Capital Regional District
625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Core Area Liquid Waste Management Committee

Wednesday, March 23, 2016 | **9:00 AM** | **6th Floor Boardroom**

L. Helps (Chair), R. Atwell (Vice-Chair), M. Alto, S. Brice, D. Blackwell, J. Brownoff, V. Derman, B. Desjardins (Board Chair), C. Hamilton, B. Isitt, N. Jensen, C. Plant, Chief R. Sam, D. Screech, L. Seaton, Chief A. Thomas, G. Young

1. Approval of Agenda

2. Adoption of Minutes

2.1. 16-427 Approval of the Minutes of February 24 and 26, and March 2 and 9, 2016

Recommendation: That the following minutes of the Core Area Liquid Waste Management Committee be approved:
1. February 24, 2016
2. February 26, 2016
3. March 2, 2016
4. March 9, 2016

Attachments:
2016-02-24 Minutes CALWMC
2016-02-26 Minutes CALWMC
2016-03-02 Minutes CALWMC
2016-03-09 Minutes CALWMC

3. Chair's Remarks

4. Presentations/Delegations

4.1. **16-455** Delegation: David Langley, re: item 5.5

4.2. **16-456** Delegation: Ian Back, re: item 5.10

4.3. **16-457** Delegation: Hans Larsen, re: item 5.10

5. Committee Business

5.1. 16-436 Update on Municipal Referrals - Core Area Wastewater and Resource Recovery System

Recommendation: That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

That the host municipalities lead the community engagement process in their respective communities, that the processes be funded from the Core Area Liquid Waste Management Program Phase 2 Planning budget and that the approach be referred to both Esquimalt and Victoria Councils.

Attachments: Staff Report: Update on Municipal Referrals - Wastewater Treatment

5.2. 16-189 Fairness and Transparency Advisor Reports - January and February, 2016

Recommendation: That the following Fairness and Transparency Advisor Reports be received for information:
1. January 2016
2. February 2016

Attachments: Report: Fairness and Transparency Advisor Report January 2016

Report: Fairness and Transparency Advisor Report February 2016

5.3. 16-184 2016 CRD Board Standing Committee Terms of Reference and Work Programs (CALWMC)

Recommendation: 1. That the attached report "Update to 2016 Capital Funding - Core Area Wastewater Program" be received for information; and
2. That the terms of reference for the 2016 Core Area Liquid Waste Management Committee as attached in Appendix A be approved; and
3. That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
That the Committee priorities and work program as outlined in the Priorities Dashboard, be confirmed.

Attachments: Staff Report 1: CRD Board Standing Committee TOR and Work Programs (CAL

Appendix A: Terms of Reference CALWMC

Appendix B: Priorities Dashboard CALWMC

Appendix C: 2016-2019 Service Plan CALWMC

Staff Report 2: Update to 2016 Capital Funding

Schedule A: 2016 Capital Funding–Core Area Wastewater Program (Oct. 2015)

Schedule B: Updated Ramping Up to Treatment (Jan. 2016)

Schedule C1: Requisition Cost Sharing (B1 from Oct. 2015)

Schedule C2: 2016 Cost Sharing Allocation (B3 from Oct. 2015)

Schedule D: Updated Proposed Work Plan Overlay (Jan. 2016)

5.4. 16-199 Available Funding Options - Core Area Wastewater Program

Recommendation: That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
That the report Available Funding Options - Core Area Wastewater Program be received for information.
(WP Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, View Royal)

Attachments: Staff Report: 2016 Available Funding Options - Core

5.5. 16-206 Regional Water System - Supply and Demand

Recommendation: That the Core Area Liquid Waste Management Committee receive the staff report for information.

Attachments: Staff Report: Regional Water System - Supply and Demand

5.6. 16-373 Core Area Wastewater Treatment Program and Year End Budget Update No. 31

Recommendation: That the Core Area Liquid Waste Management Committee receives this report and recommends to the Capital Regional District Board:
That Core Area Wastewater Treatment Program and Year End Budget Update No. 31 be received for information.

Attachments: Staff Report: Wastewater Treatment Program Budget Update No31

Attachment: Schedule A Budget Update 31

5.7. 16-387 Core Area Sewage and Resource Recovery System 2.0 - Budget Update No. 4

Recommendation: That the Core Area Liquid Waste Management Committee receive this budget update for information.

Attachments: Staff Report: Core Area Sewage Treatment Budget Update No. 4

Appendix A: Budget Table

5.8. 16-364 Sustainability Development Technology Fund

Recommendation: That the Core Area Liquid Waste Management Committee receives this report and recommends to the Capital Regional District Board:
That this report be received for information.

Attachments: Staff Report: Sustainability Development Technology Fund

5.9. 16-49 Motion with Notice: Accountability and Representation in Governance of Components of Eastside and Westside Sub-systems

Recommendation: BE IT RESOLVED THAT the Core Area Liquid Waste Management Committee directs staff to report back at the next meeting on procedural changes and/or governance enhancements that will ensure that each participant who is anticipated to use or pay for a component of the eastside or westside wastewater treatment sub-systems is included in the governance system directing the design and eventual operation of that component of the system.

Attachments: Background & Motion: Accountability and Representation (Young)

5.10. 16-257 Motion with Notice: Mechanism for Future Options (Derman, Plant)

Recommendation: That the Core Area Liquid Waste Committee ask the Chair to bring forward a program for future directions that clearly puts in place mechanisms to allow substantially different options to come forward in the future. Furthermore, such options should be able to include differences in siting, technology, overall system design and waste streams involved.

Attachments: Rationale & Motion: Mechanism for Future Options (Derman/Plant)

5.11. 16-258 Motion with Notice: Compliance with Charter Goals (Derman, Plant)

Recommendation: That the Core Area Liquid Waste Committee establish a process for thoroughly evaluating the consistency of currently proposed options with the goals and commitments established under the Project Charter. Furthermore, that the Core Area liquid Waste Committee not proceed further with any of the proposed options until it has been established that they are substantially compliant with Charter goals and commitments.

Attachments: Rationale & Motion: Compliance with Charter Goals (Derman/Plant)

5.12. 16-201 Westside Wastewater Treatment and Resource Recovery Select Committee Agenda Packages and Motion

Recommendation: 1. That the Westside Wastewater Treatment and Resource Recovery Select Committee agenda package of February 2, 2016, be received for information.
2. In relation to item 5.1 of the Westside agenda, the Westside Select Committee recommends to the Core Area Liquid Waste Management Committee:
That the Eastside undertake a similar analysis and that the results of the two studies be applied to a single plant and a two-plant option.
3. That the Westside Wastewater Treatment and Resource Recovery Select Committee agenda package of March 8, 2016, be received for information.

Attachments: 2016-02-02 Agenda Package Westside WWTRR Select Committee

2016-03-08 Agenda Package Westside WWTRR Select Committee

5.13. 16-280 Eastside Wastewater Treatment and Resource Recovery Select Committee Agenda Package for Information

Recommendation: That the Eastside Wastewater Treatment and Resource Recovery Select Commtitee agenda package of February 17, 2016, be received for information.

Attachments: 2016-02-17 Agenda Package Eastside WWTRR Select Committee

6. Correspondence

6.1. 16-302 Correspondence from Harbour Resource Partners,18 Feb. 2016, re: Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant

Recommendation: That the 18 Feb. 2016 correspondence from Harbour Resource Partners be received for information.

Attachments: Letter: HRP To CRD Board 2016-02-18 McLoughlin Solution

6.2. 16-303 Correspondence from Esquimalt and Songhees Nations, 19 Feb. 2016, re: CRD Sewage Treatment Facility-Rock Bay Lands

Recommendation: That the 19 Feb. 2016 correspondence from Esquimalt and Songhees Nations be received for information.

Attachments: Letter: Esquimalt & Songhees Nations 2016-02-19 Rock Bay Lands

6.3. 16-304 Correspondence from Burnside Gorge Community Association, 22 Feb. 2016

Recommendation: That the 22 Feb. 2016 correspondence from the Burnside Gorge Community Association be received for information.

Attachments: Letter: Burnside Gorge Community Association 2016-02-22

6.4. 16-342 Correspondence from Tourism Victoria to CRD Directors, 25 Feb. 2016, re: Sewage Treatment

Recommendation: That the correspondence from Tourism Victoria, 25 Feb. 2016, re: Sewage Treatment, be received for information.

Attachments: Letter: Tourism Victoria To CRD re SewageTreatment

6.5. 16-354 Correspondence Between Chair of the Core Area Liquid Waste Management Committee and Esquimalt Mayor, re: Core Area Wastewater Treatment

Recommendation: That the following correspondence be received for information:
1. CALWMC Chair Helps to Esquimalt Mayor Desjardins and Council, 29 Feb 2016, re: Sewage Treatment
2. Esquimalt Mayor Desjardins Response to CALWMC Chair Helps, 03 March 2016, re: CRD (Mayor Helps) Letter of February 29, 2016

Attachments: Letter: CALWMC Chair to Esquimalt Mayor 2016-02-29, Core WW Treatment

Letter: Esquimalt Mayor Response to CALWMC Chair, 2016-03-03

6.6. 16-375 Correspondence Between Core Area Liquid Waste Management Committee Directors, 23 Feb. 2016, re: Comments on IRM for Feb. 24

Recommendation: That the correspondence be received for information.

Attachments: Email String: Directors Young & Atwell and Committee Re IRM

6.7. 16-388 Correspondence from Harbour Resource Partners, 3 March 2016, re: Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant

Recommendation: That the correspondence be received for information.

Attachments: Letter: HRP re: McLoughlin Cost Update 2016-03-03

Attachment: Urban Systems/Carollo Cost Evaluation

6.8. 16-393 Correspondence: Washington State Legislature to Mayor of Victoria, 03 March 2016, re: CRD Sewage Treatment

Recommendation: That the correspondence be received for information.

Attachments: Letter: Washington State Legislature 2016-03-03 Sewage Treatment

6.9. **16-449** Correspondence from CRD Board Chair Desjardins to Minister of Environment, Mary Polak, 17 March 2016, re: CRD Core Area Liquid Waste Management Plan Amendment No. 10

Recommendation: That the 17 March 2016 correspondence from CRD Board Chair Desjardins to the Minister of Environment be received for information.

Attachments: Letter: Chair Desjardins To Min. of Environment re CALWMP Amendment No. 1

7. New Business

8. Motion to Close the Meeting

8.1. 16-447 Motion to Close the Meeting

Recommendation: That the meeting be closed in accordance with the Community Charter Part 4, Division 3, 90 (1) (a) personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the regional district or another position appointed by the regional district; and (k) negotiations and related discussions respecting the proposed provision of a regional service that are at their preliminary stages and that, in the view of the board, could reasonably be expected to harm the interests of the regional district if they were held in public; and (2)(b) the consideration of information received and held in confidence relating to negotiations between the regional district and a provincial government or the federal government or both, or between a provincial government or the federal government or both and a third party.

9. Adjournment

16-108 Reference: Core Area Liquid Waste Management Committee Project Charter

Attachments: Project Charter

Next Meeting: April 13

To ensure quorum, please advise Nancy More (250-360-3024) if you or your alternate CANNOT attend.

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes
Core Area Liquid Waste Management Committee

Wednesday, February 24, 2016 | **9:05 AM** | **6th Floor Boardroom**

PRESENT
DIRECTORS: L. Helps (Chair), R. Atwell (Vice-Chair), M. Alto (9:01), D. Blackwell, J. Brownoff, V. Derman, C. Day (for C. Hamilton), B. Desjardins (Board Chair), B. Isitt (9:03), N. Jensen, C. Plant, Chief R. Sam (9:01), D. Screech, L. Seaton, Chief A. Thomas, L. Wergeland (for S. Brice), G. Young
STAFF: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; T. Robbins, General Manager, Integrated Water Services; A. Orr, Senior Manager, Corporate Communications; R. Sharma, Senior Manager, Financial Services; D. Telford, Senior Manager, Environmental Engineering; B. Reems, Corporate Officer, and N. More, Committee Clerk (Recorder)
ALSO PRESENT: Director D. Howe, Alternate Director L. Hundleby; T. Coady, Technical Overview Panel; B. Eaton, Chair, Core Area Wastewater Treatment Program Commission; E. Lee, Urban Systems, A Gibbs, Public Assembly; C. Houghton, Aurora Innovations

The meeting was called to order at 9:00 a.m.

1. Approval of Agenda

MOVED by Director Brownoff, SECONDED by Director Blackwell,
That email correspondence between Director Young and Director Atwell and the Core Area Liquid Waste Management Committee be added as 6.4 and the supplementary agenda be added, and the agenda be approved as amended.
CARRIED

MOVED by Director Desjardins, SECONDED by Director Brownoff,
That the late delegations be added to the speakers list.
APPROVED
UNANIMOUS

2. Adoption of Minutes

Chief Sam and Director Alto entered the meeting at 9:01 a.m.

2.1. 16-276 Adoption of Core Area Liquid Waste Management Committee Minutes of January 27 and February 10, 2016

MOVED by Director Plant, SECONDED by Director Blackwell,
That the following minutes of the Core Area Liquid Waste Management Committee be adopted:
1. January 27, 2016
2. February 10, 2016
CARRIED

3. Chair's Remarks

Chair Helps remarked on the process and highlighted cost effectiveness, public support for a higher level of treatment, innovation to decrease costs and increase environmental benefit, timely completion and keeping the funding.

Director Isitt entered the meeting at 9:03 a.m.

4. Presentations/Delegations

4.1. 16-317 Delegation: Allan Crow, item 5.1

This delegation did not appear. He provided a written submission, on file at Legislative and Information Services.

4.2. 16-318 Delegation: Annie Gibson, Surfrider Foundation Vancouver Island Chapter, item 5.1

Annie Gibson, representing Surfrider Foundation Vancouver Island, spoke in favour of the motion in item 5.1. She was concerned with delays and pollution of ocean and beaches.

4.3. 16-319 Delegation: Colin Nielsen, item 5.3

Colin Nielsen spoke against a Rock Bay site and favoured a Clover Point site. The delegation provided a written submission, on file at Legislative and Information Services.

4.4. 16-320 Delegation: Gillian Montgomery, Surfrider Foundation, item 5.3

Gillian Montgomery, of the Surfrider Foundation Vancouver Island Chapter, spoke to item 5.3 in favour of tertiary treatment at Rock Bay.

4.5. 16-321 Delegation: Suzanne Cole, Burnside Gorge Community Association, item 5.3

Suzanne Cole, representing the Burnside Gorge Community Association, felt the most affected neighborhoods should have a high level of engagement with the design process and spoke against solids processing for the Rock Bay area. The delegation provided a written submission, on file at Legislative and Information Services.

4.6. 16-322 Delegation: David Langley, items 5.3 and 5.7 (revised agenda)

David Langley, regarding item 5.3, spoke in favour of a single, centralized plant. Regarding item 5.7, he remarked on the regional water supply and questioned the need for water reuse. The delegation provided a written submission, on file at Legislative and Information Services.

4.7. 16-323 Delegation: Karen Harper, item 5.11 (revised agenda)

Karen Harper spoke in favour of the motions in items 5.11 and 5.12, and against

the recommended option in 5.3. She was concerned with costs.

4.8. **16-324** Delegation: Russ Smith, items 5.1, 5.11 and 5.12 (revised agenda)

Russ Smith spoke against the motion in 5.1. Regarding item 5.2, he felt Integrated Resource Management should be fully explored before forwarding any plan to the Ministry. He spoke against the recommended option in 5.3. He was concerned with costs and disruptions and favoured a Clover Point location.

4.9. **16-325** Delegation: Rick Illi, CUPE 1978, items 5.3 and 5.6 (revised agenda)

Rick Illi spoke as President of CUPE Local 1978 and expressed concern for wastewater treatment to be a publically owned and operated service to ensure accountability and provide local jobs, with no further expansion of the P3 part of the project. He also spoke against expanding into private operation of the Hartland landfill in the event of integrated resource management.

4.10. **16-326** Delegation: John Farquharson, Sewage Treatment Action Group, item 5.2

John Farquharson, regarding 5.2, spoke in favour of Integrated Resource Management as part of an overall system design and in favour of the motion in 5.12. The delegation provided a written submission, on file at Legislative and Information Services.

4.11. **16-327** Delegation: Mehdi Najari, item 5.3

Mehdi Najari, spoke against the recommendation in 5.3, the deadlines and the public engagement process.

4.12. **16-328** Delegation: Bryan Gilbert, items 5.1, 5.2, 5.11 (revised agenda)

Bryan Gilbert spoke in favour of keeping all options on the table for potential solutions by private sector initiative and submitted suggested edits to the staff report in item 5.3. The delegation provided a written submission, on file at Legislative and Information Services.

4.13. **16-329** Delegation: Norma Brown, item 5.1

Norma Brown spoke against the motion in 5.1. The delegation provided a written submission, on file at Legislative and Information Services.

4.14. **16-330** Delegation: Robert Drew, items 5.1, 5.3, 5.10, 5.11, 5.12 (revised agenda)

Robert Drew, spoke against having the plant at Rock Bay. The delegation provided a written submission, on file at Legislative and Information Services.

4.15. **16-331** Late Delegation: Brian Grover, items 5.1, 5.2 and 5.3

Brian Grover, spoke against the recommended option in 5.3. The delegation provided a written submission, on file at Legislative and Information Services.

4.16. **16-332** Late Delegation: Ian Back, item 5.3

Ian Back spoke against the Rock Bay site. He submitted an aerial photo of the site from the 1950s, on file at Legislative and Information Services.

The Committee went into recess at 10:09 a.m.
The Committee reconvened at 10:13 a.m.

5. Committee Business

5.1. 16-50 Motion with Notice: Examine Feasibility of Single Facility at McLoughlin Point or Macaulay Point (Director Jensen)

Director Jensen presented a revised version of the motion. The Chair's ruling that the motion was in order was appealed and then upheld by a tie vote, in accordance with the Procedures Bylaw, section 20.(5)(a):
For: Blackwell, Brownoff, Isitt, Jensen, Screech, Seaton, Wergeland, Young
Against: Alto, Atwell, Day, Derman, Desjardins, Plant, Sam, Thomas.

On the motion, the Chair's ruling was again appealed and upheld by a tie vote:
For: Blackwell, Brownoff, Isitt, Jensen, Screech, Seaton, Wergeland, Young
Against: Alto, Atwell, Day, Derman, Desjardins, Plant, Sam, Thomas.

The Committee discussed reasons for and against the proposed feasibility study.

MOVED by Director Jensen, SECONDED by Director Isitt
That the Technical Oversight Panel (TOP) working with CRD staff and CRD consultants be requested to examine the feasibility of locating a facility at McLoughlin Point in conjunction with a second facility.

On the motion to amend the motion, the Committee considered the implications of the amendment and defeated an amendment to the amendment. The Committee continued to discuss the amendment to the main motion.

MOVED by Director Plant, SECONDED by Director Isitt,
That the motion be amended to change the wording after "facilities at" to "either McLoughlin Point or Macaulay Point and Clover Point and a possible site to serve the Western communities."

MOVED by Director Desjardins, SECONDED by Director Blackwell,
That the motion also be amended to add "That any new sites brought forward are brought back to the councils of the municipality in which they are located; i.e., Esquimalt and Victoria."
DEFEATED
OPPOSED Atwell, Blackwell, Brownoff, Isitt, Jensen, Screech, Seaton, Thomas, Wergeland, Young

MOVED by Director Plant, SECONDED by Director Isitt,
That the motion be amended as follows:
That the Technical Oversight Panel (TOP) working with CRD staff and CRD consultants be requested to examine the feasibility of locating facilities at either McLoughlin Point or Macaulay Point and Clover Point and a possible site to serve the Western communities.
CARRIED
OPPOSED Desjardins, Sam, Thomas

MOVED by Director Jensen, SECONDED by Director Isitt,
That the Technical Oversight Panel (TOP) working with CRD staff and CRD consultants be requested to examine the feasibility of locating facilities at either McLoughlin Point or Macaulay Point and Clover Point and a possible site to serve the Western communities.
CARRIED
OPPOSED Alto, Desjardins, Sam, Thomas

The Committee went into recess at 12:00 p.m.
The Committee reconvened at 12:10 p.m. with everyone present save Directors Jensen and Isitt.

5.3. 16-278 Recommended Option - Core Area Sewage Treatment and Resource Recovery

The Committee heard item 5.3 ahead of item 5.2, but due to time constraints, the Committee consented to hear only the presentation from Kyle Braid of Ipsos Canada and then forward item 5.3 to the next meeting for consideration.

MOVED by Director Plant, SECONDED by Director
That the presenation take no more than 15 minutes.
CARRIED

L. Hutcheson introduced K. Braid. He indicated that he had assisted Public Assembly with the survey piece of the Eastside public consultation.

Directors Jensen and Isitt entered the meeting at 12:08 p.m.

K. Braid provided highlights of the survey data. The Committee sought clarification on the validity, objectives, and structure of the survey and on public participation in the survey.

5.2. 16-277 Report from the CRD Integrated Resource Management Task Force

Chair Helps clarified that the Integrated Resource Management Task Force was created by the Capital Regional District Board in response to a recommendation of the Committee of the Whole, so the final report will go from the Task Force to the Board, but because the information was relevant to item 5.3 on the Core Area Liquid Waste Management Committee's agenda, the interim report was submitted for the Committee to receive for information.

Director Derman, as Chair of the Task Force, provided highlights of the report. On the motion, the Committee discussed the information in the Task Force report and potential implications for the wastewater treatment project.

MOVED by Director Derman, SECONDED by Director Plant,
That the following be received for information:
(a) Report from the CRD Integrated Resource Management Task Force
(b) Staff comments on the Integrated Resource Management Task Force report.

MOVED by Director Derman, SECONDED by Director Plant,
That the meeting be extended.
CARRIED

The main motion was split and the question was called.

MOVED by Director Derman, SECONDED by Director Plant,
That the report from the CRD Integrated Resource Management Task Force be received for information.
CARRIED
OPPOSED Blackwell, Isitt, Screech, Seaton, Young

MOVED by Director Derman, SECONDED by Director Plant,
That the staff comment on the Integrated Resource Management Task Force report be received for information.
CARRIED

The remaining agenda items were not considered due to time constraints and will be brought forward to the next meeting.

5.4. 16-189 Fairness and Transparency Advisor Reports - January and February, 2016

5.5. 16-184 2016 CRD Board Standing Committee Terms of Reference and Work Programs (CALWMC)

5.6. 16-199 Available Funding Options - Core Area Wastewater Program

5.7. 16-206 Regional Water System - Supply and Demand

5.8. 16-201 Westside Wastewater Treatment and Resource Recovery Select Committee Agenda Packages and Motion

5.9. 16-280 Eastside Wastewater Treatment and Resource Recovery Select Committee Agenda Package for Information

5.10. 16-49 Motion with Notice: Accountability and Representation in Governance of Components of Eastside and Westside Sub-systems

5.11. 16-257 Motion with Notice: Mechanism for Future Options (Derman, Plant)

5.12. 16-258 Motion with Notice: Compliance with Charter Goals (Derman, Plant)

6. Correspondence

6.1. 16-302 Correspondence from Harbour Resource Partners,18 Feb. 2016, re: Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant

6.2. 16-303 Correspondence from Esquimalt and Songhees Nations, 19 Feb. 2016, re: CRD Sewage Treatment Facility-Rock Bay Lands

6.3. 16-304 Correspondence from Burnside Gorge Community Association, 22 Feb.

2016

6.4. 16-375 Correspondence Between Core Area Liquid Waste Management Committee Directors, 23 Feb. 2016, re: Comments on IRM for Feb. 24

7. New Business

8. Adjournment

MOVED by Director Blackwell, SECONDED by Director Desjardins,
That the meeting be adjourned at 1:26 p.m.
CARRIED

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CHAIR

_____

RECORDER

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes
Core Area Liquid Waste Management Committee

Friday, February 26, 2016 | **1:00 PM** | **6th Floor Boardroom**

PRESENT
DIRECTORS: L. Helps (Chair), R. Atwell (Vice-Chair), M. Alto, D. Blackwell, J. Brownoff, S. Brice, V. Derman, B. Desjardins (Board Chair), C. Hamilton, B. Isitt, N. Jensen, C. Plant, Chief R. Sam, D. Screech, L. Seaton, Chief A. Thomas, G. Young
STAFF: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; T. Robbins, General Manager, Integrated Water Services; S. Henderson, Manager, Real Estate; A. Orr, Senior Manager, Corporate Communications; R. Sharma, Senior Manager, Financial Services; D. Telford, Senior Manager, Environmental Engineering; B. Reems, Corporate Officer, and N. More, Committee Clerk (Recorder)
ALSO PRESENT: Director D. Howe, Alternate Directors C. Day and L. Hundleby; T. Coady, Technical Overview Panel; B. Eaton, Chair, Core Area Wastewater Treatment Program Commission; E. Lee, Urban Systems, A Gibbs, Public Assembly; C. Houghton, Aurora Innovations

The meeting was called to order at 1:00 p.m.

1. Approval of Agenda

MOVED by Director Brice, SECONDED by Director Desjardins,
That the agenda be approved with the supplementary agenda.
CARRIED

2. Adoption of Minutes

3. Chair's Remarks

Chair Helps remarked on the correspondence from Tourism Victoria and on the work before the Committee.

4. Presentations/Delegations

4.1. **16-343** Delegation: Soren Henrich, re: item 5.1

Soren Henrich, regarding item 5.1, spoke against the Rock Bay site and expressed concern over disruptions to Cook Street during construction. He felt the Committee should look for other options.

4.2. **16-344** Delegation: Eric Pittman, re: item 5.1

Eric Pittman, regarding item 5.1, spoke in favour of re-invigorating the McLoughlin site.

4.3. **16-345** Delegation: Bryan Gilbert, re: items 5.1, 5.9 and 5.10

Bryan Gilbert, regarding items 5.1, 5.9 and 5.10, spoke in favour of a plan called the RITE plan.

4.4. **16-346** Delegation: Les Bjola, West Shore Sewage Oversight Committee, re: item 5.1

Les Bjola, as Co-Chair of the City of Langford Sewage Oversight Committee, spoke regarding item 5.1 and expressed that a two-plant system had not been looked at and the matter needed more review by the Committee in a timely fashion.

4.5. **16-347** Delegation: James Anderson, re: item 5.1

James Anderson, regarding item 5.1, was concerned over the decision-making process and the public consultation.

4.6. **16-348** Delegation: Carole Witter, re: item 5.1

Carole Witter, regarding item 5.1, spoke of being in favour of land-based wastewater treatment and combining solid and liquid waste streams.

4.7. **16-349** Delegation: Deborah M. Dickson, re: item 5.1

Deborah M. Dickson, regarding item 5.1, reviewed her past statements made at the Committee since 2009 and expressed continuing dissatisfaction with public input in the process.

5. Committee Business

5.1. 16-278 Recommended Option - Core Area Sewage Treatment and Resource Recovery

L. Hutcheson provided highlights of the staff report and E. Lee provided highlights of the Urban Systems report with the aid of a PowerPoint presentation. The Committee sought clarification on a number of issues, including sites, conveyancing, technology, and costing.

At 2:38 p.m., T. Coady, Chair of the Technical Oversight Panel (TOP), was reached via telephone and spoke to the TOP report. The Committee sought clarification on a number of points, including potential considerations of McLoughlin and Clover points.

The Committee went into recess at 3:08 p.m.
The Committee reconvened at 3:16 p.m.

A. Gibbs provided highlights of the Eastside consultation and C. Houghton provided highlights of the Westside consultation.

MOVED by Director Desjardins, SECONDED by Director Plant,
That the meeting be extended.
CARRIED

The Committee sought clarification of A. Gibbs and C. Houghton on points from

their presentation, including public engagement with the Burnside Gorge Community Association

The Committee went into recess at 3:58 p.m.
The Committee reconvened at 4:07 p.m.

Chair Helps provided the Committee with copies of a proposed motion and it was also projected on the video screens.

MOVED by Director Isitt, SECONDED by Director Alto
That it be recommended to the Capital Regional District Board:
1. That a conditional Liquid Waste Management Plan Amendment No. 10 be prepared as a basis for approval and submission to the Minister of Environment incorporating the following elements as the base case:
a) A centralized advanced (tertiary) wastewater treatment plant with capacity for 108 ML/D at Rock Bay
b) The BC Hydro/Transport Canada lands as the preferred wastewater treatment site
c) Provision for a modular 10 ML/D advanced (tertiary) wastewater treatment plant servicing Colwood at the corner of Ocean Boulevard and Island Highway to be determined in consultation with Colwood
d) Hartland Landfill as the preferred site for sludge processing with technology to be confirmed through the submission of project concepts outlined below;
2. Proceed with a process under which the CRD would invite the submission of project concepts to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages over the base case including financial backing.
The submissions could demonstrate solutions for:
a) The Rock Bay/Colwood combination as outlined above.
b) A tertiary wastewater plant at either McLoughlin or Macaulay Points, a tertiary wastewater plant at Clover Point, provision for a 10 ML/D tertiary plant on the westside.
c) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and financial backing;
3. That the above approach be formally communicated to all senior levels of government involved in funding the project including the Province, 3P Canada and Infrastructure Canada.
4. That staff be directed to finalize, subject to Board approval, Options to Purchase the lands in Rock Bay in Appendix H subject to being selected as the site;
5. That the Eastside Select Committee be dissolved and Westside Select Committee be retained to complete the outstanding technical work from the Westside Technical Committee to refine wet weather design flows to be incorporated in the refinement of LWMP and costing analysis, dependent on approval of the Ministry of Environment.
6. That staff be directed to bring back to committee the resourcing requirements and process to provide for the procurement and project management to achieve the goals of the Project Charter.

MOVED by Director Isitt, SECONDED by Director Screech,
That the recommendations be referred to staff to work with consultants to undertake value engineering and report back to the Committee as soon as possible with more detailed cost estimates for the configurations and sites outlined in recommendations 1 and 2.

MOVED by Director Plant, SECONDED by Director Blackwell,
That the referral motion be postponed.
CARRIED
OPPOSED Alto, Brice, Brownoff, Isitt, Jensen, Sam, Screech, Thomas

MOVED by Director Derman, SECONDED by Director Plant,
That the main motion be amended in the last sentence of section 2 and 2.(c) to add the words "and/or environmental advantages" after the words "fiscal advantages".
CARRIED

MOVED by Director Young, SECONDED by Director Isitt,
That the main motion be amended to revise section 2.b) and add it as a new section 1.e) with the following, revised wording:
A possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a 10 ML/D tertiary plant on the westside.

MOVED by Director Blackwell, SECONDED by Director Isitt,
That the amendment be amended to strike out "10 ML/D".
CARRIED

MOVED by Director Plant, SECONDED by Director Brice,
That the amendment be amended so that the revised section 2.b) be added to section 1.a) as a clause beginning with "or" instead of as a new 1.e)
CARRIED
OPPOSED Isitt

MOVED by Director Young, SECONDED by Director Isitt,
That the main motion be amended to revise section 2.b) and add it to section 1.a) as a clause beginning with "or", as follows:
2.b) A possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a 10 ML/D tertiary plant on the westside.
1.a) A centralized advanced (tertiary) wastewater treatment plant with capacity for 108 ML/D at Rock Bay or a possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a tertiary plant on the westside.
CARRIED

MOVED by Director Young, SECONDED by Director Alto,
That the main motion be amended to revise 2.c) as 2.d) and a new 2.c) be inserted as follows:
The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.
CARRIED
OPPOSED Blackwell, Brice, Brownoff, Derman, Sam, Screech, Seaton, Thomas

MOVED by Director Isitt, SECONDED by Director Alto,

That it be recommended to the Capital Regional District Board:
1. That a conditional Liquid Waste Management Plan Amendment No. 10 be prepared as a basis for approval and submission to the Minister of Environment incorporating the following elements as the base case:
a) A centralized advanced (tertiary) wastewater treatment plant with capacity for 108 ML/D at Rock Bay or a possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a tertiary plant on the westside
b) The BC Hydro/Transport Canada lands as the preferred wastewater treatment site
c) Provision for a modular 10 ML/D advanced (tertiary) wastewater treatment plant servicing Colwood at the corner of Ocean Boulevard and Island Highway to be determined in consultation with Colwood
d) Hartland Landfill as the preferred site for sludge processing with technology to be confirmed through the submission of project concepts outlined below;
2. Proceed with a process under which the CRD would invite the submission of project concepts to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case including financial backing.
The submissions could demonstrate solutions for:
a) The Rock Bay/Colwood combination as outlined above.
b) A possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a tertiary plant on the westside.
c) The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.
d) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages and financial backing;
3. That the above approach be formally communicated to all senior levels of government involved in funding the project including the Province, 3P Canada and Infrastructure Canada.
4. That staff be directed to finalize, subject to Board approval, Options to Purchase the lands in Rock Bay in Appendix H subject to being selected as the site;
5. That the Eastside Select Committee be dissolved and Westside Select Committee be retained to complete the outstanding technical work from the Westside Technical Committee to refine wet weather design flows to be incorporated in the refinement of LWMP and costing analysis, dependent on approval of the Ministry of Environment.
6. That staff be directed to bring back to committee the resourcing requirements and process to provide for the procurement and project management to achieve the goals of the Project Charter.

MOVED by Director Isitt, SECONDED by Director Screech,
That the amended sections 1 and 2 of the main motion be referred to staff to work with consultants to undertake value engineering and report back as soon as possible with detailed cost estimates.

MOVED by Director Derman, SECONDED by Director Brice,
That the motion to refer be amended to include an amendment to section 1.c) to strke "10 ML/D" and to strike reference to Ocean Boulevard.
CARRIED

MOVED by Director Isitt, SECONDED by Director Screech,
That the amended sections 1 and 2, below, of the main motion be referred to staff to work with consultants to undertake value engineering and report back as soon as possible with detailed cost estimates:
1. That a conditional Liquid Waste Management Plan Amendment No. 10 be prepared as a basis for approval and submission to the Minister of Environment incorporating the following elements as the base case:
a) A centralized advanced (tertiary) wastewater treatment plant with capacity for 108 ML/D at Rock Bay or a possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a tertiary plant on the westside
b) The BC Hydro/Transport Canada lands as the preferred wastewater treatment site
c) Provision for a modular advanced (tertiary) wastewater treatment plant servicing Colwood to be determined in consultation with Colwood
d) Hartland Landfill as the preferred site for sludge processing with technology to be confirmed through the submission of project concepts outlined below;
2. Proceed with a process under which the CRD would invite the submission of project concepts to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case including financial backing.
The submissions could demonstrate solutions for:
a) The Rock Bay/Colwood combination as outlined above.
b) A possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a tertiary plant on the westside.
c) The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.
d) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages and financial backing
CARRIED
OPPOSED Atwell, Plant

MOVED by Director Isitt, SECONDED by Director Brice
That consideration of sections 3 and 4 of the main motion be postponed pending receipt of the report coming from the referral to staff of sections 1 and 2.

The motion was divided.
That section 3 of the main motion be postponed pending receipt of the report coming from the referral to staff of sections 1 and 2..
CARRIED
OPPOSED Atwell, Desjardins, Helps

That section 4 of the main motion be postponed pending receipt of the report coming from the referral to staff of sections 1 and 2.
CARRIED

The question was called on sections 5 and 6 of the main motion:
That it be recommended to the Capital Regional District Board:
5. That the Eastside Select Committee be dissolved and Westside Select Committee be retained to complete the outstanding technical work from the Westside Technical Committee to refine wet weather design flows to be incorporated in the refinement of LWMP and costing analysis, dependent on approval of the Ministry of Environment.
6. That staff be directed to bring back to committee the resourcing requirements and process to provide for the procurement and project management to achieve the goals of the Project Charter.
CARRIED
OPPOSED Plant

The items that follow on the agenda were not dealt with due to time constraints and will be brought forward to the March 9, 2016, agenda.

5.2. 16-189 Fairness and Transparency Advisor Reports - January and February, 2016

5.3. 16-184 2016 CRD Board Standing Committee Terms of Reference and Work Programs (CALWMC)

5.4. 16-199 Available Funding Options - Core Area Wastewater Program

5.5. 16-206 Regional Water System - Supply and Demand

5.6. 16-201 Westside Wastewater Treatment and Resource Recovery Select Committee Agenda Packages and Motion

5.7. 16-280 Eastside Wastewater Treatment and Resource Recovery Select Committee Agenda Package for Information

5.8. 16-49 Motion with Notice: Accountability and Representation in Governance of Components of Eastside and Westside Sub-systems

5.9. 16-257 Motion with Notice: Mechanism for Future Options (Derman, Plant)

5.10. 16-258 Motion with Notice: Compliance with Charter Goals (Derman, Plant)

6. Correspondence

6.1. 16-302 Correspondence from Harbour Resource Partners,18 Feb. 2016, re: Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant

6.2. 16-303 Correspondence from Esquimalt and Songhees Nations, 19 Feb. 2016, re:

CRD Sewage Treatment Facility-Rock Bay Lands

6.3. 16-304 Correspondence from Burnside Gorge Community Association, 22 Feb. 2016

6.4. 16-342 Correspondence from Tourism Victoria to CRD Directors, 25 Feb. 2016, re: Sewage Treatment

7. New Business

8. Adjournment

MOVED by Director Desjardins, SECONDED by Director Alto,
That the meeting be adjourned at 5:30 p.m.
CARRIED

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CHAIR

_____

RECORDER

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes
Core Area Liquid Waste Management Committee

Wednesday, March 2, 2016 | **3:30 PM** | **6th Floor Boardroom**

PRESENT
DIRECTORS: L. Helps (Chair), R. Atwell (Vice-Chair), M. Alto, D. Blackwell, S. Brice, V. Derman, C. Day (for C. Hamilton), B. Desjardins (Board Chair), B. Isitt, N. Jensen, C. Plant, D. Screech, L. Seaton, Chief A. Thomas, L. Wergeland (for J. Brownoff), G. Young
STAFF: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; T. Robbins, General Manager, Integrated Water Services; A. Orr, Senior Manager, Corporate Communications; R. Sharma, Senior Manager, Financial Services; D. Telford, Senior Manager, Environmental Engineering; B. Reems, Corporate Officer, and N. More, Committee Clerk (Recorder)
ALSO PRESENT: Directors D. Howe, S. Price and J. Ranns; C. Houghton, Aurora Innovations
ABSENT: Chief R. Sam

The meeting was called to order at 3:30 p.m.

1. Approval of Agenda

On the motion to approve the supplementary agenda with the late delegation requests, the Committee discussed the nature of the day's agenda item, including the following points:
- the same item as at the February 26 meeting, where the public had opportunity to speak
- no new evidence being introduced in the item since it was presented on February 26
- on today's agenda for clarification of the motion referred to staff

MOVED by Director Derman, SECONDED by Director Plant,
That the agenda be approved.

