Water	\$ 75,168	2,169	-	-	225,150	-	-	\$ 302,487
French Creek AWS Bulk Water	\$ 872,772	14,754	-	-	2,400	(27,317)	-	\$ 862,609
Drinking Water/Watershed Protection	\$ -	-	-	-	-	-	-	\$ -
Englishman River Street lighting	\$ 2,500	13	-	-	2,500	-	-	\$ 5,013
Fairwinds Street lighting	\$ 17,425	304	-	-	-	-	-	\$ 17,729
Morningstar Street lighting	\$ 12,963	245	-	-	2,500	-	-	\$ 15,708
	\$ 2,923,023	51,442	3,009	-	309,390	(216,967)	-	\$ 3,069,897
Public Transportation								
Transit	\$ 1,178,772	23,215	-	-	323,000	-	-	\$ 1,524,987
Descanso Bay Emergency Wharf	\$ 30,282	545	-	-	2,000	-	-	\$ 32,827
	\$ 1,209,054	23,760	-	-	325,000	-	-	\$ 1,557,814
Protective Services								
Coombs Hilliers Fire	\$ 347,520	7,675	1,685	-	174,863	(16,716)	-	\$ 515,027
Errington Fire	\$ 432,775	8,336	-	-	90,000	-	-	\$ 531,111
Expansion Fire	\$ 202,333	4,070	-	-	65,620	-	-	\$ 272,023
Nanoose Fire	\$ 436,269	8,669	-	-	133,000	-	-	\$ 577,938
Dashwood Fire	\$ 472,478	8,030	1,644	-	74,986	(200,534)	-	\$ 356,604
Bow Horn Bay Fire	\$ 170,686	3,550	-	-	70,396	-	-	\$ 244,632
Nanaimo River Fire	\$ 66,705	1,302	-	-	16,175	-	-	\$ 84,182
Cassidy Waterloo Fire	\$ 2,175	156	-	-	19,031	-	-	\$ 21,362
Emergency Planning	\$ 590	250	-	-	33,545	-	-	\$ 34,385
Bylaw Enforcement	\$ 87,286	1,300	-	-	1,000	-	(7,538)	\$ 82,048
District 68 911 Service	\$ 132,276	2,347	-	-	-	-	-	\$ 134,623
	\$ 2,351,093	45,685	3,329	-	678,616	(217,250)	(7,538)	\$ 2,853,935
Parks, Recreation & Culture								
Area B Recreation	\$ 5,554	532	43,941	-	1,018	-	-	\$ 51,045
Extension Recreation	\$ 35,862	619	-	-	-	-	(664)	\$ 35,817
Community Parks	\$ 878,508	15,562	54,332	-	88,185	(157,232)	-	\$ 879,355
Regional Parks	\$ 514,914	9,928	-	-	575,708	-	(384,000)	\$ 716,550
Regional Parks Development	\$ 10,067	178	-	-	10,000	(7,732)	-	\$ 12,513
Recreation & Culture	\$ 362,482	7,088	-	-	137,871	-	-	\$ 507,441
	\$ 1,807,387	33,907	98,273	-	812,782	(164,964)	(384,664)	\$ 2,202,721
TOTAL ALL RESERVE FUNDS	\$ 34,501,862	\$687,218	\$208,609	\$0	\$5,450,581	(\$1,126,326)	(\$392,202)	\$ 39,329,742

See notes to consolidated financial statements

REGIONAL DISTRICT OF NANAIMO
 SCHEDULE OF DEVELOPMENT COST CHARGES AND PARKLAND ACQUISITION FUNDS
 RESERVE ACCOUNT BALANCES-DEC 31, 2013

ACTIVITY	Northern	Southern	Bulk	Duke Point	Parkland	Total	Total
	Wastewater DCCs	Wastewater DCCs	Water DCCs	Sewer DCCs	Acquisition FUNDS	2013	2012
ASSETS:	(1)	(2)	(3)	(4)	(5)		
Due from Revenue Fund	\$ 4,472,995	\$ 3,322,003	\$ 873,946	\$ 304,963	\$ 1,604,970	\$ 10,578,877	\$ 13,213,738
Developer Installments Receivable	-	66,841	-	-	-	66,841	316,454
DEFERRED REVENUE BALANCE (Note 10)	<u>4,472,995</u>	<u>3,388,844</u>	<u>873,946</u>	<u>304,963</u>	<u>1,604,970</u>	<u>10,645,718</u>	<u>13,530,192</u>
ACTIVITY:							
Balance, Beginning of the year	4,314,176	6,419,659	936,820	294,528	1,565,009	13,530,192	18,468,424
Add:							
Contribution by developers & others	334,427	804,779	2,415	5,208	12,100	1,158,929	2,158,584
Interest earned	73,927	80,892	16,105	5,227	27,861	204,012	348,366
Less:							
Transfer DCCs to Revenue Fund	(249,535)	(3,916,486)	(81,394)	-	-	(4,247,415)	(7,445,182)
BALANCE, End of the year	<u>\$ 4,472,995</u>	<u>\$ 3,388,844</u>	<u>\$ 873,946</u>	<u>\$ 304,963</u>	<u>\$ 1,604,970</u>	<u>\$ 10,645,718</u>	<u>\$ 13,530,192</u>

(1) Northern Wastewater DCC collection areas include the City of Parksville, Town of Qualicum Beach, portions of Electoral Area G and portions of Electoral Area E.

(2) Southern Wastewater DCC collection areas include the City of Nanaimo and the District of Lantzville.

(3) Bulk Water service areas have been established in the French Creek area of Electoral Area G and the Nanoose Bay Peninsula in Electoral Area E.

(4) Duke Point Sewer DCC collection area includes properties in Electoral A (Cedar).

(5) Parkland acquisition funds consist of payments received from developers in lieu of parkland for each electoral area in the Regional District plus interest earned on these funds. The funds are reserved for future parkland purchases.

See notes to consolidated financial statements

REGIONAL DISTRICT OF NANAIMO
SCHEDULE OF RECEIPTS AND DISBURSEMENTS
GAS TAX REVENUE TRANSFER PROGRAMS
DECEMBER 31, 2013
(UNAUDITED)

	COMMUNITY WORKS PROGRAM ²	OTHER GAS TAX PROGRAMS ⁴	TOTAL 2013	TOTAL 2012
Opening balance of unspent (spent) funds	\$ 4,104,552	\$ (858,613)	\$ 3,245,939	\$ 3,203,712
Add:				
Amount received during the year	1,038,063	1,346,176	2,384,239	1,038,524
Interest earned	76,416	-	76,416	76,496
Less:				
Amount spent on projects (Notes 2 to 4)	(263,973)	(610,771)	(874,744)	(986,689)
Amount spent on administration	(35,000)	-	(35,000)	(86,104)
Closing balance of unspent (spent) funds	<u>\$ 4,920,058</u>	<u>\$ (123,208)</u>	<u>\$ 4,796,850</u>	<u>\$ 3,245,939</u>
	(see note 10)	(see note 3)		

Notes to Schedule:

1. Gas Tax Revenue Transfer Programs

The Government of Canada through the Union of BC Municipalities (UBCM) has and is transferring Gas Tax Revenue funds to local governments in British Columbia. The use of funding is established by agreements between the local government and the UBCM. Funding may be used towards public transit, community energy, water, wastewater and solid waste infrastructure and capacity building projects, as specified in the agreements.

2. Community Works Program 2013 Activity

The Regional District applied \$34,960 towards green building programs and \$3,100 towards a Rural Village study as well as \$4,800 for the Westerne Heights water system master plan and transferred \$31,580 for North Cedar Improvement District Water Supply and Storage Infrastructure study. In addition, \$6,485 was used to complete construction of a bioengineered bank for the Miller Road Community Park and \$37,820 was spent for upgrades to the Cedar Heritage Centre.

3. Public Transit Program

In 2013, the Regional District, in agreement with Island Futures Society, transferred funding to purchase two used buses for the Society to provide community bus services on Gabriola Island.

4. Other Gas Tax Programs 2013 Activity

Under this portion of the program, expenditures are reimbursed on a claims made basis. Projects completed under these programs in prior years were Solid Waste Transfer Station Upgrade, Southern Community Wastewater Treatment Plant - Gravity Thickener and the Northern Community Wastewater Treatment Plant - Solids Contact Tank Expansion. During 2013, the construction of a cogeneration facility at the Greater Nanaimo Wastewater Treatment Plant - Solids Contact Tank Expansion was completed. At December 31, 2013, the Aquifer Storage Reservoir project, in conjunction with the Englishman River Service Joint Venture, was in progress.

<u>Project</u>	<u>Year Approved</u>	<u>Total Project value</u>	<u>Approved Grant</u>	<u>Grant Amount Expended to date</u>	<u>Amount Received to date</u>
Innovations Fund					
a. Southern Community Wastewater Treatment Plant - Cogeneration	2006	2,950,000	2,300,000	2,300,000	2,300,000
b. Englishman River Joint Venture - Aquifer Storage Reservoir Project	2012	7,525,853	1,334,230	1,094,572	971,364
Total Other Gas Tax Program Activity		<u>\$ 10,475,853</u>	<u>\$ 3,634,230</u>	<u>\$ 3,394,572</u>	<u>\$ 3,271,364</u>

See notes to consolidated financial statements

REGIONAL DISTRICT OF NANAIMO
GENERAL REVENUE FUND
SCHEDULE OF REVENUE AND EXPENDITURES
as at December 31, 2013
(UNAUDITED)

	Corporate Services (Schedule A)	Strategic & Community Development (Schedule B)	Regional & Community Utilities (Schedule C)	Recreation & Parks Services (Schedule D)	Transportation & Solid Waste Services (Schedule E)	Actual 2013	Budget 2013	Actual 2012
REVENUES								
Tax requisition	\$ 7,166,442	\$ 2,441,076	\$ 12,689,801	\$ 9,467,830	\$ 8,335,384	\$ 40,100,533	\$ 40,100,533	\$ 38,223,043
Grants	66,475	58,973	410,447	727,767	5,555,796	6,819,458	7,082,042	6,927,948
Grants in Lieu	79,609	8,183	86,424	11,261	93,470	278,947	144,145	259,546
Interest	392,150	-	-	-	-	392,150	150,000	344,574
Permit fees & other	-	238,433	-	694,398	1,080,912	2,013,743	5,384,986	1,728,155
Operating revenues	-	1,252,265	1,838,367	1,529,365	8,562,130	13,182,127	12,716,612	12,327,034
Disposal fees	-	-	-	-	7,722,570	7,722,570	8,263,161	7,824,951
Other	17,512,446	-	5,868,558	-	-	23,381,004	20,686,606	19,988,729
	25,217,122	3,998,930	20,893,597	12,430,621	31,350,262	93,890,532	94,528,085	87,623,980
EXPENDITURES								
General administration	1,111,982	805,907	1,074,785	728,038	4,056,581	7,777,293	8,206,811	7,335,939
Professional fees	216,266	291,888	375,595	192,442	421,560	1,497,751	2,472,977	1,929,660
Community grants	40,077	37,000	-	111,694	-	188,771	660,973	138,190
Legislative	322,545	-	-	-	-	322,545	337,085	321,351
Program costs	-	58,296	-	170,692	-	228,988	193,555	229,531
Equipment operating	78,637	2,604	-	80,573	3,497	165,311	238,914	159,859
Building operating	231,846	67,000	319,478	925,799	436,255	1,980,378	2,072,188	1,895,117
Vehicle operating	170,940	45,303	849,723	84,388	5,024,802	6,175,156	6,984,453	5,632,844
Other operating	287,347	147,782	3,857,637	314,539	6,102,503	10,709,808	12,083,347	10,502,072
Wages & benefits	3,464,477	2,225,092	3,545,212	4,075,341	13,130,942	26,441,064	27,489,848	24,739,747
Capital expenditures	561,564	13,502	6,471,110	1,317,520	1,050,488	9,414,184	19,360,572	16,211,624
	6,485,681	3,694,374	16,493,540	8,001,026	30,226,628	64,901,249	80,100,723	69,095,934
OPERATING SURPLUS	18,731,441	304,556	4,400,057	4,429,595	1,123,634	28,989,283	14,427,362	18,528,046
Debt retirement								
- interest	2,608,003	-	365,545	682,066	-	3,655,614	3,755,276	3,564,290
- principal	2,004,374	-	496,027	1,475,931	-	3,976,332	3,833,495	3,706,419
Contingency	-	-	-	-	-	-	313,725	-
Reserve contributions	1,182,711	298,615	3,503,607	856,723	325,000	6,166,656	5,356,933	7,100,299
Transfers to other govts	12,735,650	177,300	35,039	1,545,428	45,816	14,539,233	5,904,225	5,763,107
	18,530,738	475,915	4,400,218	4,560,148	370,816	28,337,835	19,163,654	20,134,115
CURRENT YEAR								
SURPLUS (DEFICIT)	200,703	(171,359)	(161)	(130,553)	752,818	651,448	(4,736,292)	(1,606,069)
Prior year's surplus applied	1,383,290	1,356,110	2,975,293	1,340,043	2,210,196	9,264,932	9,265,070	10,871,001
NET OPERATING SURPLUS	\$ 1,583,993	\$ 1,184,751	\$ 2,975,132	\$ 1,209,490	\$ 2,963,014	\$ 9,916,380	\$ 4,528,778	\$ 9,264,932

See notes to consolidated financial statements

Independent Auditors' Report

To the Members of the Board of the Regional District of Nanaimo:

We have audited the accompanying consolidated financial statements of the Regional District of Nanaimo, which comprise the consolidated statement of financial position as at December 31, 2013 and the consolidated statements of operations and accumulated surplus, change in net financial assets and cash flows and related schedules for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for the Consolidated Financial Statements

Management is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with Canadian public sector accounting standards, and for such internal control as management determines is necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

Auditors' Responsibility

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with Canadian generally accepted auditing standards. Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the auditors' judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Regional District of Nanaimo as at December 31, 2013 and the results of its operations, change in net financial assets and its cash flows for the year then ended in accordance with Canadian public sector accounting standards.

Other Matter

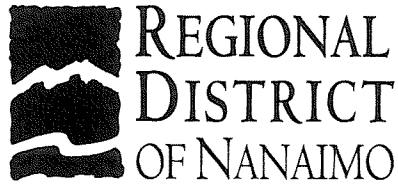
The supplementary information on pages 20 to 30 has been subjected to the auditing procedures applied to the consolidated financial statements and, in our opinion, this supplementary information is presented fairly, in all material respects, in relation to the consolidated financial statements taken as a whole.

The supplementary information on pages 31 to 46 have been presented for purposes of additional analysis and are unaudited. We do not express an opinion on these schedules because our examination did not extend to the detailed information therein.

Nanaimo, British Columbia

May 13, 2014

Chartered Accountants



RDN REPORT		[Handwritten Signature]
CAO APPROVAL		
EAP		
COW	✓	
MAY 09 2014		
RHD		
BOARD		

MEMORANDUM

TO: Larry Gardner
Manager of Solid Waste

DATE: April 29, 2014

FROM: Helmut Blanken
Superintendent Engineering & Disposal Operations

FILE: 5360-47

SUBJECT: Regional Landfill Environmental Monitoring Services Contract

PURPOSE

To consider awarding a contract for the provision of environmental monitoring services at the Regional Landfill for the period June 2014 to March 2017.

BACKGROUND

The RDN has retained the services of environmental consultants to monitor, sample and report on ground and surface water and leachate trends at the Regional Landfill since 1989. For the past five years the environmental monitoring program has been contracted to Conestoga-Rovers & Associates. This contract expired in December 2013 and was extended for one sampling event, March 2014. The contract also included the preparation of the Annual Operations and Monitoring Report.

In February 2014, a request for proposals was advertised that combined both the environmental monitoring program and the annual operating and monitoring report. Sixteen (16) consulting companies submitted letters of interest and were invited to submit proposals to provide the required services for the period June 2014 to March 2017.

A two step process was utilized whereby a selection was made on the basis of technical merit before reviewing the financial details of a proposal (see Appendix 1 for the sample evaluation form). Based on the results of the technical evaluation, financial proposals were considered from the following eight firms.

Consulting Firm	Financial Proposal
SNC Lavalin	\$244,981
AMEC	\$276,900
Tetra Tech EBA	\$289,835
Sperling Hansen	\$299,137
SLR Consulting	\$299,702
Levelton	\$300,578
Conestoga-Rovers & Associates	\$337,110
Golder Associates	\$448,910

All of these selected firms could provide acceptable services to the RDN. The selection committee concluded that the contract should be awarded to SNC Lavalin based on their technical expertise, service delivery approach, and lowest cost proposal.

ALTERNATIVES

- 1. Award the contract to SNC Lavalin.
- 2. Do not award the contract.

FINANCIAL IMPLICATIONS

The 2014 annual budget estimate for the environmental monitoring program as well as the annual operating and monitoring report is \$92,000. The SNC Lavalin financial proposal of \$244,981 for three years falls within this annual budget allocation.