MOVED by Director Atwell, SECONDED by Director Plant,
That the agenda be amended to add the supplmentary agenda of late delegation requests.
DEFEATED
OPPOSED Alto, Blackwell, Day, Helps, Isitt, Jensen, Seaton, Thomas, Wergeland, Young

MOVED by Director Derman, SECONDED by Director Plant,
That the agenda be approved.
CARRIED

2. Presentations/Delegations

3. Committee Business

3.1. 16-363 Clarification of "Recommended Option" Motion Parts 1 and 2 Referred to Staff, February 26, 2016

Chair Helps called for reconsideration of the motion that was referred to staff on February 26, 2016, and explained the need to clarify the direction the Committee wished staff to take before the March 9, 2016, meeting.

On the motion to amend the motion that was referred to staff on February 26, 2016, the Committee discussed the intent of the referred motion and the implications of the proposed amendment. The discussion included points for and against gathering information on the former plan for the McLoughlin site to enable a more similar comparison to current option estimates, review of the defeat of the former plan, and references to elements of the Project Charter. The Committee agreed that staff needed clarity on the referred motion because of its complexity.

MOVED by Director Young, SECONDED by Director Isitt,
That the motion referred to staff on February 26, 2016, be amended to add an item 1.e) and to add words to the end of subsection 2.a):
1.e) consideration of an advanced (tertiary or equivalent) wastewater plant at McLoughlin Point with a small plant on the Westside as an alternative to the Rock Bay BC Hydro site.
2.a) ...or the alternative outlined in 1.e) above.
DEFEATED
OPPOSED Alto, Atwell, Day, Derman, Desjardins, Helps, Plant, Thomas

L. Hutcheson related to the Committee the three options that would be costed, as staff understood from the referred motion. The Committee discussed a need for clarity on the cost effectiveness of building for future Westside capacity. On the motion to amend the main motion, the Committee discussed what would provide clarity.

On the amendment to the amendment, it was
MOVED by Director Derman and SECONDED by Director Blackwell,
That the question be called.
CARRIED

MOVED by Alternate Director Day, Seconded by Director Blackwell,
That the motion referred to staff on February 26, 2016, be amended in 1.a) and 2.b) to replace the phrase "provision for a tertiary plant on the westside" with "and a tertiary plant on the westside should be considered in all the combinations."

> **MOVED by Director Derman, SECONDED by Director Screech,**
> **That the amendment be amended as follows:**
> **That the motion referred to staff on February 26, 2016, be amended in 1.a) and 2.b) to replace the phrase "provision for a tertiary plant on the westside" with "and a tertiary plant on the westside in combination with the other sites selected should be considered as one of the options."**
> **CARRIED**

MOVED by Alternate Director Day, Seconded by Director Blackwell,
That the motion referred to staff on February 26, 2016, be amended in 1.a) and

2.b) to replace the phrase "provision for a tertiary plant on the westside" with "and a tertiary plant on the westside in combination with the other sites selected should be considered as one of the options."
CARRIED

On the main referral motion of February 26 as newly amended, the Committee discussed the negative and positive implications of the direction given to staff.

MOVED by Director Derman, SECONDED by Alternate Director Day,
That the question be called.
CARRIED

MOVED by Director Isitt, SECONDED by Director Screech,
That the amended sections 1 and 2, below, of the main motion be referred to staff to work with consultants to undertake value engineering and report back as soon as possible with detailed cost estimates:
1. That a conditional Liquid Waste Management Plan Amendment No. 10 be prepared as a basis for approval and submission to the Minister of Environment incorporating the following elements as the base case:
a) A centralized advanced (tertiary) wastewater treatment plant with capacity for 108 ML/D at Rock Bay or a possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, and a tertiary plant on the westside in combination with the other sites selected should be considered as one of the options.
b) The BC Hydro/Transport Canada lands as the preferred wastewater treatment site
c) Provision for a modular advanced (tertiary) wastewater treatment plant servicing Colwood to be determined in consultation with Colwood
d) Hartland Landfill as the preferred site for sludge processing with technology to be confirmed through the submission of project concepts outlined below;
2. Proceed with a process under which the CRD would invite the submission of project concepts to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case including financial backing.
The submissions could demonstrate solutions for:
a) The Rock Bay/Colwood combination as outlined above.
b) A possible tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, and a tertiary plant on the westside in combination with the other sites selected should be considered as one of the options.
c) The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.
d) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages and financial backing
CARRIED
OPPOSED Day, Desjardins, Young

4. Adjournment

MOVED by Director Plant, SECONDED by Director Alto,
That the meeting be adjourned at 4:48 p.m.
CARRIED

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CHAIR

_____

RECORDER

Capital Regional District
625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes
Core Area Liquid Waste Management Committee

Wednesday, March 9, 2016 | **9:00 AM** | **6th Floor Boardroom**

PRESENT:
DIRECTORS: L. Helps (Chair), R. Atwell (Vice-Chair), M. Alto, S. Brice, D. Blackwell, J. Brownoff, V. Derman, B. Desjardins (Board Chair), C. Hamilton, B. Isitt (9:04), N. Jensen, C. Plant, Chief R. Sam (9:02), D. Screech, L. Seaton, Chief A. Thomas, G. Young (9:21)
STAFF: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; D. Lokken, General Manager, Finance and Technology; T. Robbins, General Manager, Integrated Water Services; S. Henderson, Manager, Real Estate; D. Telford, Senior Manager, Environmental Engineering; B. Reems, Corporate Officer, and N. More, Committee Clerk (Recorder)
ALSO PRESENT: Alternate Directors C. Day and L. Hundleby; E. Lee, Urban Systems; C. Houghton, Aurora Innovations

1. Approval of Agenda

MOVED by Director Blackwell, SECONDED by Director Alto,
That the agenda be approved with the supplementary agenda.

MOVED by Director Desjardins, SECONDED by Director Derman,
That the agenda be amended to hear item 4 ahead of item 3.
CARRRIED

MOVED by Director Blackwell, SECONDED by Director Alto,
That item 4 be heard ahead of item 2 and the agenda be approved as amended with the supplementary agenda.
CARRIED

2. Adoption of Minutes

There were no minutes for adoption.

Item 4 was considered ahead of item 2.

4. Motion to Close the Meeting

4.1. 16-397 Motion to Close the Meeting

MOVED by Director Screech, SECONDED by Director Seaton,
That the meeting be closed in accordance with the Community Charter Part 4, Division 3, 90 (1) (i) the receipt of advice that is subject to solicitor-client privilege, including communications necessary for that purpose.
CARRIED

The Committee moved to the closed session at 9:02 a.m.
The Committee rose from the closed session at 9:21 a.m. without report.

3. Chair's Remarks

Chair Helps remarked on being practical, flexible and reasonable, and on the March 2 meeting. She informed the Commitee of a meeting between herself, Board Chair Desjardins, and senior government Ministers Polak and Fassbender, and on the Province being willing to help find a solution by providing facilitation.

5. Presentations/Delegations

16-414 Delegation: Bart Reed, Cook St. Village Business Association, re: item 6.1

Bart Reed, representing the Cook Street village Business Association, outlined the disruption and business losses that could result from trenching on Cook St. to add pipes for conveying wastewater to a Rock Bay plant. He spoke against Rock Bay as an option. The delegation provided a written submission, on file at Legislative and Information Services.

16-415 Delegation: Alison Glasbergen, re: items 6.10 and 6.11

Alison Glasbergen spoke in favour of making use of existing infrastructure, the best technology, and a distributed system. She was concerned with taxes and Oak Bay storm flows.

16-416 Delegation: Elise Schopper-Brigel, re: item 6.9

Elise Schooper-Brigel spoke against the current options, in comparison to the already-approved plan for a centralized plant at McLoughlin Point, and against a Clover Point plant.

16-417 Delegation: P. Potent, re: items 6.1 and 6.2

Phillip Potent was concerned with the process and the purchase of land at the Rock Bay site.

16-418 Delegation: Rick Illi, President, CUPE Local 1978, re: item 6.1

Rick Illi, as President of CUPE Local 1978, spoke in favour of publically-owned and operated wastewater treatment, whichever option was selected, against expanding P3 funding for integrated waste management, and for establishing a procurement policy that would guide the Core Area Wastewater Treatment Commission to maintain transparency, accountability and cost effectiveness, and eliminate further privatization of public services. The delegation provided a written submission, on file at Legislative and Information Services.

16-419 Delegation: Russ Smith, re: item 6.1

Russ Smith spoke in favour of the options that now included tertiary treatment and a somewhat distributed system, but was concerned there was no mechanism for broadening scope. He felt the procurement process should be

more open and there should be a business case analysis comparing pipe conveyance to truck conveyance of sludge, or to the potential for expanding use of existing pump stations.

16-420 Late Delegation: Michelle Coburn, Victoria Sewage Treatment Alliance, re: item 6.1

Michelle Coburn referenced the Greater Victoria Water Watch Coalition, the Sewage Treatment Alliance, and the public consultation process that was part of the past McLoughlin plan. She spoke in favour of the McLoughlin Point site, advanced oxidation, and shared responsibility by all municipalities. The delegation provided a written submission, on file at Legislative and Information Services.

16-421 Late Delegation: Ian Back, re: item 6.1

Ian Back felt going to tertiary treatment was an unncessary cost and that parallel cost numbers for secondary treatment should be developed before a decision is made.

6. Committee Business

6.1. 16-353 Options Analysis and Recommendation - Core Area Wastewater Treatment and Resource Recovery

L. Hutcheson provided highlights of the report and summarized the two base cases with the aid of PowerPoint slides.

The Committee discussed Macaulay Plain as opposed to Macaulay Point. The Committee sought clarification on technical details about all the locations, including:
- flows, effluent quality and capacity over time
- federal lands, land costs, and land use besides treatment plant
- upgrading Macaulay pump station
- cost deferrals
- tsunami wall
- trenching
- funding agreements
- participant funding provisions for future West shore solution
- cost comparison of trucking vs pumping through pipelines
- clarity of secondary vs tertiary costs
- anaerobic digestion vs gasification
- wastewater treatment regulations on flows and capacity
- 2030 and 2045 capacity
- operation of one or more plants
- configuration of flows and pump stations
- the process outlined in item 2 of the staff recommendation
- the role of the Technical Overview Panel or its replacement

MOVED by Director Atwell, SECONDED by Director Plant,
That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

1. That a conditional Liquid Waste Management Plan Amendment No. 10 be prepared as a basis for approval and submitted to the Minister of Environment with the following elements:

a) A tertiary wastewater treatment plant at Clover Point, servicing all flows currently directed to Clover Point, up to 2030 (see Note 1, below), and;

b) A tertiary wastewater treatment plant at McLoughlin Point, servicing all flows currently directed to Macaulay Point outfall, up to 2030, and;

c) Provision for a Westside wastewater treatment plant for future growth, at a location to be determined

d) Hartland Landfill as the preferred site for biosolids processing with technology to be confirmed by the process below.

2. That included within the Plan amendment is a process under which the CRD would invite the submission of project concepts to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case, including financial backing.

The submissions could demonstrate solutions for:

a) A Rock Bay/Westside combination.

b) A tertiary wastewater plant at either McLoughlin Point or Macaulay Point as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, provision for a tertiary plant on the Westside.

c) The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.

d) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages and financial backing.

3. That the preferred approach be formally communicated to all senior levels of government involved in funding the project, including the Province, 3P Canada and Infrastructure Canada.

4. That a referral be made to both Esquimalt and Victoria Councils seeking approval in principle of the proposed sites as locations for tertiary wastewater treatment plants.

5. That staff be directed to continue working with Colwood, Songhees and Esquimalt First Nations on issues related to purchased capacity and cost considerations for those system users and report back to Committee.

Note 1: Facility footprint to accommodate 2045 flows with tender process to incent longest-term capacity.

The Committee briefly discussed enlarging the footprint of the CRD land at Macaulay Plain by engaging with the federal government for a land swap involving the Department of National Defence.

The amendment to the main motion was put on the table and the Committee sought clarification on the issue of federal Crown land status and First Nation consultation.

Chief Sam, representing Songhees Nation, recused himself from the meeting at 11:55 a.m., citing potential conflict of interest related to his Nation's active negotiation in the BC Treaty process.

The Committee discussed the potential for cost savings and GHG reductions if a plant on Macaulay Plain was an option.

MOVED by Director Isitt, SECONDED by Director Plant,
That the main motion be amended in section 1.b), after the words "plant at McLoughlin Point", to add the words "or Macaulay Plain."
CARRIED
OPPOSED Blackwell, Desjardins, Hamilton, Seaton, Thomas

The Commitee discussion on the main motion as amended included the following topics:
- the referral to Esquimalt and Victoria councils
- the costs for two plants compared to one
- funding
- a distributed model in stages
- language in the current Liquid Waste Management Plan regarding tertiary treatment

On the motion to amend the amended main motion, the Committee discussed secondary, tertiary and equivalent to tertiary treatment, advanced oxidation and other methods, environmental benefits, having comparative costs, clarification on part 1 and part 2 of the motion, and the language describing levels of wastewater treatment in the Provincial regulations.

MOVED by Director Blackwell, SECONDED by Director Seaton,
That the main motion be amended so that in parts 1.a) and 1.b), "tertiary wastewater treatment" is revised to "secondary, tertiary, or equivalent to tertiary wastewater treatment".
CARRIED
OPPOSED Alto, Desjardins, Isitt, Plant, Thomas

MOVED by Director Atwell, SECONDED by Director Plant,
That the meeting be extended beyond three hours.
CARRIED

The Committee discussed the pros and cons of the main motion as amended and sought clarification on the interplay of part 1 and part 2 of the motion.

On the motion to amend the motion, the Commitee discussed the wording of the motion carried at the March 2, 2016, meeting.

MOVED by Director Atwell, SECONDED by Director Plant,
That the main motion be amended to replace the word "tertiary" to "advanced (tertiary)".
CARRIED

MOVED by Director Atwell, SECONDED by Director Plant,
That the question be called on the main motion as amended.
DEFEATED
OPPOSED Alto, Blackwell, Brice, Brownoff, Hamilton, Helps, Isitt, Jensen, Thomas

The Committee discussed the mention of Rock Bay in part 2 of the motion. On

the motion to amend the main motion, the Committee discussed keeping the process described in part 2 open-ended for sites.

MOVED by Director Blackwell, SECONDED by Director Seaton,
That the main motion be amended to remove item 2.a).
DEFEATED
OPPOSED Jensen, Alto, Desjardins, Hamilton, Helps, Atwell, Thomas, Isitt, Brice, Screech, Brownoff

MOVED by Director Jensen, SECONDED by Director Isitt.
That the main motion be amended so that 2.b) reflects the changes made in part 1.
CARRIED

The Committee sought clarification on the meaning of submitting the conditional Liquid Waste Management Plan (LWMP) amendment to the Province and the timing of the process described in part 2 in relation to part 1, and if there were implied commitments to the base cases.

On the motion to amend the main motion, the Commitee sought further clarification on the term "conditional", the steps with the Province, the process described in part 2, and the agreement with the funders. Staff clarified that if an amendment to the current LWMP was not submitted, the project for a one-site plan at McLoughlin, already approved in Amendment 9, would remain. The Committee discussed that the motion would be going to the Board that afternoon in any case, and the extra wording did not add further clarity.

MOVED by Director Jensen, SECONDED by Director Blackwell,
That the main motion be amended as follows:
That in item 1. after the words "as a basis for approval", the words "by the Capital Regional District Board and then subsequently" be added.
DEFEATED
OPPOSED Atwell, Alto, Brice, Blackwell, Brownoff, Derman, Desjardins, Hamilton, Plant, Screech, Seaton, Thomas

Upon defeat of the amendment to the motion, the Committee discussed the implication of item 4 in the motion, and the flexibility of the process, the change that has occured to the base case as Macaulay/Clover, and the need to move forward.

Chair Helps called the question on the main motion as amended.

MOVED by Director Atwell, SECONDED by Director Plant,
That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
1. That a conditional Liquid Waste Management Plan Amendment No. 10 be prepared as a basis for approval and submitted to the Minister of Environment with the following elements:
a) A secondary, advanced (tertiary) or equivalent to advanced (tertiary) wastewater treatment plant at Clover Point, servicing all flows currently directed to Clover Point, up to 2030 (see Note 1, below), and;
b) A secondary, advanced (tertiary) or equivalent to advanced (tertiary) wastewater treatment plant at McLoughlin Point or Macaulay Plain, servicing all flows currently directed to Macaulay Point outfall, up to 2030, and;
c) Provision for a Westside wastewater treatment plant for future growth, at a

location to be determined
d) Hartland Landfill as the preferred site for biosolids processing with technology to be confirmed by the process below.

2. That included within the Plan amendment is a process under which the CRD would invite the submission of project concepts to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case, including financial backing.

The submissions could demonstrate solutions for:
a) A Rock Bay/Westside combination.
b) A secondary, advanced (tertiary) or equivalent to advanced (tertiary) wastewater plant at either McLoughlin Point or Macaulay Plain as an alternative to Rock Bay, a secondary, advanced (tertiary) or equivalent to advanced (tertiary) wastewater plant at Clover Point, provision for a secondary, advanced (tertiary) or equivalent to advanced (tertiary) plant on the Westside.
c) The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste.
d) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages and financial backing.

3. That the preferred approach be formally communicated to all senior levels of government involved in funding the project, including the Province, 3P Canada and Infrastructure Canada.

4. That a referral be made to both Esquimalt and Victoria Councils seeking approval in principle of the proposed sites as locations for tertiary wastewater treatment plants.

5. That staff be directed to continue working with Colwood, Songhees and Esquimalt First Nations on issues related to purchased capacity and cost considerations for those system users and report back to Committee.

Note 1: Facility footprint to accommodate 2045 flows with tender process to incent longest-term capacity.

CARRIED
OPPOSED Brice, Brownoff, Isitt, Jensen, Thomas, Young

On the motion to provide an updated costing for comparison with the Amendment 9 project and the subsequent amendments, the Commitee discussion included the following points:
- different engineering firms between then and now
- secondary treatment in Amendment 9 project
- sufficiency of existing information

MOVED by Director Jensen, SECONDED by Director Isitt,

That as part of the Provincial offer to assist in finding a solution we direct staff to provide the Province with an updated costing to permit a comparison between the Amendment 9 project and the proposed Amendment 10 project.

MOVED by Director Isitt, SECONDED by Director Plant,
That the motion be amended to add after the word "Province" the words "and the Core Area Liquid Waste Management Committee".
CARRIED

MOVED by Director Brice, SECONDED by Director Isitt,
That the amendment be amended to add after "Amendment 9 project" the words, "including information for advanced (tertiary) treatment".
CARRIED
OPPOSED Alto, Atwell, Derman, Desjardins, Derman, Hamilton, Thomas

MOVED by Director Jensen, SECONDED by Director Isitt,
That as part of the Provincial offer to assist in finding a solution we direct staff to provide the Province and the Core Area Liquid Waste Management Committee with an updated costing to permit a comparison between the Amendment 9 project including information for advanced (tertiary) treatment and the proposed amendment 10 project.
DEFEATED
OPPOSED Alto, Atwell, Derman, Desjardins, Hamilton, Plant, Seaton, Thomas

Due to time constraints, item 9 was heard before itme 6.2, and items 6.2 through 8 were not heard and will be brought forward to the next meeting.

9. Motion to Close the Meeting

9.1. 16-398 Motion to Close the Meeting

MOVED by Director Desjardins, SECONDED by Director Hamilton,
That the meeting be closed in accordance with the Community Charter Part 4, Division 3, 90 (1) (a) personal information about an identifiable individual who holds or is being considered for a position as an officer, employee or agent of the regional district or another position appointed by the regional district.
CARRIED

The Committee moved to the closed session at 1:19 p.m.
The Committee rose from the closed session at 1:25 p.m. without report.

6.2. 16-189 Fairness and Transparency Advisor Reports - January and February, 2016

6.3. 16-184 2016 CRD Board Standing Committee Terms of Reference and Work Programs (CALWMC)

6.4. 16-199 Available Funding Options - Core Area Wastewater Program

6.5. 16-206 Regional Water System - Supply and Demand

6.6. 16-373 Core Area Wastewater Treatment Program and Year End Budget Update No. 31

6.7. 16-387 Core Area Sewage and Resource Recovery System 2.0 - Budget Update No. 4

6.8. 16-364 Sustainability Development Technology Fund

6.9. 16-49 Motion with Notice: Accountability and Representation in Governance of Components of Eastside and Westside Sub-systems

6.10. 16-257 Motion with Notice: Mechanism for Future Options (Derman, Plant)

6.11. 16-258 Motion with Notice: Compliance with Charter Goals (Derman, Plant)

6.12. 16-201 Westside Wastewater Treatment and Resource Recovery Select Committee Agenda Packages and Motion

6.13. 16-280 Eastside Wastewater Treatment and Resource Recovery Select Committee Agenda Package for Information

7. Correspondence

7.1. 16-302 Correspondence from Harbour Resource Partners,18 Feb. 2016, re: Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant

7.2. 16-303 Correspondence from Esquimalt and Songhees Nations, 19 Feb. 2016, re: CRD Sewage Treatment Facility-Rock Bay Lands

7.3. 16-304 Correspondence from Burnside Gorge Community Association, 22 Feb. 2016

7.4. 16-342 Correspondence from Tourism Victoria to CRD Directors, 25 Feb. 2016, re: Sewage Treatment

7.5. 16-354 Correspondence Between Chair of the Core Area Liquid Waste Management Committee and Esquimalt Mayor, re: Core Area Wastewater Treatment

7.6. 16-375 Correspondence Between Core Area Liquid Waste Management Committee Directors, 23 Feb. 2016, re: Comments on IRM for Feb. 24

7.7. 16-388 Correspondence from Harbour Resource Partners, 3 March 2016, re: Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant

7.8. 16-393 Correspondence: Washington State Legislature to Mayor of Victoria, 03 March 2016, re: CRD Sewage Treatment

8. New Business

10. Adjournment

MOVED by Director Blackwell, SECONDED by Director Brice,
That the meeting be adjourned at 1:25 pm.
CARRIED

_____

CHAIR

_____

RECORDER

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EHQ 16-34

REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, MARCH 23, 2016

SUBJECT **Update on Municipal Referrals – Core Area Wastewater and Resource Recovery System**

ISSUE

To provide the Core Area Liquid Waste Management Committee with an update on referrals made to the Township of Esquimalt and the City of Victoria regarding Core Area wastewater treatment facility siting.

BACKGROUND

On March 9, 2016, the Capital Regional District (CRD) Board approved that a conditional amendment to the Core Area Liquid Waste Management Plan be submitted to the Province. Under this amendment, two wastewater treatment plant sites were identified as a base case: Clover Point and McLoughlin Point/Macaulay Plain. The Board directed staff to refer these sites to both the City of Victoria and the Township of Esquimalt for endorsement in principle.

The City of Victoria dealt with the matter on March 10, 2016 at its Committee of the Whole meeting. The following motion was passed:

That Council:

1. *Request that the CRD meet with the Fairfield Gonzales CALUC and present a concept drawing of an underground plant at Clover Point and engage the Community with regard to their concerns and desires specific to this concept.*

2. *THEN the CRD report back to Council and also present a concept plan for an underground plant to Council.*

3. *That Council's consideration of any approval in principle of expansion of existing waste-water facilities at Clover Point would be based on conditions including, but not limited to:*

    (1) That staff work through the Local Area Planning process to engage residents of Fairfield, Gonzales and other Victoria neighbourhoods to identify neighbourhood amenities and community amenities that would be provided to ensure the most effective integration of this project into the neighbourhood and city;
    (2) The surface of the entire footprint of the proposed site being restored upon competition as publicly accessible parkland, with the final elevation of the parkland not to exceed the current elevation of the roadway at Dallas Road;
    (3) The provision of a neighbourhood amenity and community amenity package to the satisfaction of the City of Victoria; and,

(4) Mitigation of construction impacts, including: provision for potential continuous waterfront public access around the perimeter of Clover Point from Dallas Road Park in the west to Ross Bay in the east; aesthetic features including artistically adorned hoarding; negotiation of permissible working hours; and provision around access, egress and transport to the site.

(5) Request the Capital Regional District to make best efforts to pursue the most cost effective option for the proposed facility

4. All of the above is subject to land use approval by Council.

The Township of Esquimalt dealt with the matter March 14, 2016 at a special meeting of Council. Council requested that the CRD attend a subsequent Council meeting to make a presentation on the process and how these sites came to be included in the amendment. This presentation is scheduled for April 11, 2016.

ALTERNATIVES

Alternative 1

That the Core Area Liquid Waste Management Committee recommend to the CRD Board:

That the host municipalities lead the community engagement process in their respective communities, that the processes be funded from the Core Area Liquid Waste Management Program Phase 2 Planning budget and that the approach be referred to both Esquimalt and Victoria Councils.

Alternative 2

That this report be received for information.

INTER-GOVERNMENTAL IMPLICATIONS

To be successful, the process required to achieve community support and the approvals necessary from Victoria and Esquimalt Councils must be municipally led. The Minister responsible for approval of the Liquid Waste Management Plan, Minister Polak, has recently stated "The Province respects local government jurisdiction, and would not take lightly any decision to impinge on that." While the Ministers of Environment and Community, Sport and Cultural Development have committed to providing assistance and to help facilitate the process, it is essential that the host municipalities endorse a process that will identify community expectations and requirements. The CRD is not able to determine the ultimate siting of wastewater treatment facilities without municipal support and collaboration.

To support the host municipalities, the necessary capacity and resources are needed to allow a team of engagement specialists to work with municipal constituents to identify a meaningful consultation process and obtain community input. The process will need to identify design guidelines, mitigation features and opportunities to address community integration and resolve the municipal expectations and requirements for approval of the projects. A similar process will

be necessary if additional sites are identified from the Call for Concepts process. The outcomes of the process will be brought back as proposals to the CRD Board, which in turn will inform development applications and mitigation packages.

FINANCIAL IMPLICATIONS

Funding for the process would be drawn from the Core Area Liquid Waste Management Program Options Development - Phase 2 Budget, which had a balance of $498,820 as of February 29, 2016. Staff propose bringing back a detailed budget for the process to a future meeting, once the respective Councils have considered the matter, likely to be in the order of $150,000 for each community.

The financial envelope for mitigation measures will be set by the CRD Board, to be based on pro-rated 2030 design flow to the respective facilities.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

That the host municipalities lead the community engagement process in their respective communities, that the processes be funded from the Core Area Liquid Waste Management Program Phase 2 Planning budget and that the approach be referred to both Esquimalt and Victoria Councils.

Submitted by:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

LH: cl

Monthly Report to the CRD from the Fairness and Transparency Advisor
January 2016

This report provides a summary of the FTA's activities for the Core Area Sewage Treatment Project for the period from **January 1st to January 29th, 2016.**

FTA Activities

Monitoring Role

During this period, the FTA continued to review and monitor upcoming meetings of the various committees, flagging any potential issues associated with transparency, impartiality, or fairness. In this capacity, the FTA also reviewed minutes of committee meetings.

Complaints

A significant aspect of the FTA's mandate and role is to screen and (if eligible) review submitted complaints regarding the wastewater planning process. The table below summarizes the FTA's activities in this capacity for the reporting period.

January 2016 Complaints Statistics

Number of applications received	4
Number of "eligible" complaints	4
Number of decisions rendered	4
Number of Complaints previously reported	4

Four (4) formal complaints were received, screened and reviewed during this reporting period. This brings the number of formal complaints received by the FTA up to and including January 29th to eight (8). A summary of the recent complaints and the FTA's decisions are provided below.

Complaint #5 (ID no. 396328)

The FTA received notice of complaint no. 396328 ("the complaint") on Monday January 11th and proceeded with screening the complaint.

Summary of complaint:

The complainant raised issue with the timely availability of information on the consideration and evaluation of viable project options. The specific issue which gave rise to this complaint related to the lack of availability of a staff report which formed the basis of an agenda item at January 13th CALWMC meeting.

Summary of findings:

The final decision on the complaint was issued by the FTA on Wednesday January 13th and later posted to the CRD website.

In investigating this complaint, the FTA found that two documents were temporarily unavailable through hyperlinks. The links were re-established within 24 hours and the documents could at all times be found within the agenda package. As a result, the FTA found that the processes related to the January 13th CALWMC meeting were adequate with respect to fairness and transparency.

Complaint #6 (ID no. 397183)

The FTA received notice of complaint no. 397183 ("the complaint") on Saturday January 23rd and proceeded with screening the complaint.

Summary of complaint:

The main issue raised in this complaint related to the suppression of information. It was alleged that important information which would inform the CALWMC's decision-making was being withheld from both the public and the committee.

Specifically, this complaint raised issue with the Technical Oversight Panel's (TOP's) procedures for making decisions and providing recommendations to the CALWMC, including a) incomplete disclosure in the minutes of deliberations among TOP members; b) TOP 'voting' processes; and c) restrictions on Panel members from making public comment and/or sharing information regarding Panel deliberations.

Summary of findings:

The final decision on the complaint was issued by the FTA on Friday January 29th and later posted to the CRD website.

Overall, the FTA found no evidence of information suppression through the procedures of the TOP. The FTA found no flaws in how the Panel has provided advice or recommendations as it relates to managing the various perspectives of panel members and moving those deliberations forward through to the CALWMC.

Complaint #7 (ID no. 397185)

The FTA received notice of complaint no. 397185 ("the complaint") on Saturday January 23rd and proceeded with screening the complaint.

Summary of complaint:

The complaint raised issue with respect to whether information provided to the public about gasification has been based on technical expertise. In particular, the complainant called into question the expertise of Urban Systems (and Carollo Engineers) and raised procedural concerns relative to the TOP's management of views / expertise on gasification, through its deliberative processes.

Summary of findings:

The final decision on the complaint was issued by the FTA on Friday January 29th and later posted to the CRD website.

With respect to this issue around the suppression of expert views, the FTA resolved that the upcoming consultation will shed light on the expertise, perspectives, and views on the various options under consideration. The current consultation may identify practical problems and as such, is a credible tool for providing a quality check on the assessment of costs. As such, procedurally, the FTA found no fault with respect to the process.

Complaint #8 (ID no. 397206)

The FTA received notice of complaint no. 397206 ("the complaint") on Saturday January 23rd and proceeded with screening the complaint.

Summary of complaint:

The complainant raised issue with unexplained discrepancies in comparing old and new project cost estimates. The complainant stated that these new costs contain significant unexplained inconsistencies with the previous costing estimates (e.g., the 2011 McLoughlin Wastewater Treatment Plan bid), calling into question the current costing process.

Summary of findings:

The final decision on the complaint is forthcoming from the FTA and will be posted to the CRD website.

Other Issues

On Tuesday January 12, the FTA held a discussion with the TOP to provide advice on a procedural matter concerning the TOP's process for making recommendations.

Activities Summary

Provided in the table below is a summary of the FTA's Project hours devoted to each of the abovementioned activities.

January 2016 Activities

Activity	Hours Worked
Setting up procedures	0
Monitoring	3.4
Meetings	0
Complaints	115.1
Other admin	8.3
Advice	1.7
Total	**128.5**

The total number of hours to be billed for this period (spanning January 1st to January 29th) is 128.5 hours, which totals $24,180.50 before tax.

The FTA has billed a total of $93,416.50 for 472.5 hours worked on the project from August 2015 to January 29th, 2016.

Monthly Report to the CRD from the Fairness and Transparency Advisor
February 2016

This report provides a summary of the FTA's activities for the Core Area Sewage Treatment Project for the period from **January 30th to February 26th, 2016.**

FTA Activities

Monitoring Role

During this period, the FTA continued to review and monitor upcoming meetings of the various committees, flagging any potential issues associated with transparency, impartiality, or fairness. In this capacity, the FTA also reviewed minutes of committee meetings.

Requests for Review

A significant aspect of the FTA's mandate and role is to screen and (if eligible) review submitted requests for review regarding the wastewater planning process. The table below summarizes the FTA's activities in this capacity for the reporting period.

February 2016 Complaints Statistics

Number of applications received	19
Number of "eligible" complaints	17
Number of decisions rendered	5
Number of Complaints previously reported	8

Nineteen (19) formal requests for review were received, screened and reviewed in February. As noted below, eleven (11) of these complaints raised the same issue and were addressed in one decision. This brings the number of formal complaints received by the FTA to (27). A summary of the recent complaints and the FTA's decisions are provided below.

Request #9 (ID no. 398043)

The FTA received notice of request no. 398043 ("the complaint") on Sunday January 31st and proceeded with screening the complaint.

Summary of complaint:

The complainant stated that the survey outcomes had not been made clear to participants. The complainant claimed that option sets including site locations and transportation methods were not clearly defined within the survey tool. Without knowledge of the true costs and impacts associated with various options, the complainant argued that participants were unable to make reasonably informed decisions to guide the options selection process.

Summary of findings:

The final decision on the complaint was issued by the FTA on Tuesday February 9th and later posted to the CRD website.

Due to a lack of clarity on how the survey results would be used as well as missing information on Hartland, the FTA was unable to determine whether there was in fact a procedural fairness concern. If the survey was used as a determinative tool, then it would in fact be unfair to ask participants to rank choices; however, if the survey would not be used as a determinative instrument and simply as a further step in

understanding public sentiment on various interests associated with the option sets (e.g. would not be used to further narrow options) then there was not a breach of procedural fairness.

Request #10 (ID no. 398130)

The FTA received notice of request no. 398130 ("the complaint") on Monday February 1st and proceeded with screening the complaint.

Summary of complaint:

The issue raised by the complainant was a lack of public access to view and consider the proposed treatment site in Rock Bay. The complainant stated that given the proposed site's large footprint, close proximity to downtown, and inclusion in each of the considered option sets, the public should be allowed to tour the site as part of the ongoing public consultation.

Summary of findings:

Given that it was not obvious that a decision has been made to restrict access; and given that the complainant did not indicate that they had made any contact with CRD representatives to determine whether access was under consideration, was considered appropriate, or would be possible, the FTA did not proceed with investigation of this issue.

Request #11 (ID no. 398233)

The FTA received notice of request no. 398233 ("the complaint") on Thursday February 4th and proceeded with screening the complaint.

Summary of complaint:

The complainant stated that the survey design led respondents to predetermined outcomes and was therefore biased. In particular, the complainant claimed that the survey asked respondents to select no more than 3 "acceptable options" from a list of 7 option sets, however, respondents were not given a mechanism to indicate a lack of support for these proposed option sets, (e.g., to select "none of the above").

Summary of findings:

The final decision on the complaint was issued by the FTA on Tuesday February 9th and later posted to the CRD website.

The FTA was unable to determine whether the survey was a determinative tool intended to narrow the options, or if the CRD was continuing to search for new options. Based on these unknowns, the FTA recommended that the CALWMC do two things: help the public to more fully understand how the survey findings would be used; and edit the survey to allow for an option within the question the complainant raised issue with, to oppose all 7 current options (i.e., the option "none of the above"). The requirement to select "3 options" would have to be removed to accommodate this additional option.

Request #12 (ID no. 398418)

The FTA received notice of request no. 398418 ("the complaint") on Tuesday February 16th and proceeded with screening the complaint.

Summary of complaint:

The complainant suggested that taxpayer costs with respect to water reuse were not considered in the wastewater options survey or supporting documents; whereas potential water reuse revenues were

identified. The complainant questioned the absence of water reuse costs in the information provided to the public.

Summary of findings:

The final decision on the complaint was issued by the FTA on Tuesday February 23rd and later posted to the CRD website.

The FTA did not find that the current consultation process diminishes fairness. There was ample evidence that the CALWMC was provided with clear information that water reuse, from a purely financial perspective, was not advantageous. While it is absolutely true that the information which was available in the technical memos was not summarized in the survey instrument itself or in the Citizen's Guide, what was in the memos, was available to the CALWMC and to the public. The FTA recommended that next steps related to any decisions relative to water reuse include consolidated, summarized, and easy to understand information on costs and benefits of water reuse, in one single location.

Request #13 (ID no. 398541)

The FTA received notice of request no. 398541 ("the complaint") on Thursday February 18th and proceeded with screening the complaint.

Summary of complaint:

The complainant claimed that innovative treatment alternatives are being overlooked in the options process, and that this is undermining the fairness of the process to identify a wastewater treatment solution. Specifically, the complainant took issue with the CRD's position at this time to not consider alternatives to the seven option sets currently under consideration.

Summary of findings:

The final decision on the complaint was issued by the FTA on Tuesday February 23rd and later posted to the CRD website.

The FTA concluded that if the CRD is now entertaining additional options outside of the narrowed options currently being considered, it certainly has the discretion to do so; however, in order to ensure fairness, they would need to alert the public to the change in process; would need to ensure that the new process was clear and that timelines and milestones were clearly communicated; and that the new process included opportunities for public views to be heard.

Request #14 (ID no. 398566)

The FTA received notice of request no. 398566 ("the complaint") on Friday February 19th and proceeded with screening the complaint. Issue no. 2 and 3 raised by the complainant did not proceed to investigation.

Summary of complaint:

The complainant raised issue with the fairness and transparency of decision-making processes and the ways in which the option sets have been presented for feedback in the public consultation process as it relates to:

1. The leadership and transparency in the decision-making process with regards to the Eastside Public Advisory Committee (EPAC);
2. The CALWMC's release of final reports on Project costs, sites and technology after the completion of the public consultation period; and
3. The fact that each of the seven costed option sets include a common site.

Summary of findings:
The final decision on the complaint was issued by the FTA on Friday February 26th and later posted to the CRD website.

The FTA determined that that questioning the survey on procedural grounds for not having afforded the Committee a final review of the survey questions, is unsupported neither by the Committee's Terms of Reference nor by the facts. In this instance, the record is clear that "advice" was sought at key junctures with respect to the recent survey's development.

Request #15 (ID no. 394806)
The FTA received notice of request no. 394806 ("the complaint") on Tuesday February 23rd and proceeded with screening the complaint. Issue no. 7 raised by the complainant did not proceed to investigation.

Summary of complaint:
The complaint raised issue with the fairness and transparency of public consultation on the options sets with respect to both interference in the process by decision-makers and the adequacy of consultation methods and materials. In particular, the complainant raised issue with:

1. Bias in an op-ed piece authored by the CALWMC Chair;
2. Insufficient information in the survey on project break downs;
3. Corrupt data gathered through the survey tool;
4. Inadequate provision of notice for a public consultation meeting;
5. Inadequate use of mail-outs;
6. Unavailability of technical experts at a public consultation meeting; and
7. A lack of dignity and respect for the public in the consultation process.

Summary of findings:
The final decision on the complaint is forthcoming from the FTA and will be posted to the CRD website.

Request #16 (ID no. 398719)
The FTA received notice of request no. 398719 ("the complaint") on Thursday February 25th and proceeded with screening the complaint.

Summary of complaint:
The complainant claimed their company provided a proposal and presentation to the CALWMC on a particular wastewater technology (the JOR-Vic Sewage Reclaim-Treatment Alternative) and that no feedback or intent to review the feasibility of the technology was subsequently communicated by the CRD.

Summary of findings:
Based on the FTA's review concerning the details of this complaint, the issue raised appears to be of a historic nature (e.g., dating back to 2010). As such, this issue was not germane to the current process for which the FTA has a mandate to provide process oversight and did not proceed to investigation.