STRATEGIC PLAN IMPLICATIONS

There are no strategic plan implications.

ENVIRONMENTAL IMPLICATIONS

Under the Operational Certificate the Regional District must implement an environmental monitoring program for the Regional Landfill and submit an annual operating and monitoring report.

CONCLUSION

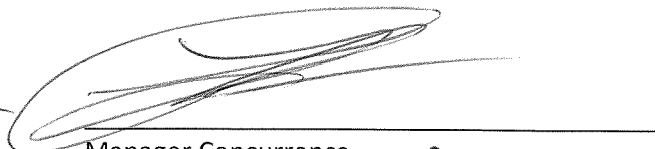
The Regional District of Nanaimo has retained the services of environmental consultants since 1989 to monitor, sample, and report on ground and surface water trends and conditions at the Regional Landfill on an annual basis. The current contract for this service expired in December 2013 and was extended for one monitoring events to March 2014. In February 2014, sixteen firms were invited to submit proposals to provide for this service for the period June 2014 to March 2017. Based on technical expertise, service delivery approach, and lowest cost, staff recommends that the contract be awarded to SNC Lavalin.

RECOMMENDATION


That the Board award the contract for environmental monitoring program services at the Regional Landfill for June 2014 to March 2017 to SNC Lavalin at a cost of \$244,981.



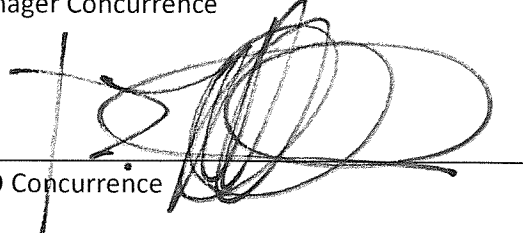
Report Writer



Manager Concurrence




General Manager Concurrence



CAO Concurrence

RFP Environmental Monitoring Program

Appendix 1

 REGIONAL DISTRICT OF NANAIMO	EVALUATION FORM
---	------------------------

PROJECT NAME: _____

EVALUATOR: _____

EVALUATION OF TECHNICAL PROPOSALS
(Maximum 500 Points)

		P O I N T S	CONSULTANTS				
1.	<u>THE FIRM</u>	(25)					
1.1	Experience with landfill design and operation	15					
1.2	General related monitoring project experience	10					
TOTAL FIRM		25					
2.	<u>THE PERSONNEL</u>	(175)					
2.1	<i>Project Manager/Director</i>	(75)					
a)	Experience in landfill design and operation	30					
b)	Experience in related monitoring projects	15					
c)	Qualifications of Project Manager/Director	15					
d)	Local knowledge	10					
e)	Location of Personnel	5					
2.2	<i>Project Team</i>	(100)					
a)	Experience in landfill design and operation	40					
b)	Experience in related monitoring projects	15					
c)	Qualifications of Team members	15					
d)	Local knowledge	15					
e)	Location of Personnel	5					
f)	Lab used & Location of Lab	10					
TOTAL PERSONNEL		175					

3.	<u>THE METHOD</u>	(300)						
3.1	General approach	50						
3.2	Quality of service	50						
3.3	Roles/responsibilities & team organization	20						
3.4	Proposed list of activities	20						
3.5	Project control and reporting	50						
3.6	Understanding of project requirements	20						
3.7	Quality of presentation	20						
3.8	Proposed Level of effort, (Hours)	50						
3.9	QA/QC of sampling	20						
<i>TOTAL METHOD</i>		300						
<i>TOTAL TECHNICAL COMPONENT</i>		500						

RDN REPORT		###
CAO APPROVAL		
EAP		
GOW	✓	
MAY 09 2014		
RHD		
BOARD		

MEMORANDUM

TO: Dennis Trudeau
General Manager of Transportation and Solid Waste Services

FROM: Larry Gardner
Manager of Solid Waste Services

SUBJECT: Review of Draft Landfill Criteria

DATE: May 9, 2014

FILE: 5360-20

PURPOSE

To advise the Board that the Ministry of Environment (MOE) has published updated *Draft Landfill Criteria for Municipal Solid Waste* (Criteria), and to advise of the implications with respect to the regional landfill.

BACKGROUND

The recently published draft Landfill Criteria (Appendix 1) provide guidance on environmentally sound landfilling practices and procedures that are consistent with regulatory requirements and desirable environmental outcomes. They become legal requirements when incorporated into solid waste management plans, operational certificates and permits, issued under the Environmental Management Act and associated regulations. This updated Criteria is intended to replace the original document adopted in 1993. MOE has invited feedback on the draft Criteria until May 31, 2014.

Staff have reviewed the Criteria, and have requested commentary from the Regional District's landfill engineering consultants, XCG Consultants, with respect to the implications of the updated document to the regional landfill. The consultant's reply is attached (Appendix 2).

DISCUSSION

The Criteria applies to all landfills in British Columbia including new landfills, lateral and vertical expansions of existing landfill, new active landfill phases and existing landfills. It sets out requirements/conditions for:

- Landfill Siting
- Performance
- Design
- Operations
- Monitoring
- Plans and Reports
- Closure
- Post Closure and Financial Security

The sections of the Criteria updates that are relevant to the regional landfill are addressed in the XCG letter and summarized as follows:

- Landfill Siting – the Criteria has expanded the sensitive area definition to include wetlands where landfilling is excluded. Two areas within the approved development area of the regional landfill are saturated and could possibly fall within the definition of “wetland”. However, these areas are approved for development by MOE as per the landfill Design and Operations Plan (2009) and the Criteria should have no impact. XCG recommends that a future update of the Design and Operations Plan specifically identify that the subject areas not be interpreted as natural wetlands.
- Landfill Gas Management - the Criteria may influence the timing and/or equipment selection for the landfill gas flare device upgrade. This is considered to be a minor implication to the landfill gas management system.
- Design – the current approved Design and Operations Plan meets essential components of the Criteria.
- Plans and Reports – the Criteria formalizes the requirement to update the Design and Operations Plan every 5 years, and formalizes the requirement for a Hydrogeology and Hydrology Characterization Report. With minor revisions to the existing Design and Operations Plan and Hydrogeological Study prepared in 2007, these conditions can be satisfied.
- Closure - the Criteria states the applicability of the *Contaminated Sites Regulation* to closed landfills. The implication is that for a change in site use from landfill (e.g. municipal park amenity) additional investigations and/or post closure care activities and associated costs are likely to be incurred.
- Post-Closure and Financial Security - these sections present the greatest potential impact to the Regional District. The 1993 version of the Criteria defined the post-closure period as 25 years while the updated draft Criteria defines the post-closure of the landfill as the contaminating life-span. Furthermore, in the absence of technical rationale establishing the contaminating lifespan, the Criteria uses a default value of 1000 years for setting the period of post-closure care. The Criteria states that for publicly-owned landfills a closure fund should be established to promote local government accounting that ensures taxpayers are appropriately funding the future liability associated with the landfills.

ALTERATIVES

1. The Board direct staff to respond to MOE by May 31, 2014 on the basis of the Summary presented below.
2. The Board provides alternate direction to staff.

FINANCIAL IMPLICATIONS

Revisions in the Criteria related to site closure, future land use and establishment of the closure fund will have financial implications to the Regional District.

Regarding future land use, the Criteria is vague on how the *Contaminated Sites Regulation* associates with the site *Operational Certificate* and, therefore, quantifying the financial implication for a change in land use is a difficult task.

The financial implications of a closure fund to address the contaminating life span of the landfill is unknown at this time. This is a task that should be completed over the coming year and would be valuable information in considering overall program costs in conjunction with the Solid Waste Management Program review.

SUMMARY/CONCLUSIONS

The draft Landfill Criteria provide comprehensive guidance for landfill construction, operation and closure to ensure environmental protection. With the exception of future land use and establishment of a closure fund, the Criteria are not expected to have a significant impact on the design or operation of the regional landfill. This minimal level of impact is attributed to the ongoing upgrading and attention to maintaining the facility infrastructure by the Regional District.

There are a few minor technical engineering points (e.g. third-party oversight for quality assurance/quality control) that staff propose to communicate directly to MOE. Furthermore, staff propose to ask that the Criteria provide further clarity on regulatory interaction between the site *Operational Certificate* and application of the *Contaminated Sites Regulation* on site closure to facilitate post-closure care cost forecasting.

Recommendation

That the RDN Board direct staff to respond to the Ministry of Environment by May 31, 2014 asking that the draft Landfill Criteria provide clarity on application of *Contaminated Sites Regulation* to closed or partially closed landfills.



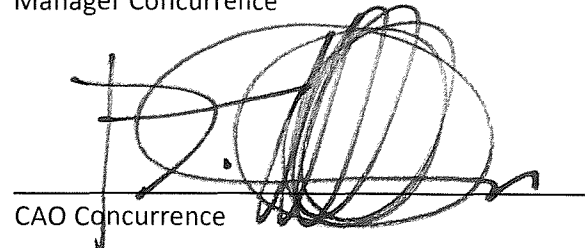
Report Writer



Manager Concurrence



L. GARDNER FOR D. TRUDEAU
General Manager Concurrence



CAO Concurrence

LANDFILL CRITERIA FOR MUNICIPAL SOLID WASTE

Draft Interim Second Edition

BRITISH COLUMBIA

BC Ministry of Environment

NOVEMBER 2013

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LIST OF ACRONYMS AND ABBREVIATIONS

DOCP	DESIGN, OPERATIONS AND CLOSURE PLAN
GCL	GEO-SYNTHETIC CLAY LINER
GHG	GREENHOUSE GAS
HDPE	HIGH DENSITY POLYETHYLENE
LEL	LOWER EXPLOSIVE LIMIT
LFG	LANDFILL GAS
MSW	MUNICIPAL SOLID WASTE
OC	OPERATIONAL CERTIFICATE
QA/QC	QUALITY ASSURANCE/QUALITY CONTROL
QP	QUALIFIED PROFESSIONAL
SWMP	SOLID WASTE MANAGEMENT PLAN

FOREWORD

In 1993 the Ministry of Environment released the first edition of the Landfill Criteria for Municipal Solid Waste which outlined how landfills were to be constructed, operated and monitored to ensure that the environment would be protected.

This interim second edition of the Landfill Criteria for Municipal Solid Waste builds on the original. It incorporates new standards and operating practices that have been developed over the years to enhance environmental protection and incorporate current regulations for Landfill Gas Management and Contaminated Sites.

The document was developed by a group of experts with extensive knowledge of landfill science and technology from the Ministry of Environment and industry. The Criteria provide guidance on environmentally sound landfilling practices and procedures that are consistent with regulatory requirements and desirable environmental outcomes. They become legal requirements when incorporated into solid waste management plans, operational certificates and permits, issued under the *Environmental Management Act* and associated regulations.

1.0 DEFINITIONS

For the purposes of this document:

"Active Face" means the working surface of a landfill upon which MSW is deposited before placement of daily cover.

"Active landfill phase" means the portion of the landfill footprint that has received or is receiving MSW for disposal, where final cover has not been placed. The DOCP provides for the phased landfill development regarding design, construction, operation and closure of each landfill phase.

"Approved" means authorized in writing or specified in writing, with or without conditions or requirements by the Minister of Environment, the Director, or the Director's delegate.

"Buffer Zone" means the area between the landfill footprint and the landfill site boundary.

"Cell" means that portion of compacted MSW in a landfill which is enclosed by cover after a designated period.

"Clean wood" means solely wood and:

- does not include composite wood products including plywood, particle board, fibreboard, hardboard, oriented strandboard, laminated lumber, laminated wood, veneer, laminate flooring, or engineered wood products; and,
- must not be contaminated with, or have been treated or coated with, antiseptant, preservative, fire retardant, glue, adhesive, laminate, bonding agents, resin, paint, stain, varnish or a substance harmful to humans, animals, plants or the environment.

"Compaction" means the mechanical process of reducing the volume of MSW placed at the active face.

"Composting" means composting as defined in the Organic Matter Recycling Regulation.

"Contaminating Lifespan" means the period of time during which the landfilled waste has the potential to produce effluent or air contaminants (as defined in the *Environmental Management Act*), including at least 25 years after installation of final cover over the entire landfill footprint.

"Controlled waste" means waste that requires special handling including:

- Slaughter and poultry processing industry waste, fish hatchery and farming wastes, cannery wastes and by-products.
- Animal carcasses including road kill, domestic pets, etc.
- Bulk liquids and semi-solid sludges which contain free liquid, including septage, black water, sewage treatment sludge, etc.

"Cover" means clean soil or approved alternate material used in covering compacted MSW. Cover material may serve as daily, intermediate, or final cover:

- "Daily Cover" means cover placed on compacted MSW on the active face.
- "Intermediate Cover" means cover placed where the active face will not be located for 30 days or more.
- "Final Cover" means cover placed on intermediate cover on the final contours of the landfill footprint. The top of the final cover is the permanently exposed final surface of the landfill.

"Design Capacity" is the volume of airspace available for waste within the landfill footprint.

"Designated Flood" means a flood, which may occur in any given year, of such magnitude as to equal a flood having a 200 year recurrence interval, based on a frequency analysis of unregulated historic flood records or by regional analysis where there is inadequate stream flow data available. Where the flow of a large watercourse is controlled by a major dam, the designated flood shall be set on a site-specific basis.

"Floodplain" means a lowland area, whether diked, flood-proofed or not, which, by reasons of land elevation, is susceptible to flooding from an adjoining watercourse, ocean, lake or other body of water and for administration purposes is taken to be that area submerged by the designated flood plus freeboard.

"Groundwater" means water below the ground surface in a zone of saturation.

"Land use" means the modification of land and water by humans for their use including for residential, commercial, transportation, utility, recreational, agricultural, or industrial purposes. Land use is codified in public land use planning documents such as growth management plans, official community plans and zoning by-laws.

"Landfill Criteria" or "Criteria" mean the requirements and criteria stipulated within this document.

"Landfill Criteria Upgrading Plan" means an action plan and schedule to upgrade a landfill to meet these Criteria, including justification of any proposed exemptions from the Criteria.

"Landfill Footprint" means the area of the landfill site where MSW is approved to be deposited.

"Landfill Gas" (LFG) means a mixture of gases generated by the decomposition of MSW, as defined in the Landfill Gas Management Regulation.

"Landfill Site" means the landfill footprint and buffer zone.

"Landfill Site Boundary" means the perimeter boundary of the landfill site.

"Lateral Expansion" means an increase in the landfill footprint.

"Leachate" means any liquid and suspended materials which it contains, that has percolated through or drained from waste.

"Landfill Base Liner" means a continuous layer of primary geosynthetic membrane and secondary compacted clay or GCL, installed beneath and/or on the sides of a landfill footprint which acts as a barrier to vertical and lateral leachate and landfill gas movement.

"Municipal Solid Waste" (MSW) means municipal solid waste as defined in the *Environmental Management Act*.

"Nuisance" means an activity or action or result of such activity or action, which:

- (a) Interferes with the reasonable use and enjoyment of property surrounding a landfill.
- (b) Is a source of irritation to the public.
- (c) Is annoying, unpleasant or obnoxious to the public.

"Open Burning" means the combustion of solid waste without control of combustion air, without control of the combustion reaction and without control of the emission of the combustion products.

"Plans and reports" means assessments, designs, drawings, plans, reports, specifications, etc.

"Post-Closure Period" means that period of time from installation of final cover over the entire landfill footprint to the end of the contaminating lifespan.

"Qualified Professional" means a person who:

- (a) Is an engineer, scientist or technologist specializing in a particular applied science or technology,
- (b) Is registered in British Columbia with a professional organization, is acting under that organization's code of ethics and is subject to disciplinary action by that organization, and
- (c) Through suitable education, experience, accreditation and knowledge respecting solid waste management and related engineering disciplines for the management of leachate, surface water, storm water, and landfill gas and other specialist disciplines, may reasonably be relied upon to provide advice within his or her area of expertise and to carry out duties or functions in those areas.

"Scavenging" means unauthorized and/or uncontrolled removal of MSW or recyclable material.

"Septage" means the pumped contents of a domestic septic tank.

"Service Life" means the period of time during which an engineered system will perform in accordance with its intended design.

"Solid Waste Management Plan" (SWMP) means waste management plan for municipal solid waste and recyclable material, as defined in the *Environmental Management Act*.

"Surface Water" means lakes, bays, sounds, ponds, impounding reservoirs, perennial or ephemeral streams and springs, rivers, creeks, estuaries, marshes, inlets, canals, the Pacific Ocean within the territorial limits of British Columbia, and all other perennial or ephemeral bodies of water, natural or artificial, inland or coastal, fresh or salt, public or private, but excludes groundwater or leachate collection channels or works.

"Vector" means a carrier that is capable of transmitting a pathogen from one organism to another and includes, but is not limited to, flies and other insects, birds and rodents.