Requests #17-27 (ID no. 17 (398761), 18 (398763), 19 (398766), 20 (398772), 21 (398776), 22 (398783), 23 (398802), 24 (398806), 25 (398762), 26 (398875) and 27 (398886)
The FTA received 11 notice of requests (no.s 17 to 27; "the complaints") between Thursday February 25th and Monday February 29th and proceeded with screening the complaints.

Summary of complaint:

These complainants raised issue with the fairness of the CALWMC's February 24th, 2016 motion to alter the process for selecting an option for wastewater treatment by allowing for new options to be assessed and considered. It was argued that allowing such an option (i.e., McLoughlin Point) to be introduced at this juncture ignored the agreed upon process of having municipalities put forward their recommended sites.

Summary of findings:

The final decision on the complaint is forthcoming from the FTA and will be posted to the CRD website.

Activities Summary

Provided in the table below is a summary of the FTA's Project hours devoted to each of the abovementioned activities.

February 2016 Activities

Activity	Hours Worked
Setting up procedures	0
Monitoring	3.9
Meetings	0
Complaints	202.7
Other admin	10.4
Advice	0
Total	**217**

The total number of hours to be billed for this period (spanning January 30th to February 26th) is 217 hours, which totals $38,353.50 before tax.

The FTA has billed a total of $131,770.00 for 689.5 hours worked on the project from August 2015 to February 26th, 2016.

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REPORT TO THE CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 10, 2016

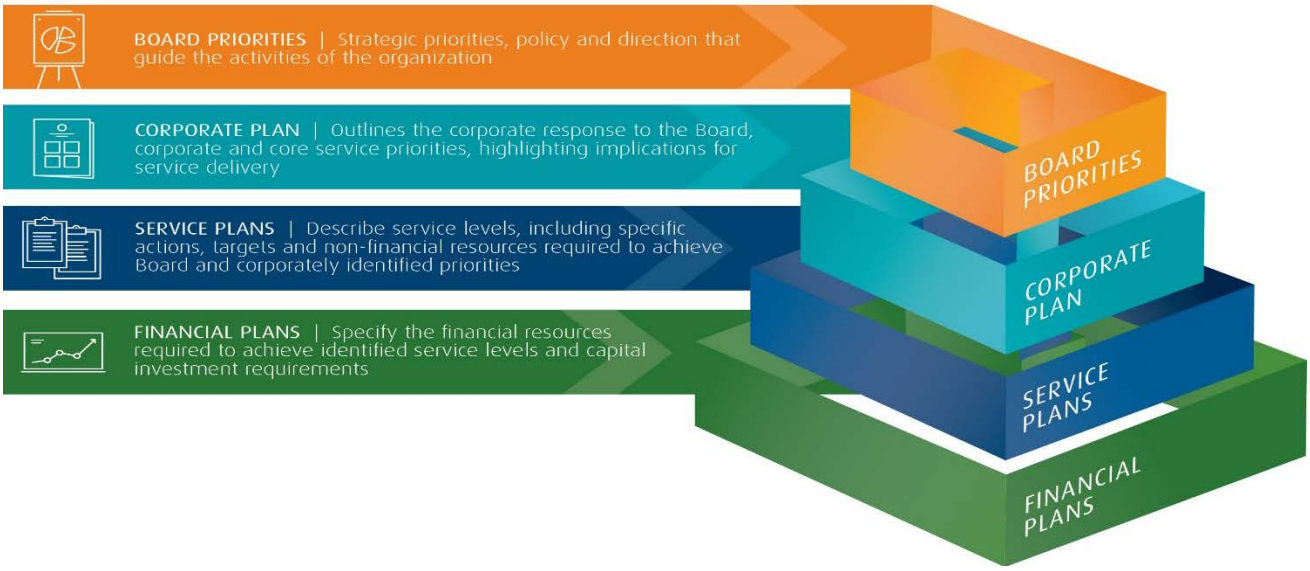
SUBJECT **2016 CRD Board Standing Committee Terms of Reference and Work Programs**

ISSUE

To establish the Terms of Reference for the 2016 CRD Board Standing Committees including a high-level orientation for committee members and an update on the 2015-2018 Board Strategic Priorities and 2015-2018 Corporate Plan Initiatives.

BACKGROUND

In 2015, the following 2016 to 2019 planning cycle was initiated to establish a longer-term focus regarding the allocation of resources required to deliver the programs and services need by the community, and to accomplish Board priorities:



In May 2015, the Board approved the *CRD Board Strategic Priorities 2015-2018* (the "*Board Priorities*") that identifies 12 strategic areas and 51 priorities to be initiated over the four-year term. The corresponding *CRD Corporate Plan 2015-2018* (the "*Corporate Plan*") was then developed to introduce corporate strategies and actions aimed at achieving the Board priorities.

As part of the planning process, in the Fall 2015, each Board standing committee reviewed the relevant departmental and divisional service plans. The multi-year service plans outlined core service information, including key service drivers such as trends, service levels, workforce considerations, and performance measures and provided the committee an opportunity to make service amendments as necessary.

Each year, the Board Chair determines the Board standing committee structure and governance model to assist the Board in accomplishing its strategic initiatives along with the corporate and divisional initiatives. The authority to establish standing committees is provided by Section 795(2) of the *Local Government* Act and the CRD Board Procedures Bylaw.

To assist the Board Chair with this determination, the Governance Committee was tasked with making recommendations regarding the Board standing and select committee structure. These recommendations were approved by the Board on December 9, 2015 and the resulting Board Standing Committees were established by the Board Chair for 2016:

- Committee of the Whole
- Core Area Liquid Waste Management
- Electoral Area Services
- Environmental Services
- Finance
- Governance
- Planning, Transportation and Protective Services
- Regional Parks

At its meeting held January 13, 2016, the Board received the terms of reference for the 2016 Board Standing Committees and referred them to the respective Standing Committees for review and approval. The proposed terms of reference for the 2016 Core Area Liquid Waste Management Committee are attached as Appendix A.

In addition to the above, the Board directed that a status update on the 2015-2018 Board Priorities and Corporate Plan be prepared for each committee for review and confirmation. The *Priorities Dashboard* is attached as Appendix B.

As part of the orientation for this inaugural committee meeting, staff will provide a high-level overview that covers aspects of the service, governance and, staff roles and responsibilities.

ALTERNATIVES

Alternative 1:

1. That the terms of reference for the 2016 Core Area Liquid Waste Management Committee as attached in Appendix A be approved; and
2. That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
   That the Committee priorities and work program as outlined in the *Priorities Dashboard,* be confirmed.

Alternative 2:

That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

1. That the terms of reference be amended; and/or
2. That the Committee priorities and work program outlined in the *Priorities Dashboard* be amended.

IMPLICATIONS

The terms of reference that have been developed for each committee identify the mandate/purpose of the committee, its establishment and authority, the composition, procedures and staff resources. For the most part, the committees are structured around specific service areas and the terms of reference identify the primary staff liaison(s) for each committee. The terms of reference for the Core Area Liquid Waste Management Committee remain unchanged from 2015.

Committee Work Program
The Board priorities, Corporate Plan initiatives and divisional initiatives have been grouped by committee in the attached Priorities Dashboard to outline the work program for the Committee. In addition, the Dashboard also identifies the current status or progress to date on these various initiatives and proposed next steps. More detail about the strategies, actions or initiatives to achieve these priorities is included in the Corporate Plan and Service Plan (Appendix C).

The terms of reference and the Priorities Dashboard provide the committee with an opportunity to confirm the work program for 2016. Any changes to the work program may have an impact on service levels, the budget, and the ability of staff to deliver their work efficiently.

CONCLUSION

The terms of reference for the 2016 Core Area Liquid Waste Management Committee are attached for consideration. The terms of reference, along with the Priorities Dashboard and high-level orientation, will serve to clarify the mandate, responsibilities and procedures governing the Committee.

RECOMMENDATIONS

1. That the terms of reference for the 2016 Core Area Liquid Waste Management Committee as attached in Appendix A be approved; and
2. That the Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:
   That the Committee priorities and work program as outlined in the *Priorities Dashboard,* be confirmed.

Submitted by:	Brent Reems, MA, LLB, Senior Manager, Legislative & Information Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

BR:ss

Attachments: Appendix A – 2016 Committee Terms of Reference
Appendix B – Priorities Dashboard
Appendix C – Service Plans

Terms of Reference

CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE

PREAMBLE

The Capital Regional District (CRD) Core Area Liquid Waste Management Committee (CALWMC) is a standing committee established by the CRD Board and will oversee and make recommendations to the Board regarding the Core Area Liquid Waste Management Plan and certain aspects of the Core Area Wastewater Treatment Program (CAWTP).

The Committee's official name is to be:

Core Area Liquid Waste Management Committee

1.0 PURPOSE

The mandate of the committee is to oversee and make recommendations to the Board regarding the:

- Administration and regulatory reporting for the Core Area Liquid Waste Management Plan
- Core area trunk sewers and sewage disposal systems
- Opportunities for resource recovery

In relation to the CAWTP, the mandate of the committee is as outlined in section 11 of Core Area Wastewater Treatment Commission Bylaw No. 1, 2012 (Bylaw No. 3851). Appendix A outlines how the CAWTP Commission will liaise with the Committee and the Regional Board.

The committee will act as the steering committee of the Technical and Community Advisory Committee, as outlined in Appendix B.

In addition, the committee will consider recommendations to the CRD Board from Select committees established to develop core area subregional wastewater treatment and resource recovery options and Liquid Waste Management Plan amendments, as outlined in Appendix C.

2.0 ESTABLISHMENT AND AUTHORITY

- The committee will make recommendations to the Board for consideration
- The Board Chair will appoint the Committee Chair, Vice Chair and committee members

3.0 COMPOSITION

The membership is comprised of all directors on the CRD Board from the following municipalities that are participants in the Core Area Liquid Waste Management Plan:

- Colwood
- Esquimalt
- Langford
- Oak Bay
- Saanich
- Victoria
- View Royal
- An elected representative and alternate from each of the Songhees Nation and Esquimalt First Nation Councils (Board Procedures Bylaw No. 3828)

All Board members are permitted to participate in standing committee meetings, but not vote, where an item of local significance is on the agenda (Board resolution Nov. 12, 2014).

4.0 PROCEDURES

- The committee shall meet monthly except August and December and have special meetings as required at the call of the Committee Chair

- The agenda will be finalized in consultation between staff and the Committee Chair and any committee member may make a request to the Chair to place a matter on the agenda

- With the approval of the Committee Chair and Board Chair, committee matters of an urgent or time sensitive nature may be forwarded directly to the Board for consideration

- A quorum is a majority of the committee membership and is required to conduct committee business

5.0 RESOURCES AND SUPPORT

- The General Manager Integrated Water Services and General Manager Parks and Environmental Services will act as a liaison to the committee with support from other departments as required

- Corporate Communications will assist the department in the delivery of Core Area Liquid Waste Management Plan communication services

- Minutes and agendas are prepared and distributed by the Legislative and Information Services department

APPENDIX A

LIAISON BETWEEN CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE (CALWMC) AND CORE AREA WASTEWATER TREATMENT PROGRAM (CAWTP) COMMISSION

In accordance with Capital Regional District (CRD) procedures and the Core Area Wastewater Treatment Commission Bylaw No. 1, 2012 (Bylaw No. 3851), the CAWTP Commission will liaise with the CALWMC and/or CRD Board as follows:

- Prior to appointing a Program Director
- Preparing a monthly written report to update and make the CALWMC and the Board aware of the progress of the Program and any significant issues
- Collaborating with the CALWMC to draft the sections of the Request for Proposals that promote innovation
- Preparing an annual Program cash flow forecast before September 30 each year as part of its comprehensive financial accounting reporting
- Preparing draft reports as required to permit the Board to report to senior governments
- Providing additional information to the CALWMC and/or Board upon request
- All documents and reports to be considered by the Board as outlined in section 10 of the Commission Bylaw are to be reviewed by the CALWMC

APPENDIX B

STEERING THE TECHNICAL AND COMMUNITY ADVISORY COMMITTEE CORE AREA AND WEST SHORE SEWAGE TREATMENT

In accordance with the Terms of Reference of the Technical and Community Advisory Committee Core Area and West Shore Sewage Treatment (TCAC) approved by the Capital Regional District Board (CRD), August 14, 2013, the Core Area Liquid Waste Management Committee (CALWMC) will steer the TCAC as follows:

- Make recommendations to the CRD Board to appoint TCAC members
- Make requests to TCAC for appropriate technical and community consultation advice and input in order to facilitate informed decision-making in a variety of CAWTP matters, including:
  - Plant design criteria and treatment technology, including:
    - opportunities for resource recovery
    - sludge management
    - odour control
    - general plant design criteria
  - Number and location of treatment plants
  - Timing/scheduling of treatment
- Receive for information or consideration of recommendations such technical and community consultation reports from TCAC as requested by CALWMC
- Dissolve the TCAC at the end of the planning stage of the Core Area and West Shore sewage treatment project or at a time determined by the CALWMC

APPENDIX C

WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEES

In accordance with the Terms of Reference of the Westside Wastewater Treatment and Resource Recovery Select Committee (the "Select committee") approved by the CRD Board, November 12, 2014, the Select committee will report its findings to the Board through the Core Area Liquid Waste Management Committee (CALWMC). The mandate of the Select committee is to:

- Evaluate options and develop a conceptual plan for a wastewater treatment and resource recovery plan for participating jurisdictions. The conceptual plan will:
  - optimize existing infrastructure, where practical
  - be developed in a collaborative manner with the participants
  - be environmentally sound
  - have decisions based on the best business case scenario that maximizes benefit to the best value for taxpayers
  - meet the unique needs of the Westside in a proactive and timely way
  - be an efficient and cost effective process
  - form the basis for an amendment to the Core Area Liquid Waste Management Plan
- Engage and consult with Westside residents

The committee will continue until it has made its final report to the Board.

In accordance with the Terms of Reference of the Eastside Wastewater Treatment and Resource Recovery Select Committee (the "Select committee") approved by the CRD Board, the Select committee will report its findings to the Board through the Core Area Liquid Waste Management Committee (CALWMC). The mandate of the Select committee is to:

- Evaluate options and develop a conceptual plan for a wastewater treatment and resource recovery plan for participating jurisdictions. The conceptual plan will:
  - optimize existing infrastructure, where practical
  - be developed in a collaborative manner with the participants
  - be environmentally sound
  - decisions will be based on the best business case scenario that maximizes benefit to the best value for taxpayers
  - meet the unique needs of the Eastside in a proactive and timely way
  - the process will be efficient and cost effective
  - form the basis for an amendment to the Core Area Liquid Waste Management Plan (CALWMP)
- Engage and consult with Eastside residents

The Committee will also:

- Consider the results of work done by individual councils as instructed by those Councils
- Report any work done by the Committee to the affected municipality

The Committee is tasked with working with the Westside committee and Westside municipalities to explore potential common facilities and use of current CRD assets.

Priorities Dashboard > Core Area Liquid Waste Management Committee

CONDITION LEGEND

No issues / Proceeding as planned

Potential or emerging issue/problem

Problem/issue has arisen

Ahead of schedule / Timing has changed

Priority	Also Reviewed By	Status and Condition			Resolution by Board/ Committee	Comments	Next Steps	
		Not Started	In Progress	Completed			Action	Timing
INTEGRATED WASTE MANAGEMENT Acquire additional expertise on technologies and solutions (including centralized/decentralized approaches and gasification) to liquid and solid waste treatment.			✓			Established the Technical Oversight Panel (TOP); retained engineering consultants with expertise in solid and liquid waste management	▸ Complete Amendment No. 10 to Liquid Waste Management Plan for submission to Province	▸ *Q1, 2016*

Service Plan for Core Area Liquid Waste Service

2016-2019
October 2015

Capital Regional District

Capital Regional District
Core Area Liquid Waste Service
470 Island Highway, Victoria, BC
T: 250.474.9600 www.crd.bc.ca

Making a difference...together

Table of Contents

1 Overview 1
1.1 Scope 1
1.2 Primary Contacts 1
2 Services & Programs 2
2.1 Regional Trunk System Overview 2
2.2 Conveyance System Operations & Engineering 2
2.3 Planning, Regulatory, Scientific & Technical Support Programs 3
3 Core Area Wastewater Treatment Program 4
3.1 Project Overview 4
3.2 Project Charter 5
3.3 Project Overlay 5
3.4 Project Work Plan 5
4 Governance & Financial Information 5
4.1 Financial Overview 6
5 Appendix 7

1 Overview

1.1 Scope

The Capital Regional District (CRD) provides wastewater management to residential, commercial, industrial and institutional customers, equivalent to a population of approximately 330,000 persons distributed throughout the Core Area communities. These communities include the cities of Victoria, Langford and Colwood, the districts of Oak Bay and Saanich, the Township of Esquimalt, the Town of View Royal and the Songhees and Esquimalt First Nations communities. In 2006, the CRD commenced the planning for the expansion and upgrading of the wastewater management system with the principal goal of moving from the existing preliminary level of treatment to secondary treatment.

The municipalities of Esquimalt, Oak Bay and Victoria are fully served by sewers. The majority of properties in View Royal have sewers but a few still remain outside of the service area. A large, predominantly rural area of Saanich is outside of the sewerage service area. Increasing areas of Colwood and Langford are served by sewers, with plans for further expansion. In the long term, both municipalities are expected to be fully served by sewers.

Properties not served by sewers utilize onsite septic systems or small treatments plants to provide wastewater treatment. These onsite systems primarily rely on tile fields or other distribution methods for ground disposal of treated effluent.

The Core Area Liquid Waste Service as a whole is delivered and supported by a number of CRD services and programs delivered by various CRD departments and divisions. The main service and program areas are described below in Section 2.

1.2 Primary Contacts

Core Area Wastewater Planning, Regulatory, Scientific and Technical Programs

Name: Larisa Hutcheson

Title: General Manager, Parks and Environmental Services

Contact Information: 250.360.3085, lhutcheson@crd.bc.ca

Core Area Wastewater Conveyance System Operations and Engineering

Name: Ted Robbins

Title: General Manager, Integrated Water Services

Contact Information: 250.360.3061, trobbins@crd.bc.ca

CRD Administration and Finance

Name: Robert (Bob) Lapham

Title: Chief Administrative Officer

Contact Information: 250.360.3285, rlapham@crd.bc.ca

Core Area Liquid Waste role: Liaise between the Core Area Wastewater Treatment Program Commission, the Core Area Liquid Waste Management Committee and the CRD Board; co-Chair the Agreement Management Committee (AMC) which includes establishing and implementing a detailed audit plan.

Name: Diana Lokken

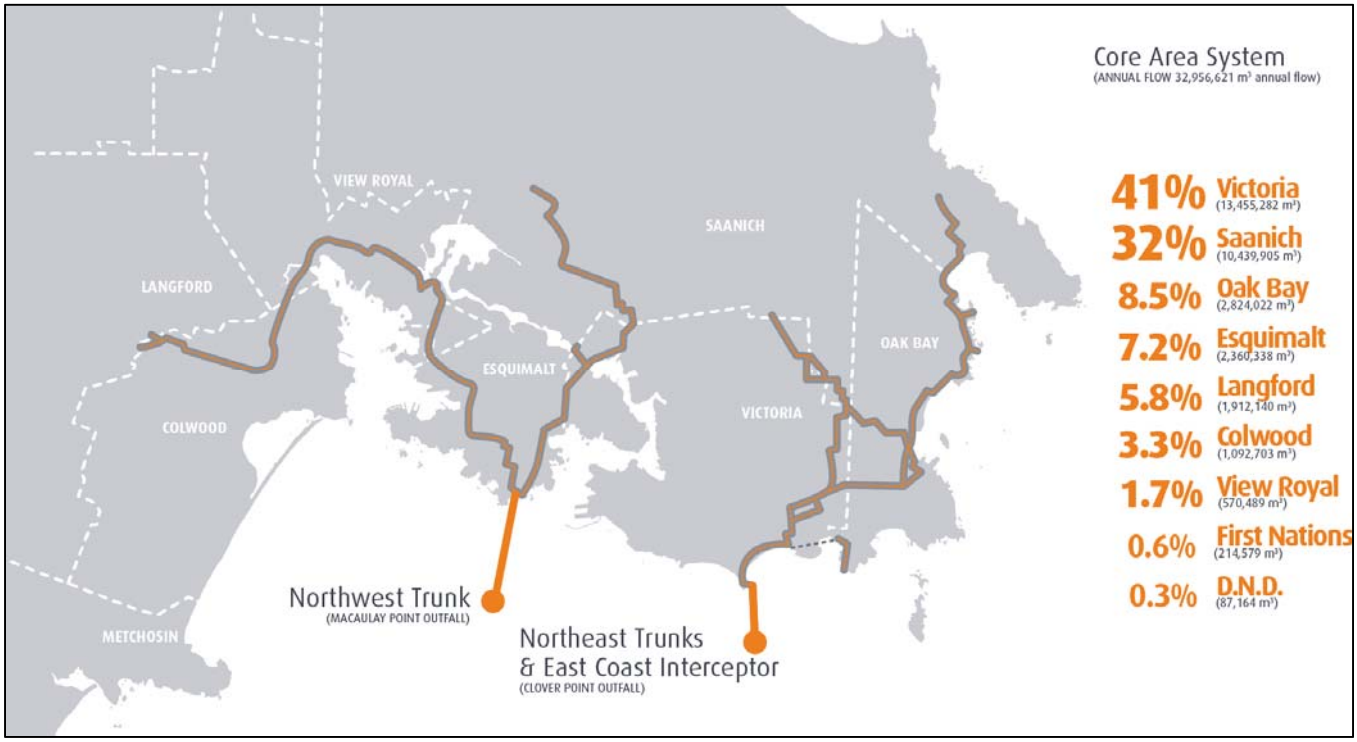
Title: General Manager, Finance & Technology, (Finance Officer)

Contact Information: 250.360.3010, dlokken@crd.bc.ca

Core Area Liquid Waste role: Overall financial responsibility, responsibility to negotiate and administer contribution agreements with senior levels of government, real estate transactions.

2 Services & Programs

2.1 Regional Trunk System Overview*



*2014 Actual Flows

2.2 Conveyance System Operations & Engineering

The services provided under this function include the operation, maintenance, engineering and capital project delivery for the Core Area Wastewater System including wastewater collection, conveyance, screening and disposal through the ocean outfalls.

The conveyance system is primarily composed of the four trunks:

North West Trunk - The North West Trunk sewer system includes the Macaulay Point pump station and outfall, as well as the Marigold, Craigflower and Lang Cove pump stations and interconnecting trunk sewer main infrastructure.

Operating costs are recovered by requisition to all participating members based on member percentage of total sewage input. Costs for the North West Trunk are shared by Saanich, Victoria, Esquimalt, View Royal, Colwood, Langford, Songhees First Nation and Esquimalt First Nation under a separate agreement.

North East Trunk – Clover - The North East Trunk Clover sewer system includes the Clover Point pump station and outfall, as well as the Harling Point pump station and interconnecting trunk sewer main infrastructure.

Operating costs are recovered by requisition to all participating municipalities based on each participant's percentage of total sewage input. Costs for the North East Trunk Clover are shared by Victoria, Saanich and Oak Bay.

North East Trunk – Bowker - The North East Trunk Bowker sewer system includes the Trent pump station and interconnecting trunk sewer main infrastructure.

Operating costs are recovered by requisition to all participating municipalities based on each participant's percentage of total sewage input. Costs for the North East Tunk Bowker are shared by Victoria, Saanich and Oak Bay.

East Coast Interceptor - The East Coast Interceptor Trunk sewer system includes seven pump stations, the largest being the Currie Road pump station in Oak Bay and the Penrhyn pump station in Saanich East, as well as the interconnecting trunk sewer main infrastructure. The East Coast Interceptor conveys sewer flows to the North East Trunk Clover for eventual discharge at Clover Point.

Operating costs are recovered by requisition to all participating municipalities based on each participant's percentage of total sewage input. Costs for the East Coast Interceptor are shared by Victoria, Saanich and Oak Bay.

These services are delivered by the Infrastructure Operations Division and the Infrastructure Engineering Division, both under the Integrated Water Services Department.

2.3 Planning, Regulatory, Scientific & Technical Support Programs

The services provided under this function include the planning for and administration of the Core Area Liquid Waste Management Plan (CALWMP) and Treatment Program, and the programs that fulfill the commitments made under the CALWMP, including the Infiltration and Inflow Management Program, the Wastewater and Marine Environment Program, the Regional Source Control Program, the Stormwater Quality Management Program, the Harbours Environmental Action Program, the On-site Septic System Program, and Management of Trucked Liquid Waste. These services and programs are delivered by technical and scientific staff in the Environmental Planning & Engineering Division, the Environmental Partnerships Division, and the Environmental Protection Division.

Core Area Liquid Waste Management Plan (CALWMP) - The CRD completed a Liquid Waste Management Plan in July 2000 to serve the municipalities of Colwood, Esquimalt, Langford, Oak Bay, Saanich, Victoria, View Royal, and the Songhees and Esquimalt Nations. The plan provides a strategy for managing liquid wastes for the next 25 years, and was approved by the Minister of Environment in March 2003. Since that time, the Plan has had nine amendments.

Infiltration and Inflow Management Program - Infiltration and inflow (I&I) refers to rainwater and groundwater that enters the sanitary sewer. A certain amount of I&I is unavoidable and is accounted for in routine sewer design. However, when I&I exceeds design allowances, sewer capacity is consumed and may result in overflows, risks to health, damage to the environment and increased conveyance costs. The purpose of the program is to reduce the amount of rainwater and groundwater entering the sanitary sewer system when it is cost-effective to do so. Reduction of I&I in the system lowers the risk of sanitary sewer overflows and can decrease the costs of conveying and treating wastewater.

Wastewater and Marine Environment Program – The Wastewater and Marine Program provides regulatory compliance monitoring and scientific assessment services on behalf of Integrated Water Services to assess the potential effects of the outfalls on the marine environment and human health. The program includes assessment

of wastewater flows, surface water and water column quality and assessment of the seafloor and organisms living near the outfall. The results are shared internally to guide the efforts of the Regional Source Control Program. The Wastewater and Marine Program works closely with regulatory agencies to ensure compliance and provides scientific assessment and annual reporting for the general public. The monitoring and analysis follows a rigorous quality assurance and quality control regime in the field and in the laboratory that ensures the quality of the data collected.

Regional Source Control Program - The Regional Source Control program is a pollution prevention initiative aimed at reducing the amount of contaminants that industry, businesses, institutions and households discharge into the district's sanitary sewer systems. The program has been active region-wide since the adoption of the CRD's Sewer Use Bylaw in August 1994. Source Control is a cost effective way of reducing the impacts of wastewater on the environment.

Stormwater Quality Management Program - The Stormwater, Harbours and Watersheds Program (SHWP) plans, promotes and coordinates the management of stormwater quality in the LWMP area, in consultation with the municipalities, the Department of National Defence and First Nations.

Harbours Environmental Action Program - The Harbours Environmental Action Program (HEAP) coordinates environmental protection and improvement efforts in Victoria and Esquimalt harbours, Portage Inlet, the Gorge Waterway and Esquimalt Lagoon. HEAP works with community groups, municipal partners and other agencies to achieve the following goals: decrease contaminant inputs, protect and enhance habitat quality, set environmental quality objectives, achieve environmentally protective land uses, monitor environmental quality.

On-Site Septic System Program - Septic systems, also known as on-site sewage systems, are an effective treatment option when designed, installed and maintained properly. Lack of maintenance, such as regular pump-outs, is the number one cause of system failure in the CRD. The program provides administration and implementation of CRD Bylaw 3479 which outlines maintenance requirements for on-site septic systems. The bylaw requires owners with Type 1 systems (septic tanks) to have pumped out their system every five years. Owners of Type 2 or Type 3 systems (often package treatment plants) are required to maintain their system according to the maintenance plan for the system, and ensure it is maintained by an Authorized Person at least once per calendar year.

Management of Trucked Liquid Waste - Many industrial, commercial and institutional operations produce liquid waste that is not suitable for discharge to the sanitary sewer or storm water system. These wastes are generated at operations such as: restaurants (grease interceptors), car washes (vehicle wash interceptors), automotive repair shops (oil water separators), parking lots (catch basins / stormwater rehabilitation units), dry cleaners (PERC from dry cleaning machines), photo processors (fixer), and laboratories (various chemicals). These by-products are considered to be high-strength liquid wastes or obstructive wastes and it is therefore illegal to discharge these wastes to the sanitary sewer system or the storm drain system. Proper disposal of these wastes requires a licensed hauler to pick up the waste, and transport it to a proper disposal facility.

3 Core Area Wastewater Treatment Program

Project Overview

The municipalities of Victoria, Saanich, Oak Bay, Esquimalt, View Royal, Colwood and Langford collectively are participants of the Core Area Liquid Waste Management Service which is managed and operated by the Capital Regional District (CRD) in accordance with the Core Area Liquid Waste Management Plan (CALWMP).

CALWMP is a 25-year plan under the Environmental Management Act which outlines CRD's wastewater management strategies, including wastewater treatment.

The CALWMP is the main planning document for the core area's wastewater treatment program. The current plan was developed under the direction of the Core Area Liquid Waste Management Committee and CRD Board, with input from experts and the public and was approved by the BC Minister of Environment.
The approved plan consists of a centralized wastewater treatment plant, a resource recovery centre to process residual solids and a conveyance system of pump stations and pipes throughout the core area to convey wastewater to the treatment facilities.

Currently, the Core Area Liquid Waste Management committee is underway with a planning and option development phase that includes further public consultation and technical and financial analysis of alternative options for the treatment program, including configurations and technologies.

3.2 Project Charter

At the October 2, 2015 meeting the CALWMC adopted a Project Charter outlining the goals, vision, roles/responsibilities, objectives, budget and schedule for the program along with a revised project schedule and an updated work plan overlay. The Project Charter, and the goals and commitments within it, will continue to inform the Core Area Liquid Waste planning process.

For the complete 10-page document, please see *Appendix 5.1, Core Area Sewage and Resource Recovery System 2.0, Phase 2, Project Charter*.

3.3 Project Overlay

Considering funding and regulatory deadlines, a work plan overlaid with key deadlines was prepared, revised and adopted (at the October 2, 2015 CALWMC meeting) highlighting milestones for the option development, planning and implementation phases of the project.

Please see *Appendix 5.2, Proposed Work Plan Overlay – 3P Canada Funding Considerations*.

3.4 Project Work Plan

With a high level project overlay in place, a more detailed work plan was presented and adopted (at the October 2, 2015 CALWMC meeting) specifying the actions to be taken in order to meet the required LWMP amendment deadline of March 31, 2016.

Please see *Appendix 5.3, LWMP Amendment Schedule – Amendment Considerations*.

4 Governance & Financial Information

The CRD has the authority to collect, convey, treat and dispose of sewage as detailed under the service establishment bylaw (CRD Bylaw 2312).

Core Area Liquid Waste Management Committee – The CRD Core Area Liquid Waste Management Committee is a standing committee established by the CRD Board to oversee and make recommendations to the Board regarding the Core Area Liquid Waste Management Plan and aspects of the Core Area Wastewater Treatment Program (CAWTP). The mandate of the committee is to oversee and make recommendations to the Board regarding the administration and regulatory reporting for the Core Area LWMP, core area trunk sewers and sewage disposal systems and opportunities for resource recovery. With regards to the CAWTP and the Program Commission, the committee is also responsible for reviewing all documents and reports prepared by the Commission for submission to the Board, advise the Commission on local issues that may affect the Program, advise the Board on matters being considered by the Commission that may affect the Program, monitor the financial and Program construction performance of the Commission, review any Program changes being recommended by the Commission for Board consideration and appoint a representative to an agreement management committee under the contribution agreements.

Core Area Wastewater Treatment Commission – The Core Area Wastewater Treatment Program Commission was established by the CRD Board for the purpose of administering the Program, including conducting procurement processes, completing the Program within established budget and timeframe, achieving the best overall value for money of the Program and the best overall triple bottom line outcomes for the Program, and ensure Program compliance with all applicable Provincial and Federal regulations and Contribution Agreements.

For a detailed description of each stakeholder's role and responsibilities, please see *Appendix 5.4, Planning Process – Core Area Liquid Waste Management Plan Roles, Input & Relationships*.

4.1 Financial Overview

Trunk Sewers and Sewage Disposal was the second service established for the CRD. This service was established by Letters Patent in 1967. The Service was established with flexibility to incorporate service expansion and fairness in costing for both Capital and Operating Costs. During the 1990s, as provincial legislation changed, the Core Area and West Shore municipalities and portions of the Juan de Fuca Electoral Area (Songhees & Esquimalt Nation lands) were established as a Liquid Waste Management Planning area for those participants.

Annual Operating cost sharing is calculated on prior year flows, whereas Capital Project cost sharing is calculated on future Design Capacity Benefit.

Annual Cost Sharing for the operation of various Wastewater Systems (North West and Western Communities Trunk, Bowker System, East Coast Interceptor, etc) is based on annual flows from the prior year for each Wastewater System. There are various meters throughout the system that allow engineering staff to calculate the annual volumes of flow received from each participant (municipality/first nation), by system and sub system. The costs for each system are then divided amongst the participants based on those flows and then requisitioned/invoiced on an annual basis.

Maintenance Reserve – there is a maintenance reserve for operations, funded by system/sub system, and drawn from by system/sub system – thus preserving the operating cost sharing. Any operating surplus is transferred to the Capital Reserve. Since the cost sharing for Capital projects is different from Operating, when funds go into the Capital reserve, they are segregated by participant contribution, not by system.

Capital project cost sharing is based on future Design Capacity Benefit. Expected capacity for each participant is calculated and costs are shared on that basis. Funding for these projects comes from a combination of Debt, Grants, Capital Reserve and Annual Requisition.

Design Capacity Benefit – capital costs and net annual debt costs for the four trunks and facilities are apportioned on the basis of the design capacity benefit that each participating area derives from each component of the system. Where the benefit is not an increase in capacity, the design capacity benefit is based on the existing maximum allocated capacity for each participant and for each facility.

Capital Reserve – since funds are segregated by participant, capital project funding is drawn from individual participant envelopes, based on design capacity benefit from the infrastructure project. Up until 2013, there were no budgeted annual contributions to the Capital Reserve to fund eventual Secondary (or higher) waste water treatment infrastructure. In 2013, an annual contribution program was commenced to provide funding towards the capital cost of NEW infrastructure. Funds from these segregated reserves have also been used for consulting services to support planning and public engagement processes for the Eastside and Westside Select Committees, according to municipally agreed upon cost-sharing.

Core Area Wastewater Treatment Program – This project is expected to have a significant ongoing NEW operating cost and debt servicing cost, in the order of $40 million dollars. In 2013 the committee commenced an annual ramp up of participant costs, to smooth the increase in eventual annual costs over a number of years. The annual funding (2015 amount $15 million) is providing working capital, funding any new annual debt servicing costs for the project, and down payment on total capital costs which will reduce the longer term on going debt servicing costs for the project.

Liquid Waste Management Plan – this budget is funded on the current design capacity benefit flows for the new Core Area Wastewater Treatment Program.

For a diagram outlining the cash flow of the Core Area Operating Budget, the Capital Budget and the Liquid Waste Management Plan Budget, please see *Appendix 5.5, Core Area Sewer Funding Cash Flow*.

5 Appendix

The following documents are attached:

5.1 Core Area Sewage and Resource Recovery System 2.0, Phase 2, Project Charter

5.2 Proposed Work Plan Overlay – 3P Canada Funding Considerations

5.3 LWMP Amendment Schedule – Amendment Considerations

5.4 Planning Process – Core Area Liquid Waste Management Plan Roles, Input & Relationships

5.5 Core Area Sewer Funding Cash Flow

Appendix 5.1

CORE AREA SEWAGE AND RESOURCE RECOVERY SYSTEM 2.0

Phase 2: Analysis, Options Costing and Public Engagement

Project Charter - FINAL

October 2, 2015

TABLE OF CONTENTS

1. VISION 1
2. BACKGROUND 1
3. GOALS AND COMMITMENTS 2
4. SCOPE 4
5. KEY STAKEHOLDERS 4
6. ROLES AND RESPONSIBILITIES 4
7. MILESTONES 9
8. BUDGET 9
9. CONSTRAINTS, ASSUMPTIONS, RISKS AND DEPENDENCIES 10

1. VISION

In partnership with the public, the Core Area Liquid Waste Management Committee (CALWMC) will deliver a sewage treatment and resource recovery system that is proven, innovative and maximizes the benefits for people and the planet – economic, social, and environmental – for the long term.

2. BACKGROUND

In 2006, an environmental report commissioned by the Ministry of Environment noted the contamination of seabed sites close to Capital Regional District (CRD) outfalls where the region's wastewater is discharged. As a result, the Province mandated that the CRD plan for and initiate secondary sewage treatment for the region.

In 2007, the CRD received a letter from the Ministry of Environment giving six directives for the Core Area Liquid Waste Management Plan (LWMP). These six directives continue to inform the goals and commitments of this project.

Minister's Requirements:

1. Meet the regulatory standard for liquid waste
2. Minimize total project cost to the taxpayer by maximizing economic and financial benefits, including beneficial reuse of resources and generation of offsetting revenue
3. Optimize the distribution of infrastructure based on number 2 above
4. Aggressively pursue opportunities to minimize and reduce greenhouse gas emissions (e.g., reduced requirement of energy for pumping purposes and beneficial reuse of energy)
5. Optimize 'smart growth' results (e.g., district services, density, Dockside Green-like innovation)
6. Examine the opportunity to save money, transfer risk and add value through a public private partnership

In 2012, the federal government passed a law requiring all high-risk Canadian cities to provide secondary sewage treatment by 2020 at the latest. The CRD's core area was considered to be in the high-risk category.

Between 2009 and 2014, the CALWMC, CRD staff and consultants, and the Core Area Wastewater Program Commission (the Commission) worked to create and implement a publicly acceptable sewage treatment and resource recovery system for the Core Area.

While the approved CALWMP continues to identify McLoughlin Point as the location for the wastewater treatment facility, in April 2014, the CRD's revised McLoughlin Point rezoning application did not meet the zoning requirements for Esquimalt. In June 2014, the plan to build one regional plant at McLoughlin Point was put on hold by the CRD Board, in response to public input.

In June 2014, Langford, Colwood, View Royal, Esquimalt and the Songhees Nation formed the Westside Select Committee to begin planning for a new project to treat sewage and recover resources in those municipalities and the Nation. In September 2015, Esquimalt Nation joined the Westside Select Committee. In January 2015, a similar body – the Eastside Select

Committee, comprised of Saanich, Oak Bay and Victoria – was formed to develop a similar plan for the Eastside municipalities.

Since June 2014 and January 2015, respectively, both Select Committees have been engaged in in-depth public engagement activities to share information with the public, build trust, and seek public input on a range of factors including, but not limited to, level of treatment, treatment technologies, siting of treatment plants, costs, risks and long-term social, economic and environmental benefits.