"Vertical Expansion" means an increase in the design capacity without an increase in the landfill footprint.

"Wetland" includes any land such as a tidal flat, marsh, swamp, bog, pocosin, or fen which is frequently inundated and for that reason has developed an organic soil and occurs in an area which is lower lying than its surroundings.

"Yard waste" means non-food vegetative matter from gardening, landscaping, and land clearing.

2.0 APPLICABILITY

These "Landfill Criteria for Municipal Solid Waste" are effective from the date of issuance and apply to all landfills in British Columbia including public and private landfills on public and private land, that receive municipal solid waste (MSW) after the date of issuance of these Criteria, including:

- New landfills.
- Lateral and/or vertical expansions of existing landfills.
- New active landfill phases.
- Existing landfills.

The conformance status of all existing landfills shall be evaluated and a Landfill Criteria Upgrading Plan shall be prepared by the authorization holder for non-conforming landfill sites. The evaluations and Landfill Criteria Upgrading Plan shall be submitted to the director during the next SWMP review or within 5 years of the date of issuance of these Criteria, whichever time period is shorter.

2.1 EXEMPTIONS

These Criteria apply to all MSW landfills. However, in special cases, mainly for existing landfills and vertical expansion of existing landfills, the Director may consider exemptions from specific Criteria (e.g. Siting Criteria, etc.). Requests for exemption from specific Criteria must be submitted to the Ministry of Environment in writing. The requests shall include sufficient technical justification to demonstrate that proposed exemptions provide an equivalent or better level of environmental protection.

2.2 LEGAL REQUIREMENTS

This "Landfill Criteria for Municipal Solid Waste" is a guidance document for MSW landfills provided by the Ministry of Environment and is to be considered during the setting of legal standards specified within SWMPs, operational certificates and permits. The director may require additional information and/or specify legal standards that are more or less stringent than these Criteria. Information regarding the waste discharge authorization process is available on the ministry website. Compliance with the Landfill Criteria does not relieve the owner/operator from the requirements of any other Acts, Regulations, including regulations under the *Environmental Management Act*, or By-Laws.

3.0 SITING CRITERIA

Proper siting of a landfill site is one of the most important aspects of environmental protection. Siting must consider the physical conditions of a site, the remoteness of the area, the existing and planned land uses in proximity, the sensitivity of the receiving environment and the size of the landfill site.

From an environmental perspective, the principal objective of site selection is to identify a suitable location for a landfill to safeguard public health, have minimal impact on the environment, and provide for long term isolation of MSW deposited in the landfill site. Distance requirements stated in the following sections are Ministry criteria, unless noted otherwise.

3.1 LAND USE

The landfill footprint must not be located within 500 m of an existing or planned sensitive land use. A planned sensitive land use is one that has been identified as an allowed use in a regional growth management plan, official community plan or zoning by-law but has not yet been built/established.

Sensitive land uses include, but are not limited to: schools, residences, hotels, restaurants, cemeteries, food processing facilities, churches, and municipal parks. Land uses such as heavy industry, forestry operations, aggregate extraction/mining, railways/rail yards, etc. are not considered sensitive land uses.

3.2 HERITAGE AND ARCHEOLOGICAL SITES

The landfill footprint shall not be located within 100 m of a heritage or archaeological site.

Landfill siting is also subject to the requirements of the *BC Heritage Conservation Act* administered by the Archaeology Branch of the British Columbia Ministry of Forests, Lands and Natural Resource Operations. The Branch and website should be consulted for requirements.

3.3 AIRPORTS

Transport Canada policies generally require that a landfill footprint be located no closer than 8 km from airports. This is due to the propensity for landfills to attract birds, thereby creating potential hazards to aircraft, especially during take-off and landing. That minimum separation distance may be reduced to 3 km if bird control measures acceptable to Transport Canada are implemented at the landfill site, and the reduction in the necessary buffer is approved by the airport authority. Where airport zoning regulations exist, the provisions of those regulations shall prevail.

3.4 BUFFER ZONE

The buffer zone between the landfill footprint and the landfill site boundary shall be a minimum of 50 m, of which the 30 m closest to the landfill site boundary shall be reserved for natural or landscaped screening (berms and/or vegetative screens). Only the 20 m buffer closest to the landfill footprint shall be used for access roads, surface water management works, leachate management, landfill gas management and monitoring works, firebreaks, and other ancillary works as required.

3.5 WATER SUPPLY SOURCES

The landfill footprint shall be a minimum distance of 300 m from a water supply well or water supply intake and a minimum 500 m from municipal or other high capacity water supply wells.

3.6 GULLIES AND DEPRESSIONS

The landfill footprint shall not be located in a gully or depression that acts as a point of water collection during rainfall events unless acceptable diversion works are provided such as interception ditching or other diversion measures are undertaken. Diversion of water through culverts beneath the landfill footprint is not allowed.

3.7 FAULTS AND UNSTABLE AREAS

The landfill footprint shall not be located within 100 m of a geologically unstable area. A geologically unstable area is defined as a location where natural or man-made features

pose a substantial risk to the integrity of the landfill environmental control systems or global stability of the fill. Specifically, the landfill footprint must not be located within 100 m of:

- A Holocene fault.
- A known active or historic landslide.
- Areas underlain by weak or collapsible soils, karst limestone, frozen mineral soil or muskeg with an active layer, or underground mine workings.
- Areas prone to debris movement (landslide paths, avalanche paths, alluvial fans).
- A location at risk of tsunami.

3.8 ENVIRONMENTALLY SENSITIVE AREAS

The landfill footprint must not be located within 100 m of an environmentally sensitive area such as:

- A national, provincial, regional or municipal park.
- A wildlife management area as designated under Section 4 of the provincial *Wildlife Act*.
- A critical wildlife area or wildlife sanctuary designated under Section 5 of the provincial *Wildlife Act*.
- A land acquired and administered under Section 3 of the provincial *Wildlife Act*.
- An ecological reserve designated under the provincial *Ecological Reserve Act*.
- A bird sanctuary designated under the regulations pursuant to the federal *Migratory Birds Convention Act*.
- A wildlife area designated under the federal *Wildlife Act*.
- A marine sanctuary.
- A wetland.
- The habitat of rare, threatened or endangered species under federal and/ or provincial Species at Risk legislation.

3.9 SURFACE WATER

A landfill footprint shall not be located within 100 m of surface water.

3.10 **FLOODPLAINS**

A landfill footprint shall not be located in a floodplain.

3.11 **SHORELINES**

A landfill footprint shall not be located within 100 m of the sea level maximum high tide or seasonal high watermark of an inland lake shoreline.

3.12 **DEPTH TO WATER TABLE**

The landfill base shall be a minimum 1.5 m above "groundwater" at all times.

4.0 PERFORMANCE CRITERIA

Performance criteria in this guidance document ensure adequate protection of human health and environment. All assessments, designs, reports and plans, developed under this guidance document must demonstrate how they will satisfy performance criteria. All the documents must be prepared under the supervision of, and certified by, a Qualified Professional.

4.1 GROUNDWATER AND SURFACE WATER QUALITY

Existing and potential future uses of groundwater and surface water must be identified within 1 km of the landfill footprint. After considering existing and potential future uses of groundwater and surface water, a Qualified Professional must recommend the appropriate water quality criteria, compliance locations, and provide related rationale and justification.

Water quality criteria to be considered include:

- The Contaminated Sites Regulation Schedule 6 Generic Numerical Water Standards and Schedule 10, Generic Numerical Soil and Water Standards, Column V Drinking Water (DW) Water Standard.
- The Canadian Drinking Water Quality Guidelines.
- The BC Approved and Working Water Quality Guidelines.
- BC Water Quality objectives.
- Other water quality criteria for parameters not addressed by the preceding water quality criteria.

The appropriate water quality criteria and compliance monitoring locations are subject to the approval of the Director in writing.

As a minimum, the appropriate water quality criteria must be satisfied at and beyond the landfill site boundary, or 150 m from the landfill footprint, whichever is closer. More stringent requirements may be set by the director. Any surface water in the buffer zone must also satisfy appropriate water quality criteria. Any discharges to surface water considered as potential fish habitat must also comply with the requirements of the federal *Fisheries Act*.

4.2 LANDFILL GAS MANAGEMENT

Soil gas concentrations at the landfill site boundary must not exceed the lower explosive limit of methane (5 percent by volume).

Combustible gas concentrations measured in on-site buildings must not exceed 20 percent of the lower explosive limit of methane (1 percent by volume) at any time.

Landfill Gas (LFG) must also be managed in accordance with all migration and health and safety requirements. Resources include Worksafe BC and the Landfill Gas Management Facilities Design Guidelines (Section 8.0 LFG Migration Assessment and Control; Section 9.0 Health and Safety).

LFG emissions must be managed such that all federal, provincial, and local ambient air quality objectives and standards are not exceeded.

LFG management is also regulated under the BC Landfill Gas Management Regulation. This regulation requires that all landfills having more than 100,000 tonnes of waste in place, or receiving more than 10,000 tonnes of waste per year, are to submit a Landfill Gas Generation Assessment Report. Landfills determined to be generating more than 1,000 tonnes of methane per year are required to prepare a Landfill Gas Management Facilities Design Plan and to have a LFG management system in place four years after the Facilities Design Plan submission. LFG management systems are to be designed to maintain 75 percent collection efficiency.

4.3 NUISANCE

A landfill must not create a "nuisance" including but not limited to dust, noise, litter, odour, vectors and/or wildlife attraction.

5.0 DESIGN CRITERIA

This section of the Criteria presents the design objectives and minimum requirements for a landfill site and the environmental control systems to be implemented on the site.

Landfills must be designed to protect the environment and satisfy all criteria set out in this document. The performance of the site-specific design must be assessed within the plans and reports described in Section 10.

5.1 SERVICE LIFE AND CONTAMINATING LIFESPAN

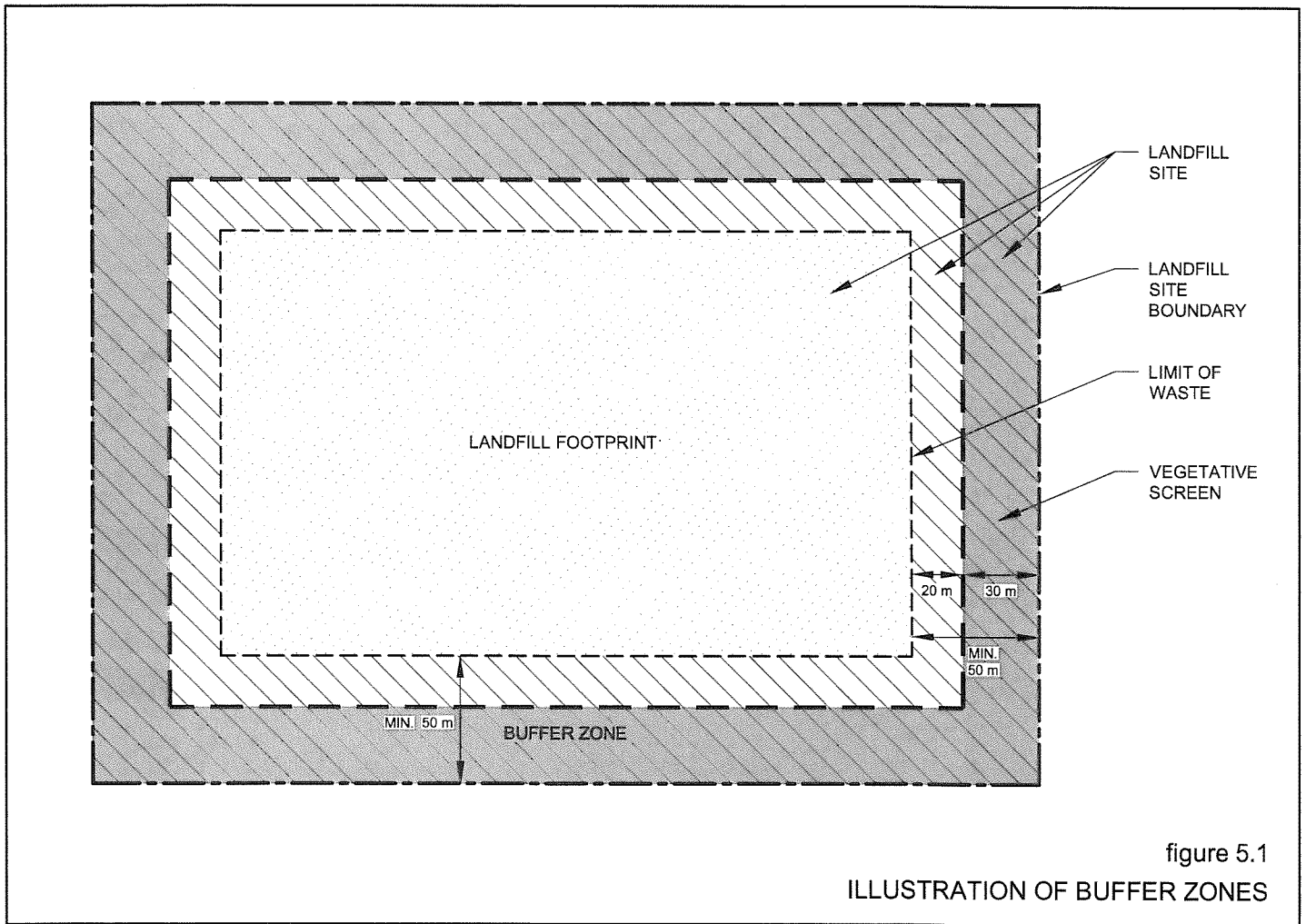
A landfill site must be designed such that the service life of the facilities exceeds the contaminating lifespan.

5.2 SITE LAYOUT

The site layout must be designed to satisfy all criteria including the siting criteria, and minimise environmental impacts.

Figure 5.1 provides an illustration of landfill buffer zones. The buffer zone between the landfill footprint and the landfill site boundary shall be a minimum of 50 m of which the 30 m closest to the landfill site boundary shall be reserved for natural or landscaped screening. A vegetative screen serves to reduce the visual impact of the landfill on adjacent properties. The 20 m buffer closest to the landfill footprint shall be used for access roads, firebreaks, leachate and landfill gas management and monitoring works, as required.

The site layout must provide for site entrance, gatehouse, material recovery/recycling area, structures, access roads, landfill footprint, surface water ditching and management ponds and leachate and gas management infrastructure. The site layout should minimize the potential for leachate and landfill gas impacts offsite taking into consideration groundwater flow direction and surface water infiltration and discharge points.



5.3 LANDFILL BASE DESIGN

The landfill base provides the foundation for construction of the landfill base liner and leachate collection system. The landfill base shall be graded to provide a minimum 2 percent grade for the primary drainage path and minimum 0.5 percent for the secondary drainage path that results in a maximum drainage path of 50 m.

The landfill base shall be placed in stable soils or rock, with a minimum distance of 1.5 m above groundwater at all times, as presented in Figure 5.2. The landfill base soils shall not be subject to consolidation that could result in differential settlement under the applied waste and cover soil loading.

Geologic inspection of the landfill base by a QP is required to be completed to confirm the geology beneath the landfill footprint and confirm the geologic assumptions used in the landfill design prior to placement and construction of the landfill base liner system. Any geologic features that pose a risk to the landfill design performing as intended, including unstable soils or unstable bedrock or groundwater conditions, discovered during site construction are to be identified and addressed prior to construction of the landfill base liner system.

5.4 LANDFILL BASE LINER

The landfill base liner (illustrated on Figure 5.3) shall be comprised of a primary HDPE geomembrane liner and a secondary compacted clay liner or Geosynthetic Clay Liner (GCL). Continuous QA/QC inspection by a QP during membrane installation and subsequent membrane coverage is required to limit occurrence of undetected defects. Each seam should be individually tested using non-destructive methods.

The minimum specifications for the primary HDPE geomembrane liner are:

- HDPE membrane thickness of 1.5 mm (60 mil).
- Service life of 100 years.
- High quality seams.
- Consideration is to be given to the requirement for texturing and asperity size of the primary geomembrane to ensure stability of the fill in all circumstances, including earthquake loading.