In July 2015, both select committees presented their work and recommendations to the CALWMC. The CALWMC approved the solution sets and recommendations from the Eastside Select Committee, including potential sites and direction with regard to investigating secondary and tertiary treatment, anaerobic digestion and gasification, and resource recovery and revenue generation. The CALWMC received a presentation from the Westside Select Committee outlining five technically preferred sites and two scenarios, detailing its technical work to date. The Committee accepted the Westside Select Committee's proposal to carry on with further public engagement and more detailed costing and engineering analysis as per its terms of reference to be presented to the CALWMC as more fully-developed solutions in fall 2015.

The work of the Eastside and Westside Select Committees, the CALWMC and the public between June 2014 and July 2015 lays the groundwork for the current project, *Core Area Sewage and Resource Recovery System 2.0.*

3. GOALS AND COMMITMENTS

The *Core Area Sewage and Resource Recovery System 2.0* project will deliver the following goals and meet the following commitments. *NB goals should be measurable. Each of these goals needs a corresponding metric so at project completion, the CALWMC can determine whether it achieved its goals.*

Goals

a) Meet or exceed federal regulations for secondary treatment by December 31, 2020

b) Minimize costs to residents and businesses (life cycle cost) and provide value for money

c) Produce an innovative project that brings in costs at less than original estimates

d) Optimize opportunities for resource recovery to accomplish substantial net environmental benefit and reduce operating costs

e) Optimize greenhouse gas reduction through the development, construction and operation phases and ensure best practice for climate change mitigation

Commitments

a) Develop and implement the project in a transparent manner and engage the public throughout the process

b) Deliver a solution that adds value to the surrounding community and enhances the livability of neighbourhoods

c) Deliver solutions that are safe and resilient to earthquakes, tsunamis, sea level rise and storm surges

d) Develop innovative solutions that account for and respond to future challenges, demands and opportunities, including being open to investigating integration of other parts of the waste stream if doing so offers the opportunities to optimize other goals and commitments in the future

e) Optimize greenhouse gas reduction through the development, construction and operation phases and ensure best practice for climate change mitigation

4. SCOPE

The scope of this phase of the *Core Area Sewage and Resource Recovery System 2.0* project, is to complete the Options Development Phase, by submitting an amendment to the Liquid Waste Management Plan and receiving conditional approval from the Minister of Environment of an Amendment for the Core Area. This Plan amendment will be approved by the provincial and federal funding agencies. Completion of this phase includes securing sites for all facilities (wastewater treatment and resource recovery).

The scope of this phase does not include detailed site assessments such as Environmental and Social Reviews, submission of detailed business cases (as may be required by funding agencies), indicative design, finalized cost sharing agreements or the procurement of infrastructure.

5. KEY STAKEHOLDERS

The graphic illustration (see Attachment 1) outlines all of the *Core Area Sewage and Resource Recovery 2.0* project stakeholders and displays the relationships between them. For a description of the roles and responsibilities of each stakeholder, please see Section 6.

6. ROLES AND RESPONSIBILITIES

Project Lead (TBD)

Federal Government – In 2012, the federal government passed a law requiring all high-risk Canadian cities to provide secondary sewage treatment by 2020 at the latest. The CRD's Core Area was considered to be in the high-risk category. The federal government agreed to contribute up to $253 million towards the project out of three different funding programs: Building Canada Fund ($120 million), Green Infrastructure Fund ($50 million) and 3P Canada ($83.4 million).

- Secondary treatment mandated by 2020
- Funding up to $253 million

Provincial Government – In 2006, an environmental report commissioned by the Ministry of Environment noted the contamination of seabed sites close to CRD outfalls where wastewater is discharged. As a result, the CRD was mandated by the province to plan for and initiate secondary wastewater treatment for the region. Provincial funding agreements provide a maximum of $248 million towards the project.

- Funding up to $248 million
- Approval of LWMP amendment and regulatory requirements

Capital Regional District Board (CRD Board) – The CRD Board is responsible for selecting final site locations and securing lands for wastewater treatment facilities, obtaining the rezoning of lands, approving the architectural design for facilities, and approving funding agreements and the budget. The CRD Board is responsible for delivering the project outlined in the Vision.

- Final approving body for funding, budget and major decisions
- Collect and disburse the local portion of the funding of $287 million

Core Area Liquid Waste Management Committee (CALWMC) – A standing committee of the CRD Board, the CALWMC consists of Directors from municipalities and First Nations participating in the Core Area Liquid Waste Management Plan (CALWMP). The committee is responsible for overseeing the CALWMP and making recommendations to the CRD Board about the CALWMP and certain aspects of the Core Area Wastewater Treatment Program.

- Standing Committee of CRD Board
- Responsible for overseeing CALWMP

Core Area Liquid Waste Management Committee (CALWMC) Chair – The CALWMC Chair is selected by the Chair of the CRD Board annually. The CALWMC Chair is responsible for participating in CALWMC agenda meetings and chairing CALWMC meetings. The Chair is also responsible for building and maintaining relationships, and liaising with the Chair of the Core Area Wastewater Program Commission and the Chair of the Technical Oversight Panel. The CALWMC Chair is the public face of the project and is responsible for communicating with other public bodies at the political level, as well as with the media.

Core Area Liquid Waste Management Committee (CALWMC) Vice Chair – The CALWMC Vice Chair is responsible for fulfilling the roles and responsibilities of the CALWMC Chair in the Chair's absence.

Westside Wastewater Treatment and Resource Recovery Select Committee – In June 2014, Westside participants (Colwood, Esquimalt, Langford, View Royal, and Songhees Nation) formed the Westside Wastewater and Resource Recovery Select Committee to evaluate Westside treatment options and develop a sub-regional wastewater treatment and resource recovery plan. The member municipalities' role is to provide political input and take feedback from the public and report to the Westside Select Committee. The participating municipalities also have zoning authority. In September 2015, the Esquimalt Nation joined the Westside Select Committee. The Songhees and Esquimalt Nation representatives provide political input to the Westside Select Committee. The Committee reports to the CALWMC and is supported by CRD staff, Westside staff, consultants and a technical working group.

The Westside Select Committee participants initiated the Westside Solutions Project as a way to engage residents to work collectively to identify solutions for wastewater treatment and resource recovery that meet the unique needs of the Westside communities. The Westside option sets consider flow scenarios that include Eastside flows from Vic West and Saanich West. This work, along with the work from the Eastside Select Committee, will inform the *Core Area Sewage and Resource Recovery 2.0* project and the amendment to the Liquid Waste Management Plan.

- Representatives from Colwood, Esquimalt, Langford, View Royal and Songhees Nation
- Reports to CALWMC
- Evaluates options to develop a sub-regional wastewater treatment plan
- Supported by CRD staff, Westside municipal staff, consultants and a technical working group

Eastside Wastewater Treatment and Resource Recovery Select Committee – In January 2015, Oak Bay, Saanich and Victoria formed the Eastside Wastewater and Resource Recovery Select Committee to engage with their communities and develop wastewater treatment options that meet the needs of the Eastside municipalities. The role of the participating municipalities is to provide political input and take feedback from the public and report to the Eastside Select Committee. The participating municipalities also have zoning authority. The Eastside Select Committee reports to the CALWMC and is supported by CRD staff, participating municipal staff and consultants.

The Eastside option sets consider a regional option, which includes all flows from Eastside and Westside, as well as a sub-regional and distributed option that includes flows from Eastside municipalities only and Eastside Clover Point outfall catchment flows. The Eastside Select Committee's plan, in combination with the work from the Westside Select Committee, will inform the *Core Area Sewage and Resource Recovery 2.0* project and could form the basis for an amendment to the CALWMP.

- Representatives from Oak Bay, Saanich and Victoria
- Reports to CALWMC
- Working to develop wastewater treatment options for Eastside municipalities
- Supported by CRD staff, participating municipal staff, and consultants

CRD Chief Administrative Officer – The CAO oversees all administrative operations and staff, ensures CRD Board policies are implemented, oversees the operations and functions of the CRD, and aligns the organization to achieve strategic priorities set by the Board. This includes working with federal and provincial staff to coordinate funding agreements and providing advice to the CRD Board regarding potential risks and opportunities for the CRD Board.

- Oversees CRD operations and staff
- Works with partners and stakeholders
- Provides advice to the CRD Board

General Manager of Parks & Environmental Services – The GM of Parks & Environmental Services provides general direction and leadership to CRD staff and advises the CALWMC and the Eastside and Westside Wastewater Treatment and Resource Recovery Select Committees regarding the technical and legal aspects of the CALWMP and the wastewater treatment

planning process. The General Manager's role is also to provide information to the Core Area Municipalities' CAOs and First Nations Administrators.

- Provides general direction and leadership to CRD staff
- Advises on technical and legal aspects of the CALWMP
- Informs Core Area Municipal CAOs and First Nation Administrators about the project

General Manager of Finance & Technology – The GM of Finance & Technology is the Chief Financial Officer for the CRD. The GM of Finance and Technology is responsible for the budget and all financial services, information technology and geographic information services (IT & GIS), property and real estate services, insurance and risk management, facilities management, and arts development for the Capital Region.

Corporate Officer – The CRD Corporate Officer provides support and procedural advice to the CRD Board and the CALWMC, and is responsible for maintaining the official records of these bodies. The officer also processes requests for records in accordance with the Freedom of Information and Protection of Privacy Act.

First Nations Liaison – The First Nations Liaison serves as a point of contact for First Nations communities involved with the project and provides departmental support and assistance in the areas of service delivery, referral processes, outreach, engagement and relationship building.

Manager, Corporate Communications – The Senior Manager of Corporate Communications provides professional expertise and leads the CRD Corporate Communications team, which works with the General Manager of Parks & Environmental Services and the CAO on overall communications for the CRD Board. There is a communications coordinator dedicated to working on the CALWMP.

Technical Oversight Panel (ToP) – The role of the Technical Oversight Panel is to review the costing and feasibility studies developed by the Engineering Team during the planning phase of the project and to ensure that the studies for the wastewater treatment options include the necessary due diligence. The Technical Oversight Panel will also advise on how to best engage the private sector in this phase of the project. Fundamental to providing independent technical oversight and confirming due diligence is to ensure that the engagement of the private sector in this phase of the project and the innovative solutions that may come forward is informed by, not necessarily bound by (as per the ToP Terms of Reference), decisions to date regarding sites, option sets, timelines, definitions of treatment and other potential limitations on analysis and costing.

The role of the ToP does not include public consultation, media interaction, land acquisition and rezoning, contract management or direction of the Engineering Team The ToP receives information from and liaises with the Engineering Team (Urban Systems and Carollo Associates), and provides feedback and recommendations to the CALWMC. The Chair of the ToP reports to the CALWMC biweekly. The ToP liaises with the Eastside and Westside Select Committee.

- Independent Technical Oversight Panel
- Reviews costing and feasibility studies

- Reports findings to the CALWMC

Independent Engineering Resources – The Independent Engineering Team's role is to conduct the Feasibility and Costing Analysis (Urban Systems partnered with Carollo) for the CALWMP Wastewater Treatment System. The Engineering Team is also working with the Westside Select Committee to do a more detailed analysis on the Westside flows. The team provides information to and liaises with the ToP, and reports to and receives direction from the CALWMC. Additional external resources may be required for staff to prepare the LWMP amendment. The team is assessing the feasibility of a regional and sub-regional system in the Core. The team is also looking at a distributed system option based on the potential sites put forward from the Eastside Select Committee and Westside Select Committee.

- Conducts feasibility and costing analysis
- Assesses feasibility of regional and sub-regional systems in the Core Area
- Assists with preparation of LWMP amendment

Fairness and Transparency Advisor (FTA) – The FTA's role is to act as a point of contact for the public to submit complaints regarding the process of costing the options, working with the host jurisdiction(s) and preparing an amendment to the LWMP and to ensure that the process is fair, transparent, impartial and objective. The FTA is independent of the CRD. The FTA's role is to investigate appropriate complaints and report to the Board, through the CALWMC, the results of an investigation, to help strengthen the fairness, transparency or objectiveness of the process followed. The FTA is to provide monthly status reports to the CALWMC. The role of the FTA does not restrict the public from going to other sources for complaints and requests to review processes, such as the office of the Ombudsperson.

- Independent of the CRD
- Investigates public complaints regarding process
- Ensures process is fair, transparent, impartial and objective

Core Area Wastewater Treatment Program Commission (the Commission) – As part of the funding negotiations with the Province, the CRD was required to establish an independent non-political governance body to manage, implement and commission the Core Area Wastewater Treatment Program. The Commission governs the implementation and operation of the Wastewater Treatment Program and oversees the procurement process for all components of the Program. The Commission operates autonomously of the CALWMC and Regional Board; however, the Commission is required to seek CRD Board and funder approval on predetermined items as detailed in the CRD Commission bylaw. Several steps have been taken to scale back operations and reduce costs as the CRD continues its planning work to find a new solution to wastewater treatment. The Commission remains in place waiting to implement whatever system of wastewater projects the CRD Board decides upon, and is approved by the Province.

- Independent Commission required by Province
- Manages implementation and operations of the Wastewater Treatment Program
- Oversees procurement process

Technical and Community Advisory Committee (TCAC) – The Technical and Community Advisory Committee is an LWMP requirement of the province, and provides technical and

community consultation advice and input to the CALWMC. The TCAC assists the CALWMC in making appropriate recommendations to the CRD Board in the following areas: (a) plant design criteria and treatment technology, including opportunities for resource recovery, sludge management, odour control and general plant design criteria, (b) number and location of treatment plants, and (c) timing/scheduling of treatment.

- Provides technical and community consultation advice
- Makes recommendations regarding design criteria, treatment technology, number and location of treatment plants, and schedule for treatment

Eastside Public Advisory Committee (EPAC) – The Eastside Public Advisory Committee takes input from the public and provides guidance to the Eastside Wastewater and Resource Recovery Select Committee on the public consultation process.

- Takes input from the public
- Provides Eastside Select Committee on the public consultation process

Core Area CAOs + First Nation Administrators – The Core Area CAOs and First Nations Administrators are the principle policy advisors to councils, and provide support to the Eastside and Westside Select Committees. The Core Area CAOs and First Nations Administrators receive project-specific information and updates from the CRD's General Manager of Parks & Environmental Services regarding the progress of the CALWMC and the Eastside and Westside Select Committees.

- Principle policy advisors
- Receive project information
- Provide recommendations from municipal staff perspective

Municipal Councils – The role of municipal councils is to make land-use decisions for facility siting and to negotiate development agreements with the CRD.

Westside Communications Team – The Westside Communications Team is made up of Communications Coordinators from Colwood, Esquimalt, CRD and Aurora Consultants. The Team provides communication and public consultation support to the Westside Select Committee.

Eastside Communications Team – The Eastside Communications Team consists of a consultant from Public Assembly and the CRD Communications Manager and CRD CALWMP Communications Coordinator. The Eastside Communications Team provides communication and public consultation support to the Eastside Select Committee.

Westside Technical Team – The Westside Technical Team consists of municipal staff, supported by Urban Systems. The technical team provides technical information and input to the Westside Select Committee.

- Comprised of municipal staff and supported by Urban Systems and Aurora Innovations for facilitation and coordination support
- Provides technical advice to the Westside Select Committee

Eastside Technical Team – The Eastside Technical Team is comprised of municipal staff and supported by Urban Systems and CRD Staff. The Technical Team provides support and input to the Eastside Select Committee.

- Comprised of municipal staff; provides support and information to the Eastside Select Committee

7. MILESTONES

The Proposed Work Plan Overlay, which was adopted and submitted to 3P Canada in March 2014, provides the overarching timelines and milestones through the completion of the project (Attachment 2). A draft schedule identifying key tasks and milestones of the feasibility and costing exercise to be achieved by the end of 2015 during Phase 2 of the Core Area Sewage and Resource Recovery System 2.0 project is included for discussion (Attachment 3). The scheduling and implementation of the public consultation on the preferred solution sets (after the costing analysis) is anticipated to occur in early December, but is dependent on all of the deadlines being met up until that point.

A detailed schedule is under development and will be circulated for comment.

8. BUDGET

Funding for the project will be drawn from the Core Area Liquid Waste Management Plan operating reserve, funded by all participants in the service based on projected design capacity for 2030. A total budget of $1,250,000 has been identified to support this phase of the project, including engineering and public consultation consulting fees, Technical Oversight Panel honorarium and disbursements, Fairness and Transparency Advisor, public consultation process delivery and CRD staff time.

Phase 2 Budget

Item	Cost
Project Oversight (FTA & ToP)	$280,000
Public Consultation	$240,000
Feasibility and Costing Analysis	$450,000
Property and Zoning	$75,000
LWMP Amendment No. 10	$75,000
Staff and Wages	$300,000
Miscellaneous and Legal	$30,000
TOTAL	$1,450,000

9. CONSTRAINTS, ASSUMPTIONS, RISKS AND DEPENDENCIES

a) Constraints

- The timelines for this phase of the project are extremely aggressive with no buffer
- The schedule is dependent on multiple parties and governance bodies meeting their sub-project schedules

b) Assumptions

- The Minister of Environment will provide direct *conditional* approval of the Liquid Waste Management Plan upon submission to the Province

c) Risks

- The costing analysis and public consultation processes will be subject to criticism due to time constraints
- The governance model of the project is complex, leading to miscommunication or contradictory decision making
- Municipal councils do not endorse siting preferences of the CRD Board
- Potential loss of senior government funding if timelines are not met

d) Risk Mitigation

- Ensure regular, open reporting of all parties to the Core Area Liquid Waste Management Committee to ensure "no surprises" when public consultation is formally conducted
- Engage in close municipal council and staff involvement as preferred sites emerge and municipal planning/siting processes are initiated
- Ensure ongoing and open discussions with the funding agencies to ensure "no surprises" when the LWMP amendment is submitted for approval and the project is submitted for funding
- Ensure transparent and deep engagement with the community
- Ensure there is enough time required to rezone and that there is public support for rezoning

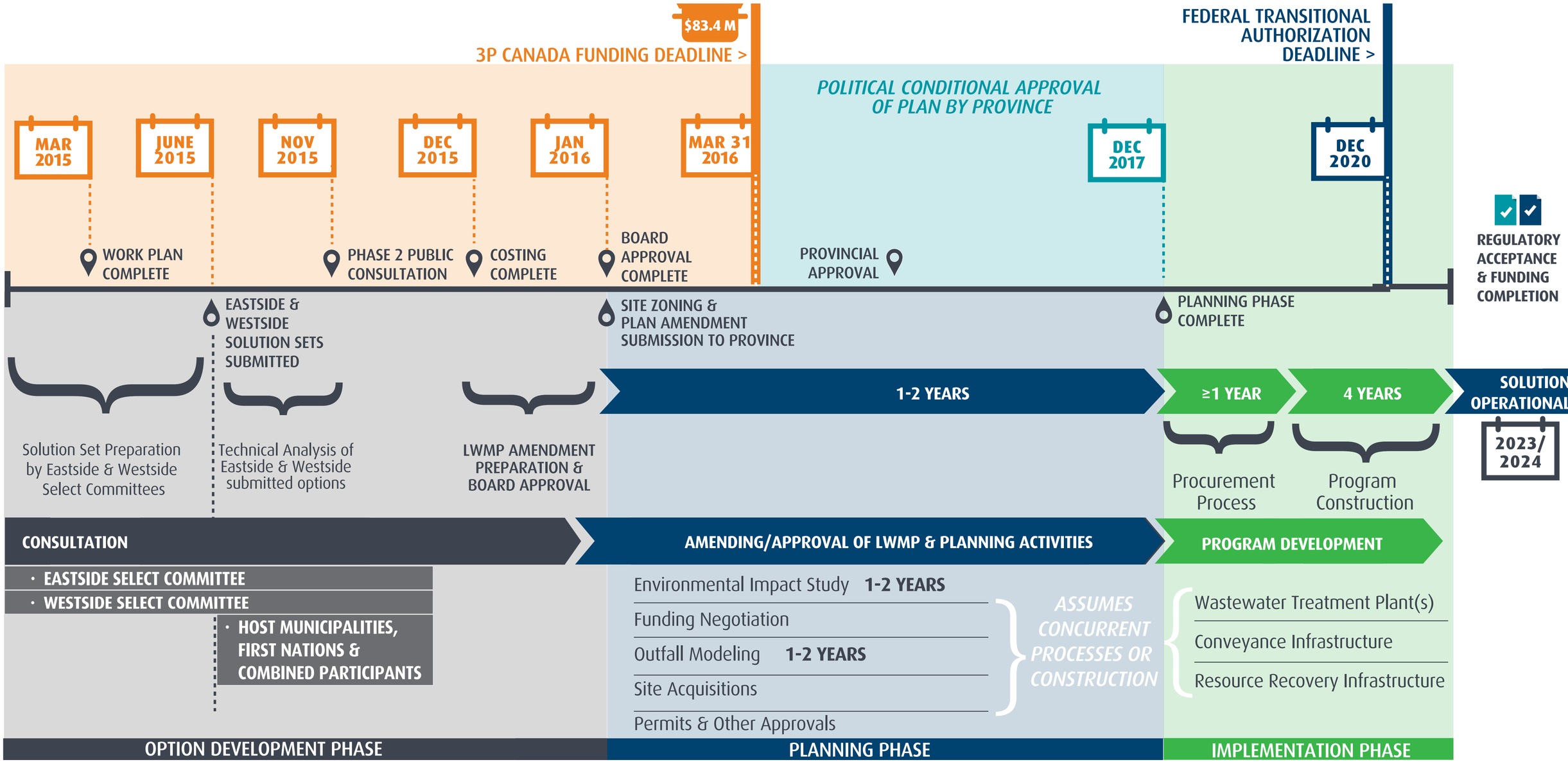
Attachments:	Attachment 1:	Planning Process – Core Area Liquid Waste Management Plan – Roles, Input & Relationships
	Attachment 2:	Proposed Work Plan Overlay – 3P Canada Funding Considerations
	Attachment 3:	Proposed Feasibility and Costing Analysis Schedule (Urban Systems) – August 31, 2015

Appendix 5.2

Proposed Work Plan Overlay

3P CANADA FUNDING CONSIDERATIONS

OPTION DEVELOPMENT, PLANNING & IMPLEMENTATION PHASES

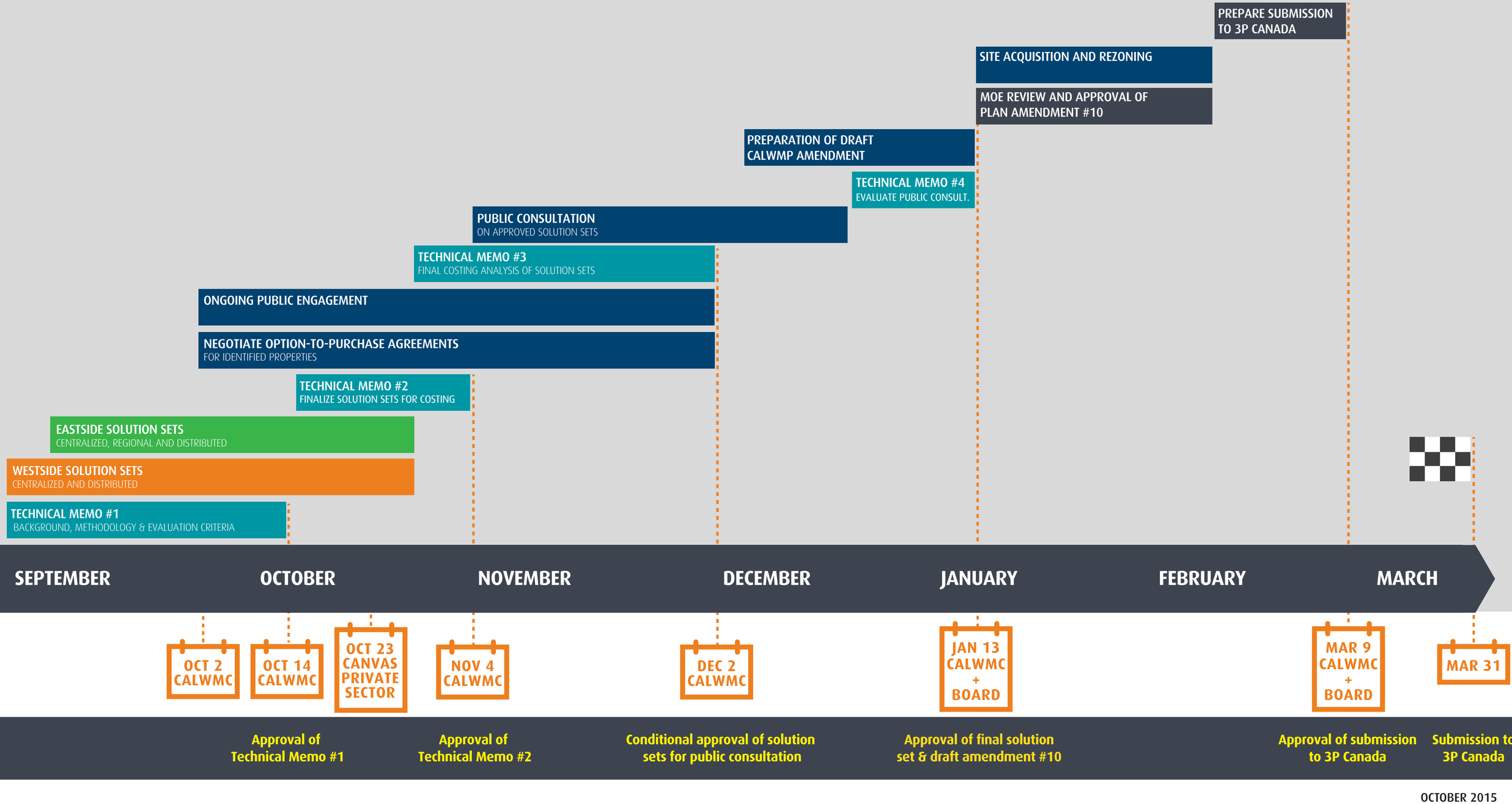


OCTOBER 2015

Appendix 5.3

LWMP AMENDMENT SCHEDULE

AMENDMENT CONSIDERATIONS



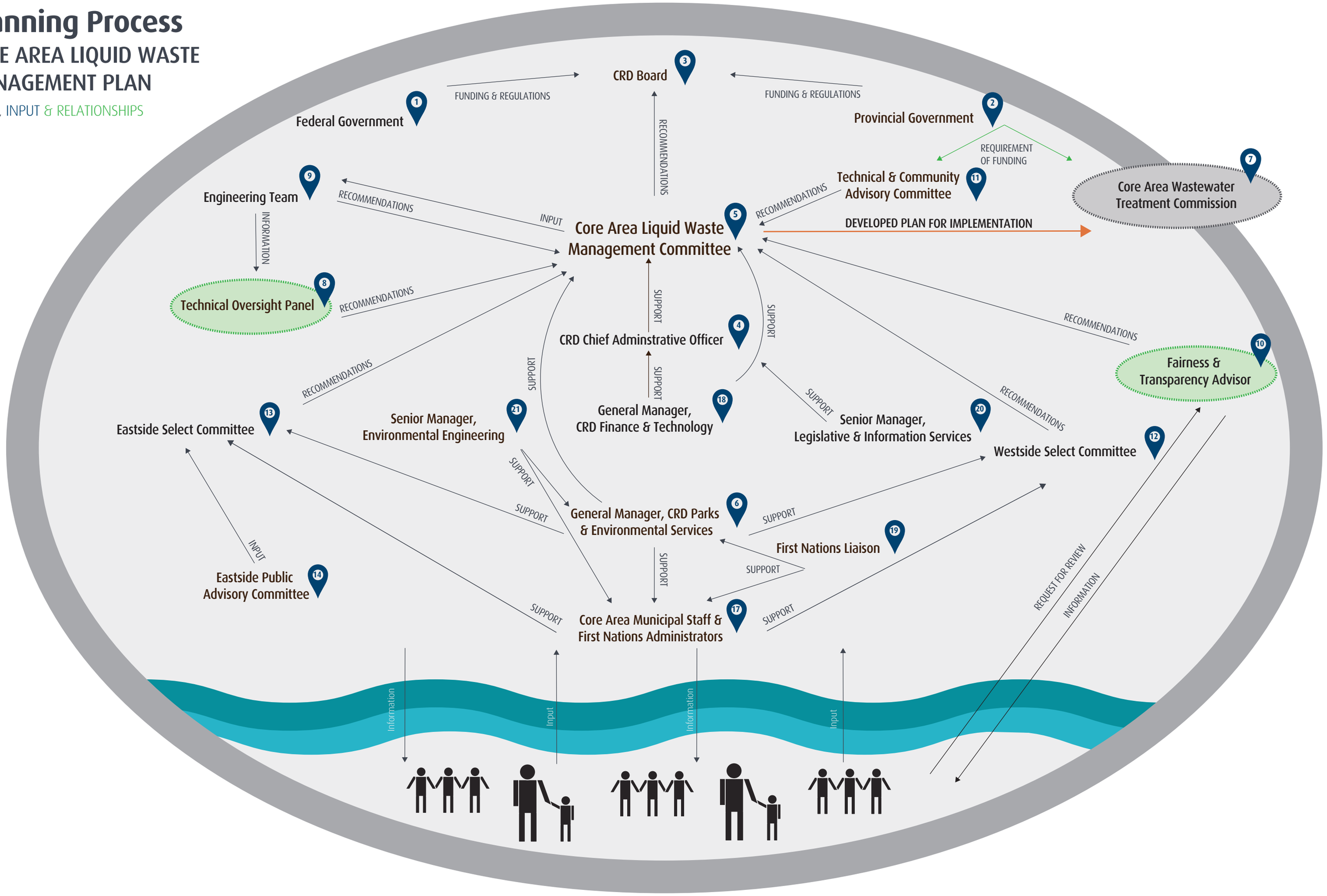
OCTOBER 2015

Appendix 5.4

Planning Process

CORE AREA LIQUID WASTE MANAGEMENT PLAN

ROLES, INPUT & RELATIONSHIPS



Appendix 5.4
Planning Process CORE AREA LIQUID WASTE MANAGEMENT PLAN

ROLES, INPUTS & RELATIONSHIPS

1) Federal Government – In 2012, the federal government passed a law requiring all high-risk Canadian cities to provide secondary sewage treatment by 2020 at the latest. The CRD's Core Area was considered to be in the high-risk category. The federal government agreed to contribute up to $253 million towards the project out of three different funding programs: Building Canada Fund ($120 million), Green Infrastructure Fund ($50 million) and 3P Canada ($83.4 million).

2) Provincial Government – In 2006, an environmental report commissioned by the Ministry of Environment noted the contamination of seabed sites close to CRD outfalls where wastewater is discharged. As a result, the CRD was mandated by the province to plan for and initiate secondary wastewater treatment for the region. Provincial funding agreements provide a maximum of $248 million towards the project.

3) Capital Regional District Board (CRD Board) – The CRD Board is responsible for selecting final site locations and securing lands for wastewater treatment facilities, obtaining the rezoning of lands, approving the architectural design for facilities, and approving funding agreements and the budget. The CRD Board is responsible for delivering the project outlined in the Vision.

4) CRD Chief Administrative Officer – The CAO oversees all administrative operations and staff, ensures CRD Board policies are implemented, oversees the operations and functions of the CRD, and aligns the organization to achieve strategic priorities set by the Board. This includes working with federal and provincial staff to coordinate funding agreements and providing advice to the CRD Board regarding potential risks and opportunities for the CRD Board.

5) Core Area Liquid Waste Management Committee (CALWMC) – A standing committee of the CRD Board, the CALWMC consists of Directors from municipalities and First Nations participating in the Core Area Liquid Waste Management Plan (CALWMP). The committee is responsible for overseeing the CALWMP and making recommendations to the CRD Board about the CALWMP and certain aspects of the Core Area Wastewater Treatment Program.

6) General Manager of Parks & Environmental Services – The GM of Parks & Environmental Services provides general direction and leadership to CRD staff and advises the CALWMC and the Eastside and Westside Wastewater Treatment and Resource Recovery Select Committees regarding the technical and legal aspects of the CALWMP and the wastewater treatment planning process. The General Manager's role is also to provide information to the Core Area Municipalities' CAOs and First Nations Administrators.

7) Core Area Wastewater Treatment Program Commission (the Commission) – As part of the funding negotiations with the Province, the CRD was required to establish an independent non-political governance body to manage, implement and commission the Core Area Wastewater Treatment Program. The Commission governs the implementation and operation of the Wastewater Treatment Program and oversees the procurement process for all components of the Program. The Commission operates autonomously of the CALWMC and Regional Board however, the Commission is required to seek CRD Board and funder approval on predetermined items as detailed in the CRD Commission bylaw. Several steps have been taken to scale back operations and reduce costs as the CRD continues its planning work to find a new solution to wastewater treatment. The Commission remains in place waiting to implement whatever system of wastewater projects the CRD Board decides upon, and is approved by the Province.

8) Technical Oversight Panel (ToP) - The role of the Technical Oversight Panel is to review the costing and feasibility studies developed by the Engineering Team during the planning phase of the project and to ensure that the studies for the wastewater treatment options include the necessary due diligence. The Technical Oversight Panel will also advise on how to best engage the private sector in this phase of the project. Fundamental to providing independent technical oversight and confirming due diligence is to ensure that the engagement of the private sector in this phase of the project and the innovative solutions that may come forward is informed by, not necessarily bound by (as per the ToP Terms of Reference), decisions to date regarding sites, option sets, timelines, definitions of treatment and other potential limitations on analysis and costing.

The role of the ToP does not include public consultation, media interaction, land acquisition and rezoning, contract management or direction of the Engineering Team The ToP receives information from and liaises with the Engineering Team (Urban Systems and Carollo Associates), and provides feedback and recommendations to the CALWMC. The Chair of the ToP reports to the CALWMC biweekly. The ToP liaises with the Eastside and Westside Select Committee.

9) Independent Engineering Resources - The Independent Engineering Team's role is to conduct the Feasibility and Costing Analysis (Urban Systems partnered with Carollo) for the CALWMP Wastewater Treatment System. The Engineering Team is also working with the Westside Select Committee to do a more detailed analysis on the Westside flows. The team provides information to and liaises with the ToP, and reports to and receives direction from the CALWMC. Additional external resources may be required for staff to prepare the LWMP amendment. The team is assessing the feasibility of a regional and sub-regional system in the Core. The team is also looking at a distributed system option based on the potential sites put forward from the Eastside Select Committee and Westside Select Committee.

10) Fairness and Transparency Advisor (FTA) - The FTA's role is to act as a point of contact for the public to submit complaints regarding the process of costing the options, working with the host jurisdiction(s) and preparing an amendment to the LWMP and to ensure that the process is fair, transparent, impartial and objective. The FTA is independent of the CRD. The FTA's role is to investigate appropriate complaints and report to the Board, through the CALWMC, the results of an investigation, to help strengthen the fairness, transparency or objectiveness of the process followed. The FTA is to provide monthly status reports to the CALWMC. The role of the FTA does not restrict the public from going to other sources for complaints and requests to review processes, such as the office of the Ombudsperson.

11) Technical Community and Advisory Committee (TCAC) - The Technical and Community Advisory Committee is an LWMP requirement of the province, and provides technical and community consultation advice and input to the CALWMC. TCAC assists the CALWMC in making appropriate recommendations to the CRD Board in the following areas: (a) plant design criteria and treatment technology, including opportunities for resource recovery, sludge management, odour control and general plant design criteria, (b) number and location of treatment plants, and (c) timing/scheduling of treatment.

12) Westside Wastewater Treatment and Resource Recovery Select Committee - In June 2014, Westside participants (Colwood, Esquimalt, Langford, View Royal, and Songhees Nation) formed the Westside Wastewater and Resource Recovery Select Committee to evaluate Westside treatment options and develop a sub-regional wastewater treatment and resource recovery plan. The member municipalities' role is to provide political input and take feedback from the public and report to the Westside Select Committee. The participating municipalities also have zoning authority. In September 2015, the Esquimalt Nation joined the Westside Select Committee. The Songhees and Esquimalt Nation representatives provide political input to the Westside Select Committee. The Committee reports to the CALWMC and is supported by CRD staff, Westside staff, consultants and a technical working group.

The Westside Select Committee participants initiated the Westside Solutions Project as a way to engage residents to work collectively to identify solutions for wastewater treatment and resource recovery that meet the unique needs of the Westside communities. The Westside option sets consider flow scenarios that include Eastside flows from Vic West and Saanich West. This work, along with the work from the Eastside Select Committee, will inform the Core Area Sewage and Resource Recovery 2.0 project and the amendment to the Liquid Waste Management Plan.

13) Eastside Wastewater Treatment and Resource Recovery Select Committee - In January 2015, Oak Bay, Saanich and Victoria formed the Eastside Wastewater and Resource Recovery Select Committee to engage with their communities and develop wastewater treatment options that meet the needs of the Eastside municipalities. The role of the participating municipalities is to provide political input and take feedback from the public and report to the Eastside Select Committee. The participating municipalities also have zoning authority. The Eastside Select Committee reports to the CALWMC and is supported by CRD staff, participating municipal staff and consultants.

The Eastside option sets consider a regional option, which includes all flows from Eastside and Westside, as well as a sub-regional and distributed option that includes flows from Eastside municipalities only and Eastside Clover Point outfall catchment flows. The Eastside Select Committee's plan, in combination with the work from the Westside Select Committee, will inform the Core Area Sewage and Resource Recovery 2.0 project and could form the basis for an amendment to the CALWMP.

14) Eastside Public Advisory Committee - The Eastside Public Advisory Committee takes input from the public and provides guidance to the Eastside Wastewater and Resource Recovery Select Committee on the public consultation process.

15) Westside Technical Team - The Westside Technical Team consists of municipal staff, supported by Urban Systems. The technical team provides technical information and input to the Westside Select Committee.

16) Eastside Technical Team - The Eastside Technical Team is comprised of municipal staff and supported by Urban Systems and CRD Staff. The Technical Team provides support and input to the Eastside Select Committee.

17) Core Area CAOs and First Nation Administrators - The Core Area CAOs and First Nations Administrators are the principle policy advisors to councils, and provide support to the Eastside and Westside Select Committees. The Core Area CAOs and First Nations Administrators receive project-specific information and updates from the CRD's General Manager of Parks & Environmental Services regarding the progress of the CALWMC and the Eastside and Westside Select Committees.