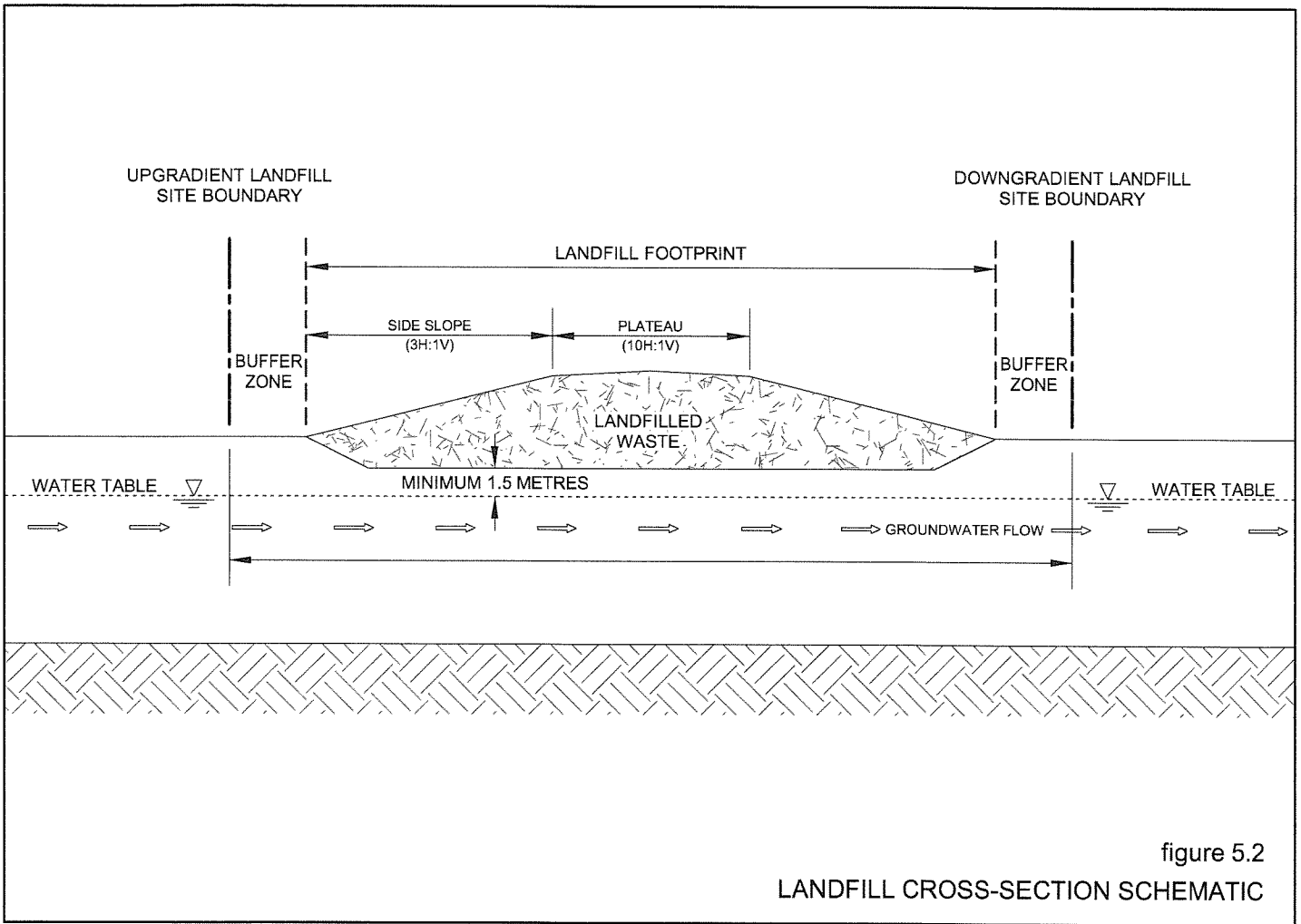
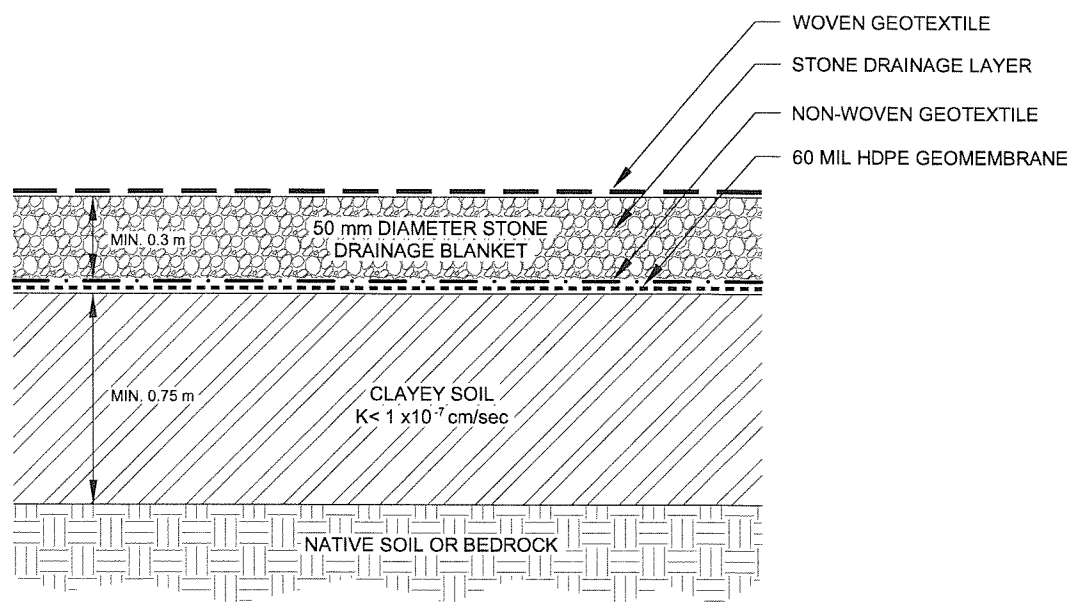


figure 5.2
LANDFILL CROSS-SECTION SCHEMATIC



LANDFILL BASE GRADES

- MINIMUM 2% GRADE PRIMARY DRAINAGE PATH
- MINIMUM 0.5% GRADE SECONDARY DRAINAGE PATH

NOTE

- GEOCOMPOSITE CLAY LINER CAN REPLACE CLAYEY SOIL LINER IF EQUIVALENT OR BETTER PERFORMANCE CAN BE ACHIEVED

figure 5.3

LANDFILL BASE LINER SYSTEM

The specifications for the secondary compacted clay liner are:

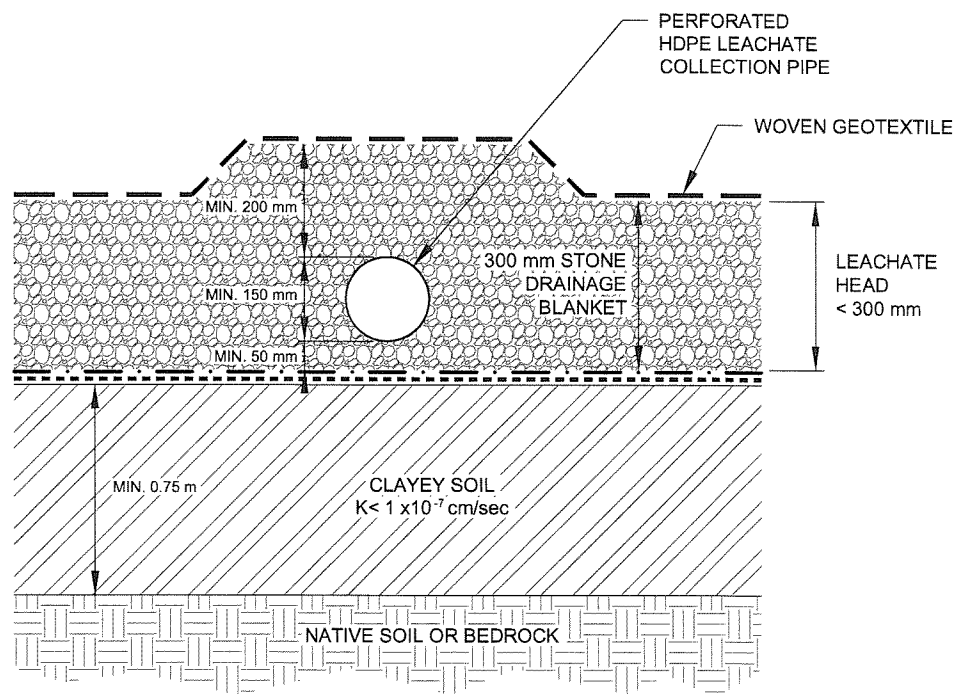
- Soil containing minimum 25 percent clay and minimum 60 percent silt and clay by weight.
- A minimum compacted thickness of 750 mm.
- Compacted hydraulic conductivity of 1×10^{-7} cm/sec or less.
- Organic carbon content of at least 0.1 percent.
- Clay structure and permeability to remain stable when exposed to leachate.

The secondary compacted clay liner may be replaced by an equivalent performing GCL. An alternative landfill base liner may also be approved as per Section 2.3 (Exemptions).

5.5 LEACHATE COLLECTION SYSTEM

A leachate collection system is to be constructed above the landfill base liner. The leachate collection system is to provide a free draining layer that allows for collection of leachate and eliminates the buildup of a leachate head on the landfill base liner. The leachate collection system is to be designed to minimize clogging and allow for maintenance of the leachate collector pipes. Minimum design requirements for a leachate collection system are:

- The leachate collection system shall be constructed of a continuous 0.3 m thick stone drainage blanket with perforated collector pipes with protective geotextile layers.
- The stone drainage blanket shall be constructed of 50 mm diameter clear stone with minimal fines. The stone shall be chemically stable and inert rock.
- A non-woven geotextile shall be placed on top of the geomembrane liner prior to placement of the stone drainage blanket to protect the geomembrane liner.
- A woven geotextile shall be placed above the clear stone drainage blanket to maintain separation of the waste from the clear stone and to minimize the potential for ingress of fines into the stone drainage blanket.
- Perforated high density polyethylene leachate collector pipes shall be placed within the stone drainage blanket as detailed on Figure 5.4.
- Leachate collector pipes are to be installed at a lateral spacing that provides a maximum spacing of 15 m and maximum drainage path of 50 m.
- The collector pipes shall be sized to handle leachate flows based on site-specific leachate generation calculations but shall be a minimum 150 mm diameter in all cases.



NOTE:

MINIMUM COLLECTOR PIPE SLOPE 2%

MAXIMUM COLLECTOR SPACING 15.0 m

MAXIMUM DRAINAGE PATH 50.0 m

figure 5.4
LEACHATE COLLECTION PIPE

- The pipe wall thickness shall be designed based on the site-specific loadings from the mass of the waste and final cover soils.
- The collector pipes shall be installed at a minimum slope of 2 percent along primary leachate flow paths.
- Clean outs are to be provided at each end of the leachate collector pipes.
- The collector pipes shall drain to a collection header and sump to allow for the removal of collected leachate. Leachate shall be removed to maintain a leachate head of less than 0.3 m at any point on the landfill base liner.

Continuous QA/QC inspection shall be carried out during installation by a Qualified Professional during the construction of the leachate collection system. The collected leachate shall be managed in accordance with the approved Leachate Management Plan (Section 10.3.3).

5.6 SURFACE WATER MANAGEMENT WORKS

Surface water management works shall be designed and constructed in accordance with a Surface Water Management Plan (Section 10.3.2) prior to commencement of landfill site operations. Surface water management works are to:

- Convey and direct surface water runoff away from the active operation area within the landfill footprint to minimize surface water contact with waste.
- Minimize potential for on-site erosion and sediment loading to downstream water courses.
- Control peak flows from the landfill to minimize the downstream flood risk.
- Prevent surface water run-on onto the landfill footprint.

Hydrologic modeling is required to assess the performance of the surface water management works under minor and major storm events and is to be completed for 5-, 10-, and 100-year design storm events. This modeling is required to identify the hydraulic requirements for the design of the ditches, ponds, coffer dams, check dams, and outlet structures needed within the site-specific design to meet the performance requirements of the Surface Water Management Plan.

Surface water management works shall be designed in accordance with the following criteria:

- All components of a surface water management system, including surface water management ponds, are to be designed to promote settling of sediment and infiltration of retained storm water for groundwater recharge.
- Ponds are to be designed with low flow control structures and high flow overflow channels.
- Surface water ditches and retention ponds shall be designed for the control and retention of a 1:100-year, 24-hour storm event.
- The design shall make allowances for additional water that may result from snow melt.
- Surface water runoff generated from active areas of the landfill (i.e., areas that are not capped with final or interim cover but containing waste) shall be managed as leachate. Cofferdams are to be used where required to minimize clean surface water contact with active waste disposal areas.
- All ditch surfaces are to be armoured (rip rap, erosion control matting, or vegetative cover) to prevent erosion of ditch bottom and side slopes.
- All ditches are to maintain a minimum 1 percent grade to prevent sedimentation and maintain hydraulic design capacity. Ditches shall be designed to accommodate localized settlement (no grade reversals).
- Check dams are to be used for sediment control as required.
- Mid slope drainage ditches/swales shall be constructed on the final cover surface as required to prevent erosion of final cover soils.

5.7 LANDFILL GAS MANAGEMENT WORKS

Landfill gas management works generally include an active or passive landfill gas collection system, a methane destruction system (flare, boiler, reciprocating engine, upgrader or biofilter), and landfill site perimeter soil gas monitoring probes.

As per the requirements of the Landfill Gas Management Regulation, landfill owners required to prepare a landfill gas management facilities design plan must design, construct, and operate landfill gas management facilities in accordance with the BC Landfill Gas Management Facilities Design Guideline.

The guidance document entitled "Technologies and Best Management Practices for Reducing GHG Emissions from Landfills Guidelines" provides guidance for the

selection of technologies and best management practices for reducing GHG emissions from landfills.

5.8 FINAL COVER DESIGN

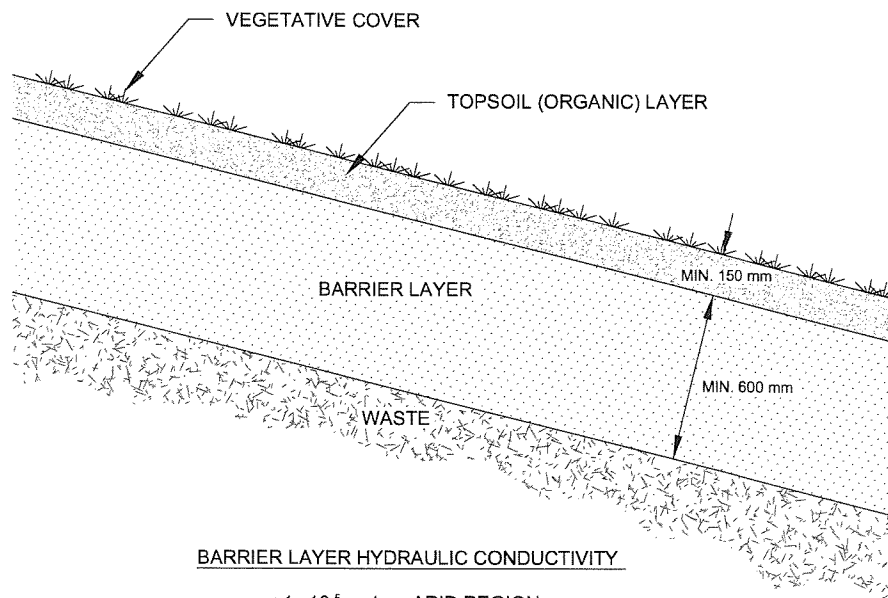
The final cover is to achieve the following objectives:

- Prevent exposure of humans and/or wildlife to MSW.
- Control infiltration of precipitation.
- Minimize the uncontrolled release of methane to the atmosphere.
- Limit erosion and release of sediment to surrounding surface waters.
- Control the release of odours.
- Minimize oxygen infiltration and fire risk.

The final cover must be compatible with the end use planned for the landfill site.

The minimum final cover shall consist of a barrier layer, providing a maximum hydraulic conductivity of 1×10^{-5} cm/sec for landfill sites located in arid regions and 1×10^{-7} cm/sec for landfill sites located in non-arid regions. The final cover barrier layer shall have a compacted thickness of 0.6 m measured perpendicular to the slope with a 0.15 m topsoil layer capable of establishment and sustained growth of the vegetative cover. The minimum final cover requirements are illustrated in Figure 5.5a. Requirements are site-specific, depending on the amount of precipitation received annually.

Based on the landfill performance assessment and the requirements of the Leachate Management Plan the maximum allowable leachate generation rate must be identified. The final cover system is to be designed to ensure the maximum allowable leachate generation rate is not exceeded but will allow for waste stabilization during the post-closure period. Hydrologic modeling of the "final cover" performance using the applicable climatic setting for the landfill site must be completed to demonstrate the final cover stability under design storm conditions and consistency with the Leachate Management Plan. A lower permeability barrier layer or the addition of a geomembrane, as illustrated in Figure 5.5b, may be required to control leachate generation rates to be consistent with those identified in the Leachate Management Plan. The final cover design must also be coordinated with the LFG management facilities including LFG collection or venting facilities.