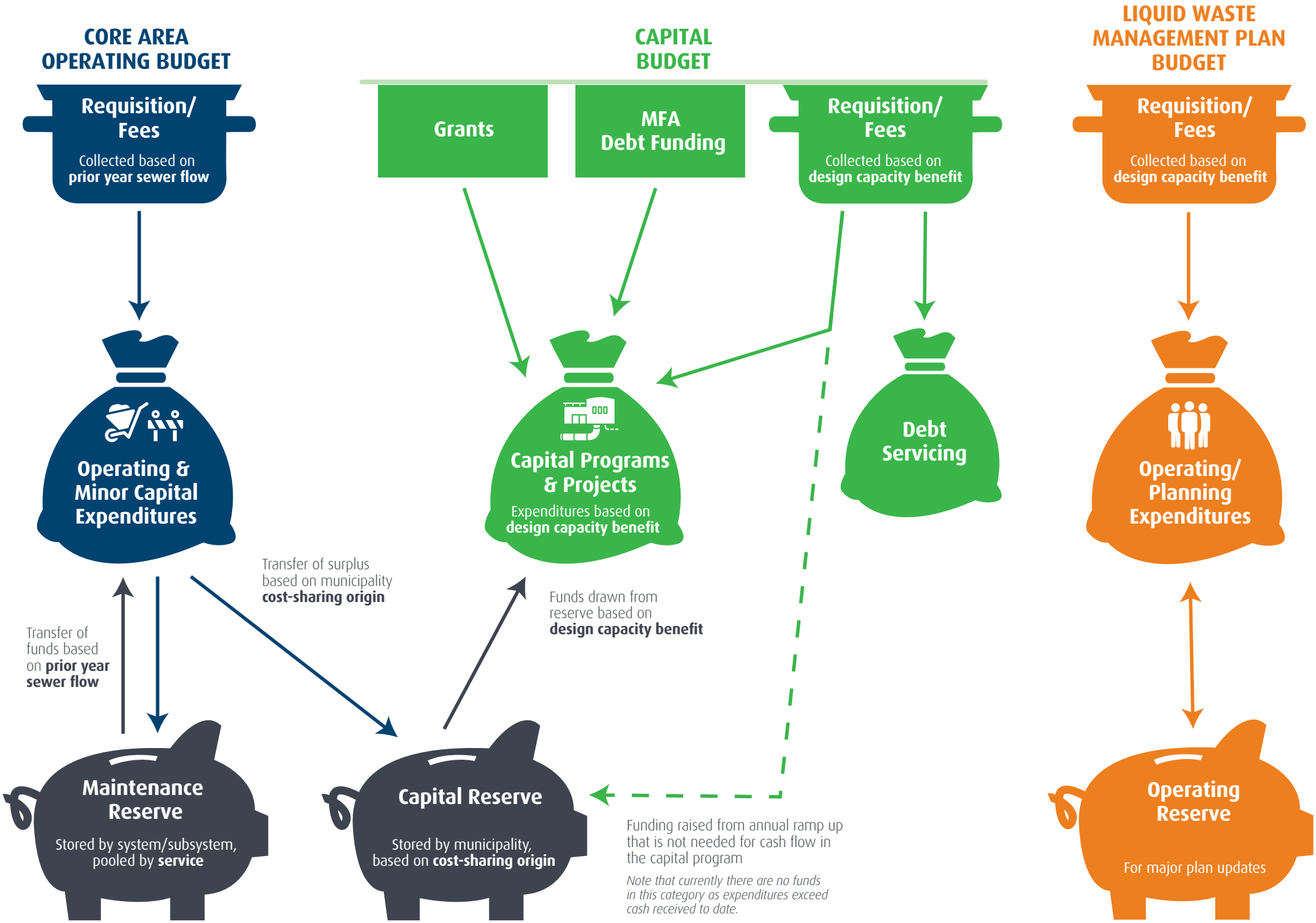
18) GM of Finance & Technology - The GM of Finance & Technology is the Chief Financial Officer for the CRD. The GM of Finance and Technology is responsible for the budget and all financial services, information technology and geographic information services (IT & GIS), property and real estate services, insurance and risk management, facilities management, and arts development for the Capital Region.

19) First Nations Liasion - The First Nations Liaison serves as a point of contact for First Nations communities involved with the project and provides departmental support and assistance in the areas of service delivery, referral processes, outreach, engagement and relationship building.

20) Senior Manager, Environmental Engingeering (Dan Telford) - The Sr. Manager of Environmental Engineering supports the GM of Parks and Environmental Services as well as provides support for the Core Area Chief Administration Officers and First Nations Administrators.

21) Corporate Officer - The CRD Corporate Officer provides support and procedural advice to the CRD Board and the CALWMC, and is responsible for maintaining the official records of these bodies. The officer also processes requests for records in accordance with the Freedom of Information and Protection of Privacy Act.

Appendix 5.5
Core Area Sewer Funding Cash Flow



Making a difference...together

REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 10, 2016

SUBJECT **Update to 2016 Capital Funding – Core Area Wastewater Program**

ISSUE

To update the Core Area Liquid Waste Management Committee (CALWMC) on approved 2016 capital funding and 2016 Capital Plan.

BACKGROUND

At the CALWMC held on October 28, 2015, a report was presented outlining both the Projects and Funding and the Annual Requisition Funding for the Core Area Wastewater Treatment Program (Schedule A). The report outlined the Core Area Sewer Infrastructure Upgrade Projects planned for 2016, including both the estimated costs and cost sharing allocations for each project, along with the Capital Plan through to 2020.

It was stated in the report, that finance and engineering staff would evaluate the $23.9 million of expenditures to determine which components have future value to the project. This work was projected to be part of the 2015 year-end financial audit. After joint technical sessions with the auditors, and in reference to Public Sector Accounting Board standards (PS3150 – Tangible Capital Assets) there is currently no ability to make an evaluation of which costs have future value.
This audit review will now take place for the 2016 year-end financial statement, although staff will begin this work once the project has been defined.

Schedule B – Ramping Up to Treatment has been updated from the original report to reflect the decision of the CALWMC and CRD Board to retain the Annual Requisition level at $15 million for the 2016 year.

Schedule D – The most recent Proposed Work Plan Overlay has been added to show the revised timing related to the project.

ALTERNATIVES

1. That the Core Area Liquid Waste Management Committee receive this report for information.

2. That the Core Area Liquid Waste Management Committee request additional information.

FINANCIAL IMPLICATIONS

When the new sewage project is defined to sufficient detail, CRD finance and engineering staff will be able to evaluate which past costs have value to the newly defined sewage project.

CONCLUSION

When the sewage project is defined, identified costs will be expensed with the associated funding from the previous annual requisitions of the project.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee receives this report and recommends to the Capital Regional District Board:

That Update to 2016 Capital Funding - Core Area Wastewater Program be received for information.

Submitted by:	Amber Genero, MA, CPA, CMA, Manager, Accounting Services
Concurrence:	Diana E. Lokken, CPA, CMA, General Manager, Finance & Technology
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

AG:ab

Attachments: Schedule A – 2016 Capital Funding – Core Area Wastewater Program
Schedule B – Updated Ramping Up to Treatment (reflects decision from November 4, 2015 Board Meeting)
Schedule C-1 – Requisition Cost Sharing
Schedule C-2 – 2016 Cost Sharing Allocation
Schedule D – Updated Proposed Work Plan Overlay

Making a difference...together

REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, OCTOBER 28, 2015

SUBJECT **2016 Capital Funding – Core Area Wastewater Program**

ISSUE

To propose the 2016 Core Area Wastewater Program annual capital program projects and funding and the annual increase in the levy to fund the Core Area Wastewater Treatment Program (Program).

BACKGROUND

Core Area Wastewater Service Annual Capital Program – Projects and Funding

The Capital Reserve Fund for the Core Area Wastewater Service is comprised of funds held for each participant in the service. The funds in reserve are raised through two sources:

1. Annual operating budget requisition surplus – Funding for annual operating expenses is requisitioned or invoiced based on actual annual flows from the prior year for each of the four Core Area wastewater trunk systems. If operating surpluses exist, the surplus funds are directed to each participant's share of the Capital Reserve Fund based on the 'flow-based' operating cost sharing.

2. Capital budget requisition – As necessary to meet annual capital funding requirements (cash or debt servicing), funding is requisitioned or invoiced based on a design capacity apportionment basis. That is, the design capacity benefit that each participant derives from each improvement or component of the system.

In recent years, annual capital programs have been partially or fully deferred while the treatment program planning process has been underway and until conveyance system configuration impacts are better understood. However, there are now several capital projects on the trunk sewer infrastructure components that need to be completed to avoid operational and service impacts. The proposed 2016 projects and cost sharing apportionments are attached in summary as Schedule B-3. It is expected that most of the proposed projects will not be affected by changes in conveyance system configuration due to the location or nature of the project, however, staff have identified two pump station structural improvement projects that could be deferred.

The total value of the proposed 2016 Core Area Annual Capital Program is $2,095,000. Schedule B-3 also notes the Capital Reserve Fund balances held for each participant in the service. It is projected that there will be sufficient funding in reserves for each participant to fund the proposed 2016 capital program. The five year (2016-2020) capital plan value is currently projected to be $14.176 million and would require new funding, either through planned reserve fund contributions or debt financing. For the 2017 budget, long term funding options for the annual capital program will be brought to the Committee for consideration and the Committee can give further consideration to the annual capital projects with more certainty regarding treatment program impacts on the conveyance system.

Core Area Wastewater Treatment Program – Annual Requisition Funding

When the Program was approved in 2012, there had been no capital reserve built up over the years to provide for the eventual cost of sewage treatment within the Core Area. In 2013 the estimated eventual combined operating and debt servicing costs for the Program was estimated to be an additional $35 to $40 million annually, see Schedule A (Ramping Up to Treatment).

The Core Area Liquid Waste Management Committee (Committee) approved a plan to requisition funds in an orderly, predictable manner to reach the estimated on going combined operating and debt servicing costs by 2019/2020. This plan includes an annual levy increase of $5 million per year. The additional cash flow was intended to provide working capital; pay for debt servicing costs for any new debt incurred from 2013 onward and to provide cash to reduce the ongoing borrowing costs where available. To date the project expenditures and annual debt servicing costs have exceeded the funds received through this plan. There is currently over $7 million in temporary borrowing to fund the Program.

Additionally, funding for the Eastside and Westside Select Committees has been taken from the annual requisition. This has resulted in $2.02 million of the requisition funding no longer available for the new Program. For cost sharing reasons, of the $2.02 million, $540,432 is allocated to the Westside participants (26.76%) and $1,479,120 is allocated to the Eastside participants (73.24%). Since the Eastside Select Project is budgeted at $658,877 the remainder of their funds, $820,243 has been transferred to the individual Capital Reserve balances for Victoria, Saanich, and Oak Bay, as noted in Schedules B-1, B-2, and B-3.

Further to an October 14 report to the Committee (Project Expenditures to Date) there is $23.9 million of expenditures that may have ongoing value to the new Program; however, there will be a portion of these costs that will have no future value (sunk costs) once the new configuration has been determined. As part of the 2016 first quarter work for the 2015 financial audit, engineering and finance staff will work together to evaluate which costs have ongoing and future value to the Program. The sunk costs will be expensed with associated funding from the previous annual requisitions. Staff are unable to perform this valuation until the new configuration has been determined and costing has been completed by the consultants, which is projected to be available for the first quarter of 2016. The expense of the sunk costs reduces requisition funding available for the new Program.

The Committee has engaged consultants and is working on a new Program. Configurations for the eventual new program have not yet been finalized; therefore, revised costing is currently unavailable. The additional costs of new land acquisitions will be a costs incurred solely by CRD. New costing information is currently unavailable; therefore, maintaining the orderly requisition ramp up is a prudent course of action. It is recommended that the levy for 2016 be budgeted at $20 million as originally planned.

ALTERNATIVES

1. That the Core Area Liquid Waste Management Committee:

   A. Approve the 2016 annual capital program projects, cost sharing apportionments and utilization of the capital reserve funding including a $20 million program requisition in the 2016 Core Area Sewage Treatment budget. by participant; and

   B. Direct staff to amend the 2016 annual capital program, cost sharing and funding plan.

2. That the Core Area Liquid Waste Management Committee determine a different requisition increase for 2016.

OPERATIONAL IMPLICATIONS

Further deferral of the most of the proposed annual capital projects could have operational and service impacts if the infrastructure deficiencies are not addressed.

FINANCIAL IMPLICATIONS

The Committee is currently working on the project and new configuration, but given that updated configuration and costs are unavailable, there is no budget upon which to set a different plan of requisition increases.

CONCLUSION

Although work is actively underway to identify a new configuration and new land sites, there is no costing currently available for the new Program, thus there is no updated budget upon which to set a different plan of requisition increases to reach the estimated future annual ongoing debt and operating costs.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee:

A. Approve the 2016 annual capital program projects, cost sharing apportionments and utilization of the capital reserve funding including a $20 million program requisition in the 2016 Core Area Sewage Treatment budget. by participant; and

B. Direct staff to amend the 2016 annual capital program, cost sharing and funding plan.

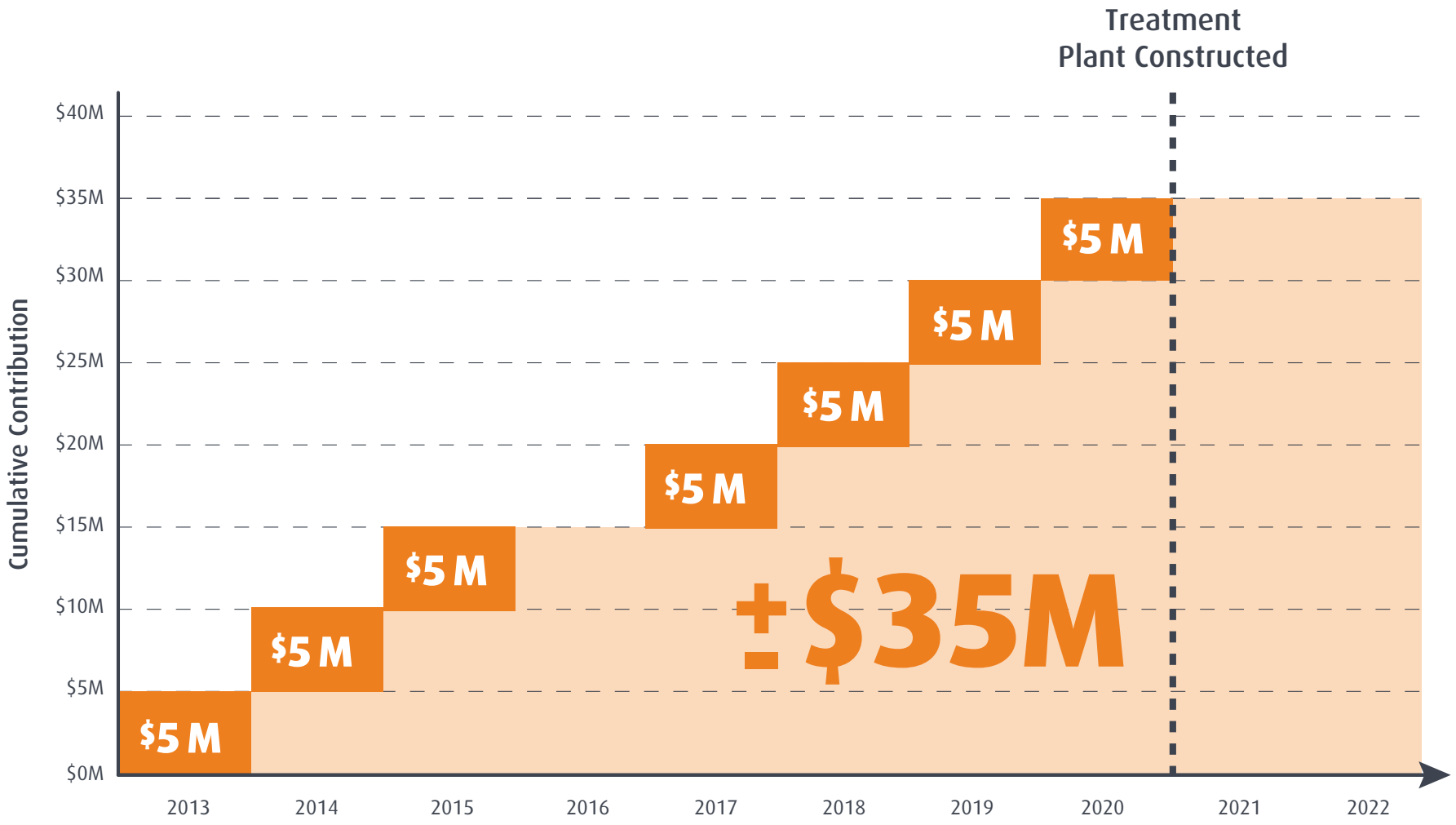
Submitted by:	Amber Genero, MA, CPA, CMA, Manager, Accounting Services
Concurrence:	Diana E. Lokken, CPA, CMA, General Manager, Finance & Technology
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

AG:sb
Attachments: Schedule A – Ramping Up to Treatment
Schedule B-1 – Requisition Cost Sharing
Schedule B-2 – Summary of Core Area Municipal Capital Reserve Balances
Schedule B-3 – 2016 Cost Sharing Allocation

Ramping Up to Treatment

Estimated capital cost of currently approved LWMP

$248M



UPDATED FEBRUARY 3, 2016

Requisition Cost Sharing

MUNICIPALITIES:	Requisition Breakdown	Transfer to Individual Municipality Reserve
Colwood	4.26%	
Esquimalt	6.65%	
Langford	12.66%	
View Royal	3.19%	
Westside Select Committee Only	26.76%	
Oak Bay	6.45%	72,263
Saanich	30.54%	342,041
Victoria	36.25%	405,938
Eastside Select Committee Only	73.24%	820,243
Total for all other costs (Debt operating costs, Sewer Capital Funding, etc)	100.00%	

COMMITTEES:	Budget		Funding by Proportion	
Westside Select Committee				
Phase 1 to Aug 15 Actual	366,870			
Phase 2 Budget to Dec 15	173,562			
Funded by Requisition	540,432	26.76%	540,432	
Eastside Select Committee				
Phase 1 to Aug 15 Actual	443,877			
Phase 2 Budget to Dec 15	215,000			
Funded by Requisition	658,877	73.24%	1,479,120	820,243
Total to Dec 15	1,199,309		$ 2,019,552	
Core area LWMP Options Development				
Phase 2 (To March 2016)	1,450,000			
Funded by Reserve Accnt - LWMP			$ 1,450,000	

* Extra Eastside drawdown to balance Westside project funding transferred to Core Trunk Sewer Reserve (estimate)

COST SHARING ALLOCATION
Core Area Sewers Infrastructure Upgrade Projects for 2016
(Schedule G of the 2016 Budget)

(Cost sharing based on 2015 flows - 2016 flows to be updated Februaly 2016)

Date: October 23, 2015

Estimated YrEnd Balance Before Adjustments			$ (2,248,946.60)	$ (2,072,973.93)	$ (1,207,565.95)	$ (203,320.98)	$ (98,972.17)	$ (382,173.04)	$ (209,801.35)	$ (4,090.90)	$ (191,952.61)	$ -
Estimted Extra Eastside drawdown to balance Westside project funding			$ (405,938.26)	$ (342,041.35)	$ (72,263.41)							
Revised Estimated YrEnd Balance			$ (2,654,884.86)	$ (2,415,015.28)	$ (1,279,829.36)	$ (203,320.98)	$ (98,972.17)	$ (382,173.04)	$ (209,801.35)	$ (4,090.90)	$ (191,952.61)	$ -
Item	**Improvement**	**Area**	**Estimated Cost**	**Victoria**	**Saanich**	**Oak Bay**	**Langford**	**Colwood**	**View Royal**	**Songhees Nation**	**Esquimalt Nation**	**Esquimalt**	**DND**
1	Odour Control Improvements Phase 2	NWT	$ 60,000	24.30% $ 14,581.46	25.38% $ 15,229.52		8.33% $ 4,995.50	7.81% $ 4,684.97	6.17% $ 3,699.37	1.04% $ 621.06	0.38% $ 229.52	21.76% $ 13,055.81	4.84% $ 2,902.79
2	Manhole Rehabilitation Phase 2	NWT W	$ 145,000				23.81% $ 34,523.81	22.33% $ 32,377.73	17.63% $ 25,566.28	2.90% $ 4,198.84	1.09% $ 1,586.23	20.79% $ 30,138.35	11.45% $ 16,608.75
3	Lang Cove PS Upgrades	NWT W	$ 35,000				23.81% $ 8,333.33	22.33% $ 7,815.32	17.63% $ 6,171.17	2.90% $ 1,013.51	1.09% $ 382.88	20.79% $ 7,274.77	11.45% $ 4,009.01
4	Marigold Pump Station Detailed Structural Assessment	NWT N	$ 80,000	37.37% $ 29,896.19	39.03% $ 31,224.91					0.03% $ 27.68		22.28% $ 17,826.99	1.28% $ 1,024.22
5	Macaulay Pt Outfall Coating & Shoreline Protection	NWT	$ 80,000	24.30% $ 19,441.94	25.38% $ 20,306.03		8.33% $ 6,660.67	7.81% $ 6,246.62	6.17% $ 4,932.49	1.04% $ 828.08	0.38% $ 306.03	21.76% $ 17,407.74	4.84% $ 3,870.39
6	Old Craigflower PS Demolition	NWT W	$ 145,000				23.81% $ 34,523.81	22.33% $ 32,377.73	17.63% $ 25,566.28	2.90% $ 4,198.84	1.09% $ 1,586.23	20.79% $ 30,138.35	11.45% $ 16,608.75
			$ 545,000										
7	Beach Drive Trunk Root Removal and CCTV	NET	$ 150,000	57.69% $ 86,531.59	13.16% $ 19,737.78	29.15% $ 43,730.63							
8	NET Odour Control Improvements	NET	$ 20,000	57.69% $ 11,537.54	13.16% $ 2,631.70	29.15% $ 5,830.75							
9	Harling Point Pump Sta Upgrade Pre-Design Phase	NET	$ 150,000	57.69% $ 86,532	13.16% $ 19,738	29.15% $ 43,731							
10	NET Flow Meter Auditing Study	NET	$ 25,000	57.69% $ 14,421.93	13.16% $ 3,289.63	29.15% $ 7,288.44							
11	Clover Point Siphon Repair	NET	$ 60,000	57.69% $ 34,612.63	13.16% $ 7,895.11	29.15% $ 17,492.25							
12	Clover Point Ventilation Assessment	NET	$ 75,000	57.69% $ 43,265.79	13.16% $ 9,868.89	29.15% $ 21,865.32							
			$ 480,000										
13	ECI Odour Control Improvements	ECI	$ 20,000	16.15% $ 3,230.69	27.86% $ 5,572.94	55.98% $ 11,196.37							
14	ECI Root Removal and CCTV Program	ECI	$ 310,000	16.15% $ 50,075.72	27.86% $ 86,380.62	55.98% $ 173,543.66							
15	ECI Flow Meter Auditing Study	ECI	$ 50,000	16.15% $ 8,076.73	27.86% $ 13,932.36	55.98% $ 27,990.91							
16	Penrhyn Pump Station Structural Improvements	ECI	$ 80,000	16.15% $ 12,922.77	27.86% $ 22,291.77	55.98% $ 44,785.46							
17	Humber Pump Station Mechanical Upgrades	ECI	$ 15,000	16.15% $ 2,423.02	27.86% $ 4,179.71	55.98% $ 8,397.27							
18	Rutland Pump Station Mechanical Upgrades	ECI	$ 30,000	16.15% $ 4,846.04	27.86% $ 8,359.41	55.98% $ 16,794.55							
19	Currie Minor PS Backflow Preventor Relocation	ECI	$ 40,000	16.15% $ 6,461.38	27.86% $ 11,145.89	55.98% $ 22,392.73							
20	McMicking Point PS Structural & Access Upgrades	ECI	$ 30,000	16.15% $ 4,846.04	27.86% $ 8,359.41	55.98% $ 16,794.55							
			$ 575,000										
21	NET-B Root Removal and CCTV	NET B	$ 300,000	21.16% $ 63,492.07	2.45% $ 7,341.27	76.39% $ 229,166.67							
22	Doncaster Trunk Rehabilitation	NET B	$ 125,000	21.16% $ 26,455.03	2.45% $ 3,058.86	76.39% $ 95,486.11							
23	Net-B Odour Control Improvements	NET-B	$ 20,000	21.16% $ 4,232.80	2.45% $ 489.42	76.39% $ 15,277.78							
24	Net-B Flow Meter Auditing Study	NET-B	$ 50,000	21.16% $ 10,582.01	2.45% $ 1,223.54	76.39% $ 38,194.44							
			$ 495,000										
				$ 1									
		Total per Municipality/City		**$538,464.96**	**$302,256.57**	**$839,958.53**	**$89,037.12**	**$83,502.38**	**$65,935.60**	**$10,888.02**	**$4,090.89**	**$115,842.02**	**$45,023.91**
Remaining Reserve Estimated 2016				$ (2,116,419.90)	$ (2,112,758.70)	$ (439,870.83)	$ (114,283.86)	$ (15,469.79)	$ (316,237.45)	$ (198,913.33)	$ (0.00)	$ (31,086.69)	

Proposed Work Plan Overlay

3P CANADA FUNDING CONSIDERATIONS

OPTION DEVELOPMENT, PLANNING & IMPLEMENTATION PHASES

- JAN 13-FEB 24: PHASE 2: PUBLIC CONSULTATION
- FEB 24 - MAR 9: PREPARATION OF PLAN AMENDMENT BASED ON PREFERRED OPTION, REFERRAL TO TCAC
- MAR 9 2016: CALWMC/BOARD APPROVES PREFERRED OPTION

$83.4 M

3P CANADA FUNDING DEADLINE >

FEDERAL TRANSITIONAL AUTHORIZATION DEADLINE >

POLITICAL CONDITIONAL APPROVAL OF PLAN BY PROVINCE

MAR 2015 — WORK PLAN COMPLETE

JUNE 2015 — EASTSIDE & WESTSIDE SOLUTION SETS SUBMITTED

NOV 2015 — TECHNICAL ANALYSIS COMPLETE

DEC 2015 — COSTING & FINANCIAL ANALYSIS COMPLETE

JAN 2016 — CALWMC APPROVAL OF OPTION SETS FOR CONSULTATION

FEB 2016

MAR 31 2016 — BOARD APPROVAL COMPLETE — SUBMISSION OF PLAN AMENDMENT TO PROVINCE

DEC 2017 — SITE ZONING PROCESS COMPLETE — PROVINCIAL APPROVAL — PLANNING PHASE COMPLETE

DEC 2020 — REGULATORY ACCEPTANCE & FUNDING COMPLETION

LWMP AMENDMENT PREPARATION & BOARD APPROVAL: 1-2 YEARS

≥1 YEAR: Procurement Process

4 YEARS: Program Construction

SOLUTION OPERATIONAL 2023/2024

PHASE 1: SITING PUBLIC CONSULTATION

TECHNICAL ANALYSIS

PHASE 2: OPTIONS PUBLIC CONSULTATION

CONSULTATION

- EASTSIDE SELECT COMMITTEE
- WESTSIDE SELECT COMMITTEE
- HOST MUNICIPALITIES, FIRST NATIONS & COMBINED PARTICIPANTS

AMENDING/APPROVAL OF LWMP & PLANNING ACTIVITIES

- Environmental Impact Study **1-2 YEARS**
- Funding Negotiation
- Outfall Modeling **1-2 YEARS**
- Site Acquisitions
- Permits & Other Approvals

ASSUMES CONCURRENT PROCESSES OR CONSTRUCTION

PROGRAM DEVELOPMENT

- Wastewater Treatment Plant(s)
- Conveyance Infrastructure
- Resource Recovery Infrastructure

OPTION DEVELOPMENT PHASE | PLANNING PHASE | IMPLEMENTATION PHASE

January 2016

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REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 10, 2016

SUBJECT **Available Funding Options – Core Area Wastewater Program**

ISSUE

The Core Area Liquid Waste Management Committee (CALWMC) has requested information on other potential funding opportunities available for the Core Area Wastewater Program.

BACKGROUND

At the CALWMC meeting held on October 2, 2015, the following motion was passed:

That staff prepare a report focused on all funding options available.

Staff have researched grants currently available that may be appropriate for the Core Area Wastewater Program.

Green Municipal Fund (GMF) Water Capital Projects – Federation of Canadian Municipalities (FCM) GMF offers below-market loans (up to $30 million), in combination with grants (up to $5 million). FCM will accept applications year-round, with waste and water sector funding approvals being made twice a year. Acceptable Wastewater Systems projects must include at least one tertiary treatment process. Disinfection treatments are not considered tertiary treatments for this purpose, and sludge treatment projects are not eligible for GMF funding.

New Building Canada Fund – National and Regional Projects (PTIC-NRP) – is an allocation based program that supports medium to large scale infrastructure projects across 14 categories, including wastewater and includes $9 billion for projects that are nationally and regionally significant. The grant requirements state that projects with eligible costs over $100 million will be required to undergo a P3 screen, however, there have been recent announcements that this requirement may be removed. No specific application details are available, but eligible recipients are instructed to contact the Ministry of Transportation and Infrastructure.

Recent comments from the federal government indicate that there may be new versions of grant programs coming in the near future and staff will report out to the committee as they evolve.

ALTERNATIVES

1. That the Core Area Liquid Waste Management Committee receive this report for information.
2. That the Core Area Liquid Waste Management Committee request additional information.

FINANCIAL IMPLICATIONS

GMF provides up to $5 million in grants for wastewater projects; the scope of applications that can be submitted under this program appear to be negligible compared to the scope of CRD's Core Area Wastewater Treatment program. Subject to federal government policy changes, the New Building Canada Fund documentation currently requires projects to undergo an additional P3 screening that may potentially impact the overall procurement process for the project. Although additional grants may benefit the project, further research on stacking of grants will be required, particularly in light of the existing funding agreements with the province and federal government.

CONCLUSION

The committee requested information on other grant opportunities, high level research has identified two grant programs that may potentially be considered. Neither of these grant programs appear to be suitable to provide funding for CRD's Core Area Wastewater Program.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee receives this report and recommends to the Capital Regional District Board:

That Available Funding Options - Core Area Wastewater Program be received for information.

Submitted by:	Amber Genero, MA, CPA, CMA, Manager, Accounting Services
Concurrence:	Diana E. Lokken, CPA, CMA, General Manager, Finance & Technology
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

AG:ab

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REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 10, 2016

SUBJECT **REGIONAL WATER SYSTEM - SUPPLY AND DEMAND**

ISSUE

The Regional Water Supply and demand projections relate to various aspects of the Core Area Wastewater Treatment Program, including treatment design capacity and water reclamation viability.

BACKGROUND

Current and future water supply and demand projections have been updated and are generally consistent with the projections outlined in the most recent update of the Strategic Plan for the Greater Victoria Water Supply System (April 2012), known as the Regional Water Supply System.

Water Demand

When considering current water demand for the operation of the supply system, two demand figures are considered:

1. Gross per capita demand - Gross per capita demand represents supply level demand derived from the total volume of water that passes through the Regional Water Supply disinfection system divided by the total population served, including all customer sectors (residential, institutional, commercial, industrial, agricultural), as well as non-revenue water. Non-revenue water is water related to leakage in the transmission system, fire protection water, system flushing water and metering anomalies. Gross per capita demand for the Regional Water Supply System is 340 litres per capita per day.

2. Municipal per capita demand – Municipal per capita demand represents the average demand at the customer level across all sectors, derived from water billing data. Municipal per capita demand for the Regional Water Supply System is 240 litres per capita per day.

A future (2030) municipal water demand has been projected at 200 litres per capita per day. This is based on the expected continuing trend of declining demand across the region at a rate of approximately 1% per year. The declining demand is largely related to declining indoor demand resulting from ongoing household conversions to low flow fixtures and high efficiency appliances, as well as declining outdoor demand as public attitudes and behaviour towards discretionary outdoor water use change. These current and projected per capita demand rates are consistent with the per capita demand rates used by Urban Systems in developing current and future wastewater design flows for the Core Area Program. These rates were restated in the January 13, 2016 staff report to the Core Area Liquid Waste Management Committee – *Follow Up to Technical and Financial Information Requests*, under Appendix F (December 23, 2015 Memorandum from Urban Systems – *Design Flows).*

Water Supply Capacity

The primary water supply area for the Regional Water Supply System is the Sooke Water Supply Area, comprised of 6,720 hectares of catchment land, which provides source water to the Sooke Lake Reservoir, the primary reservoir for the Regional Water Supply System. Sooke Lake Reservoir has a total storage volume of 160.32 million cubic metres, of which 92.7 million cubic metres are useable for water supply. The Regional Water Supply System currently serves a population of approximately 350,000. Based on future water demand projections and assuming no significant shifts in climate or precipitation patterns, it is estimated that the Sooke Lake Water Supply Area and Reservoir could support an additional population of approximately 170,000.

The Leech Water Supply Area was acquired by the Capital Regional District (CRD) in 2007 as the future water supply area for the Regional Water Supply System. It has currently been estimated that the Leech Water Supply Area will not be required to supplement source water to the Sooke Lake Reservoir to meet the Regional Water Supply System demands until 2072 with a moderate population growth rate (up to 1% per year) or 2046 with a higher population growth rate (1% - 2% per year). As noted previously, the actual year the Leech Water Supply Area will be required will be subject to changing water demand and climate change impacts, as well as actual population growth rates.

CONCLUSION

The current average municipal per capita demand across the Regional Water Supply System is 240 litres per capita per day. Demand across the Region is expected to continue to decline at approximately 1% per year. Based on demand and population growth projections, it has been estimated that the Sooke Lake Reservoir will meet the Regional Water Supply System demands until 2046 or 2072 depending on the growth scenarios. The Regional Water supply and demand projections relate to various aspects of the Core Area Wastewater Treatment Program, including treatment design capacity and water reclamation viability.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee receive the staff report for information.

Submitted by:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

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REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, MARCH 9, 2016

SUBJECT **Core Area Wastewater Treatment Program Year End Budget Update No. 31**

ISSUE

This report provides information on Core Area Wastewater Treatment Program (the "Program") costs for the period from November 1 to December 31, 2015.

BACKGROUND

The Core Area Liquid Waste Management Committee (Committee) has requested monthly financial reporting on the Program. As part of the process staff have prepared a year end budget update on the costs associated with the Program.

From November 1 to December 31, 2015 the total program expenditure was $456,774. The attached Schedule A reflects the year end position of the Program, including expenditures and known accruals for the year ended December 31, 2015. The attached program summary report reflects the reduced service level as directed by the Committee.

ALTERNATIVES

1. The Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

   That Core Area Wastewater Treatment Program Budget Update No. 31 be received for information.

2. That the Core Area Liquid Waste Management Committee request additional information.

FINANCIAL IMPLICATIONS

The current variance is a direct result of the program service delivery being placed on pause. Staff have reviewed all costs to assess any components that will not provide a future benefit to the project, which is a requirement of the Tangible Capital Assets accounting standard (PS 3150). Rent and severance costs have been expensed as part of the 2015 year end process, which is reflected in Schedule A-2.

CONCLUSION

Staff will continue to evaluate the costs, and revise the budget accordingly as soon as a new project is defined.

RECOMMENDATION

The Core Area Liquid Waste Management Committee recommend to the Capital Regional District Board:

That Core Area Wastewater Treatment Program Budget Update No. 31 be received for information.

Submitted by:	Amber Genero, MA, CPA, CMA, Manager, Accounting Services
Concurrence:	Diana E. Lokken, CPA, CMA, General Manager, Finance & Technology
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

AG:sb
Attachments 1. Schedule A – 2015 Program Summary Report

Core Area Wastewater Treatment Program
2015 Program Summary Report
Year to Date 31-December-15

	2015 Budget	Year to Date Actuals	Commitments Unpaid (CU)	Total YTD Actuals + CU	Variance Budget - YTD	Projected CU Dec 31 2015
WASTEWATER TREATMENT	36,046,000	476,371	-	476,371	35,569,629	-
CONVEYANCING PIPES AND PUMPSTATIONS	27,078,000	3,013,222	1,900.33	3,015,122	24,064,778	-
RESOURCE RECOVERY CENTRE	3,069,000	13,223	-	13,223	3,055,777	-
COMMON COSTS	6,645,000	237,592	326,842	564,434	6,407,408	-
INTERIM FINANCING	320,000	192,834	-	192,834	127,166	-
PROGRAM CONTINGENCY	3,399,000	-		-	3,399,000	-
TOTAL	**76,557,000**	**3,933,242**	**328,742**	**4,261,984**	**72,623,758**	**-**

SCHEDULE A-2

Core Area Wastewater Treatment Program
Program Management (Common Costs) Expenditure Report
Year to Date 31-December-2015

	2015 Budget	Year to Date Actuals	Commitments
CAPITALIZED COSTS			
Salaries and Wages	2,330,000	922,350	326,842
Consultants	2,921,000	131,141	-
Allocations - Finance	47,000	-	-
Allocations - IT	58,000	-	-
Allocations - Human Resources	63,000	-	-
Allocations - Other (OutReach, Admin	48,000	-	-
Rentals and Leases	312,000	317,531	-
Operating - Other Costs	566,000	83,228	-
Impairment	-	-1,216,659	-
TOTAL	**6,345,000**	**237,592**	**326,842**

SCHEDULE A-3

Core Area Wastewater Treatment Program
Commission Expenditure Report
Year to Date 31-December-2015

	2015 Budget	Year to Date Actuals	Commitments
CAPITALIZED COSTS			
Honoraria	203,000	87,780	-
Travel	35,000	1,419	-
Operating - Other Costs	62,000	-	-
TOTAL	**300,000**	**89,199**	**-**

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EEE 16-30

REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, MARCH 9, 2016

SUBJECT **Core Area Sewage and Resource Recovery System 2.0 – Budget Update No. 4**

ISSUE

To provide the Core Area Liquid Waste Management Committee (CALWMC) with a monthly budget update.

BACKGROUND

The CALWMC requested that a detailed operating budget for the Core Area Sewage and Resource Recovery System 2.0 (including securing final treatment sites, rezoning, public consultation, LWMP Amendment No. 10 and final submission to 3P Canada by March 31, 2016 deadline) with actual expenses and commitments to be provided to the CALWMC on a monthly basis. At its January 13, 2016 meeting, the CALWMC received Budget Update No. 3.

Phase 2 Budget Update No. 4 provides actual expenses and outstanding commitments to January 31, 2016, as summarized in Appendix A.

The Core Area Liquid Waste Management Plan (LWMP) Options Development Phase 2 of the project is scheduled for completion by the end of March 2016.

FINANCIAL IMPLICATIONS

Funding for the project is being drawn from the Core Area Liquid Waste Management Plan (LWMP) operating account.

CONCLUSION

A budget is presented for the Core Area LWMP Options Development Phase 2 of the project to the end of March 2016. Due to the accelerated pace of work on the project, invoicing received from some of the suppliers and consultants has lagged. Any invoices received after the cut-off date for reporting will be brought up to date with the next budget report.

The Committee will continue to receive monthly budget updates through the course of the project.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee receive this budget update for information.