BARRIER LAYER HYDRAULIC CONDUCTIVITY

$\leq 1 \times 10^{-5}$ cm/sec ARID REGION

$\leq 1 \times 10^{-7}$ cm/sec NON-ARID REGION

SLOPES

SIDE SLOPE 3H:1V

PLATEAU 10H:1V

figure 5.5a
FINAL COVER DETAIL

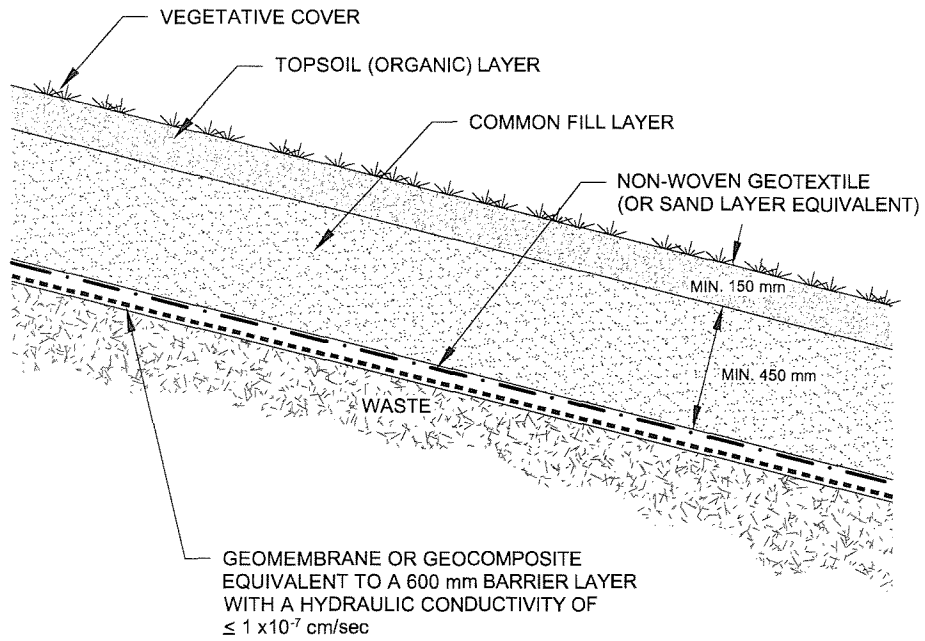


figure 5.5b
 GEOMEMBRANE FINAL COVER DETAIL

Topsoil Layer

A topsoil layer shall be the top layer in the final cover. The topsoil shall be comprised of a soil horizon that will provide the moisture retention and nutrients required to support healthy vegetative growth in the long term. The topsoil can be comprised of suitable soil or a fabricated growing medium produced from an appropriate mix of soil, a carbon source, and a nutrient source such as biosolids. If biosolids are used as a soil conditioner, the fabricated growing medium mix shall be developed by a Qualified Professional, and in compliance with BC's Organic Matter Recycling Regulation.

Vegetation

A completed final cover shall be seeded or hydroseeded at the first opportunity that will result in successful germination and sustainable growth. The seed mix shall achieve erosion control, low maintenance, and end use objectives. Reseeding and fertilization shall be carried out periodically until such time that a sustainable vegetative cover is fully established.

5.9 FINAL CONTOURS

The final contours of a landfill will affect the landfill site capacity and the performance of the final cover system. Maximum recommended slope length should depend on soil type, slope steepness and climate. More gradual slopes will reduce surface water runoff and cover soil erosion but result in increased infiltration and leachate generation. Steeper slopes reduce infiltration but may result in increased erosion and slope stability concerns. Final contours of the landfill shall be constructed at grades not steeper than 3H:1V (33 percent). The top plateau of the landfill must have a slope not less than 10H:1V (10 percent) above the final landfill side slope. Figure 5.2 provides an example profile schematic of the final contours.

Surface water control benches to intercept surface water run-off shall be provided on the landfill final contours every 15 m vertical or less. Benches shall be graded in a way that will effectively convey surface water run-off from the landfill refuse via ramps, down-chutes, or spillways and shall account for anticipated settlement.

5.10 SITE SECURITY AND FENCING

Landfill security fencing is required to discourage unauthorized access to the facility outside of the landfill operating hours.

Security fencing shall be established around the entire perimeter of the landfill on the landfill site boundary. The minimum size fence shall be a 1.2 m post and wire fence. Along the landfill site boundary where vehicle access can be achieved from the outside a minimum 2 m chain link fence is recommended. Entrance gates with vandal proof locking mechanisms are required at all access points to the landfill site that are accessible to the public. The gates shall be maintained in a locked position outside landfill operating hours.

5.11 ACCESS ROADS

Landfill access roads must be designed and constructed to provide safe all-weather access to on-site facilities and for conducting inspection and maintenance of the landfill site infrastructure during the operating and post-closure periods of the landfill.

During the operating life of the landfill site, safe public access shall be maintained to all material drop-off and waste disposal areas. Recessing the entrance into the landfill should be considered to minimise vehicle queuing along public roads. The access roads at the landfill site entrance shall be designed and constructed to prevent the tracking of mud or waste from the site onto public roadways.

The size and grade of the access roads are to be designed to meet the traffic load and vehicle type within the open and controlled areas of the landfill site. The following design criteria should be adopted:

- Access road traffic surface to be minimum 4 m wide for one lane and 7 m for two lanes.
- Roads for public and commercial traffic shall not exceed 8 percent grade.
- Roads for construction/internal off-road equipment traffic shall not exceed 15 percent grade.
- All roads sloped steeper than 2 percent shall have armoured ditches.

5.12 VECTOR AND WILDLIFE MANAGEMENT AND NUISANCE CONTROLS

A landfill site must be designed to satisfy the operation criteria with respect to vector and wildlife management and nuisance controls.

6.0 OPERATIONS CRITERIA

This section of the Criteria presents the objectives and minimum requirements for operation of landfill sites to ensure the landfill performance criteria are met.

6.1 AUTHORIZED WASTES

MSW shall be approved for disposal in the landfill. In general, waste disposed in the landfill shall not contain Hazardous Waste as defined in the Hazardous Waste Regulation. The following types of Hazardous Waste may be specifically approved for disposal by the director:

- Waste asbestos managed according to Section 40 of the Hazardous Waste Regulation.
- Hydrocarbon-contaminated soils managed according to Section 41.1 of the Hazardous Waste Regulation. Details of contaminated soil disposal are provided in Appendix B.

Disposal of controlled waste is generally prohibited. Controlled waste, if approved for disposal, requires special handling. Burial of specified controlled waste in dedicated trenches may be approved in instances where it has been demonstrated that there is no other viable alternative for the waste stream such as treatment/disposal, recycling, reprocessing or composting. The DOCP shall identify the controlled waste to be received at the landfill site and the additional controls to be implemented for the receipt and disposal of such wastes.

Many materials found in the MSW waste stream such as cardboard, beverage containers, scrap metal, drywall, etc. are recyclable. Although not banned by these Criteria, many regional districts and municipalities have implemented SWMPs and by-laws to ban a wide range of substances from being disposed of in a landfill. Commonly banned materials include:

- Metal.
- Cardboard.
- Gypsum drywall.
- Yard waste.
- Clean wood.
- Concrete.
- Wood from construction and demolition sources.

- Organics from commercial and residential sources.
- Product categories under the BC Recycling Regulation.

Recovery of recyclable and reusable materials to avoid placement of these materials in a landfill is encouraged.

6.2 LANDFILLING OF WASTES

All waste shall be placed within the landfill footprint in accordance with the filling plan. The active face shall be kept at a minimum while providing sufficient area for the safe unloading of waste by incoming waste haulage vehicles.

Specifications for the active face size and uncompacted lift heights are provided in Appendix A.

Wastes are to be spread in thin layers (0.6 m or less) on the active face and compacted. Normally, 3-5 passes of the compacting equipment over the wastes are sufficient to achieve adequate compaction.

General guidance is provided regarding the following wastes that may be approved for disposal in the landfill footprint:

Waste Asbestos

Waste asbestos as defined by the BC Hazardous Waste Regulation must be transported in compliance with the Transportation of Dangerous Goods Act and Regulations and disposed of in accordance with Part 6, Section 40 of the HWR (including the Director's requirements), and any landfill-specific asbestos handling and management policies.

Currently, section 40(2) of the HWR requires:

- A person must not deposit waste asbestos in a landfill other than a secure landfill unless
- (a) a permit or an approval has been issued under the Act to operate the landfill, or the landfill is operated under a waste management plan,
 - (b) the waste asbestos is confined during handling, storage and transportation by
 - (i) dry airtight containment techniques such as
 - (A) packing in 6 mil plastic bags placed within a non-reusable drum and then sealed, or
 - (B) packing in a 6 mil plastic bag placed within a second 6 mil plastic bag and then sealed, or

- (ii) wet containment techniques such as saturation with water and containment in non-leaking sealed drums or equivalent, or
- (iii) approved containment techniques,
- (c) the waste asbestos is disposed of at the landfill by being immediately buried with a minimum of 0.5 m of cover material,
- (d) approval of the landfill owner is received before disposal takes place, and
- (e) the deposit is authorized by a director and carried out in accordance with the director's requirements.

Waste asbestos can typically be deposited into a dedicated asbestos trench excavated into garbage removed from the operating active face, or in a controlled waste trench excavated into native soil within the final landfill footprint and in an area where no further excavation will occur. The trench should be excavated between 2 to 4 m deep.

Controlled Waste

If approved, controlled waste may be disposed of in a 2 to 4 m deep trench excavated into MSW at the active face, or in a trench excavated into native soil within the landfill footprint where no further excavation will occur. The controlled waste shall be immediately covered with a minimum of 0.5 m of cover or MSW.

Slaughter House waste is differentiated into two types. Type 1 waste is considered Specified Risk Material (SRM). SRM is defined as waste that contains body parts from cattle that may contain the BSE prion, including the brain, spinal cord and other body parts. Type 2 waste is cattle waste not at risk of containing SRM and other slaughterhouse waste such as poultry waste. For slaughter industry waste, the federal Canadian Food Inspection Agency (CFIA) requires producers, transporters, and processors to obtain permits for transporting, accepting and disposing of specified risk material (SRM). For information, consult the CFIA.

6.3 COVER PLACEMENT

Cover is required to control vectors, wildlife, fire, litter, odour, infiltration, landfill gas, scavenging, etc.

Daily cover must be placed on the entire surface of the active face at the end of each operating day. If daily cover is soil, it shall be at least 150 mm thick.

Intermediate cover must be placed where the active face will not be scheduled to receive the placement of additional wastes for 30 days or more. If intermediate cover is soil, it shall be at least 300 mm thick (may include the daily cover thickness).

Alternate materials that may be approved as daily or intermediate cover include:

- Reusable (e.g., rigid steel plates, rubber belts, or tarps).
- Left in place and buried (e.g., wood waste, shingles, contaminated soils, thin decomposable plastic films or spray-on covers).

Depending on the type of daily or intermediate cover, surface water that contacts daily or intermediate cover may be considered to be leachate and, if so, must be managed in accordance with the leachate management plan.

Cell construction and use of inert daily and intermediate cover reduces the risk of fire initiation through spontaneous combustion as well as the risk of a fire spreading throughout a landfill facility. However, daily and intermediate cover may lead to the development of perched water tables and limit the vertical flow of landfill gas toward gas collection wells and horizontals. Recognizing these conflicting objectives, stripping of daily and intermediate cover can be undertaken at MSW landfill facilities in order to enhance landfill gas recovery and to prevent leachate breakouts and slope failures. The optional stripping of cover shall be undertaken only immediately before beginning an active face on top and must not result in unacceptable nuisance odours and/or odour complaints.

Final cover must be placed within 180 days on any part of the landfill footprint at final contours. The final cover barrier layer shall be placed at a minimum thickness of 600 mm.

Contaminated soil may be used as waste cover under conditions provided in Appendix B.

6.4 NUISANCE CONTROLS

The landfill must be designed and operated to prevent nuisance and comply with any local government nuisance bylaws. If the landfill is likely to cause a nuisance or not comply with any local government nuisance bylaws (including due to dust, noise, litter, odour, vectors, wildlife, tracking of mud out of the site entrance, etc.), assessment, modeling and/or monitoring must be conducted to determine predicted and/or actual

nuisance levels, and controls must be designed and implemented to prevent nuisance and comply with the bylaws.

A complaint response procedure is required to be developed and posted on-site for responding to nuisance complaints.

Dust

Any landfill surface, soil stockpile and road surface has the capacity to generate dust. Other potential dust sources are compost grinding operations and the delivery of dusty loads of waste. The magnitude of the resulting impact will depend on the type and size of the operation, the prevailing wind direction and intensity, the presence of any natural or engineered wind breaks and dust control measures implemented, the soil type, and climate.

Dust releases must be controlled on site. Roads on the landfill surface shall be watered as necessary or otherwise treated to control dust emissions. Chloride-containing dust suppressants are discouraged as chloride is a common leachate indicator parameter used in the groundwater and surface water quality monitoring program. Waste oil is banned for use as a dust suppressant.

Landfill supervisory staff shall routinely watch out for dust clouds and shall initiate remedial measures whenever excessive dust is observed.

Noise

Landfill operations generally require the operation of heavy equipment including waste compactors, dozers, heavy trucks and mobile crushers, screens and other plants used in recycling operations. Heavy equipment must operate with back-up alarms that also generate noise. Without proper noise control measures, landfill operations can result in nuisance.

Site operations must minimise noise including:

- Making use of natural and/or constructed features such as vegetated buffers, soil berms, and material stockpiles to dampen off-site noise impacts.
- Constructing main haul roads at 8 percent grade or less to minimize engine noise.
- Scheduling potentially noisy activities during hours that will minimise impacts on the community.

Litter

Exposed litter on the landfill site must be prevented. The performance objectives for landfills in British Columbia are as follows:

- To have no litter migrate beyond the landfill site boundary.
- To pick up all litter on the landfill site at least once per year, or more often if required.

Odour

Landfill site operations shall be carried out in a manner that prevents nuisance from odour. Odour control measures are required for all activities having the potential to cause nuisance odour. Daily and intermediate cover requirements shall be complied with at all times. Control systems shall be installed as necessary where required and maintained according to industry standards. Aeration systems shall be added to all leachate storage ponds and other liquid facilities that generate unpleasant odours. Biosolids and other odorous materials shall be stored, blended, and processed with required odour control measures in place.

6.5 VECTOR AND WILDLIFE MANAGEMENT

Vectors and wildlife must be discouraged from feeding at landfills.

The following operation criteria shall be implemented at landfill sites to minimize the attraction of vectors and wildlife to landfills:

- Landfills shall comply with all daily, intermediate, and final cover requirements to limit the area of exposed waste that typically attracts vectors.
- Landfills situated within 8 km of airports and landfills in areas where birds converge to feed on refuse at any time shall implement an effective bird deterrent program.
- An effective rodent control program shall be implemented and maintained to minimize the population of rodents on the landfill site.
- Landfills situated in bear habitat or where there are signs of bears such as bear scat, footprints or sightings, must have the landfill site and all areas where an attractant is located, enclosed with a bear-proof electric fence. An attractant includes food or food waste, compost, carcass or part of an animal or fish, or other meat, or other waste or garbage, that could attract bears. If bear signs are detected at a landfill that does not have a bear-proof electric fence, a new bear-proof electric fence shall be erected

within 120 days. An electric fence may also be required if other dangerous wildlife (e.g. cougar, coyote or wolf, etc.) is attracted to the landfill.

6.6 BURNING

Open burning of wastes at the landfill site is generally prohibited. However, open burning of clean wood and yard waste may be approved in the SWMP, OC or permit if it can be demonstrated to the director that there is no viable alternative such as reuse, recycling, energy recovery, or composting. A technical assessment report satisfactory to the director must be submitted and the open burning must be approved in the SWMP, OC or permit. Approval must also be obtained from any other applicable fire protection authorities. Guidelines for open burning of clean wood and yard waste are summarized in Appendix C.

6.7 LANDFILL FIRE MANAGEMENT

Landfills shall be operated in a manner that reduces the risk of landfill fires from occurring. The following requirements must be met:

- All landfills shall comply with the daily and intermediate cover requirements that specify placement and compaction of waste in cells and isolation by specified thicknesses of inert daily and intermediate cover. This is particularly important at DLC facilities.
- Fire breaks at least 15 m wide and free of trees, brush, tall grass and other combustible material shall be maintained within the buffer zone within the 20 m closest to the landfill footprint.
- Landfill site should have year-round and immediate access to a water supply capable of a sustained flow of water for firefighting purposes that exceeds 4,000 litres per minute or suitable alternative fire suppression equipment specified in the Fire Safety Plan.

In the event of an unauthorized fire (including any smoldering fire) the landfill owner or operator shall immediately make all reasonable efforts to extinguish the fire including reporting the fire to the fire department with jurisdictional responsibility. Any large fire which poses a threat to public health or to neighbouring property shall be reported to the Provincial Emergency Program.

6.8 SCAVENGING

Scavenging of wastes from the active face is prohibited. This prohibition is not intended to prevent the operation of material recovery facilities within the buffer zone.

6.9 SITE HEALTH AND SAFETY PLAN

The landfill site operations shall meet the requirements of Work Safe BC.

6.10 SIGNAGE

Signage shall be erected and maintained at the landfill site entrance. Signage at the landfill site entrance shall provide the following information.