Submitted by:	Dan Telford, P.Eng., Project Manager, Core Area Wastewater and Resource Recovery Project
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services
Concurrence:	Rajat Sharma, B.Eng., MBA, CPA, CMA, Senior Manager, Finance
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

DT:mer

Attachment: Appendix A – Core Area Sewage and Resource Recovery System 2.0 – Budget Update No. 4

APPENDIX A

CORE AREA LIQUID WASTE MANAGEMENT PROGRAM

Options Development - Phase 2 Budget Update No. 4
January 31, 2016

	BUDGET (est. Oct 14, 2015)	ACTUAL	COMMITTED	TOTAL	REMAINING
Project Oversight (FTA & ToP)	280,000	313,258		313,258	- 33,258
Public Consultation	240,000	56,592		56,592	183,408
Feasibility and Costing Analysis	450,000	365,921	84,079	450,000	-
Property and Rezoning	75,000			-	75,000
LWMP Amendment No. 10	75,000			-	75,000
Project Management (Staff & Wages)	300,000	30,457		30,457	269,543
Miscellaneous and Legal	30,000	4,301		4,301	25,699
CALWMP Total	**$ 1,450,000**	**$ 770,529**	**$ 84,079**	**$ 854,608**	**$ 595,392**

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REPORT TO CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF WEDNESDAY, MARCH 9, 2016

SUBJECT **Sustainability Development Technology Fund**

ISSUE

To provide information on the Sustainability Technology Development Fund grant program announced on February 17, 2016.

BACKGROUND

Sustainable Development Technology Canada (SDTC) acts as a primary catalyst in building a sustainable development technology industry in Canada, funding and supporting Canadian *"cleantech"* projects across a number of sectors.

SDTC invests in Canadian companies that bring positive contributions to Canada through their innovative technologies; creating quality jobs, driving economic growth, and preserving the environment. As a federal government funded foundation, SDTC's mandate is to fund promising Canadian *"cleantech"* projects and to coach the companies that lead them as they move their technologies to market.

On February 17, 2016, SDTC announced another round of funding through its two key funds: SDTC's SD Tech Fund™ and SD Natural Gas Fund™; the call closes on April 13th, 2016.

The SD Tech Fund™ supports technologies that address the challenges of clean air, soil, water and climate change. This year, SDTC has issued five areas of priority for SD Tech Fund applicants:

1. Responsible natural resource development
2. Carbon-free power generation and distribution
3. Remote and Northern Community Utility Systems
4. Energy efficiency for industry and communities
5. Next generation technologies with longer-term benefits for Canada
    - Biofuels and Biorefineries
    - Sustainable Agriculture and Food Security
    - Biodiversity Protection and Enhancement

The SD Natural Gas Fund™, an offshoot of the SD Tech Fund, supports the development and demonstration of new downstream natural gas technology. It is a partnership with the Canadian Gas Association (CGA) including up to $15 million from both CGA and the SD Tech Fund™.

Potential applicants for these funds:

- Have formed, or have the intention to form, a Canadian company to develop clean technology innovation and carry out the majority of development and demonstration work in Canada. The participation of international companies as consortium partners is welcomed, but the lead applicant must be Canadian;
- Can prove their technology is highly innovative (new intellectual property); will bring environmental and economic benefits to Canada and aligns with SDTC's technology priority areas; and

- Have a business plan that explains the economic and environmental impact of their technology, and includes other sources of funding, and one or more industry partners.

IMPLICATIONS

Staff has inquired with SDTC and based on the information provided this grant is for technology developers, rather than adopters, and therefore the CRD is not eligible to apply directly.

RECOMMENDATION

That the Core Area Liquid Waste Management Committee receives this report and recommends to the Capital Regional District Board:

That this report be received for information.

Submitted by:	Rajat Sharma, B. Eng., MBA, CPA, CMA, Senior Manager, Finance
Concurrence:	Larisa Hutcheson, P. Eng., General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

CORE AREA LIQUID WASTE MANAGEMENT COMMITTEE
MEETING OF JANUARY 13, 2016

Motion with Notice: Accountability and Representation in Governance of Components of Eastside and Westside Sub-systems

(Director Young, Jan. 2016)

BACKGROUND Under some options for the proposed core area liquíd waste management system that may be considered, part of the total flow volume to the proposed Westside infrastructure will originate from the District of Saanich and City of Victoria. It has also been suggested at the Board table that even if none of the East side flows are treated in the West side system, a part of the costs of these West side systems will be paid by East side taxpayers. The option sets and other preliminary planning undertaken for the Westside sub-system within the Core Area Liquid Waste Management Plan has occurred in the absence of participation, representation and input from the East side municipalities or directors. ln accordance with the principle of representation for users of a service provided by a regional district, it is proposed that the Core Area Liquid Waste Management Committee provide direction to staff to bring forward in a timely way recommendations on procedural changes and/or governance enhancements to ensure that each user of components of the service and each area that is paying for components of the system, are adequately represented in decision-making.

MOTION BE IT RESOLVED THAT the Core Area Liquid Waste Management Committee directs staff to report back at the next meeting on procedural changes and/or governance enhancements that will ensure that each participant who is anticipated to use or pay for a component of the eastside or westside wastewater treatment sub-systems is included in the governance system directing the design and eventual operation of that component of the system.

Notice of Motion to the Core Area Liquid Waste Committee

February 10, 2016 – Directors Derman and Plant

RATIONALE

At its January 13, 2016 meeting, members of the Core Area Liquid Waste Committee debated the issue of whether or not to send proposed sewage treatment options out for public comment. During that debate, a number of directors expressed the belief that the options presented were "representative" only and would not preclude the possibility of other, potentially better, options coming forward in the future. Neither the chair nor staff contradicted these statements.

At the subsequent January 27th meeting of the Core Area committee, a program laid out for future directions, and comments from staff, appeared to limit or eliminate opportunities for substantially different options to come forward in the future. This is inconsistent with the statements and beliefs put forward in the January 13th meeting.

MOTION

That the Core Area Liquid Waste Committee ask the Chair to bring forward a program for future directions that clearly puts in place mechanisms to allow substantially different options to come forward in the future. Furthermore, such options should be able to include differences in siting, technology, overall system design and waste streams involved.

Notice of Motion to the Core Area Liquid Waste Committee

February 10, 2016 – Directors Derman and Plant

RATIONALE

Under the Gordon Campbell government, Environment Minister Barry Penner mandated the Core Area of the Capital Regional District to move to sewage treatment. Subsequently, the minister expressed his desire to have the following goals accomplished:

- *Meet the regulatory standard for liquid waste*
- *Minimize total project cost to the taxpayer by maximizing economic and financial benefits, including beneficial reuse of resources and generation of offsetting revenue*
- *Optimize the distribution of infrastructure based on number 2 above*
- *Aggressively pursue opportunities to minimize and reduce greenhouse gas emissions (e.g., reduced requirement of energy for pumping purposes and beneficial reuse of energy)*
- *Optimize 'smart growth' results (e.g., district services, density, Dockside Green-like innovation)*
- *Examine the opportunity to save money, transfer risk and add value through a public private partnership*

In a 2015 Project Charter for the Core Area Liquid Waste project, similar goals and commitments were established:

Goals and Commitments

The Core Area Sewage and Resource Recovery System 2.0 project will deliver the following goals and meet the following commitments. NB goals should be measurable. Each of these goals needs a corresponding metric so at project completion, the CALWMC can determine whether it achieved its goals.

Goals

- *Meet or exceed federal regulations for secondary treatment by December 31, 2020*
- *Minimize costs to residents and businesses (life cycle cost) and provide value for money*
- *Produce an innovative project that brings in costs at less than original estimates*
- *Optimize opportunities for resource recovery to accomplish substantial net environmental benefit and reduce operating costs*
- *Optimize greenhouse gas reduction through the development, construction and operation phases and ensure best practice for climate change mitigation*

Commitments

- *Develop and implement the project in a transparent manner and engage the public throughout the process*

- *Deliver a solution that adds value to the surrounding community and enhances the livability of neighbourhoods*
- *Deliver solutions that are safe and resilient to earthquakes, tsunamis, sea level rise and storm surges*
- *Develop innovative solutions that account for and respond to future challenges, demands and opportunities, including being open to investigating integration of other parts of the waste stream if doing so offers opportunities to optimize other goals and commitments in the future*
- *Optimize greenhouse gas reduction through the development, construction and operation phases and ensure best practice for climate change mitigation*

With all due respect, for the efforts of those involved in their creation, it is not clear that current options put forward to the Core Area Liquid Waste Committee substantially meet either the Project Charter goals and commitments or Minister Penner's initial requirements:

MOTION

That the Core Area Liquid Waste Committee establish a process for thoroughly evaluating the consistency of currently proposed options with the goals and commitments established under the Project Charter. Furthermore, that the Core Area Liquid Waste Committee not proceed further with any of the proposed options until it has been established that they are substantially compliant with Charter goals and commitments.

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda

Westside Wastewater Treatment and Resource Recovery Select Committee

Tuesday, February 2, 2016 **1:00 PM** **Colwood Council Chambers, 3300 Wishart Road**

C. Hamilton (Co-Chair), B. Desjardins (Board Chair), Chief R. Sam, D. Screech, L. Seaton, Chief A. Thomas, S. Young

1. Approval of Agenda

2. Adoption of Minutes

2.1. **16-177** Adoption of the Westside Wastewater Treatment and Resource Recovery Select Committee Minutes of January 8, 2016

Recommendation: That the minutes of the Westside Wastewater Treatment and Resource Recovery Select Committee meeting of January 8, 2016, be adopted.

Attachments: 2016-01-08 Minutes Westside WTRR Select Committee

3. Chair's Remarks

4. Presentations/Delegations

5. Committee Business

5.1. **16-150** Technical and Financial Work Required to Analyze Westside Participants' Dry Weather Flows

Recommendation: That the Westside Select Committee direct staff to retain the services of an engineering consultant to proceed with the analysis of dry weather flows for Westside communities within an amount not to exceed $60,000 (excluding GST).

Attachments: Staff Report: Tech & Financial Analysis - Westside Dry Weather Flows

Appendix A: Peak 24 Hour Sanitary Flows

5.2. **16-161** Feasibility and Costing Analysis of an Additional Option Set (5c) to Treat Sewage to Tertiary Levels

Recommendation: That the Westside Select Committee receive this report for information.

Attachments: Staff Report: Feasibility & Costing Analysis of Additional Option Set (5c)

5.3. **16-166** Public Engagement - Verbal Update

Recommendation: That the public engagement verbal update be received for information.

5.4. **16-167** Eastside Wastewater Treatment and Resource Recovery Select Committee - Verbal Update

Recommendation: That the Eastside Wastewater Treatment and Resource Recovery Select Committee verbal update be received for information.

6. Motion with Notice

6.1. 16-163 Motion with Notice: Options for Wastewater Treatment (Director Hamilton)

Recommendation: WHEREAS: It is critical that there be positive action taken to meet funding deadlines and regulatory requirements for waste water treatment for the Capital Regional District;
BE IT RESOLVED that: Capital Regional District (CRD) staff be directed to support municipalities and First Nations who want to explore options for waste water treatment that are economically responsible, technically feasible, environmentally sound and meet current provincial and federal deadlines;
AND THAT funding be provided from the sewage treatment budget to support an independent assessment of alternative locations to McLoughlin and Hartland, with full and regular engagement of staff and elected representatives from participating municipalities, First Nations and the public;
AND THAT any decisions taken to amend the Liquid Waste Management Plan be done in an open and transparent public process;
AND THAT any further money spent be recoverable under the funding arrangement with the Provincial and Federal Governments and that clarity be sought that the funding arrangement with Provincial and Federal governments be able to support the communities to the extent it supported the CRD driven process.

Attachments: Motion: Options on Wastwater Treatment (Hamilton) RevAug2014

7. New Business

8. Adjournment

Next Meeting: March 1 (To Be Confirmed)

To ensure quorum, please advise Nancy More (250-360-3024) if you or your alternate CANNOT attend.

Capital Regional District
625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes
Westside Wastewater Treatment and Resource Recovery Select Committee

Friday, January 8, 2016 | **10:30 AM** | **6th Floor Boardroom**

PRESENT
DIRECTORS: B. Desjardins (Co-Chair), D. Blackwell (for S. Young), C. Day (for C. Hamilton, Co-Chair), D. Screech, L. Seaton
STAFF: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; D. Lokken, General Manager, Finance and Technology; L. Taylor, Communications Coordinator, Corporate Communications; B. Reems, Corporate Officer, and N. More, Committee Clerk (Recorder)
ALSO PRESENT: Director R. Atwell, Alternate Director M. Sahlstrom; K. Anema, View Royal; J. Bowden, Langford; I. Howat, Colwood; L. Hurst, J. Miller, Esquimalt; S. Brubacher, Urban Systems; C. Houghton, J. O'Reardon, Aurora Innovations; R. Sansom, Turner Lane Development Corp.
ABSENT: Chief R. Sam, Chief A. Thomas

The meeting was called to order at 10:32 a.m.

1. Approval of Agenda

Chair Desjardins directed the Committee members, alternate members, municipal staff, and consultants seated at the Board table to introduce themselves.

MOVED by Director Blackwell, SECONDED by Director Seaton,
That the agenda be approved with the supplementary agenda.
CARRIED

2. Adoption of Minutes

2.1. **16-22** Adoption of the Minutes of November 24, 2015

MOVED by Director Screech, SECONDED by Director Blackwell,
That the minutes of November 24, 2015, be adopted.
CARRIED

3. Chair's Remarks

Chair Desjardins remarked on her new role as Chair of the Capital Regional District Board and announced that she would no longer serve as co-chair of the Westside Wastewater Treatment and Resource Recovery Select Committee and that a decision on electing a co-chair would be made at a future meeting.

4. Presentations/Delegations

4.1 **16-55** 4.1 Delegation Bryan Gilbert

B. Gilbert felt that a 100% distributred tertiary with advanced gasification system was possible, could be referred to as a "$250 million option", and should be presented to the public before any discussion of cost sharing allocation. The delegation provided a written submission, on file at Legislative and Information Services.

This delegation was presented.

5. Committee Business

5.1. 16-24 Feasibility and Costing Analysis of an Additional Option Set to Treat Westside Sewage, Including a Wastewater Treatment Facility and Disposal Service for Colwood and Langford

S. Brubacher of Urban Systems, with the aid of a PowerPoint presentation, presented the information including on option sets 5A and 5B, and capital costs relative to the other option sets.

The Committee requested that presentations be provided ahead of the meetings in agenda packages.

The Committee sought clarification on the "soft" costs, the magnitude of cost changes due to changes in conveyance and method of discharge, the discussion between Colwood and the Ministry on regulations regarding ground discharge and beneficial re-use of water.

L. Hutcheson provided highlights of the staff report. J. Miller provided information from the Westside technical committee's standpoint.

The Committee sought clarification on the need for an outfall as a backup to ground discharge, details on the costing, and regulations in relation to wet and dry flows.

MOVED by Director Screech, SECONDED by Alternate Director Day,
That the Westside Select Committee receive this report for information and forward it to the Core Area Liquid Waste Management Committee for consideration.
CARRIED

5.2. 16-25 Public Consultation Update

C. Houghton presented an update on the public engagement process with the aid of a PowerPoint presentation. She remarked on shared aspects of the Eastside Wastewater Treatment and Resource Recovery Select Committee public engagement. Topics in the presentation included principles and objectives, challenges, examples of public engagement activities that have been implemented, and the online survey platform.

Chair Desjardins clarified that a preliminary report would be provided around February 10, 2016, and a final report around February 19, 2016.

The Committee sought clarification on an Eastside public engagement event in Victoria on January 8, 2016.

MOVED by Director Screech, SECONDED by Director Blackwell,
That the Westside Wastewater Treatment and Resource Recovery Select Committee receive this update for information.
CARRIED

5.3. 16-14 Core Area Sewage and Resource Recovery System Cost Sharing

On the motion, the Committee discussed the allocation of costs for regional services, the future development of the region, and the timing of the discussion in relation to current information. L. Hutcheson provided highlights of the staff report, and reported on the decision taken by the Eastside Select Committee on January 6, 2016, to recommend retaining the current cost sharing model.

Chair Desjardins summarized the cost sharing options.

The Committee sought clarification on the direction given to staff to provide the cost sharing information.

Moved by Director Blackwell, SECONDED by Director Screech,
That it be recommended to the Capital Regional District Board:
That the current cost sharing under Bylaw No. 2312 "Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995", as amended, and based on design capacity benefit, be retained.
CARRIED
OPPOSED Day, Desjardins

On the motion, it was clarified that the scope of the motion is for all options and that the enlarged scope of work would be serviced by Westside municipal staff and consultants.

MOVED by Director Screech, SECONDED by Director Blackwell,
WHEREAS current cost estimates for wastewater treatment and resource recovery are very conservative and default to the worst case scenario for costing specifically regarding costs related to four (4) times the dry weather flows; and
WHEREAS Westside communities have in large part successfuly dealt with their inflow and infiltration (I&I) issues and have greatly reduced the potential of having flows exceed the two (2) times the dry weather flows; and
WHEREAS the participating communities remain committed to adhering to the goal stated in the approved Westside Project Framework that the solution be "based on the best business case scenario that maximizes benefit to the best value for taxpayers"; therefore
BE IT RESOLVED that the Westside initiate the technical and financial work required to evaluate the potential cost savings for Westside residents by analysing two (2) times the dry weather flows, and that after being presented to the Westside Select Committee, the results of this work be used as a basis to engage with the Province as regulator in determining acceptable flow levels, with costs subsequently reduced for Westside participants.
CARRIED

5.4. 16-26 Cost Comparison of Budgets - New Options Versus Previous Plan

L. Hutcheson provided highlights of the staff report.

MOVED by Director Screech, SECONDED by Director Blackwell,
That the report be received for information.
CARRIED

5.5. 16-29 Westside Concept Planning - Phase 2 Budget Update No. 3

MOVED by Director Screech, SECONDED by Director Blackwell,
That the report be received for information.
CARRIED

5.6. 16-28 Eastside Select Committee Verbal Update

L. Hutcheson reported on the January 6, 2016, Eastside Select Committee meeting, and Director Atwell provided further highlights.

This update was presented.

6. Motion with Notice

6.1. 15-311 Referral of Motion with Notice: Options for Wastewater Treatment (Director Hamilton)

MOVED by Alternate Director Day, SECONDED by Director Blackwell,
That consideration of the motion referred from the Core Area Liquid Waste Management Committee be postponed to the next meeting.
CARRIED

7. New Business

There was none.

8. Adjournment

MOVED by Director Screech, SECONDED by Director Blackwell,
That the meeting be adjourned at 11:43 a.m.
CARRIED

_____
CHAIR

_____
RECORDER

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EEE 16-18

REPORT TO WESTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEE MEETING OF TUESDAY, FEBRUARY 2, 2016

SUBJECT **Technical and Financial Analysis of Westside Participants' Dry Weather Flows**

ISSUE

To provide a technical and costing analysis to evaluate the potential cost savings for Westside residents by analyzing 2 times the average dry weather flows (ADWF).

BACKGROUND

The Westside Technical Committee, consisting of technical staff and consultants from the participating communities, has been working collaboratively to influence treatment option sets (or scenarios) proposed for the Westside currently being considered to treat Core Area communities' wastewater.

At the meeting of January 13, 2016, Urban Systems presented to the Core Area Liquid Waste Management Committee (CALWMC) Appendix A showing the peak 24 hour sanitary flows for the last five years for each of the Westside municipalities. The graphs include the actual average annual flows over that period of time and the allocated design capacity or ADWF requested by the municipalities. Also shown are the 2, 3 and 4 times allocated design capacities used in determining the level of treatment required as flows increase.

Under the Municipal Wastewater Regulation, the Minister of Environment (MOE) requires a minimum of full secondary treatment for flows that are 2xADWF and primary treatment for flows that are between 2xADWF and 4xADWF. Flows greater than 4xADWF require only preliminary treatment (screening). These requirements are also reflected in the Core Area Liquid Waste Management Plan. However, if the applicant can demonstrate that there is an acceptable level of risk to the environment and public health, the MOE has the discretion to waive the primary treatment requirement for flows greater than 2xADWF. If primary treatment is not required, the treatment costs for the Westside should be reduced from estimates prepared by CRD consultants.

On January 8, 2016, the Westside Select Committee passed a motion to have the average dry weather flow data analyzed and to evaluate the potential technical and financial benefits.

The Westside Technical Committee has developed the following Terms of Reference and budget to fulfill the direction given by the Select Committee. An independent engineering firm, retained through a competitive process, would:

1. Obtain and review raw data on flows in the main sewers in each of the Westside municipalities by accessing the CRD data base including comment on data reliability.

2. Determine if the possible Westside plants (Colwood, Esquimalt First Nation) could be designed to only treat 2xADWF at the design horizons of 2030 and 2045.

3. If it were determined that one or both of the plants could not meet the requirements of only 2xADWF, determine if one or both plants would have to be designed for accepting flows at the 3xADWF boundary condition.

4. Once it has been established what flow condition each plant could operate under, outline potential cost savings at each potential plant site.

5. Recommend to the Westside Select Committee if there is a basis for approaching MOE to negotiate a new boundary condition (i.e., 2xADWF or 3xADWF) for either or both proposed treatment plants on the Westside.

The results of the analysis would be reported to the Select Committee by the end of March 2016. Regardless of the option selected by the CALWMC, an analysis of dry weather flows is critical to determining size and capacity for redundancy in treating the wastewater.

ALTERNATIVES

That the Westside Select Committee direct staff to:

Alternative 1

Retain the services of an engineering consultant to proceed with the analysis of dry weather flows for Westside communities within an amount not to exceed $60,000 (excluding GST).

Alternative 2

Delay analysis until the CALWMC has selected the preferred Core Area wastewater treatment option set for the amendment to the Liquid Waste Management Plan.

FINANCIAL IMPLICATIONS

The maximum budget for the analysis of dry weather flows for Westside communities shall not exceed $60,000 (excluding GST) and can be charged to the Westside Select Committee Phase 2 Budget, which has $66,714 of uncommitted funds available for this assignment.

WESTSIDE STAFF COMMITTEE

The Westside Staff Committee is in agreement with this report.

RECOMMENDATION

That the Westside Select Committee direct staff to retain the services of an engineering consultant to proceed with the analysis of dry weather flows for Westside communities within an amount not to exceed $60,000 (excluding GST).

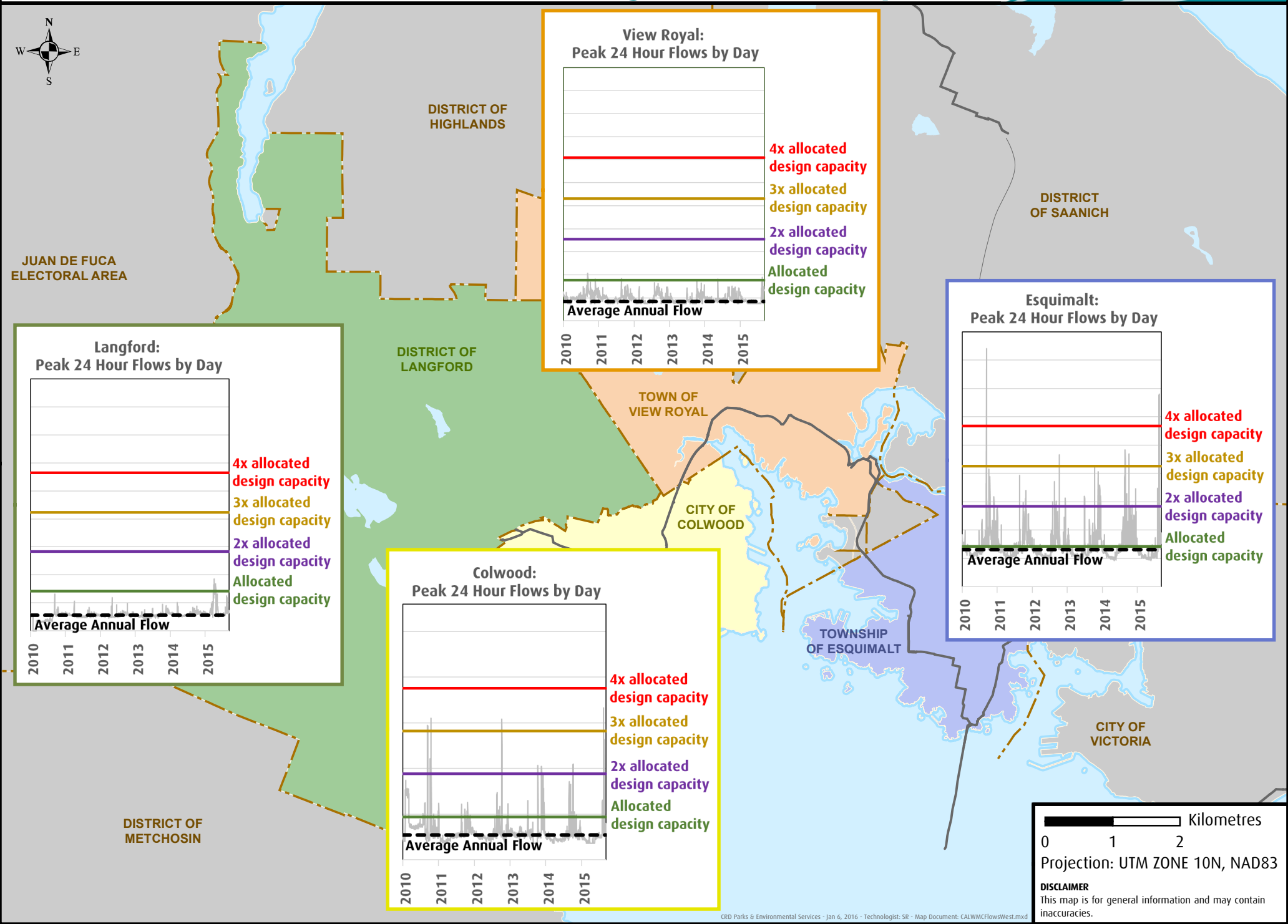
Submitted by:	Dan Telford, P.Eng., Project Manager, Core Area Wastewater and Resource Recovery Project
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

CH/DT:cl

Attachment: Appendix A – Peak 24 Hour Sanitary Flows: Colwood, Esquimalt, Langford and View Royal

Peak 24 Hour Sanitary Flows: Colwood, Esquimalt, Langford, and View Royal

APPENDIX A



DISCLAIMER
This map is for general information and may contain inaccuracies.

CRD Parks & Environmental Services - Jan 6, 2016 - Technologist: SR - Map Document: CALWMCFlowsWest.mxd

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EHQ 16-19

REPORT TO WESTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEE MEETING OF TUESDAY FEBRUARY 2, 2016

SUBJECT **Feasibility and Costing Analysis of an Additional Option Set (5c) to Treat Sewage to Tertiary Levels**

ISSUE

To provide a feasibility and costing analysis for an additional siting option set (5c) to the Core Area Liquid Waste Management Committee (CALWMC) and Westside Select Committee that would treat all wastewater to tertiary levels.

BACKGROUND

Under the direction of the Westside Technical Committee, Urban Systems and Carollo Engineers prepared and presented a report titled *Westside Wastewater Treatment Plant Siting Analysis – Phase 2* to the Westside Select Committee on October 27, 2015 that included an order of magnitude costing for 1, 2 and 4 plant option sets.

Subsequent to that report, Urban Systems and Carollo integrated the Westside Technical and financial analysis with sites and scenarios brought forward by the Eastside Select Committee in conjunction with the core area Technical Oversight Panel. The resulting analysis, titled *Core Area Liquid Waste Management Plan Phase 2: Wastewater Treatment System Feasibility and Costing Analysis – Technical Memorandum #3 Costing and Financial Analysis (Draft)*, was presented to the CALWMC on December 9, 2015.

Upon consideration of the analysis provided, the CALWMC requested that additional information including a modified option set to be developed, costed and analyzed for a wastewater treatment plant conveyance and disposal system to serve Colwood and Langford flows (secondary and tertiary).

The Westside Technical Committee met with representatives from Urban Systems and agreed that as all current options, with the exception of the one plant and two plant options, have wastewater generated on the Westside treated entirely at potential Westside facilities, this modified option set would have impacts on flows and options for the other Westside participants that needed to be considered.

Urban Systems and Carollo developed and presented their technical analysis and costing of two option sets – labelled 5a and 5b – to the Westside Select Committee on January 8, 2016 and to the CALWMC on January 13.

At the January 13 CALWMC meeting, the staff recommendation to proceed with public consultation on existing options (seven in total) was approved with the amendment “with the addition of 5c as per the discussion of Rock Bay, Esquimalt Nation and Colwood plants all increased to tertiary plants.”

Due to the lack of budget capacity and the tight timelines, a full technical analysis and costing was not possible and could not be included as a full option in the consultation initiative. Instead, a single question informing respondents that there is a potential for a variation of the three plant option and asking if this option should be considered.

The results of the consultation, including interest in this new option, will be reported in full to the CALWMC on February 24, 2016. Results will include an indication of how individuals within specific municipalities, or groupings of municipalities, have responded to questions within the survey.

CONCLUSION

Results from the survey and other engagement activities should be analyzed to determine public interest on option 5c before further work is considered.

WESTSIDE STAFF COMMITTEE

The Westside Technical Committee is in agreement with this report.

RECOMMENDATION

That the Westside Select Committee receive this report for information.

Submitted by:	Dan Telford, P.Eng., Project Manager, Core Area Wastewater and Resource Recovery Project
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

CH:cl

MOTION FOR WHICH NOTICE HAS BEEN GIVEN: OPTIONS FOR WASTEWATER TREATMENT (DIRECTOR HAMILTON)

WHEREAS: It is critical that there be positive action taken to meet funding deadlines and regulatory requirements for waste water treatment for the Capital Regional District;

BE IT RESOLVED that: Capital Regional District (CRD) staff be directed to support municipalities and First Nations who want to explore options for waste water treatment that are economically responsible, technically feasible, environmentally sound and meet current provincial and federal deadlines;

AND THAT funding be provided from the sewage treatment budget to support an independent assessment of alternative locations to McLoughlin and Hartland, with full and regular engagement of staff and elected representatives from participating municipalities, First Nations and the public;

AND THAT any decisions taken to amend the Liquid Waste Management Plan be done in an open and transparent public process;

AND THAT any further money spent be recoverable under the funding arrangement with the Provincial and Federal Governments and that clarity be sought that the funding arrangement with Provincial and Federal governments be able to support the communities to the extent it supported the CRD driven process .

(Revised, August 2014)

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda

Westside Wastewater Treatment and Resource Recovery Select Committee

Tuesday, March 8, 2016 **10:30 AM** **Colwood Council Chambers, 3300 Wishart Road**

C. Hamilton (Co-Chair), B. Desjardins, Chief R. Sam,
D. Screech, L. Seaton, Chief A. Thomas, S. Young

1. Approval of Agenda

2. Adoption of Minutes

2.1. **16-395** Adoption of February 2, 2016, Westside Wastewater Treatment and Resource Recovery Select Committee Minutes

Recommendation: That the Westside Wastewater Treatment and Resource Recovery Select Committee Minutes of February 2, 2016, be adopted.

Attachments: 2016-02-02 Minutes Westside WTRR Select Committee

3. Chair's Remarks

4. Presentations/Delegations

5. Committee Business

5.1. **16-391** Westside Public Engagement Summary Document

Recommendation: That the Westside Public Engagement Summary Document be received for information.

Attachments: Westside Public Engagement Summary Document

5.2. **16-394** Previous Westside Options Analysis

Attachments: Westside Wastewater Treatment Plant Siting Analysis - Ph 2 Report

November Staff Report: Technical Analysis for Evaluation of Sites, etc.

Appendix: Westside Technical Team Analysis (Nov 2015)

5.3. **16-396** Technical and Financial Work Required to Analyze Westside Participants Dry Weather Flows

Recommendation: [This report and recommendation will be added on Monday, February 7, 2016]

5.4. **16-385** Westside Concept Planning - Phase 2 Budget Update No. 4

Recommendation: That the Westside Wastewater Treatment and Resource Recovery Select Committee receive this report for information.

Attachments: Staff Report: Westside Phase 2 Budget Update No. 4

Appendix A: Budget Table

5.5. 16-167 Eastside Wastewater Treatment and Resource Recovery Select Committee - Verbal Update

Recommendation: That the Eastside Wastewater Treatment and Resource Recovery Select Committee verbal update be received for information.

6. New Business

7. Adjournment

Next Meeting: TBA

To ensure quorum, please advise Nancy More at 250-360-3024 if you or your alternate CANNOT attend.

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Capital Regional District

Meeting Minutes

Westside Wastewater Treatment and Resource Recovery Select Committee

Tuesday, February 2, 2016 **1:00 PM** **Colwood Council Chambers, 3300 Wishart Road**

PRESENT
MEMBERS: C. Hamilton (Co-Chair), B. Desjardins (Board Chair), D. Screech (1:06), L. Seaton, S. Young
STAFF: L. Hutcheson, General Manager, Parks and Environmental Services; D. Lokken, General Manager, Finance and Technology; B. Reems, Corporate Officer; N. More, Committee Clerk (recorder)
ALSO PRESENT: Councillor B. Burton-Krahn; C. Houghton, Aurora Innovations; J. Miller, Esquimalt
ABSENT: Chief R. Sam, Chief A. Thomas

The meeting was called to order at 1:05 p.m.

1. Approval of Agenda

MOVED by Director Seaton, SECONDED by Director Desjardins,
That the agenda be approved with the addition of a budget update as part of 5.1.
CARRIED

2. Adoption of Minutes

2.1. **16-177** Adoption of the Westside Wastewater Treatment and Resource Recovery Select Committee Minutes of January 8, 2016

MOVED by Director Seaton, SECONDED by Director Desjardins,
That the minutes of the Westside Wastewater Treatment and Resource Recovery Select Committee meeting of January 8, 2016, be adopted.
CARRIED

3. Chair's Remarks

Co-Chair Hamilton remarked briefly on the work ahead.

4. Presentations/Delegations

There were none.

5. Committee Business

5.1. **16-150** Technical and Financial Work Required to Analyze Westside Participants' Dry Weather Flows

C. Houghton introduced the item and J. Miller of the Westside Technical Committee spoke to the report. The Committee discussed the implications for costs, site location and level of treatment. L. Hutcheson provided information on the budget implications.

On the motion, the Committee discussed the details of flows and costs and capacity implications for the project in relation to Eastside flows and inflow and infiltration.

MOVED by Director Desjardins, SECONDED by Director Screech,
That the Westside Select Committee direct staff to retain the services of an engineering consultant to proceed with the analysis of dry weather flows for Westside communities within an amount not to exceed $60,000 (excluding GST) and the overall budget be increased by $40,000.
CARRIED

The Committee discussed the status of inflow and infiltration for the Westside and the Eastside in relation to the project.

MOVED by Mayor Young, SECONDED by Director Desjardins,
That it be recommended to the Core Area Liquid Waste Management Committee: That the Eastside undertake a similar analysis and that the results of the two studies be applied to a single plant and a two-plant option.
CARRIED

5.2. 16-161 Feasibility and Costing Analysis of an Additional Option Set (5c) to Treat Sewage to Tertiary Levels

C. Houghton provided highlights of the report. The Committee discussed funding implications for tertiary treatment options.

MOVED by Director Screech, SECONDED by Director Desjardins,
That the report be received for information.
CARRIED

5.3. 16-166 Public Engagement - Verbal Update

C. Houghton provided an update with the aid of a PowerPoint presentation. Topics included methodology, community meetings, ads in local media, high school competition planning and the survey. The option sets were depicted on large printed copies set up on tripods for the committee members to view. Copies of the information packages available to the public were provided for the committee's information.

The Committee sought clarification on the public response to date and the information being presented, especially the information about land costs.

MOVED by Mayor Young, SECONDED by Director Seaton,
That a whiteboard be put up at each open house identifiying the approximate value of the land for each location picked by the Westside and Eastside.
CARRIED

5.4. 16-167 Eastside Wastewater Treatment and Resource Recovery Select Committee - Verbal Update

There was no report, as the Eastside Select Committee had not met since the last report.

6. Motion with Notice

6.1. 16-163 Motion with Notice: Options for Wastewater Treatment (Director Hamilton)

The Committee discussed the achievements since the motion was first put.

MOVED by Director Desjardins, SECONDED by Director Screech,
That the motion be withdrawn.
CARRIED

7. New Business

There was none.

8. Adjournment

MOVED by Director Screech, SECONDED by Director Seaton,
That the meeting be adjourned at 2:11 p.m.
CARRIED

_____
CHAIR

_____
RECORDER

Westside Public Engagement Summary Document

Introduction

The Westside Select Committee launched the Westside Solutions Project in October of 2014. The Select Committee participants initially were from Colwood, Esquimalt, Langford, View Royal, and Songhees Nation. Esquimalt Nation officially became part of the Committee in the fall of 2015.

The scope of the Select Committee included both technical and public engagement activities including:

- Evaluation of existing technologies
- Evaluation of treatment levels
- Evaluation of resource recovery opportunities
- Site selection criteria
- Site selection
- Public engagement for wastewater and resource recovery options

Throughout the process the Committee has operated in an open and transparent fashion and has endeavored to inform, educate and involve Westside residents and stakeholders in decisions about Westside wastewater treatment and resource recovery.

During Phase I of the project the Westside Select Committee undertook a number of successful initiatives to fulfill their mandate, including open houses, innovation days, roundtables, community events, and online and telephone surveys. The public input around these programs helped guide the information and concepts that have been brought forward into Phase II of the overall project for the Core Area Liquid Waste Management Committee (CALWMC) of the Capital Regional District (CRD).

Phase II has consisted of a more thorough technical evaluation of possible sites and scenarios for wastewater treatment for both Eastside and Westside communities. As of January 13, 2016, the results of the technical work has been part of a concentrated public engagement process that was guided by an approved set of sound principles and clear objectives – recognizing the challenges in delivering a program of this size and complexity in a short period of time.

Over the course of the entire process to date, and through the efforts of municipal staff and consultants, thousands of residents have participated in the public consultation process.

- ✓ Principles:
  - Accessibility
  - Transparency
  - Diversity
  - Expanding Civic Literacy
  - Clear decision-making process
- ✓ Objectives:
  - maximize public engagement on sites, scenarios and costs
  - educate options benefits/drawbacks
  - educate on resource recovery options
  - identify further information requirements
  - engage a wider demographic for wider public feedback
  - identify and address concerns of citizens
  - Solicit constructive input to help guide decision making
  - general public acceptance

Overview

Methodology:

To help reach and engage the maximum number of Westside residents a number of tactics were engaged. These included utilizing earned media and paid advertising done in conjunction with the Eastside, social media, open houses, Westside newsletter and targeted meetings. Materials specific to the Westside along with a more comprehensive guide to the options was made available online, at public events, and at municipal halls and the CRD.

Survey:

The broadest reaching engagement tool was an online open survey targeted at residents across the Core Area. The survey was designed to give citizens the opportunity to examine and evaluate the seven options put forward for treatment of liquid waste and the two possible locations and technologies for treatment of solids. The options were developed by technical consultants, overseen by the Technical Oversight Panel and approved for consultation by the Directors of the CALWMC.