- Name of Owner/Site Operator.
- Hours of Operation.
- Emergency Contact Information (e.g. Fire, Police, Ambulance 911, Provincial Emergency Program (PEP) Environmental Emergency 24-hour Incident Reporting Hotline:1-800-663-3456, Conservation Officer Report All Poachers and Polluters (RAPP) Dial Toll Free 1-877-952-7277).
- Owner/Site Operator Contact Information.
- Waste and recyclable material accepted prohibited, restricted, and tipping fees.

Appropriate traffic control signage shall be posted inside the landfill site boundaries directing public and commercial waste haulers to drop-off, material recovery, and disposal areas of the landfill site.

6.11 WEIGH SCALES

Weigh scales shall be installed at all landfill sites receiving more than 5,000 tonnes of waste per year. The weigh scales shall be maintained in proper working order and meet the requirements of the federal *Weights and Measures Act*.

6.12 RECORDS

The landfill owner and/or operator shall record and maintain all relevant records for at least 7 years. The records shall be available on-site for inspection (as practical) and shall be submitted to the director within 14 days of a request from Ministry of Environment staff. Records include the following:

- The Permit or the Operational Certificate.
- All “plans and reports”.
- Inspection records conducted by regulatory agencies.
- Complaint ledger providing source of complaint, nature of complaint, time received and actions taken.
- Waste tonnages and volumes disposed of in a landfill and if available recyclable material data and disposition for each category of waste and recyclable material received and exported from the landfill site.

6.13 OPERATOR TRAINING

All landfills shall be supervised and operated by trained qualified personnel. All landfill operators and managers should have specialized professional training in courses such as a SWANA Manager of Landfill Operations course, a Qualified BC Landfill Operator course or similar. Ministry of Environment strongly recommends the continuing education of staff operating a landfill site.

7.0 CLOSURE AND POST-CLOSURE CRITERIA

7.1 CLOSURE PLAN

A Closure Plan is required for all landfill sites. The Closure Plan shall be included in the DOCP prepared for the landfill site and shall be updated upon the landfill having reached two years of remaining site life. The Closure Plan shall be prepared identifying a specific post-closure land use proposed for the landfill site.

7.2 PROGRESSIVE CLOSURE

Each area of the landfill footprint that has achieved final contours shall be closed within 180 days to provide for progressive closure of the landfill site. Closure activities include but may not be limited to constructing final cover, extending surface water ditches and access roads, planting vegetation, erecting or relocating signage. The timing of the progressive closure activities will be based on the filling plan.

7.3 POST-CLOSURE OPERATION AND MAINTENANCE

Post -closure operation and maintenance must be done in accordance with the Closure Plan. The post-closure operation and maintenance program as well as an environmental monitoring program are required to be conducted during the Contaminating Life Span of a landfill. Detailed requirements of the program are specified in Section 10.3.4.

7.4 CONTAMINATING LIFESPAN

As part of the Closure Plan, the "Contaminating Life Span" of a landfill shall be determined using the latest updated environmental monitoring information.

As a minimum, the Contaminating Life Span of a landfill shall not be assumed to be less than 30 years when determining the requirements for post-closure operation and maintenance and the amount of financial security required for the landfill site.

The Landfill Gas Management Regulation also addresses the permanent shutdown of landfill gas management facilities.

7.5 CONTAMINATED SITES REGULATION AND LANDFILL CLOSURE

Part 4 of the *Environmental Management Act* and the Contaminated Sites Regulation (CSR) contain legal provisions that may apply during the closure of a municipal solid waste landfill. The Ministry's Land Remediation (Contaminated Sites) Section administers these provisions. Questions and Answers about landfills provided by the Land Remediation Section are available at:

<http://www.env.gov.bc.ca/epd/remediation/q-a/index.htm>.

Municipal waste landfilling is a specified purpose/activity in Schedule 2 of the CSR. Section 40 of EMA requires, at the time of "decommissioning" (10 days prior to final deposit of waste), that a landfill property owner complete and submit, to the Director, a site profile. In response to receipt of the site profile, the Director may impose a site investigation requirement and, if so, may require a report on the investigation to be submitted within one year.

Typically, if the landfill property is not planned to be used for a new purpose in the future, then the landfill closure process and post-closure monitoring and reporting requirements will be regulated under the Closure Plan developed for a landfill site (Section 10.3.4). If future plans include the landfill property being put to a new use (e.g., municipal park amenity; light industrial complex), then there may be further requirements to ensure that the landfill site is suitable, from an environmental protection standpoint, for the proposed future use.

Further information regarding the Ministry's contaminated site remediation regulatory framework and a staff contact list may be found at:

<http://www.env.gov.bc.ca/epd/remediation/index.htm>.

8.0 FINANCIAL SECURITY

Financial security is required for all privately-owned landfills.

For publicly-owned landfills a closure fund should be established to promote local government accounting that ensures taxpayers are appropriately funding the future liability associated with the landfills. This is not considered financial security.

8.1 AMOUNT OF FINANCIAL SECURITY

Financial security for landfills shall match liabilities throughout the life of the site. The amount shall be adequate to close the site at any point in its operational life and continue with post-closure care for maintenance and monitoring. Liabilities should be estimated for each phase of development such as:

1. Maximum land disturbance as a result of site development before any waste is placed in the landfill.
2. Nearing completion of each phase of the landfill development and including post-closure care costs.
3. Just prior to final closure of the landfill and including post-closure care costs. This will typically be the point of maximum liability.
4. Post-closure care.

The initial financial security deposit will, at minimum, match the estimate determined by number (1). Increasing financial security shall match costs projected and the timeline for each phase of development (2). At the time of site closure, the fund shall be adequate to offset final closure (3) and post-closure care costs (4).

8.2 CALCULATING FINANCIAL SECURITY

The amount of financial security shall be calculated as the sum of the following costs:

- Cost of emergency closure or planned closure, whichever cost is greater.
- Cost of post-closure operation, maintenance, monitoring and reporting for the contaminating Life Span.
- Cost of implementing contingency measures.

Each task or activity associated with closure and post-closure cares shall be detailed and estimated in performing financial security calculations. Costs for each task or activity should be determined by multiplying the unit cost by the number of units (e.g. cost to develop a well X number of wells). All costs shall be identified individually and tabulated for each phase of landfill development. Estimates shall include costs associated with administration, engineering assessment and construction oversight.

The estimated costs shall not be reduced by the value of any assets. A contingency of 20% shall be added to the total estimated costs.

Closure Costs

Activities to be considered in the closure costs include:

- Compaction, grading of the landfill surface area.
- Final cover placement and the establishment of vegetation.
- Installation of fences, gates, surface water control works, passive LFG venting system and construction of any other monitoring and control works that may be required for the post-closure period.

Post-Closure Costs

Activities to be considered in the post-closure cost estimate are:

- Management and maintenance of the landfill final cover including fertilizing, irrigating and re-seeding of the vegetative cover as anticipated.
- Operation and maintenance of any on-site or off-site leachate management facilities.
- Operation and maintenance of landfill gas management facilities.
- Operation and maintenance of site infrastructure including surface water control works, roads, fences, etc.
- Construction or replacement of any monitoring or control works as required.
- Annual environmental monitoring and reporting.

Contingency Measures Cost

Activities to be included are the costs of implementing and maintaining the contingency measures included in the DOCP.

8.3 POST-CLOSURE PERIOD

The post-closure period for which post-closure care will be determined is the contaminating lifespan of the landfill. (e.g. the time period during which leachate collection or landfill gas management or monitoring is necessary). In the absence of technical rationale to determine the contaminating lifespan, 1000 years shall be used as the default. In no case shall the post-closure period be less than 30 years.

8.4 COST TO BE PRESENTED IN CURRENT DOLLARS

All cost estimates should be presented in net present values and adjusted for inflation and discount rates. Inflation rates shall be based on the *British Columbia Consumer Price Index* averaged over the preceding 10 year period or as recommended by a qualified professional. Discount rates shall be based on the current *Government of Canada Long Term Bond Yield* or as recommended by a qualified professional.

The default for the real rate of return (i.e. the difference between the discount rate and inflation rate) shall be 2% unless otherwise determined by a member of *Canadian Institute of Actuaries* or other qualified professional with comparable expertise.

8.5 REVIEW PERIOD

Cost estimates should be reviewed at the commencement of a new landfill phase or where there has been a significant design revision. Regardless, the period for review should not exceed 5 years.

8.6 TYPES OF FINANCIAL SECURITY

An irrevocable letter of credit is the preferred type of financial security. Contact ministry staff for additional information on that and other acceptable forms of financial security.

9.0 MONITORING CRITERIA

A detailed Environmental Monitoring Plan (EMP) for leachate, groundwater, surface water, and landfill gas must be prepared and conducted during landfill operation, closure and post-closure. The EMP must be prepared and conducted to:

- Demonstrate compliance with the performance criteria.
- Demonstrate that monitoring results are consistent with the plans and reports including the groundwater and surface water impact assessment.
- Address the need for monitoring within 1 km of the landfill footprint.

The EMP shall be developed in accordance with the "Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills" for groundwater, surface water, leachate, and soils and vegetation or its approved replacement.

9.1 LEACHATE MONITORING

Leachate monitoring is required to establish site specific leachate chemistry and contaminants and to ensure these contaminants are included in the groundwater and surface water monitoring. Monitoring of leachate levels within the landfill shall be conducted to ensure that landfill gas extraction wells (or horizontals) are not flooding, the waste is not becoming saturated and excessive pore pressures are not developing to trigger slope instability.

Leachate chemistry is also required to assist with determining the Contaminating Lifespan of the landfill at the time of closure.

9.2 GROUNDWATER AND SURFACE WATER MONITORING

The EMP for groundwater shall be developed based on the Hydrogeology and Hydrology Characterization Report, the Groundwater and Surface Water Impact Assessment, and the expected landfill performance. The EMP for surface water shall be developed to monitor the performance of the surface water control works constructed and operated on a landfill site. The groundwater and surface water monitoring results are to be assessed for compliance with the applicable Criteria as stipulated in Section 4.1.

9.3 LANDFILL GAS MONITORING

Landfill gas monitoring is required to ensure the health and safety of the landfill operations personnel, the public and any other sensitive on-site and off-site receptors.

The EMP for landfill gas shall follow the requirements in the BC Landfill Gas Management Facilities Design Guidelines as this guidance document supersedes the landfill gas section of the “Guidelines for Environmental Monitoring at Municipal Solid Waste Landfills”.

10.0 PLANS AND REPORTS

All plans and reports must be prepared at the appropriate time, certified by a Qualified Professional, kept up-to-date, retained for inspection and/or submitted to the director, as required.

The landfill must be planned, designed, constructed, operated, monitored, and closed in accordance with the plans and reports.

The following plans and reports must be prepared:

- Landfill Criteria Upgrading Plan, (for existing landfills see Section 2.2).
- Hydrogeology and Hydrology Characterization Report.
- Construction report(s).
- Design, Operation and Closure Plan (DOCP).
- Landfill Gas Generation Assessment, if required under the Landfill Gas Management Regulation.
- Landfill Gas Management Facilities Design Plan, if required under the Landfill Gas Management Regulation.
- Annual Operations and Monitoring Report (s).

10.1 HYDROGEOLOGY AND HYDROLOGY CHARACTERIZATION REPORT

The purpose of the Characterization Report is to characterize the geology, hydrogeology, and surface hydrology at and near the landfill site.

The minimum requirements of a Characterization Report are:

1. **Map and cross-sections** - A geologic map and geologic cross-section of the landfill site showing lithology and structural features. Cross-sections shall be referenced to the geologic map and shall be located to best portray geologic features relevant to the landfill site.
2. **Geologic Structure** - A description of the natural geologic structure of materials underlying the landfill site and its surroundings.
3. **Hydraulic Conductivity** -The in-place hydraulic conductivity of soils immediately underlying the landfill footprint including:
 - Hydraulic conductivity data, in tabular form, for selected locations within the landfill footprint.

- A map of the landfill site showing test locations where these hydraulic conductivity data were obtained.
 - An evaluation of the test procedures and rationale used to obtain these hydraulic conductivity data.
4. **Groundwater Flow Direction** -the perennial direction(s) of ground water movement within the ground water aquifer(s) within 1 km of the landfill footprint.
 5. **Groundwater Flux** -the groundwater flux within the aquifer(s) beneath the landfill site.
 6. **Springs/ Groundwater Discharge** - A map showing the location of all springs and groundwater discharge locations within 1 km of the landfill footprint.
 7. **Surface Hydrology** - A study of water and contaminant transport over the earth's surface, and through near-surface soils within 1 km of the landfill footprint.
 8. **Water Quality** - An evaluation, supported by water quality analysis, of the baseline water quality within 1 km of the landfill footprint.
 9. **Background** - A tabulation of background water quality for all applicable monitoring parameters and indicator parameters identified in the Environmental Monitoring Program.
 10. **Land and water use**
 - **Well map** - a map showing the locations of all wells including water supply monitoring, oil and gas wells, geothermal, etc. within 1 km of the landfill footprint.
 - **Well information** - well information, where available, for each water well indicated on the well map including, but not limited to:
 - Total well depth.
 - Diameter of casing at ground surface and at total depth.
 - Type of well construction (cable-tool, rotary, etc.).
 - Depth and type of perforations.
 - Name and address of well driller.
 - Year of well construction.
 - Use of well (agricultural, domestic, livestock watering, etc.).
 - Depth and type of seals.
 - Lithologic, geophysical, and other types of well logs, if available.
 - Water levels, pump tests, water quality, and other well data, if available.
 - **Land use** - Current and allowed land uses within 1 km of the landfill footprint including:
 - Types of land use (e.g., residential, commercial, industrial, agricultural, recreational, etc.).
 - Types of crops.
 - Types of livestock.
 - Number and location of dwelling units.

- **Groundwater and Surface water uses** - Existing and potential future uses of groundwater and surface water within 1 km of the landfill footprint.

10.2 CONSTRUCTION REPORT(S)

Construction report(s) must be prepared after the construction and/or significant modification of landfill facilities. Construction report(s) must demonstrate the landfill has been constructed in accordance with the plans and reports and confirm that the geologic conditions encountered are as expected and used in a Groundwater and Surface water impact assessment. Construction report(s) must include all inspection and quality assurance/quality control testing results, and as-built record drawings showing the lines, grades, and as-built elevations of the landfill. The results of all soil test data including field and laboratory data shall be contained within the construction report. The geologic inspection report containing information as per Section 5.4 shall be included in the Construction Report prepared for the landfill site.

Before and during the construction or significant modification of landfill facilities (e.g. landfill base, landfill base liner, leachate management facilities, landfill gas management facilities, surface water management works, final cover, etc.), inspections and quality assurance/quality control testing must be conducted, and any concerns addressed.

For example, the following inspections and testing are recommended:

Landfill Facility	Inspections and testing
Landfill base	Geologic inspection and soil testing
Landfill base liner	Continuous QA/QC inspection during geomembrane installation and subsequent geomembrane coverage to limit occurrence of undetected defects. Each seam should be individually tested using non-destructive methods.
Leachate collection system	Continuous QA/QC inspection
LFG Collection System	Continuous inspection, testing and adjustment

Final Cover System	QA/QC for geomembrane cover installation, regular inspection for cover integrity, health of vegetation, undesirable plant species, burrowing animals, erosion, settlement, etc.
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Construction reports are to be kept up to date as the landfill development occurs and must be retained for inspection and, upon request, submitted to the Director.

10.3 DESIGN, OPERATIONS AND CLOSURE PLAN

The landfill owner shall prepare and maintain a current DOCP. The plan shall be reviewed and updated as needed at least once every five years. The DOCP shall demonstrate that the facility will be planned, designed, constructed, operated, monitored, and closed in compliance with the Criteria. The facilities specified in the DOCP shall be developed, operated, and closed in accordance with the plan and under the oversight of a Qualified Professional who must ensure that the required works are fully and properly executed.

The DOCP shall include the following:

1. **Topography** - a map of the landfill site and its surrounding region within 1 km of the landfill footprint showing elevation contours, natural ground slopes, drainage patterns, and other topographical features.
2. A **Physical Summary** that describes the physical setting, including geology, hydrogeology, hydrology and climatic conditions (from the Hydrogeology and Hydrology Characterization Report).
3. A **Geotechnical and Seismic Assessment** of the landfill site that includes:
 - Bearing capacity, differential settlement, slope stability during construction, operation, and post-closure.
 - Seismic and fault activity risk assessment.
 - Any effects on the landfill base liner and leachate collection system.
 - Conclusions and recommendations regarding the suitability of the landfill site.
4. A **Groundwater and Surface Water Impact Assessment** that includes:
 - Groundwater and surface water impact assessment at and beyond the landfill site boundary, or within 150 m of the landfill footprint, whichever is closer, including to existing and potential future uses of groundwater and surface water within 1 km of the landfill footprint.