- ✓ Earned media
  - Press releases
  - Editorial meetings
  - Events
- ✓ Social media
  - Twitter
  - Facebook
  - Web sites
- ✓ Paid advertising
  - Black Press
  - Online TC
  - Used Victoria
  - Facebook
  - Postcard drop
- ✓ Targeted meetings and open houses
  - Community/neighbourhood associations
  - Business associations
- ✓ Online feedback
- ✓ Newsletter

Participation	Westside % just Westside communities (n=361)	Westside % to total participation across Core Area	Westside % of population in Core Area
Westside overall	100	27	28
Esquimalt	34	9	5.6
Colwood	26	7	5.7
Langford	24	6	11.9
View Royal	16	4	3.7
Songhees Nation	<1	<1	<1
Esquimalt Nation	0	0	<1

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A total of 361 residents completed the online survey. While there was higher percentage of participation per population by Colwood and Esquimalt residents, and a lower percentage of participation per population by Langford residents, the overall participation by Westside residents is virtually equal to its population.

Liquid Treatment:

Acceptability for liquid treatment - Westside residents	One plant secondary	One plant tertiary	Two plant	Three plant secondary	Three plant tertiary	Four plant	Seven plant
Very acceptable	33	34	23	9	10	5	6
Somewhat acceptable	35	32	30	20	17	18	9
Not very acceptable	14	14	18	29	23	23	16
Not at all acceptable	17	16	26	38	46	50	66
No opinion	2	4	3	4	4	4	3
Very + Somewhat Acceptable	***68***	***66***	***53***	***29***	***27***	***23***	***15***

Please choose 3 options, in no particular order, that are in your view, acceptable options for wastewater treatment.	Pre-change	Post change
Two Plant - Rock Bay &Colwood - Secondary & Tertiary	69	51
One Plant - Rock Bay - Tertiary	70	47
One Plant - Rock Bay - Secondary	62	43
Three Plant Esquimalt Nation, Rock Bay & Colwood - Tertiary	25	20
Three Plant - Esquimalt Nation, Rock Bay & Colwood - Secondary	21	15
Seven Plant - Langford, Colwood, View Royal, Rock Bay, East Saanich, Saanich Core & Esquimalt	13	10
Four Plant - Esquimalt Nation, Rock Bay, Colwood & East Saanich	10	11
No answer/None of the above	9	34

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Solids Treatment:

Preference for solids treatment site	West %
Hartland Landfill	35
Rock Bay	37
No preference	28

Q. Please rank your top three considerations among the following:	Top consideration	Top 1st, 2nd or 3rd consideration
Truck traffic for moving solids	20	42
Ability to be integrated with waste like food scraps, wood and construction waste, yard waste	16	41
Proximity of facilities to residential and business	13	42
Disposal of treated solids	11	45
Ability to generate resources like gas	13	35
Potential emissions	12	34
Piping to move solids	6	28
Ability to integrate into place	8	24

Priorities:

Ranking of your HIGHEST, SECOND HIGHEST and THIRD HIGHEST priorities for this project.	Highest priority	Highest 1st, 2nd or 3rd priority
How the project costs will affect my taxes	45	75
Level of water quality being discharged into the ocean	26	51
Opportunities for water reuse and heat recovery	9	43
Location of the treatment plants	10	36
How the treatment facilities will integrate with my neighbourhood and community	5	24

Completing the project on time	4	30
How construction will impact the quality of life in my neighbourhood	1	12
How truck traffic will impact the quality of life in my neighbourhood	0	12

Open Houses:

Westside hosted four Open Houses for Westside residents and participated in a joint Open House at Songhees Wellness Centre with the Eastside. The Open Houses were not as well attended as the ones hosted last year at this time – however there was a very interested and engaged public that did come to the events. As well – it should be noted that all the Open Houses were well supported by municipal staff and politicians.

Participation	Date	Attendance
Langford	February 10, 2016	~20
Songhees Wellness Centre (Joint with Eastside)	February 11, 2016	~30
Colwood	February 13, 2016	~75
Westshore and Esquimalt Chambers	February 15, 2016	~20
View Royal	February 15, 2016 (AM)	~30
Esquimalt	February 16, 2016	~85

Correspondence

Residents of the Westside who were unable to attend the Open Houses and/or were unwilling to complete a survey were encouraged to email coreareawastewater.ca, staff or consultants to voice their concerns and ideas. As most emails received did not specifically identify were the respondent resided it is difficult to quantify which proportion of those who wrote in were from the Westside. However, it should be noted that themes coming from correspondence coincided with the quantitative data collected through the survey and at Open Houses.

All correspondence will be made available in accordance with *Freedom of Information and Privacy Act.*

Qualitative Themes:

1. Financial

The priority concern of Westside residents is perceived cost escalations for the overall project. This issue was exacerbated by the comparison to the previous plan in spite of it being at a more preliminary stage in the process (the initial estimate for the previous plan was $1.2B in 2007) and the claims put forward by citizen advocates of a less costly solution.

There are also concerns by citizens regarding the cost allocations published with the options and that they were unfair to smaller municipalities. Specifically there is a great deal of anxiety for those on septic and what, if anything, they

should contribute to the overall system. This is a particular concern of Colwood residents as 70% are currently not on the sanitary system – but as there are those on septic in Langford and View Royal there are potential impacts there as well.

The issue of protecting the grants was raised occasionally – however people who participated in the events were more concerned about getting the scale of the project to the right size and then convincing senior levels of government to support that plan financially.

2. Environmental

In spite of the financial concerns there is still a great degree of concern for the quality of discharge into the environment. Concerns mainly centre most notably around the discharge of pharmaceuticals and micro-plastics, their impact on wildlife and the aquatic eco-system, and potential impacts on human health. Regardless of costs – there are a substantial number of residents who would be willing to pay more to do what they see as the right thing and protect the environment.

There is also a substantial interest in the opportunities for recovery of both heat and water. Particular interest to residents is not only the potential for both benefitting the environment, but also creating a revenue stream to offset costs. Of recovery potential – water reuse was the most mentioned by participants.

3. Community impacts

In July of 2015 Westside Solutions conducted a public education and survey on proposed sites for wastewater treatment on the westside. From that consultation sites were narrowed into the six (6) that were part of the current initiative. As residents had already weighed in on site selection – there was very little negative feedback on Westside sites.

As well – because of the previous technical and public engagement work done on the Westside there is an interest by some members in the community to pursue a “Westside Solutions” that would have a single plant that would treat wastewater generated on the westside, and potentially all wastewater currently being discharged out the McCaulay outfall.

In earlier engagement events, the Westside has put an emphasis on community integration. While residents are always concerned that there will be a negative impact – there is a much higher level of comfort that any facility can be a positive addition to a neighbourhood, and not a negative. However, concern over impacts of truck traffic and disruption during construction must be acknowledged and minimized during construction and in operation.

4. Other

Other issues that were raised with some frequency at events include:

- confusion on why Rock Bay is in every option
- no analysis of impact on business taxes
- no analysis of impact on tourism if the stalemate continues
- frustration over conflicting information
- frustration of the length of time it is taking to make a decision

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Conclusion

The Westside Select Committee's engagement strategy for the current phase of the Core Area project was built on a number of previous successful public engagement initiatives. As well as collaborating with the Eastside on the survey and advertising, over the course of the past few weeks the participating communities promoted activities and materials on their websites, at municipal halls and through social media; hosted five (5) Open Houses (including a joint Open House with the Eastside); communicated directly with community associations and citizens in person and through correspondence; and participated in a breakfast meeting with members of the Esquimalt and Westshore Chambers of Commerce.

Key themes that emerged include:

- concerns over costs and cost allocations;
- how application of costs will affect people on septic systems;
- concerns around discharge quality and having a treatment level that deals with substances such as pharmaceuticals and micro-plastics; and
- opportunities for water re-use and energy extraction.

There was very little negative feedback from participants on the proposed sites either in this round of engagement, or in the earlier SiteSpeak online survey that appears to speak to an understanding that facilities can be integrated into communities successfully. As well there is some interest, primarily from members of the business community, to further explore a "Westside Solution" with a single facility to treat wastewater generated by participating west-side communities as per the Engineering consultants report delivered to the Select Committee in November, 2015.

Public sessions were fairly well attended, had a cross section of residents – including many new faces - and were very respectful. It was clear that people who come to the public events came to learn more about the issue so as to contribute positively to the solution. It noted and appreciated by many citizens that the Westside public events were very well supported by municipal staff and politicians.

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Westside Wastewater Treatment Plant Siting Analysis – Phase 2 Report

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carollo
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URBAN systems

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Victoria, BC, V8W 1G2

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October 2015

Project: 1692.0034.08

Table of Contents

1.0 Report Summary and Study Overview 1
1.1 Key Findings from Phase 2 2
1.1.1 Representative Design Approach 2
1.1.2 Solids Management and Recovery 2
1.1.3 Water Reuse and Recovery Systems 3
1.1.4 Life Cycle Costing Considerations 4
1.1.5 Site Findings 5
2.0 Design Criteria 6
2.1 Flows 6
2.2 Influent Wastewater Quality 8
2.3 Liquid Effluent Criteria 8
2.3.1 Introduction 8
2.3.2 Ammonia and Toxicity 11
2.3.3 Primary Liquid Effluent 11
2.3.4 Secondary Liquid Effluent plus Disinfection 11
2.3.5 Enhanced Tertiary Liquid Effluent 12
2.3.6 Emerging Contaminants 12
2.3.7 Liquid Treatment Summary 13
3.0 Options for Management of Residual Solids 14
4.0 Resource Recovery Opportunities Characterization Methodology 16
4.1 Introduction 16
4.2 Water Reuse 17
4.2.1 Water Reuse Target Market Summary 17
4.2.2 Summary of Water Reuse across the Westside 19
4.2.3 Water Reuse Infrastructure Systems 20
5.0 Technology Needs and Considerations 21
5.1 Representative Sites and Characteristics 21
5.2 Liquid Treatment Options and Representative Designs 21
5.3 Solids Treatment Options and Representative Designs 26
5.4 Energy Recovery Options and Representative Designs 29
6.0 Costing Factors 31
6.1 Introduction 31

DRAFT

6.2 Capital Cost Breakdown 31
6.3 Pump Stations 32
6.4 Piping 33
6.5 Outfalls 34
6.6 Methodology to Provide WWTP Cost Estimates 35
6.7 Revenue Sources 35
6.8 Operating and Life Cycle Cost Assumptions 36
7.0 Description of Option Sets 38
7.1 Introduction 38
7.2 Site Prioritization 39
7.3 Option 4A (Revised) – Four Plants 39
7.3.1 Description 39
7.3.2 Option Set Components 41
7.3.3 Cost Estimates 44
7.3.4 Relevant Considerations 46
7.4 Option 1B 46
7.4.1 Description 46
7.4.2 Option Set Components 48
7.4.3 Cost Estimates 48
7.4.4 Relevant Considerations 50
7.5 Option 2C Revised – Two Plants 51
7.5.1 Description 51
7.5.2 Components 51
7.5.3 Cost Estimates 53
7.5.4 Relevant Considerations 55

Appendices

Appendix A Derivation of 2045 Flows
Appendix B 2014 Influent Quality Data
Appendix C Ammonia Toxicity Memorandum
Appendix D Options for Management of Residuals Solids Memorandum
Appendix E Pump Station Cost Curves
Appendix F Updated Site Prioritization

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1.0 Report Summary and Study Overview

The Westside Select Committee terms of reference guided recent analysis for potential distributed and sub-regional treatment systems. Led by Westside Technical Staff, recent analysis builds from sites and option set development in 2015 to provide advanced feasibility reporting for three options: 1-plant, 2-plant and 4-plant solutions. Phase II objectives include:

- Conduct technical analysis using current public input and wastewater data
- Study wastewater treatment technologies including liquids and solids treatment
- Explore resource recovery pathways including water reclamation and solids-energy recovery
- Assess the regulations and identify varying levels of service for further consideration by the Committee
- Include conceptual costing as well as preliminary revenue projections for resource recovery
- Reprioritize the Westside sites for further consideration by Westside Technical Staff and the Select Committee

Interim findings were presented to the Westside Select Committee on September 29, 2015 for further discussion and direction on each of the study objectives. The interim presentation provided for a progressive discussion regarding flow conditions, resource recovery methodologies, solids recovery strategies, regulatory considerations and treatment technologies. Key takeaways from September 29 included direction to conduct analysis on the integrated flow scenario, whereby Westside option sets incorporate flows from west Saanich and west Victoria, and, direction by the Committee to study and report on highest-potential solids recovery approaches, given factors such as distributed, centralized and integration with municipal yard and kitchen waste.

This report includes six technical chapters which cover design criteria, resource recovery, solids management and review of each option set (1-plant, 2-plant and 4-plant). Section 1.1 isolates key findings for further discussion and direction and provides a strong basis for subsequent technical and life-cycle analysis. Opportunities to achieve similar or higher levels of service at lower costs may be possible following Core Area feasibility analysis by way of finding resource recovery synergies, reducing infrastructure needs and or minimizing redundant facilities.

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1.1 Key Findings from Phase 2

1.1.1 Representative Design Approach

- Representative design includes provisional selection of technologies to develop order of magnitude costs. Technologies are selected to suit the project criteria but should not be considered the solution as private sector responses are critical to confirming the actual facilities built.

1.1.2 Solids Management and Recovery

- Wastewater solids are comprised of many materials and provide for a diverse range of recovery possibilities, such as nutrients, energy, bioplastics, biofuels and carbon dioxide (among others). Converting wastewater solids into valued resources requires customers, risk, investments and often, tenured financial partnerships. There are myriad ways to recover resources from wastewater solids which extends the resources required for broad studies. Instead, wastewater utilities often canvass the private sector for financially-backed solutions to meet a list of explicit objectives as stated by the Owner. Proponents detail how their solution addresses the Owner's requirements and responses include confirmation of end-uses, customers, risk management, costs and revenues. While Core Area analysis will further explore solids management and recovery, recent Westside analysis explored the potential for integration of solids recovery with municipal solid waste such as kitchen scraps and yard/garden waste.
- Gasification of municipal sludge (e.g. cake) with municipal yard and kitchen waste appears to provide a similar long-term cost and value proposition as anaerobic digestion of wastewater solids (only). However, gasification of sludge without yard waste does struggles to achieve energy neutrality. At the time of this report, technical analysis continues regarding the storage, handling, trucking, revenue potential and residual solids management methods (e.g. creating new markets for biochar, among others). Carrying the cost for either gasification or anaerobic digestion in representative design cost estimates does not appear to significantly affect the overall cost estimating at this time. As noted above, results from Core Area analysis may further suggest that that approaching the private sector with a Request for Statements of Interest (RFSI) for either technology would maximize the efficiency of the market.
- Five conditions encourage a centralized approach to energy-solids recovery:
  - Multiple small plants are overall less efficient than one larger facility (important in order to optimize recovery and revenues)
  - Multiple small plants do not negate the need for a larger solids processing facility at one location (to account for the 0-4xADWF flows), meaning that additional plants may be redundant and costly
  - Multiple small plants will require redundant heat/energy delivery infrastructure or gas-upgrading systems which have capital and operating costs;

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- Trucking patterns for one facility would be relatively simple compared to the ins-outs of multiple smaller facilities
- Most sites throughout the Westside are not large enough to host both liquids and solids treatment, in particular when three or four times the feedstocks are temporarily stored for gasification

- Resource recovery activities at Hartland Landfill should be explored further to define the benefits of integration with municipal yard and kitchen waste as well as to uncover the synergies of linking technologies with resource recovery efforts (e.g. methane gas capture) already underway at the Landfill. A key issue in future phases will be to identify the future market for all residual solids downstream of the preferred recovery technology to avoid the cost of landfilling byproducts until suitable markets are confirmed.

1.1.3 Water Reuse and Recovery Systems

- Core Area water customers receive service from CRD Water with adequate supply from Sooke Reservoir. Treated effluent reuse could help to mitigate future potable water supply issues caused by climate change or population growth (among other drivers).
- Target markets for water reclamation typically include clusters of high-water use demands such as parks, green spaces, aquifer recharge and future growth centers (based on treated effluent used for toilet flushing). Next steps in water reuse should look to identify new customers (i.e. new markets) for water reuse to grow water revenues to offset capital + operating costs.
- Growth and development as well as lands in and around the North Colwood site node present the highest water reuse possibilities, including, the potential for aquifer recharge throughout the year. Further feasibility analysis is being conducted by Colwood to determine the reliable potential for aquifer recharge and those effects on infrastructure systems. Two reuse systems in Colwood-Langford and Esquimalt (with some coverage of View Royal lands) provides for relatively efficient strategy to provide for water reuse via clustered infrastructure systems.
- Phasing-in water reclamation systems (e.g. purple pipe) over time helps to align infrastructure investments with the timing of actual water needs. With a potential system built in Colwood, Westside communities could consider expanding water reclamation systems to suit potable water supply challenges over time in addition to aquifer recharge.
- Treatment plants are designed to renovate wastewater for re-entry to the environment. Recent Westside analysis suggests that a sustainable water recovery strategy can include:
  - reclamation for irrigation of up to 400 hectares,
  - aquifer recharge for most flows in Colwood and perhaps more from treated flows Langford over time,

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- indirect potable reuse for toilet flushing in growth centers (in addition to any other grey-water reuse strategies that may also be considered), and
- the potential to treat almost all flows in excess of the regulations by way of tertiary treatment via membranes (part) and disinfection (all).

- Recent information points to increased aquifer recharge which should also be explored further in Phase 2: Core Area. Life cycle costing can inform the desired level of service for water recovery.

1.1.4 Life Cycle Costing Considerations

- Costing models are based on a construction schedule that begins in 2018 with commissioning in 2023. Preliminary cash flow analysis is based on system capacities to suit the 2030 flow scenario over a 7-year analysis period. Longer-term analysis is needed for decision making but cannot be completed until 2045 capital projects have been considered and more accurate revenue projections been developed. Preliminary analysis still provides important insights into option set financial feasibility.
- Multiple, smaller-scale facilities reduce beneficial economies of scale for construction, reduce efficiencies, increase the number of pumps and length of pipes, and increase overall site improvement costs which create higher life-cycle costs for the 4-plant option. The 1-plant option provides greater efficiencies, increases economies of scale, reduces the extent of new infrastructure and demonstrates the lowest costs.
- Revenues for water reuse are set to be phased in as customers confirm partnerships with CRD or the municipality for service. Revenues from water re-use will be challenged to cover the operating and capital financing costs of their delivery systems.
- Revenues for heat recovery are largely confined to offsetting the costs of processing heating and energy needs at the plant(s). Finding a reliable market for biochar or biosolids will significantly affect the preliminary life-cycle feasibility of either technology. Preliminary analysis assumes that a market for a biochar must be developed at or less than the cost of landfilling. Revenues from carbon offsets for either anaerobic or gasification are still under development and therefore have not yet been accounted for in costing analysis.
- While the 1-plant option provides for the lowest life cycle costs up to 2030, the 2-plant option is appreciably less costly than the 4-plant option. The qualitative benefits of any option help to balance the financial weighting of the analysis with respect to other environmental, social and economic factors.

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Option Sets Summary: Criteria Differentiators

A fulsome characterization of option sets against the Charter and technical criteria will be completed as Part of Phase 2 for the Core Area. Consider this preliminary table a snapshot into the characterization of the three option sets.

Criteria	
Leverage infrastructure and minimize operating costs	• The 1-plant option requires least new infrastructure and offers lowest operating costs; the 2-plant option is notably less expensive than the 4-plant option
Long-term revenues and resource demands	• The 2-plant option best meets the supply-demand, and achieves high efficiencies for water and solids recovery
Include other waste streams	• All options consider integration with municipal-garden waste at the Esquimalt Nation site
Includes capacity phasing	• The 1-plant option allows for the most efficient capacity phasing however 2-plant and 4-plant options allow for capacity increases adjacent where growth is to occur
Carbon, energy and footprint (physical area)	• The 1-plant option demonstrates the greatest energy and carbon footprint; the 4-plant option involves smaller facilities throughout
Positive and safe public interaction	• Smaller facilities of the 2-plant and 4-plant options provide a higher level of service and allow for enhanced massing for neighborhood fit; all facilities should be designed for safe interaction and to suit the local context
Extent of water quality in excess of regulations	• Each option set provides for enhanced tertiary treatment to varying levels: 4-plant includes ~40% to tertiary levels; 2-plant includes ~15% to tertiary levels; 1-plant to ~5% of tertiary levels

1.1.5 Site Findings

- Langford Site 2a at Meaford, Colwood Site 11 'Park and Ride', Colwood Site 14 'Juan de Fuca Recreation Centre', Esquimalt Nation Site 15, Bullen Park Site 17 and View Royal Site 16 'Burnside' are preferred technical sites because they present advantages over other sites due to infrastructure and sizing considerations. Site 17 demonstrates low overall feasibility against the other five sites due to its size however synergies with Eastside facilities may reduce the footprint of any plant in Esquimalt. Further analysis in Phase 2 will explore this possibility in greater detail.
- Esquimalt Nation site poses the greatest feasibility for both liquids and solids treatment for the Westside (if sub-regional solids treatment is preferred).
- Gravel Storage Site 4 was not considered for 2030 design scenarios but can offer benefits to future sanitary system expansions as Westside communities continue to grow. Further consideration should be given to sites near Royal Bay for the 2045 scenario and beyond.

2.0 Design Criteria

2.1 Flows

All flows generated from Westside communities are currently discharged through the Macaulay Point Outfall. Partial flows from west Saanich and west Victoria also flow to Macaulay Point Outfall which triggers the need for Westside Solutions to consider treatment capacities for six of the seven municipalities in the Core Area.

Two recent milestones affect the design flows for this assignment:

- Direction from the Westside Select Committee to include the flows from west Saanich and west Victoria in the analysis
- Adoption by the Core Area Committee for 2030 flows for each municipality, which differ in the case of west Saanich and west Victoria from the flows initially provided at the start of this project

The inconsistency in flow estimates can be reconciled as part of Phase 2 feasibility and life-cycle analysis for the Core Area. For example, the cumulative flow estimates for the Core Area are relatively unchanged from previous estimates, however their distribution across west Saanich and west Victoria is what appears to have changed. Each of these flow scenarios in terms of average dry weather flows (ADWF) is summarized below in Table 2.1 Flow estimates to 2045 are provided as a provisional scenario for developing long-term site size requirements.

Table 2.1: 2030 and 2045 Design Flows

Location	Current	2030			2045 (2)		
	ADWF (MLD)	ADWF (MLD)	2 x ADWF (MLD)	4 x ADWF (MLD)	ADWF (MLD)	2 x ADWF (MLD)	4 x ADWF (MLD)
Langford	5.2	14.1	28.2	56.4	23.1	46.2	92.4
Colwood	2.2	4.7	9.4	18.8	13.1	26.2	52.4
View Royal	1.5	3.5	7.0	14.0	7.9	15.8	31.6
Esquimalt First Nation	0.1	0.7	1.4	2.8	0.4 (1)	0.8	1.6
Songhees First Nation	0.5	0.7	1.4	2.8	0.5 (1)	1.0	2.0
Esquimalt	4.9	6.2	12.4	24.8	7.9	15.8	31.6
West Victoria	5.4 (3)	1.0	2.0	4.0	6.8	13.6	27.2
West Saanich	16.4 (3)	16.5	33.0	66.0	32.9	65.8	131.6
Total	**36.2**	**47.4**	**94.8**	**189.6**	**92.6**	**185.2**	**370.4**

(1) Flows are not actually expected to decrease. This discrepancy is due to different sources of data which is not significant enough to affect analysis at this time.

(2) For derivation refer to Appendix A.

(3) Flows are not expected to decrease, this discrepancy is due to different sources of data.

Wastewater flows fluctuate throughout the day and throughout the year. As such, the Ministry of Environment and the LWMP have established certain treatment levels for different flows. The regulations, at minimum, require treatment facilities to treat 0 to 2 x ADWF to a secondary level. Flows from 2 to 4 x ADWF must be treated to a primary level and then can be combined with the secondary effluent for release through the Macaulay outfall. Flows greater than 4 x ADWF must be screened and then can be combined with the rest of the flows for discharge out the outfall. Table 2.2 summarizes the primary and secondary flows for the various option sets that were determined in the Phase 1 Report.

Table 2.2: Westside Design Treatment Flows

Option		2030 (MLD)		2045 (MLD)	
		Primary *	Secondary 2 x ADWF	Primary *	Secondary 2 x ADWF
1A	Esquimalt Village	189.6	94.8	370.4	185.2
1B	Esquimalt Nation	189.6	94.8	370.4	185.2
2A	Esquimalt Village	146.0	51.2	282.2	97.0
	View Royal	43.6	43.6	88.2	88.2
2B	Esquimalt Nation	47.4	47.4	90.0	90.0
	Esquimalt Village	142.2	47.4	280.4	95.2
2C	Colwood North	37.6	37.6	72.4	72.4
	Esquimalt Village	152.0	57.2	298.0	112.8
2D	Langford/Colwood	28.2	28.2	46.2	46.2
	Esquimalt Village	161.4	66.6	324.2	139.0
2E	Colwood South	37.6	37.6	72.4	72.4
	Esquimalt Village	152.0	57.2	298.0	112.8
4A	Langford/Colwood	28.2	28.2	46.2	46.2
	Colwood North	9.4	9.4	26.2	26.2
	View Royal	7.0	7.0	15.8	15.8
	Esquimalt Village	145.0	50.2	282.2	97.0
4B	Langford/Colwood	28.2	28.2	46.2	46.2
	Colwood North	9.4	9.4	26.2	26.2
	Esquimalt Nation	9.8	9.8	17.6	17.6
	Esquimalt Village	142.2	47.4	280.4	95.2

* Since the Macaulay outfall has no room for primary treatment facilities it is assumed the flows resulting from I/I (i.e., 2 to 4 x ADWF) will be treated as close to the Macaulay outfall as possible including any of the sites identified in the option sets.

2.2 Influent Wastewater Quality

The CRD collects 24 hour composite samples and tests the influent effluent for numerous parameters, as summarized in Appendix B. For convenience, Table 2.3 provides the most relevant influent sewage concentration data from 2014. This data is consistent with historical reports prepared for the Core Area LWMP, the latest being the January 23, 2013 Technical Memo "Indicative/Detailed Design/Wastewater Characterization and Design Loads". Table 2.3 also includes a summary of the 2030 maximum month loads, which are used to size the biological components of the plants. To account for flow and load variability, design factors account for the maximum load that the facility will experience in any 30 consecutive days which typically represents the 92 percentile of the data set analyzed for 2014. The proposed flow-load variability factor is set at 1.25 times the average loading.

Table 2.3 – Average Influent Quality Concentrations and Maximum Month Loads for 2030 Flows (1)

Parameter	Macaulay	
	Average (mg/L)	Max Month (kg/d)
Carbonaceous BOD_5	226	17,010
Total BOD_5	275	20,700
Total Suspended Solids	270	20,320
Chemical Oxygen Demand (COD)	632	47,560
Ammonia	42	3,160
Alkalinity	217	16,330
Total Kjeldal Nitrogen	54	4,060

(1) Note influent pH typically ranges from 7.3 to 7.7

2.3 Liquid Effluent Criteria

2.3.1 Introduction

Two regulations currently govern effluent discharges in BC – The Federal Wastewater Systems Effluent Regulation (WSER) and the BC Municipal Wastewater Regulation (MWR). The WSER deals only with discharges to surface waters and has marginally different criteria than the MWR. The MWR also defines indirect potable reuse applications which we understand to be an acceptable level of treatment for aquifer

recharge based on work currently being undertaken by City of Colwood. Both provincial and federal governments intend to harmonize the regulations which will affect the effluent criteria.

There is a strong sentiment within Westside to reuse reclaimed water where feasible. To facilitate this sentiment, it is proposed that effluent destined for reuse meet the *Indirect Potable Reuse Category* for reclaimed water as defined in the BC Municipal Wastewater Regulation. This level of quality is more stringent than the requirements of the *Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing* and the California *Title 22 Regulation* and would permit all reclaimed uses except Direct Potable Reuse. Alternatively if reuse was limited to irrigation on restricted public access sites only, then the standard of effluent quality could be reduced to *Moderate Exposure Potential Category* which is basically equivalent to secondary treatment as defined in Section 2.3.4. Also, secondary treatment is suitable for discharge to most marine environments but the outfall depth must be positioned at 30 m depth or more which effectively rules out any discharge to the inner harbour.

Stream augmentation is cited in the regulations whereby treatment must be greater than secondary (i.e. must be tertiary) with effluent criteria to suit the receiving environment. However, MWR requires an alternate disposal or storage for reclaimed water (stream augmentation or reuse) as follows:

"Alternate Disposal or Storage

114 (1) A person must not provide or use reclaimed water unless all of the following requirements are met:

(a) There is an alternate method of disposing of the reclaimed water that meets the requirements of this regulation or is authorized by a director.

(b) Treatment processes are built with the minimum number of components specified in the applicable reliability category for the alternate method of disposal, as described in section 35 *[general component and reliability requirements]*;

(c) If there is no immediate means of conveyance of the municipal effluent or reclaimed water to the alternate disposal method, the wastewater facility has 48 hours' emergency storage outside the treatment system.

(2) Despite subsection (1) (a), a director may waive the requirement for an alternate method of disposal for reclaimed water that is not generated from residential development or institutional settings if an alternate method is not required to protect public health or the receiving environment and the wastewater facility has

(a) 48 hours' emergency storage outside the treatment system and the ability to shut down generation of municipal wastewater within 24 hours, or

(b) A dedicated storage system that is designed to accommodate:

i. At least 20 days of design average daily municipal effluent flow at any time,

ii. The maximum anticipated volume of surplus reclaimed water, and

iii. Storm or snowmelt events with a less than 5-year return period.

(3) Despite subsections (1) (a) and (2), if reclaimed water is discharged from a wastewater facility directly into a wetland, a director may waive the requirement for an alternate method of disposal if an alternate method of disposal is not required to protect public health or the receiving environment.

Failure to meet municipal effluent quality requirements

115 (1) If municipal effluent does not meet municipal effluent quality requirements, a provider of reclaimed water must ensure that the municipal effluent is diverted immediately to

(a) An alternate method of disposal, as provided for in section 114 (1) (a) *[alternate disposal or storage]*, or

(b) Emergency storage or a dedicated storage system, as described in section 115 (1) (c) or (2),

Until municipal effluent quality requirements are met and reclaimed water uses may continue.**"**

These regulatory requirements strongly suggest that access to an alternate ocean outfall is required if stream augmentation is pursued.

A discharge to a wetland may be possible without requiring an alternate method of disposal, but this would require a specific environmental impact study and a waiver from the Director of the Ministry of Environment. A discharge to a wetland has not been considered in our analyses at this time however may be considered at the direction of the Committee.

The MWR and previous liquid waste management plan amendments further regulate the quality of effluent with respect to wet weather flows, as tabulated below:

Effluent Criteria	Macaulay Outfall
Secondary	0 to 2 x ADWF
Primary	2 to 4 x ADWF
Screening (6 mm Ø)	> 4 x ADWF

ADWF = Average Dry Weather Flow

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2.3.2 Ammonia and Toxicity

Ammonia and toxicity in wastewater effluent is a complicated topic which is discussed in detail in Appendix C. In summary, the Federal and BC governments have criteria that regulate the amount of ammonia in the effluent, in particular to the un-ionized ammonia concentrations. Our research and analysis concludes (Appendix C) that it is not necessary to reduce ammonia in the wastewater treatment plants to comply with both the federal and provincial regulations before discharging out the Clover and Macaulay outfalls. Enhanced treatment would be required however for any option that contemplates stream augmentation and/or wetland discharges.

2.3.3 Primary Liquid Effluent

The MWR requires primary effluent to meet:

$CBOD_5 \leq 130$ mg/L

TSS $\leq$ 130 mg/L

2.3.4 Secondary Liquid Effluent plus Disinfection

Ocean outfall effluent criteria should best address both the federal and provincial regulations, as proposed in the table below, and based on the requirement of outfall diffusers at a minimum depth of 30 m below the surface.

Parameter	Units	Average Concentration	Maximum Concentration
$CBOD_5$	mg/L	$\leq$ 25	$\leq$ 45
TSS	mg/L	$\leq$ 25	$\leq$ 45
Un-ionized Ammonia in Effluent	mg/L	NA	$\leq$ 1.25 (1)
Un-Ionized Ammonia at End of Dilution Zone	mg/L	NA	$\leq$ 0.016 (1)
Total Residual Chlorine	mg/L	NA	$\leq$ 0.02
Faecal Coliforms	cfu/100 mL	NA	$\leq$ 200 (2)

(1) Only one of these parameters need to be met.

(2) It is our understanding that disinfection will be required. This is the standard concentration for discharge to recreational waters.

The frequency of testing and averaging period is dependent on flow rates as shown below for continuous flow systems.

Flow Range	Testing Frequency	Averaging Period
≤ 2,500 m³/d	Monthly	Quarterly
> 2,500 but ≤ 17,500 m³/d	Every 2 Weeks	Quarterly
> 17,500 but ≤ 50,000 m³/d	Weekly	Monthly
> 50,000 m³/d	3 Days/Week	Monthly

2.3.5 *Enhanced Tertiary Liquid Effluent*

Secondary liquid effluent treatment with added disinfection is considered the base case level of service. However, in order to provide the ability for reuse we have identified enhanced tertiary treatment targets to satisfy most reclaimed water applications in the *Indirect Potable Water Reuse* category. This approach allows for aquifer recharge which is being contemplated in Colwood, and would require the following effluent criteria as defined in the Municipal Wastewater Regulation, as noted below:

Parameter	Indirect Potable Reuse	Monitoring Requirements
pH	6.5 to 9	Site Specific
$CBOD_5$	≤ 5 mg/L	Weekly
TSS	≤ 5 mg/L	Weekly
Turbidity	Maximum 1 NTU	Continuous Monitoring
Faecal Coliform (1)	Median <1 cfu/100 mL	Daily

(1) Median is based on the last 5 results.

2.3.6 *Emerging Contaminants*

There are in the order of 1,700 pharmaceuticals and personal care products (PPCPs) in wastewater, with some contaminants posing greater concern than others. At the present time, there are no published standards in Canada for the discharge of emerging contaminants to marine waters. Data has been collected by the CRD to estimate removal efficiencies of key contaminants at their Ganges membrane bioreactor (MBR) plant and Saanich Peninsula secondary plant (conventional activated sludge). Preliminary results show that approximately 80% of the contaminants (211 of 266) had removal efficiencies > 90% for the MBR plant. Approximately 45% of the monitored contaminants (145 of 324) had removal efficiencies > 90% for the activated sludge plant.

Increasing treatment levels beyond the regulations can be seen as an enhanced level of service. In order to allow for ongoing discussion and debate amongst the Committee(s) and the public, it is important that option sets provide for a range of treated effluent quality levels. Whether secondary and disinfection, or MBR, many emerging contaminants will be reduced during treatment significantly. While we have not

included specific technologies to further reduce emerging contaminants, explicit criteria can be added as a required outcome for any proposals by the private sector.

Also note that treatment processes and technologies can be assessed further when the Ministry of Environment considers enhanced regulations for emerging contaminants. The CRD may also elect to expand their existing emerging contaminants monitoring program to research any new facilities in the Core Area in the early years of operation and to assess the level of reduction of emerging contaminants already occurring in the effluent. Space could be left in the plant(s) if it was desired for emerging contaminant treatment in the future once the specific effluent criteria are known.

2.3.7 Liquid Treatment Summary

While water reuse markets will be explored, any excess treated effluent has been designed to meet secondary treatment plus disinfection standards for all ocean discharges up to 2 x ADWF. Flows greater 2xADWF but less than 4xADWF will undergo primary treatment at the plant closest to the Macaulay Outfall. Water for reclaimed purposes will be treated to Indirect Potable Reuse Tertiary Standards given the water quality requirements for anticipated uses.

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3.0 Options for Management of Residual Solids

The options available to manage residual solids along with the advantages and disadvantages of all legal methods of reusing or disposing of biosolids acceptable to the BC Ministry of Environment are fully detailed in a memorandum included in Appendix D. Section 3.0 provides for a summary of the memorandum.

Westside communities are currently assessing options for the management of local sanitary sewage. Research to date summarizes the management approaches available for the residual solids as well as an inventory of acceptable methods of reuse and disposal including their regulatory considerations and treatment approaches. There are a variety of different words which can be used for the residual solids which are produced during municipal wastewater treatment. For the purpose of this memorandum, the use of the word “sludge” will relate to the untreated residual solids which are produced during wastewater treatment and the use of the word “biosolids” will relate to sludge which has undergone treatment and meets the regulatory standards outlined in the BC Organic Matter Recycling Regulation (OMRR).

The CRD does not want biosolids or sludge going into the Hartland Landfill. It is our understanding that the Saainch Peninsula plant is discharging their solids into the landfill only until this process implements a solids treatment plant that they can utilize. Markets for solids byproducts must be developed as part of any Core Area solution.

Application to land is long-practiced and well documented, but often receives significant opposition, despite well-known benefits to plant growth and soil conditions. Treatment requirements can be costly, with little to no return on the capital and operational costs through sales opportunities. No authorisation is needed from the BC Ministry of Environment, but there is the need to register biosolids activities under the OMRR, e.g. a compost operation or a Land Application Plan. A policy statement was passed by the CRD Board indicating the desire not to apply biosolids to land.

Incineration and gasification are two available options to convert organics into energy. Globally, the common approach to using sludge as an energy source is an incineration-type process. However, incineration results in high capital and operational costs, which could include the need to dry the sludge before combustion in order to increase process efficiency. There are risks associated with the gasification process as well, as this approach is relatively new for sludge/biosolids management and, as such, there is little information on the long-term operation. Moisture content and calorific value are both important when considering process efficiency. There is a risk with respect to the authorisation requirements, until incineration and gasification of sludge/biosolids becomes established in BC. From the information available, it is expected that no authorisation is needed from the BC Ministry of Environment for the development of a combustion process for sludge/biosolids. Depending on the management approach for the waste solids and any wastewater which may be produced as a result of combustion, it is possible that

no further authorisations are needed from the BC Ministry of Environment, with the only authorisation being a permit for air emissions. There is also a risk with respect to the requirement of a BC environmental assessment, although this may be avoided, depending on interpretations regarding the material for combustion and wording in the approved CRD Liquid Waste Management Plan. Clarification on these interpretations would be required from the BC Environmental Assessment Office.

In terms of the criteria to use for treatment technologies and management of solids, the following aspects have been used:

- The CRD has a policy that does not allow the land application of biosolids within its boundaries.
- The CRD strongly discourages solids being discharged to their landfill.
- Where it is economical, implement resource recovery.
- Consider the potential to integrate other waste streams.

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4.0 Resource Recovery Opportunities Characterization Methodology

4.1 Introduction

Recovery of resources available in both the liquids and solids is highly dependent on the market conditions, energy prices, carbon and renewable credit markets and the overall cost for the projects. The following list identifies the resources present in the sewage and the sewage solids that will be considered as resources for recovery. Water recycling through purple pipe, recharge, indirect potable reuse, direct potable reuse and other reclamation alternatives are discussed later in this section.