- Contaminant concentrations, mass loadings, assimilative capacity and cumulative impacts.
5. A **Site Plan** that for at least the area within 1km of the landfill footprint includes:
 - The landfill property, landfill site boundary, landfill footprint, and buffer zone.
 - All applicable features in the siting criteria and corresponding distances from the landfill footprint.
 - Legal property boundaries, right-of-way and other easements.
 - Topographic contours (1.0 or 0.5 m).
 - UTM Grid (100 -m spacing), north arrow and scale.
 - All existing structures and infrastructure.
 - Tree line areas.
 6. A **Site Layout Plan** that includes:
 - The landfill site boundary, landfill footprint, and buffer zone.
 - Current and final landfill contours, waste thickness and design volume.
 - Landfill facilities including site entrance, fencing, roads, gatehouse, weighscale, waste and recyclable drop off and recycling facilities, leachate management works, surface water management works, landfill gas management works, etc.
 7. **Landfill Design** that demonstrates the landfill will satisfy all sections of the Criteria, along with necessary plans, specifications, drawings, elevations, sections, etc.
 8. A **Filling Plan** showing planned development of individual phases and cover borrow areas in a sequence that provides for the practical development of the landfill. Section 10.3.1 provides detailed information on the requirements of the Filling Plan.
 9. A **Progressive Closure Plan** that documents how progressive closure will be implemented. Details of the requirements for the Progressive Closure Plan are:
 - Phasing Plan showing areas to be progressively closed.
 - Plan area of each progressive closure.
 - Schedule for each progressive closure.
 - Proposed cover system profile, defining materials and material properties for each cover system layer. Specifications for the revegetation strategy should also be included.
 - Stability analysis demonstrating cover system will be stable under design storm conditions.
 - Analysis of landfill gas production and the need for venting of LFG from beneath the cover system.
 - A materials management plan indicating the quantity of each material required for closure, where it will be sourced, and where it will be stored on-site during closure construction.
 10. A **Lifespan Analysis** table that projects the annual waste tonnage to be received, reused, recycled, burned, and landfilled and the annual air space consumed. The

calculation shall account for air space consumed by waste, cover, road material, settlement, and environmental control works including landfill base liner, leachate and landfill gas collection works, and final cover.

11. A **Contaminating Lifespan Assessment** of the site for key contaminants. The assessment shall demonstrate that the service life and Contaminating Lifespan (Section 5.2) will be satisfied for the facilities particularly those identified in the design criteria.
12. A **Surface Water Management Plan**. See Section 10.3.2.
13. A **Leachate Management Plan**. See Section 10.3.3.
14. A **LFG Management Plan** that demonstrates the LFG management facilities will satisfy the criteria. If required under the Landfill Gas Management Regulation, a Landfill Gas Management Facilities Design Plan can be submitted as a part of the DOCP to satisfy this requirement.
15. An **Environmental Monitoring Plan**. See Section 9.
16. A **Facility Operations Plan** that demonstrates how the facilities will be operated in compliance with the operation criteria. The design of the nuisance control measures is to be included in the plan.
17. A **Closure Plan**. See Section 10.3.4.
18. A **Fire Safety Plan** that:
 - Is submitted to the Fire authority that would respond to the fire.
 - Describes how fire risks will be minimized.
 - Includes an emergency response plan to quickly extinguish a fire if one develops.
 - Identifies a suitable water supply, firefighting and heavy equipment resources.
19. An **Emergency Response Plan** that shall document strategies for dealing with emergencies at the site including HAZ-MAT incidents, spills, power outages, and extreme climate events. The landfill site shall also meet the requirements of Work Safe BC.
20. A **Financial Security Plan**. See Section 8.
21. A **Contingency Plan** that includes:
 - Possible failure and non-compliance scenarios of the leachate, surface water, and landfill gas management facilities.
 - Practical and implementable contingency measures to address any failure or non-compliance with the performance criteria.
22. A **Land Survey** is required to be prepared for all landfill sites and included in DOCP. The land survey is required to identify and establish the location of the landfill site boundary and the landfill footprint. The limits of the landfill footprint and landfill site boundary are to be established and maintained in the field.

10.3.1 Filling plan

A Filling Plan must include volumes associated with each phase and must be designed to take into account the following:

- Generation and collection of leachate.
- Control of storm water.
- Control of litter during the various seasonal conditions.
- Interim slope stability and safety.
- Vehicle access to the active waste disposal area.
- Progressive closure of the landfill footprint.
- Minimization of nuisance impacts such as dust, nuisance weeds, etc.

A Filling Plan shall describe how the active phase of a landfill will be filled on a lift by lift basis. The filling plan shall identify the development of cells, strips and lifts and provide full details on cell geometry and cell size. It shall contain requirements and plans for cover, including daily cover, intermediate and final cover. Plans for any proposed stripping and reuse of cover layers and road materials shall be fully described. The target compaction density, waste to cover ratio, and air space utilization factor should be provided. The Filling Plan shall be illustrated on a series of engineered drawings that provide for the progressive closure of the landfill footprint.

10.3.2 Surface Water Management Plan

A Surface Water Management Plan must be prepared for the landfill site and shall demonstrate how it will satisfy performance criteria (Section 4). The potential for surface water impairment and resulting impacts must be addressed. The Plan must also demonstrate a full understanding of the local and regional watershed including identification of all relevant natural surface water bodies and drainage features.

The Surface Water Management Plan is to:

- Preserve the natural hydrologic cycle for the landfill site.
- Document how surface water will be managed on site, including both run-on and run-off.
- Promote diversion of clean water to minimize leachate production and groundwater recharge.
- Protect the surface water quality in the off-site surface water bodies receiving drainage from the landfill site.

- Provide a design for surface water control works that will ensure drainage coming onto and leaving the landfill site does not result in interruptions to the site operations.
- Provide a design that will maintain run-off from the site sediment free and at rates that are consistent with pre-development flows.
- Identify the surface water management works required for the control of erosion, sediment transport, flood risk, water quantity and water quality.
- Provide the meteorological data applicable to the site, results of the hydrologic modeling stipulated in Section 5.7 and the detail design of ditches, down-chutes, settlement/retention ponds, culverts, and other surface water control infrastructure.

The Surface Water Management Plan must address the management of surface water throughout the operating and post-closure period of the landfill. The Surface Water Management Plan is to be prepared in a manner that is consistent with the water management requirements and strategies utilized in developing the Leachate Management Plan and the Groundwater and Surface Water Impact Assessment.

10.3.3 Leachate Management Plan

An engineered liner system, leachate collection, and Leachate Management Plan are required for all new and expanding landfills and new active landfill phases at existing landfills.

A Leachate Management Plan shall:

- Present the most appropriate method of leachate collection, storage, treatment, and discharge on a site-specific basis that meets the requirements of the landfill design that is protective of groundwater, surface water and the surrounding environment.
- Demonstrate the performance criteria (Section 4) will be satisfied.
- Perform the assessment of alternatives for off-site or on-site leachate treatment and identify the preferred treatment method.
- Demonstrate that the preferred alternative is practical and implementable and provide an implementation schedule of the preferred alternative.
- Identify required approvals for implementation of the Leachate Management Plan if off-site disposal/treatment is proposed.

The Plan must consider the quantity and quality of leachate to be generated at the landfill site during the operational and post-closure phases of the landfill. The leachate

quantity assessment shall identify the expected leachate quantities that will be generated by the facility on a Phase by Phase basis, both under average and extreme conditions. The leachate quality assessment shall predict the expected concentrations of key leachate parameters throughout the lifespan. At a minimum, the assessment shall consider concentrations of ammonia, BOD, chloride, iron, manganese, and TSS.

At a minimum, the Leachate Management Plan shall address the following:

- Leachate generation quantities (annual, monthly and peak flows).
- Leachate chemistry profiles (actual and expected).
- Landfill liner strategy (including leachate compatibility and lifespan).
- Leachate collection strategy (including protection from clogging).
- Leachate collection system efficiencies.
- Treatment System Selection and Design. The Plan should also include:
 - Identification of Management Alternatives including opportunities for moisture reduction, on-site treatment, off-site treatment, and recirculation.
 - Evaluation of Management Alternatives including required level of treatment, availability of infrastructure, economics, sustainability and environmental risks.
- Sludge Management.
- Treatment system performance monitoring and maintenance.
- Leachate discharge strategy.
- Leachate management contingency plan.

Leachate captured by the leachate collection system shall be treated prior to discharge to the environment. Some form of leachate treatment is mandatory for all landfills. The level of treatment required and method of treatment are site specific and will greatly depend on the strength of the leachate, the nature of the final discharge and the climatic conditions at the landfill site. In general, leachate treatment methods used at landfill sites include the following:

- Leachate recirculation back into the waste at dry sites where the evaporation rate is greater than annual precipitation.
- Leachate pre-treatment if necessary, and directed to a sanitary sewage collection system where a sewage collection system is in reasonably close proximity to the landfill. If discharging to a sanitary sewer, the leachate shall meet the applicable water quality limits established for influent to the waste water treatment plant (WWTP) or sewer discharge bylaws, where such bylaws exist. The WWTP must have sufficient hydraulic and loading capacity to treat the leachate. A treatability study is required to confirm the composition of the leachate will not cause an upset

of the treatment system. Flow equalization and pre-treatment shall be provided as required.

- Leachate treatment on-site using an appropriate treatment methodology. Typically, on-site treatment will require flow equalization, biological treatment, filtering, and on-site polishing. Not all steps are needed for every site. In some cases lined evaporation ponds will sufficiently serve for treating leachate. Biological treatment can be provided in aeration ponds (pre-treatment) or sequencing batch reactors. Filtering and final polishing can be accomplished with a sand filter, an engineered wetland, or a phyto-remediation area. The treated leachate shall meet the following discharge specific standards:
 - If discharging to a groundwater infiltration system, leachate shall meet applicable groundwater quality standards as specified by the Director.
 - If leachate discharge is to a stream or river then the discharge shall meet applicable surface water quality standards as specified by the Director.
 - All leachate discharges to surface waters shall comply with the requirements of the federal *Fisheries Act*.

Information on the requirements for leachate treatment and leachate recirculation for bioreactor landfills is provided in Appendix D.

10.3.4 Closure Plan

A Closure Plan must document how the facility will be operated and maintained post closure to ensure that all required environmental control systems will continue to function and all performance criteria will be met.

The post-closure operation and maintenance program shall include:

- Maintenance of the final cover including vegetation and the repair of damage due to erosion, leachate breakouts, slope failures, settlement and burrowing animals.
- Where applicable, operation and maintenance of surface water management works, including repairs required due to settlement.
- General site maintenance including maintenance of access roads and fencing.
- Where applicable, operation and maintenance of leachate collection and on-site leachate treatment facility or leachate haulage program.
- Where applicable, operation and maintenance of landfill gas management facilities, including repairs to infrastructure damaged by settlement.
- An environmental monitoring program to be carried out during the Contaminating Life Span.

- Practical and implementable contingency measures to address any failure of the works or non-compliance with the performance criteria. Contingency measures may include the following measures:
 - Extraction and treatment of groundwater downgradient of the landfill site.
 - Establishment of monitored attenuation zones.
 - Repair and/or installation of shallow leachate collection system.
 - Installation of landfill gas collection or barrier systems.

10.4 LANDFILL GAS GENERATION ASSESSMENT

The Landfill Gas Management Regulation requires municipal solid waste landfills with 100,000 tonnes or more of waste in place or with an annual waste acceptance rate exceeding 10,000 tonnes to undertake an assessment of landfill gas generation and to submit the results to the Ministry. For the detailed requirements, procedure and report format see guidance documents provided under the Landfill Gas Management Regulation.

10.5 LANDFILL GAS MANAGEMENT FACILITIES DESIGN PLAN

If according to the Landfill Gas Generation Assessment Procedure a regulated landfill site is estimated to generate annually 1000 tonnes or more of methane, the owner or operator of that site is required to complete a LFG management facilities design plan and to install the designed facilities at the landfill site. For timelines and detailed requirements see the Landfill Gas Management Regulation and the Landfill Gas Management Facilities Design Guidelines.

10.6 ANNUAL OPERATIONS AND MONITORING REPORT

The Annual Report should contain two essential components:

1. The Annual Environmental Monitoring Report.
2. The Annual Operations Report.

Both of these reports shall assess the performance of and report on the operational status of the landfill for a specified year period.

The Annual Environmental Monitoring Report must include:

- Results of the environmental monitoring program.
- Data tabulation, comparison to performance criteria, interpretation, trend analysis, graphs, etc.
- Identification of any current or predicted future non-compliance with performance criteria.
- Conclusions, recommendations and proposed changes to the environmental monitoring program.

The Annual Operations Report should include at a minimum:

- Total volume, tonnage, and types of waste discharged into the landfill for the year.
- Types and tonnages of waste that were not directly disposed of into the landfill such as open burned, recycled, composted, etc.
- Leachate quantities collected, treated and discharged.
- Landfill gas quantities collected flared and utilized. If applicable, an annual report should be done in the format required by the Landfill Gas Management Regulation and submitted either separately or as a part of the Annual Report.
- Operational plan for the next 12 months.
- Remaining site life and capacity.
- Closure works completed.
- Any changes from approved reports, plans and specifications.
- Any complaints received and the action taken as a result of a complaint.
- Financial Security Plan update.
- Identification of any non-compliance with the Solid Waste Management Plan, operational certificate or permit, and a proposed action plan and schedule to achieve compliance. The plan should include a monitoring program to measure the performance of the proposed measures in achieving compliance.
- Where applicable, progress report on efforts to resolve previously determined non-compliance conditions.

In addition, landfill owners are encouraged to track and report the following parameters to assess the overall operational efficiency of their landfill:

- Compaction, waste to cover ratio, waste to road ratio and airspace utilization factor.
- Operation and maintenance expenditures.

By tracking these parameters and comparing results to best practices, the landfill owner or a Qualified Professional can identify areas where operations can be made more

efficient, adding to the landfill lifespan, contributing additional revenue, and reducing per-tonne operating costs.

APPENDIX A

LANDFILL FILLING PLAN

The following provides guidance for the landfill filling plan:

Active Phase Area Size

As landfill gas emissions and leachate production are generally proportional to the active landfill phase area, phased landfill development and progressive closure is encouraged. Based on the incoming annual tonnage, the size of the active phase at a landfill site shall be limited to the following:

<10,000 tonnes/year	1 Ha
10,000 - 20,000 tonnes/year	2 Ha
20,000 - 50,000 tonnes/year	4 Ha
50,000 - 200,000 tonnes/year	6 Ha
200,000 - 500,000 tonnes/year	8 Ha
>500,000 tonnes/year	10 Ha

Cell Volume

The volume of MSW placed in individual cells shall be roughly equivalent to 20 operating days of incoming refuse. Maximum recommended cell sizes are as follows:

<10,000 tonnes/year	1,000 m ³
10,000 - 20,000 tonnes/year	2,000 m ³
20,000 - 50,000 tonnes/year	4,000 m ³
50,000 - 100,000 tonnes/year	6,000 m ³
100,000 - 200,000 tonnes/year	15,000 m ³
200,000 - 500,000 tonnes/year	20,000 m ³
>500,000 tonnes/year	40,000 m ³

First Lift

The first lift of waste is to be placed on top of the leachate collection system in a 1.5- to 2.0-m lift. The first lift is to consist of MSW containing a minimal amount of fines or soil

in order to provide a relatively high permeability waste layer directly over the leachate collection system. The first lift of waste is to be free of large pieces of wood, metal, or other debris that could cause damage of the leachate collection system or liner components if placed directly on the prepared base. No cover soil is to be placed within the first 1.5- to 2.0-m lift of waste. Following placement of the first lift of waste in the new cell, the waste is to be covered with a 150-mm layer of daily cover soil. Waste compaction equipment shall not operate on the first lift of waste.

Lift Height

The height of individual lifts dictates the size of the active face and operational cover requirements. Small landfills operate more efficiently on small lifts (e.g., 1.5 m) while large tonnage landfills operate most efficiently on lifts as high as 5.0 m. The following lift height guidance is provided to achieve efficient landfill operations:

<10,000 tonnes/year	1.5 m
10,000 – 20,000 tonnes/year	2.0 m
20,000 – 50,000 tonnes/year	2.5 m
50,000 – 100,000 tonnes/year	3.0 m
100,000 – 200,000 tonnes/year	4.0 m
200,000 – 500,000 tonnes/year	4.5 m
>500,000 tonnes/year	5.0 m

Active Face Area

The goal of efficient landfill operations is to minimize the active face while providing sufficient area to unload incoming loads safely and to efficiently spread refuse on the active face as it comes in. Excessively large active face dimensions generally result in problems with litter, vectors, and odours. They also consume more operational cover than necessary. The following maximum active face area dimensions are recommended to achieve efficient landfill operations:

	<i>Lift Height</i> <i>m</i>	<i>Slope Distance</i> <i>m</i>	<i>Face Width</i> <i>m</i>	<i>Area m²</i>
<10,000 tonnes/year	1.5	9.1	10	91
10,000 - 20,000 tonnes/year	2	12.2	12	146
20,000 - 50,000 tonnes/year	2.5	15.2	16	243
50,000 - 100,000 tonnes/year	3	18.2	20	365
100,000 - 200,000 tonnes/year	4	24.3	24	584
200,000 - 500,000 tonnes/year	4.5	27.4	25	684
>500,000 tonnes/year	5	30.4	40	1,217

Compaction Density

Compaction of solid waste is an effective way to maximize the use of available capacity. Waste should be placed at the base of the active disposal face and should be pushed up the disposal face to maximize compacted density. Based on current best practice the following ranges of compaction densities are recommended as achievable goals:

<10,000 tonnes/year	0.65 tonnes/m ³
10,000 - 50,000 tonnes/year	0.75 tonnes/m ³
50,000 - 200,000 tonnes/year	0.80 tonnes/m ³
200,000 - 500,000 tonnes/year	0.85 tonnes/m ³
>500,000 tonnes/year	0.95 tonnes/m ³

APPENDIX B

CONTAMINATED SOIL RELOCATION

The following legislation and regulations include provisions which address the relocation and deposition of contaminated soil:

1. The *Environmental Management Act* (EMA)
2. The Contaminated Sites Regulation (CSR)
3. The Hazardous Waste Regulation (HWR)

Contaminated soil may be deposited at a landfill site under the following conditions:

- A. If the authorization (e.g. SWMP and associated OC, or permit) expressly allows the deposit of contaminated soil, contaminated soil that is not hazardous waste can be deposited at a landfill without a Contaminated Soil Relocation Agreement pursuant to Section 55.5 of the *Environmental Management Act* (EMA). The authorization holder must comply with the authorization including ensuring that the concentration of any substance in the contaminated soil is not greater than or equal to the soil standards expressly allowed in the authorization (permit, SWMP, OC).
- B. If the authorization (e.g. SWMP and associated OC, or permit) does not expressly allow the deposit of contaminated soil and the deposit of contaminated soil is not contrary to the authorization, contaminated soil that is not a hazardous waste can be deposited at a landfill without a Contaminated Soil Relocation Agreement pursuant to section 42 of the CSR. The landfill owner must file a written statement with a director indicating the intended future use of the site and ensure the concentration of any substance in the contaminated soil is not greater than or equal to the soil standards for the intended future use.

If condition A or B is not satisfied, contaminated soil that is not a hazardous waste can be deposited at a landfill in accordance with a Contaminated Soil Relocation Agreement pursuant to section 55 of EMA and Part 8 of the CSR.

- C. If contaminated soil is hazardous waste "hydrocarbon contaminated soil", it may be approved for treatment, storage or disposal at/in a landfill facility pursuant to section 41.1 of the HWR including the requirements specified by the Director.

Deposit of contaminated soil in the landfill may be approved for mono-filling, co-disposal with other wastes, or use as daily or intermediate cover. Contaminated soil must not be used as final cover unless the concentration of any substance in the contaminated soil is not greater than or equal to the CSR soil standards for the intended future end use specified in the closure plan.

Additional information on relocation of contaminated soil may be found at:
<http://www.env.gov.bc.ca/epd/remediation/soil-relocation/index.htm>

APPENDIX C

OPEN BURNING

As stated in Section 6.6 of the Criteria, open burning of wastes at the landfill site is generally prohibited. However, open burning of clean wood may be approved in the SWMP, OC or permit if it can be demonstrated that there is no viable alternative such as reuse, recycling, energy recovery, or composting. A technical assessment report satisfactory to the director must be submitted and the open burning must be approved in the SWMP, OC or permit. Approval must also be obtained from any other applicable fire protection authorities.

If open burning of clean wood is approved in the SWMP, OC or permit, this Appendix provides some general guidelines to be considered.

Open Burning Guidelines:

- Relevant requirements of the Open Burning Smoke Control Regulation are applicable. Notification of the regional MOE office is required, at least 24 hours prior to the open burn event. Additional authorizations for open burning may be required from other government agencies. The open burn process shall satisfy all fire safety and general safety precautions imposed by other agencies.
- The maximum duration of each open burn event shall be limited to the period of dawn to dusk of a single day, after which time the fire shall be extinguished. The wood residue to be burned shall be stacked in piles of a size that may be consumed by the fire in the dawn to dusk time frame.
- Open burning shall not be initiated unless the ventilation index is forecasted as "good" for the day of the planned open burn. The Venting Index may be obtained from the MOE's information line at 1-888-281-2992 or on the Internet at: <http://www.env.gov.bc.ca/epd/epdpa/venting/venting.html>.
- Only clean wood shall be burned. Clean wood means solely wood and:
 - does not include composite wood products including plywood, particle board, fibreboard, hardboard, oriented strandboard, laminated lumber, laminated wood, veneer, laminate flooring, or engineered wood products; and,
 - must not be contaminated with, or have been treated or coated with, antiseptant, preservative, fire retardant, glue, adhesive, laminate, bonding agents, resin, paint, stain, varnish or a substance harmful to humans, animals, plants or the environment.

- The clean wood to be burned shall be segregated from other waste and sorted to ensure that there are no unacceptable materials in the burn pile(s). Unacceptable materials are any materials other than clean wood.
- The clean wood shall be piled in a manner that will promote rapid and hot combustion.
- The operator shall ensure that the open burn is supervised throughout the duration of the burn. Suitable devices shall be available for extinguishing fires to prevent them from spreading to surrounding areas and to extinguish the fire at dusk of the burn day. A fireguard shall be cleared and maintained free of combustible materials.
- The fire shall be started using an accelerant applied about the perimeter of the burn to encourage rapid ignition and reduce smoke generation at the onset of burning. The operator shall promote efficient combustion in the pile by turning it over as the fire diminishes and the pile starts to smoulder. An excavator with a thumb is recommended for active management of the burn pile.
- If smoke is excessive, or for any other reason, the Director may order the operator to immediately extinguish the burn.
- Additional requirements may be imposed by the Director based on site specific circumstances and/or on the performance of open burn events. The Director may rescind the authorization if warranted by the circumstances.

The operator shall within 30 days of completion of the open burn event submit a report to the Director with the following information:

- Weather conditions, including venting index, prevailing wind direction and estimated wind speed.
- Time of ignition (start of burn period).
- Time of completion (or extinguishment) of burn.
- Quantity of material open burned.
- A representative photo record of the open burn including photos of the pile prior to ignition and photos of the burn event at a frequency of at least one photo per hour till completion of the burn.
- Any complaints received and how they were addressed.

The Fire Safety Plan shall provide the site specific conditions and controls for the burning of clean wood if approved.

APPENDIX D

BIOREACTOR LANDFILLS

Bioreactor type landfills have been in practice for over three decades. The bioreactor landfills accelerate the waste stabilization in comparison to traditional landfill design. Traditional landfills attempt to entomb the waste by minimizing the infiltration of liquid. This reduces leachate generation but extends the contaminating lifespan of the site. Bioreactor landfills provide a controlled and monitored process to accelerate waste stabilization and reduce the contaminating lifespan primarily through the addition of moisture. Previous experience and research indicates that the control of waste moisture content is the single most important factor in enhancing waste decomposition in landfills¹. The use of bioreactor landfills in dry climates is dependent on the availability of leachate and/or water to facilitate the decomposition process and sustain waste stabilization activity. A bioreactor landfill may provide a longer site life than a traditional designed landfill due to decomposition and consolidation of the waste providing opportunity to increase the waste density and recover landfill air space.

A full understanding of landfill design and operating systems is required for the operation and management of bioreactor landfills due to the high level of interdependence and interactions of landfill system components. Engineered system components for bioreactor landfills include integrated landfill gas and leachate collection systems, leachate storage, leachate disposal (on-site or off-site), and leachate recirculation systems. Double composite liner systems providing both containment and leak detection are preferred when considering leachate recirculation due to the establishment and maintenance of a leachate mound resulting in increased hydraulic pressures on the liner systems.

Primary implications for bioreactor landfills include nuisance impacts (odour), health and safety issues associated with rapid stabilization (i.e., rapid gas production, rapid settlement, depth of leachate on liner, slope failure due to waste saturation) and excessive leachate mounding that could lead to side slope seepage which must be addressed in the design stages². The applicability of bioreactor landfills requires completion of economic evaluations that include a comparison of landfill design and operating criteria and account for and quantify differences in environmental impacts as well as capital and operating/maintenance expenses.

¹ Pohland, F.G., "Landfill Bioreactors: Fundamentals and Practice", Solid Waste Association of North America Conference Review, 1996, pp 18 - 22.

² Mosher, R., McBean, E., Crutcher, A., and MacDonald, N., "Leachate Recirculation for Rapid Stabilization of Landfills: Theory and Practice", Solid Waste Association of North America Conference Review, 1997, pp 33 - 26.

Leachate recirculation can reduce leachate strength for certain parameters such as organic loading but can increase the levels of certain contaminants such as metals, chloride, and sulphates. Bioreactor landfills require more comprehensive monitoring to evaluate landfill performance. Monitoring requirements for fully engineered bioreactor landfills can include leak detection between liners in a double liner system, groundwater monitoring in the vicinity of the landfill to detect releases, air and gas monitoring for landfill emissions, as well as solids monitoring to determine the level of waste stabilization. Monitoring the leachate head on the liner is important to assess liner performance and the potential for leachate discharge to the environment. Leachate seepage through side slopes should be also monitored as a part of slope stability monitoring and for the potential to negatively impact surface water quality and increase odours.

The key technical components for the design and development of an engineered bioreactor landfill include:

- Geologic/hydrogeologic investigation.
- Determination of leachate generation rates and collection system efficiencies.
- Liner system performance assessment with sustained leachate mound.
- Hydrogeologic impact assessment considering reasonable failure scenarios.
- Geotechnical assessment for soil bearing capacity and slope stability.
- Detailed leachate, water quality, and hydraulic monitoring programs.
- Feasible and implementable contingency measures.



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May 9, 2014

XCG File No. 4-2200-01-75

Mr. Larry Gardner
 Manager, Solid Waste
 Regional District of Nanaimo
 6300 Hammond Bay Road
 Nanaimo, British Columbia
 V9T 6N2

Re: Impacts of the Draft BC Landfill Criteria on the Nanaimo Regional Landfill

Dear Mr. Gardner:

XCG Consultants Ltd. (XCG) is pleased to present the following letter summarizing the anticipated impacts on the Nanaimo Regional Landfill (Site) associated with the enactment of the updated British Columbia Landfill Criteria for Municipal Solid Waste (Updated Criteria).

The Site is currently operating under Operational Certificate 1714 (OC) issued by the British Columbia Ministry of Environment (BC MOE) on December 30, 2011 under the current Landfill Criteria enacted in June of 1993 (1993 Criteria). The OC stipulates that the Site be operated and developed as per the approved Design and Operations Plan dated November 2, 2009. The approved Design and Operations Plan addresses the long-term development of the Site, existing and future landfill footprint, and final development area and final contours. As such, it is not anticipated that the Updated Criteria will result in changes to the remaining disposal air space or site life. Furthermore, it is noted that due to the diligence of Regional District of Nanaimo (RDN) staff and landfill personnel, any impacts of the Updated Criteria to the RDN are anticipated to be minimal and should not affect ongoing site operations.

Impacts of the Updated Criteria, although relatively minor in nature, with the noted exception of long-term post-closure financial liabilities, are presented herein.

SITING CRITERIA

Although the Site was established in the 1940s as an unlined landfill, and the development of lined cells commenced in 1991, there is the potential for some minor impacts of the Updated Criteria on the development of the Site.

Article 3.8 of the Updated Criteria stipulates that the landfill footprint must not be located within 100 metres of an environmentally sensitive area such a wetland. The low lying area west of the site Garage, where the North Berm is to be constructed, is typically saturated through the winter months due to poor drainage associated primarily with historic landfill development and the establishment of drainage culverts from the north side of Cedar Road adjacent to the Site.



In addition, poor drainage conditions associated with beaver activity (i.e. creation of dams) in the southeast corner of the Site within the permitted area, in the region of the future Southeast Berm expansion, has also resulted in ponding of water. This ponded area is understood to be the direct result of beaver activity since the 1990s, with ponded water now encroaching within approximately 20 to 25 metres of the 2000 lined expansion area.

Development of these areas is approved in the aforementioned Design and Operations Plan and should be addressed in the future to ensure that these areas, located within the permitted landfill area, are not interpreted to be environmentally sensitive areas.

LANDFILL GAS MANAGEMENT

Landfill gas has been actively collected at the Site since 1997 and the Site is considered an “early adopter” with respect to reducing greenhouse gas emissions. The landfill gas collection system has been designed based upon best management practices and upgrades to the well field and associated header pipe have been incorporated into the Design and Operations Plan to meet the 75 percent collection rate stipulated in the Updated Criteria. As such, with the exception of the flare which will require eventual upgrade to meet the Updated Criteria, no significant impacts have been identified other than long-term financial considerations during the post-closure phase which are addressed below.

DESIGN CRITERIA

The Updated Criteria replaces many of the general “performance criteria” with a “prescriptive criteria” approach. In general, the approved Design and Operations Plan meets these new prescriptive criteria with respect to all major components, environmental controls, buffers and setbacks for all future cells (North Berm) and closure works. As such, the long-term capital budget for ongoing development and closure works is not anticipated to be significantly impacted.

OPERATIONS CRITERIA

The operational requirements outlined in the updated Landfill Criteria are in general agreement with those outlined in the approved Design and Operations Plan. The requirement for 15-metre wide fire breaks in article 6.7 is the only significant noted exception. Due to the lack of buffer on the older portion of the landfill which predates the 1993 Criteria (especially in the northwest quadrant of the Site along Cedar Road where the buffer zone is as little as approximately 10 metres wide) full compliance with this article is not possible and should be addressed in the next amendment to the OC.

CLOSURE POST-CLOSURE CRITERIA

This element of the Updated Criteria presents the greatest potential financial impact to the Site and the RDN. Where the 1993 Criteria defined the post-closure period as a minimum of 25 years, the Updated Criteria defines the post-closure period as the duration of the contaminating lifespan.

Contaminating Lifespan is defined in the Updated Criteria as “the period of time during which the landfilled waste has the potential to produce effluent or air contaminants.” The duration of the contaminating lifespan has the potential to be significantly longer than 25 years as historically used as a default value. As such, the RDN should consider undertaking an



assessment to estimate the site-specific contaminating lifespan which is stipulated by the criteria to be 30 years or greater. In the absence of such an assessment, the updated criteria stipulates a default value of 1000 years for post-closure liabilities.

In addition to post-closure liability, the Updated Criteria also addresses the applicability of the British Columbia Contaminated Sites Regulation (CSR) to a closed landfill. The Updated Criteria stipulates in Article 7.5 that ten days prior to termination of landfilling activities at a landfill, a Site Profile must be submitted to the MOE. The implication of this stipulation is the potential for additional requirements to be placed upon the Site during the post-closure phase, if land use or activities being undertaken at the landfill have been altered. This will result in additional post-closure liabilities.

FINANCIAL SECURITY

This element the Updated Criteria represents the second greatest potential impact to the RDN with respect to financial considerations and is also directly related to the aforementioned post-closure liability.

The Updated Criteria prescribes the establishment of a formal closure fund to finance closure of the Site (including provisions for emergency closure or closure at any stage of development of the landfill), post-closure maintenance, environmental monitoring, equipment replacement (e.g. landfill collection system components, environmental monitoring wells, etc.), and emergency contingency measures.

Although it is understood that provisions for progressive closure have been accommodated for in the RDN capital reserves, provisions for post-closure liabilities (associated with the full contaminating lifespan of the Site) and contingency measures have not been accounted for to date.

PLANS AND REPORTS

The Updated Criteria formalize a requirement to update the Design and Operations Plan every five years and provides details with respect to the minimum content of this document. With only minor exceptions, the approved Design and Operations Plan meets the requirements of the Updated Criteria. This document is budgeted for revision in 2014 and will be updated to meet all requirements of the Updated Criteria.

In addition to the Design and Operations Plan, the Updated Criteria also stipulates that a Hydrogeology and Hydrology Characterization Report be submitted to the BCMOE. The existing report for the Site entitled "Hydrogeologic Study" (CRA, 2007) meets many of the requirements of the Hydrogeology and Hydrology Characterization Report. It is understood that an updated Hydrogeology and Hydrology Characterization Report is budgeted to be completed in 2014/2015 and this budget can be readily amended to meet the requirements outlined in the Updated Criteria.



Should you have any questions or require additional information, please do not hesitate to contact the undersigned.

Yours very truly,

XCG CONSULTANTS LTD.

A handwritten signature in black ink, appearing to read 'M. Lefebvre', written in a cursive style.

Michel Lefebvre, M.Sc., P.Eng.
Senior Project Manager