Liquid

1. Thermal: Thermal energy recovery from sensible heat contained in the sewage in the form of hotter temperature (then ambient/winter condition) and cooler temperature (than ambient/summer condition).
2. Mechanical: Mechanical energy recovery from the transformation of potential energy into kinetic energy. This type of energy recovery is possible when water has a natural drop in elevation that can be harnessed and converted into energy.

Solids

1. Nutrients: Ammonia and Phosphorus recovery from the sewage solids.
2. Energy: The thermal conversion of the carbon contained in the sewage solids.
3. Bio plastics: The conversion or refinement of bioplastics from the sewage solids.
4. Organic Soil Amendment: The use of treated sewage solids to offset the use of commercial fertilizers
5. BioMethane: The biological conversion of carbon in the sewage solids to a usable gas through anaerobic digestion
6. Biofuels: The conversion of the sewage solids into usable vehicle fuels.
7. Carbon Dioxide: The capture, purification and compression of combustion and digestion by products to produce a commercial pure gas.

In addition to the ones identified, there are research level efforts to try and recover heavy and precious metals, and other high value organics. Since these are at a research level only at this time, they are not being considered for the evaluation.

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As the resource recovery must compete with the products they are offsetting, it is extremely hard for this effort to adequately evaluate the revenue source that could be derived from implementing any of these approaches. In other words, market commodity prices are dynamic and cash flow analysis is subject to multiple caveats and risks. As such we propose the CRD work with the private sector to distribute risk appropriately in an effort to identify and fund the recovery of the resources available in the sewage. A common and well-regarded approach is to issue a Request for Statements of Interest (RFSI). This document would be issued to the general private market to propose on resource recovery opportunities with their technologies and provide the CRD with an all-in cost to install the technology, receive (solids or liquid) the product, process it and provide a higher value material as well as the recovered materials extracted from the product.

The CRD can then evaluate these proposals and rank them based on their:

1. Alignment with CRD Goals and Objectives
2. Environmental Benefit
3. Cost
4. Risk to CRD and member Cities.

Through this process, the CRD will make sure that the market is driving the recovery of resources and how much investment the CRD is willing to introduce to promote the recovery of resources that with today's utility costs may require longer term investments.

4.2 Water Reuse

4.2.1 Water Reuse Target Market Summary

When treated to a high enough standard, treated effluent can be reused instead of potable water. A target market framework helps to navigate the multiple possibilities for reuse to select applications that have greatest potential. Water recovery target markets should deliver on the following key themes:

- Demonstrate long-term demands and revenues
- Support community amenities
- Reduce the scope of infrastructure needs
- Demonstrate synergy with conventional public utility services

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For Westside Solutions, supply-demands studies centered on water applications that require less than potable-quality water in addition to water demands situated in clusters which helps to reduce the cost of additional pipes to convey flows. Ideally, treated effluent on the Westside should include:

- large tracts of irrigable land such as parks and green spaces;
- significant industrial water reuse such as greenhouses or manufacturing operations;
- growth centers where new developments can be encouraged to include additional plumbing systems for toilet flushing or outdoor irrigation; and
- environmental augmentation.

These types of customers typically present the lowest capital cost for system set up (so long as they are located near treatment facilities), provide long-term demands and revenues, support community amenities such as parks and growth and generally conforms to the type of water services provided today.

Spatial analysis based on land use uncovers target markets and illustrate clusters of high demand. Each land parcel is coded based on its land use through the BC Assessment Authority which provides a proxy for water use potential i.e. parks, institutional-vacant, dairy farm, etc. At a conceptual level, these land use codes provide a basis for the potential for land application in Westside communities. Further, local Official Community Plans, land use plans and regional growth centers illustrate where focused, dense development may occur over the next 20+ years. The cost of retrofitting (re-plumbing) existing buildings to allow for treated effluent reuse is prohibitive; it is more feasible to include non-potable water lines in new construction and to phase in non-potable sources over time. Combined, land application and regional growth centers provide for lower-barrier methods for reuse.

Environmental augmentation includes directing treated effluent to natural water courses for beneficial reuse. While these methods don't typically provide revenues, they represent an opportunity to close the wastewater loop and restore water supplies locally, in urban areas; particularly where/when there is demonstrated need. Typical forms of environmental augmentation include:

- Direct augmentation to streams, rivers or other surface water bodies,
- Indirect augmentation to surface water bodies which includes infiltration to adjacent soils allowing flows to meander into the substrate groundwater or into actual surface flows,
- Aquifer recharge, and
- Wetland enhancement.

Each of these methods requires adequate environmental study to determine the feasibility including risks associated with any option. Water bodies which demonstrate supply issues are typically studied for

stream augmentation because there is a clearer link to beneficial reuse, instead of simply becoming a vector for disposal. Wetlands throughout the Westside have not been studied to date.

Colwood has studied the potential for indirect augmentation via aquifer recharge for the highly permeable soils near royal Roads University and further west toward Langford. Local infiltration rates are relatively high and may provide for aquifer recharge for 10 to 30 MLD, based on recent reports. If approved by the Director (of the Ministry), this approach could negate the need for an alternate disposal method such as local outfall to the ocean, however we have assumed any effluent that does not meet the specifications would be discharged into the CRD trunk to be treated by a downstream plant. Westside Technical Staff are awaiting formal feedback from the Ministry regarding the potential for aquifer recharge including any waiving of outfall infrastructure. Option sets which include a treatment facility in Colwood take into account the preliminary feasibility results for aquifer recharge.

4.2.2 Summary of Water Reuse across the Westside

Table 4.1 summarizes the land application; toilet flushing and aquifer recharge possibilities on the Westside based on the applied target-market framework and analysis methodology. It is important to note that while estimates can be developed per municipality, it became clear during analysis and mapping that demands were clustered near growth centers of Colwood-Langford and separately, in Esquimalt (with some overlap to View Royal). Establishing two reuse systems provides for 3/4 coverage of the treated effluent target possibilities and also reduces the need for redundant infrastructure.

Table 4.1 – Reuse Target Market Scan

Node	Colwood-Langford	Esquimalt
Area (ha) w/ Irrigation Potential	275	115
Demand (low) (cm/year)	45	30
Demand (high) (cm/year)	60	45
Volume (low) (ML/year)	1,240	340
Volume (high) (ML/year)	1,650	520
Aquifer Recharge (ML/year)	3,430	n/a
Toilet (2030; ML/year)	1,780	435

Additional lands in the View Royal-Highlands interface could provide greater irrigation potential however these lands would require significantly larger reuse systems. Further, Colwood continues to undertake more detailed water reuse analysis. Table 4.1 should be updated for future analysis as the results of Colwood's analysis are available.

Overall, if the Ministry accepts Colwood's aquifer strategy then the Colwood plant could demonstrate near 100% reuse of flows in that area: during the winter when there is less need for irrigation, reuse can be focused toward aquifer recharge and toilet flushing, whereas during irrigation seasons, aquifer recharge could be reduced significantly while flows are redirected to land application. It is also feasible to phase-in greater effluent reuse capacity at the Colwood facility as population growth occurs in Colwood-Langford.

Future phases of analysis should confirm with the Ministry whether redundant capacity is needed at alternate plants on the Westside to account for any potential treatment upsets at the Colwood facility. This would provide greater assurance of environmental protection through planned and unplanned treatment disruptions.

4.2.3 Water Reuse Infrastructure Systems

Treated effluent systems require their own, separate infrastructure for distribution. Each proposed wastewater treatment facility would include a pumping station to cover the range of elevations and flows as well as distribution pipes based on conceptual routes. In order to avoid the costs and footprint of equalization storage, reuse of treated effluent would be limited to the daily capacity of the plant. This strategy does not significantly limit the supplies available for irrigation or toilet flushing.

For Colwood-Langford, the conceptual reuse system includes approximately 19,500 meters of reuse pipe and a pumping system equivalent to the average daily capacity of the plant. The Esquimalt system includes almost 17,000 meters of reuse pipe and pumping system that can deliver the peak irrigation and toilet flushing demands in 2045. While the reuse systems are similar in scope, the Colwood-Langford plant provides 5x (or greater) the amount of reuse potential because of the land irrigation demand and aquifer recharge, providing a significantly greater return on investment. In effect, while the 4-plant option set would provide higher level of service and boost enhanced tertiary water quality, it may not provide greater reuse opportunities for a long time.

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5.0 Technology Needs and Considerations

5.1 Representative Sites and Characteristics

Representative design is a helpful approach to assessing the relative merits of multiple option sets, each with their own feasible sites. For Westside analysis, representative design was customized to suit myriad possible configurations by identifying four types of treatment plants to suit the flow design scenarios across the municipalities. Table 5.1 summarizes the four types of plants that would be situated across the Westside as they relate to each option set.

Table 5.1 - Site Characterization Summary

Site Characterization	Neighbouring Land Use	Flow Range (Average Dry Weather Flow)	Anticipated Plant Purpose – Liquid Train
Small Distributed	Residential	< 5 ML/day	Tertiary treatment for local reuse
Medium Distributed	Residential	6-15 ML/day	Tertiary treatment for local reuse
Large Distributed	Residential	16 – 25 ML/day	Tertiary treatment for local reuse
Extra Large Distributed or Central	Non-Residential	26 + ML/day	Primary & Secondary treatment for outfall and tertiary treatment for local reuse

5.2 Liquid Treatment Options and Representative Designs

The small, medium and large plants are part of distributed option sets whereby plants may be located in residential areas. It is our understanding, based on the public process to date, that the primary reason to have a distributed system is to put plants near target markets for resource recovery thereby signalling the need for tertiary level treatment. The driver for smaller footprint and consideration to 'neighborhood fit', treatment technologies should be selected that occupy a relatively smaller physical space.

Representative design includes technology selections on a provisional basis: at this stage, design choices provide key insights into the possibilities at each plant without eliminating the innovation from the private sector to propose the ultimate solutions. Indeed, the selection of specific technologies and manufacturers is a complicated process and ought to consider, more detailed evaluations such as:

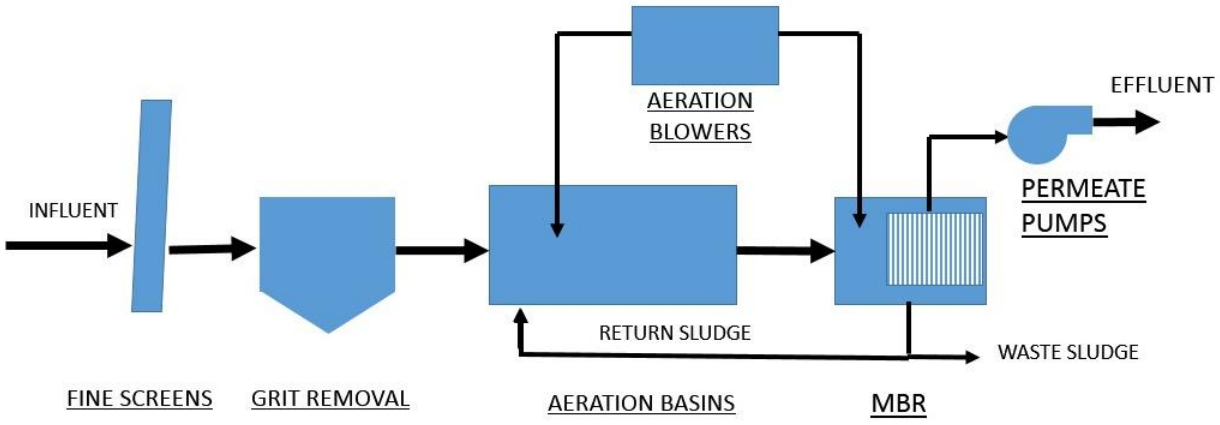
1. Method of procurement
2. Competition amongst a reasonable number of manufacturers

3. Financial security of manufacturer
4. Proven in the market place
5. Life cycle costing (capital and operating)
6. Flexibility
7. Ability to phase construction
8. Carbon footprint
9. Operational complexity
10. Physical area requirements
11. Amount of commonality with equipment desired within the entire CRD

Examples of tertiary technologies that demonstrate potential for the Westside include: membrane bioreactors, sequencing batch reactors with ultrafiltration membranes, moving bed bioreactors with ultrafiltration membranes and continuous flow intermittent cleaning with ceramic membranes. Representative designs for the small, medium and large plants include membrane bioreactor (MBR) processes because it is well-known to tertiary quality requirements, because there is competition among the manufacturers of the technology, and also, because it occupies a small physical footprint. .

A typical generic MBR plant would include grit removal, fine screens, anoxic and aerated bioreactors, membranes, a waste sludge wasting system and ultraviolet light for primary disinfection with sodium hypochlorite for secondary disinfection (chlorine residual). Odour control facilities would also be provided. A typical process schematic for an MBR process is shown in Figure 5.1 below.

Figure 5.1 – Membrane Bioreactor (MBR)



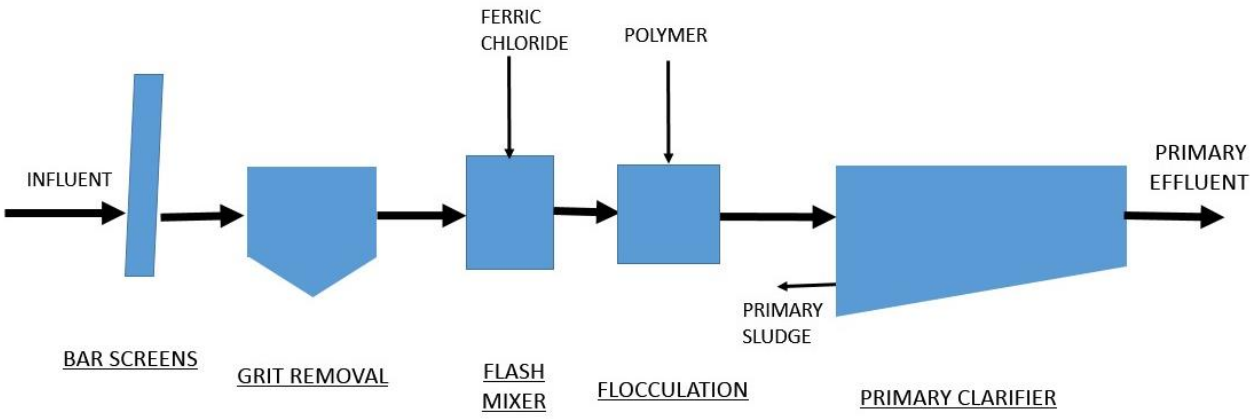
Each of these plants would extract 2 x ADWF from the CRD trunk sewers. Any wet weather flows above this amount will be left in the trunk sewer to be treated at the extra-large distributed or central plants.

The extra-large distributed or central plants located in non-residential areas are primarily targeting to meet the federal and provincial regulations. This means meeting the secondary level of treatment and processing the 2 to 4 x ADWF to a primary treatment level. The intent with these plants is to ensure there is sufficient site area to allow for a side stream of flow to be treated to a tertiary level to satisfy the target resource recovery markets in the reuse areas identified nearby the plant. However, it is recognized that because the demand for reuse in the vicinity may be a small fraction of the treatments plants capacity, these facilities will operate at reduced capacities much of the time. Private sector responses allow for other technologies that meet or exceed the level of treatment identified above.

Primary treatment technologies are diverse as well and technologies considered for this project include traditional primary clarification (PC), ballasted flocculation (BF) and chemically enhanced primary treatment (CEPT). The mechanical fine mesh screen systems were reviewed, but were eliminated for further consideration since they do not consistently achieve the $CBOD_5$ < 130 mg/L requirement.

Representative design analysis includes the CEPT process because it is established in the market, occupies a relatively small physical footprint and provides a high level of reliability. The CEPT process includes chemical addition, mechanical mixing and primary clarifiers with sludge removal pumps. The primary clarifiers would be covered and include odour removal equipment. Figure 5.2 provides a schematic of a CEPT system with a headworks that includes screens and grit removal.

Figure 5.2 – Chemically Enhanced Primary Treatment (CEPT)



Representative design for extra-large treatment facilities included review of processes that were suited for providing secondary treatment to larger flow ranges. Suitable technologies include conventional activated

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sludge (CAS), moving bed bioreactors (MBBR) and integrated fixed-film activated sludge (IFAS). Process schematics of CAS, MBBR and IFAS are provided in Figures 5.3, 5.4 and 5.5 below.

Figure 5.3 – Conventional Activated Sludge (CAS)

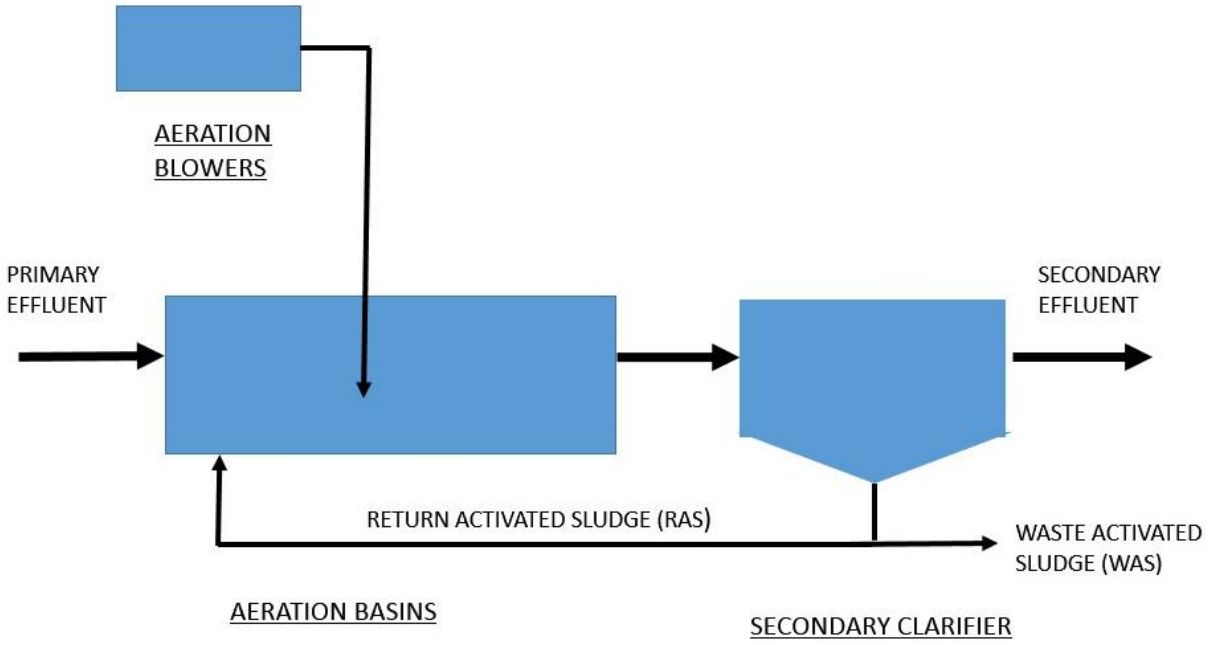


Figure 5.4 – Moving Bed Biological Reactors (MBBR)

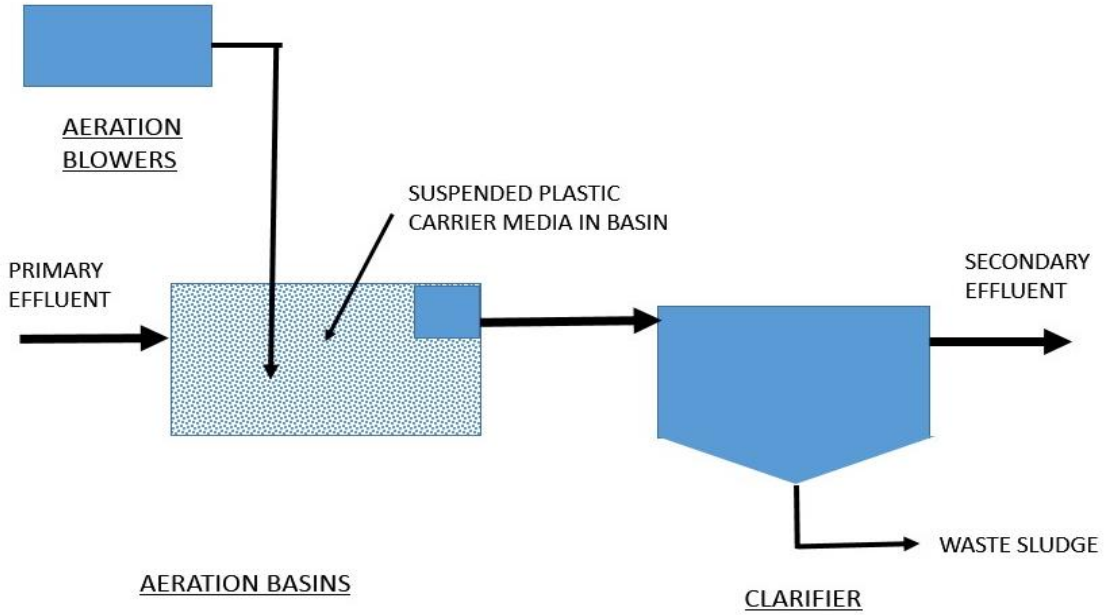
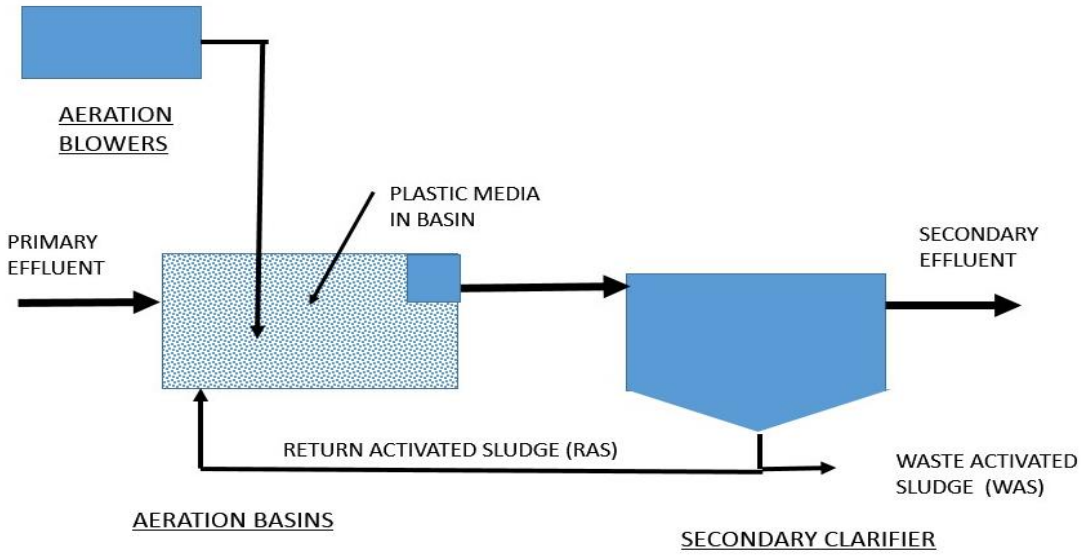


Figure 5.5 – Integrated Fixed-Film Activated Sludge (IFAS)



The MBBR and IFAS systems processes are similar to CAS, in that they both typically use aeration and clarification tanks for treatment. One advantage of these processes is that they reduce the size of aeration tanks needed for biological treatment. This is accomplished by adding media (plastic pieces, ropes, or sponges) to the aeration tanks. Bacteria grow on the surface of the media in a "fixed film," and effectively increase the amount of bacteria that can be held within a given tank size. Both the IFAS and MBBR processes provide a fixed media with an aeration basin. IFAS differs from MBBR in that is more like the activated sludge process, since it provides for a return of activated sludge from the clarifier back to the aeration basin. These systems are sometimes used to upgrade an existing aeration basin in a treatment plant, by retrofitting existing aeration basins with the media to be able to provide increased capacity for the existing basin footprint.

The secondary treatment process for extra-large facilities includes primary treatment via CEPT followed by secondary treatment. The initial technology selected was CAS due to lower operating costs than the MBBR or IFAS systems. Based on the available land area for the selected sites, it became apparent that a secondary treatment process requiring a smaller footprint than a CAS system would provide advantages. An MBBR or IFAS system would require a reduced foot print, but annual operating costs would be greater than CAS because of less efficient aeration. These systems would provide an effluent quality that would meet or exceed the proposed discharge limits. Overall, the MBBR and IFAS processes were reviewed in order to meet the treatment limits but also reduce the footprint. Also note that the process would typically include grit removal, screens, primary treatment, and an aerated tank with a floating or fixed film media. Any floated media systems require screens to contain the media in the tank, in addition to a clarification system, a waste sludge system, and ultraviolet light for primary disinfection. The aeration basins would be covered and include odour control equipment.

5.3 Solids Treatment Options and Representative Designs

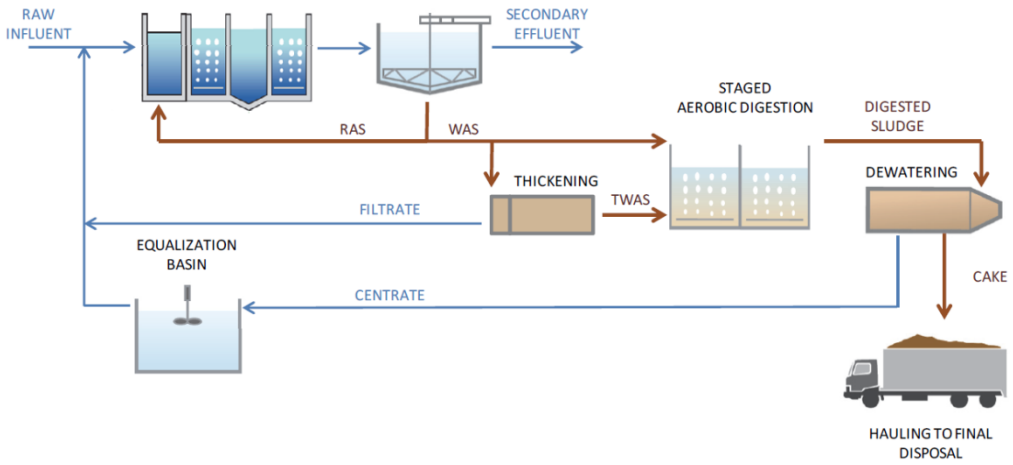
Solids treatment alternatives are narrowed based largely on these local boundary conditions:

1. The land application of any sewage solids is not allowed. This includes highly processed forms like pelletized solids, biochar or solids converted through thermochemical methods. New markets must be developed through partnerships to reflect the value of the byproduct in an effort to offset the treatment and development costs.
2. The landfilling of sewage solids is strongly discouraged by the CRD. Under extraordinary circumstances, the landfill may accept sewage solids at a cost of $121 dollars per wet tonnne.
3. The CRD is considering an integrated waste resource plant that may include sewage solids in addition to select yard, garden and kitchen waste managed in an integrated manner with solid waste management services.

In addition to these boundary conditions, Phase 2 analysis for Westside includes review of three key technologies for the stabilization and treatment of the sewage solids generated at the liquid treatment plants: aerobic digestion, anaerobic digestion and gasification.

Aerobic Digestion: Through this process, the collected sewage solids are kept under aeration for a period of no less than 28 days (using reactors in series) at a concentration of less than 2% solids (to maintain adequate air transfer and avoid odors and anaerobic conditions). The resulting is a wet-soil like material with high potential for odors, bacterial regrowth and additional degradation. This process is energy intensive and can be capital intensive in larger applications. Figure 5.6 shows a generic flow schematic for the aerobic digestion alternative.

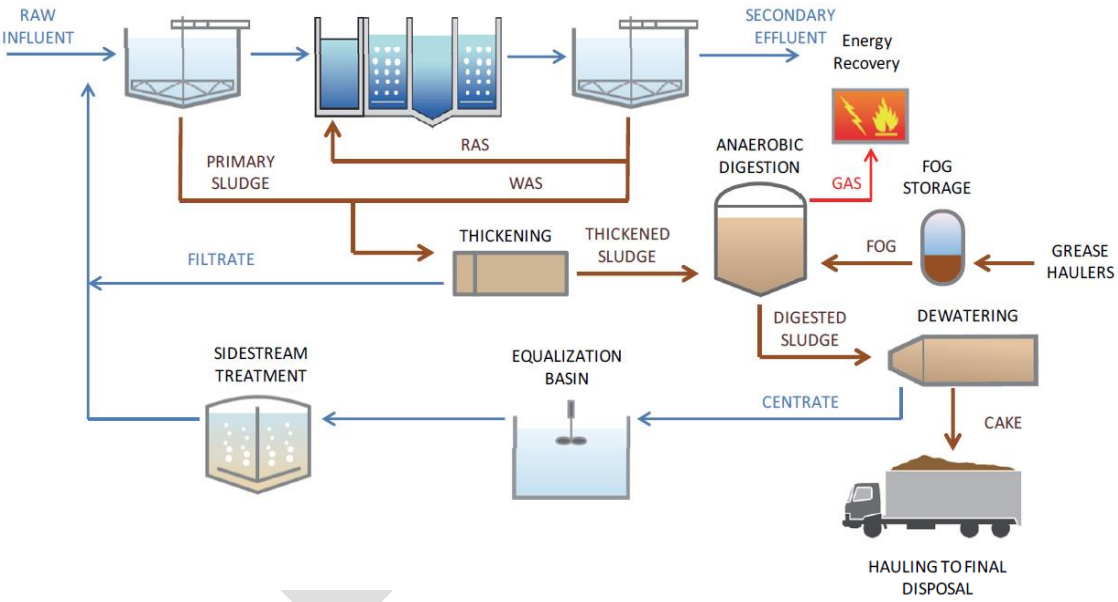
Figure 5.6 – Aerobic Digestion



1. Anaerobic digestion: Through this process, the collected sewage solids are kept under anaerobic (no oxygen) conditions for a period of 15-25 days at a concentration of at least 4% solids to allow the microorganisms to consume the organic matter efficiently and produce a valuable resource in the form of methane gas that can be recovered and reused. These systems produce a wet-soil like material with moderate potential for odors, bacterial regrowth and additional degradation. This process generates energy and is cost effective, compared to aerobic digestion, in facilities larger than 20 ML/d. Anaerobic digestion is particularly suited for facilities that have primary clarification as the performance of the system is far superior to the anaerobic digestion of biological sludge (Waste Activated Sludge).

   Figure 5.7 shows the generic process flow diagram for the anaerobic digestion alternative including energy recovery and fats oils and grease digestion to supplement gas production.

Figure 5.7 – Anaerobic Digestion



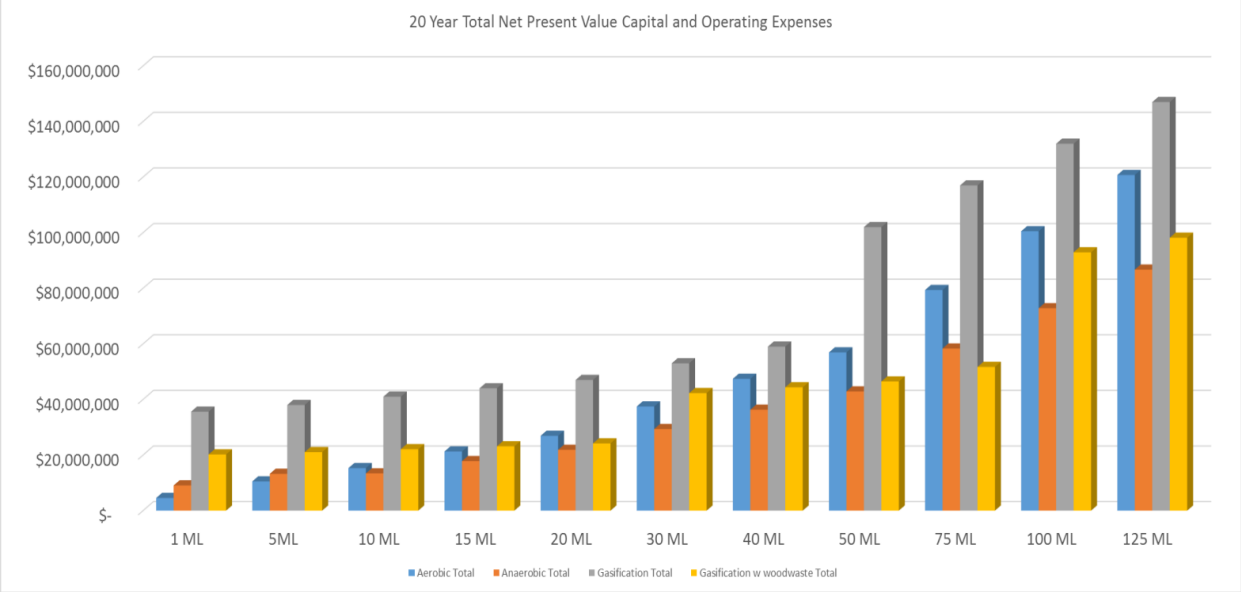
2. Gasification: This process is a thermal process that converts part of the organic carbon in the sewage solids into a syngas through non-biological processes. Unlike the previous approaches, this approach will require the participation of a technology manufacturer as the gasification systems require proprietary technology. The end product of the gasification technology is a biochar that does not look like a soil material. It has the composition and physical properties of activated carbon but is irregular and may produce dust. This technology struggles to achieve energy neutrality using only sewage solids; it requires a solids concentration of approximately 80% to become energy positive; manufacturers of gasification technology claim that the use of other feedstocks, like wood waste or yard, garden and kitchen scraps make the process energy positive.

While liquids and solids treatment processes overlap and link together, it's typical to assess solids recovery methods in an isolated manner to illustrate the cost and revenue conditions for each approach. Solids recovery scenarios for Westside analysis include:

1. Provide full level of solids treatment at each site.
2. Reintroduce the solids into the sewer system for treatment at the peak weather facility
3. Provide solids dewatering and transport at the smaller facilities and full treatment at the peak weather facility.

Figure 5.8 shows the 20 year total net present value (NPV) for the solids alternatives as a function of the plant size.

Figure 5.8 – 20 Year Total Net Present Value Capital and Operating Expenses



Takeaways and detailed insights from Table 5.2 and Figure 5.8 include:

1. Gasification of sewage solids without additional feedstocks is not cost effective in a 20 year life cycle. Based on the cost estimating, the reduction in mass obtained by drying and gasifying the sewage solids is significant and reduces the cost of disposal. This offset however does not pay back for the cost of the initial installation and the cost of the natural gas to drive the drying process.
2. Gasification with feedstock is cost effective in a 20 year life cycle. The overall costs are similar to anaerobic digestion (assuming a market can be created at a cost less than $121/tonne).

3. Based on the size of the distributed system facilities, all of the smaller facilities would incorporate aerobic digestion, as the minimum facility size that provides a NPV benefit utilizing anaerobic digestion is around 20 ML average daily flows. Because the option sets still provide for the peak flows (>2X ADWF) to be routed to a peak flow "large facility", the system will have all of the costs of the smaller plants plus a large fraction of the costs of the single facility. Therefore the cost of providing full solids treatment at each of the satellite facilities is approximately $25,000,000. These costs do not appreciably offset any costs for the larger facility. Based on this analysis, it is recommended that the CRD consider only solids dewatering at the satellite facilities. This approach will provide for a reduction in the cost of almost $20,000,000 as the solids dewatering systems would remain at each of the satellite plants and a solids receiving station would be required at the large plant.
4. Based on preliminary net-present value analysis, the use of anaerobic digestion at the large plant with trucking of the solids from the satellite plants and gasification using a yard waste feedstock are comparable. A Request for Statements of Interest and Request for Proposals will assist the CRD in confirming reliable, financially-backed solutions for solids recovery management.

5.4 Energy Recovery Options and Representative Designs

Until further research can be conducted on the full life-cycle costing of gasification including integration of waste streams, anaerobic digestion was included for life-cycle costing due to its energy positive balance and more reliable cost estimates (because there are more installations for comparison).

The industry standard for Energy recovery from anaerobic digesters is to provide the ability to use a combined heat and power (CHP) system for the facility. CHP units utilize either an internal combustion engine or turbine to generate power; the waste heat from these units is captured and used to provide heat for the digesters.

Newer approaches include the refinement of the biogas to Biomethane by processing the gas to higher standards and removing the carbon dioxide present in the gas. This biomethane can be compressed and used to fuel CNG vehicles if there is sufficient production and the demand (buses or trash trucks) are located in close proximity where the gas is being produced. As this approach requires additional treatment and the marketing of the gas, this recovery alternative is a candidate for a public-private-partnership. We recommend that the CRD issue a RFSI similar to the resource recovery RFSI for the inclusion of private market capital to promote and produce biomethane.

Therefore, the Energy Recovery Option will be limited to the sites that can support anaerobic digestion and will focus on the use of a CHP system (micro-turbine or internal combustion generator) to match the expected average gas production.

Technology	Electricity Produced	Heat Recovered
MICROTURBINE	30%	30%
INTERNAL COMBUSTION GENERATOR	35%	35%

Based on the size of the facility it is recommended that an internal combustion engine be evaluated as the CHP driver. The table below shows the estimated cost of the combined heat and power system for the central facility.

Type of CHP	Size of Installation	Cost of Installation	Power Generated	Heat Rejected to Recovery
Internal Combustion Engine	1.5 MW	$7,750,000	1,285 kW	4 MMBTU/hr. 16,000 Kcal/hr.

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6.0 Costing Factors

6.1 Introduction

Costs will be presented in 2015 Canadian dollars. It is important to recognize that since 2010, and from 2015 until the systems are constructed, prices of all cost elements can be significantly affected by time and other cost escalations. For example, the Engineering News Record (ENR) is an industry guide to the construction industry. The ENR states that the construction cost index for Toronto (BC is currently not represented in the ENR) has increased from 9,434 (2010) to 10,515 (2015). This is equivalent to a construction cost increase of 11.5% over the 5 year period. A review of data available from Stats Canada for the Victoria area indicates that their construction price index has risen from 111.5 (2010) to 122.8 (2014; no 2015 data yet available), using a base index of 100 (2007). This is equivalent to a 10.1 % increase over this 4 year period. This would appear to correlate fairly closely with the 11.5 % increase over 5 years for the ENR index. We have used the Stats Canada index for the purposes of calculating all cost escalations.

The impact of the exchange rate between the Euro, the US and Canadian dollars is also relevant, since a portion of the equipment may be manufactured in the USA or Europe.

Some costing considerations are difficult to predict, like the supply and demand and productivity of skilled labour in the Greater Victoria area, especially if other large scale projects in the province were to occur, such as liquefied natural gas and the Metro Vancouver Lion's Gate WWTP. It is also widely known that construction on Vancouver Island carries a premium compared to the mainland.

Cost estimates will also stem from recent engineering and costing experiences for construction projects supported by Urban Systems and Carollo, both locally and abraod. Cost estimates conducted by other consultants for CRD have been reviewed and informed the updated unit rates.

6.2 Capital Cost Breakdown

Capital cost estimates include multiple factors and contingencies. For Class D cost estimates we have included *general requirements*, *contractor profit and overhead*, *construction and project contingencies, engineering, administration, interim financing and escalation.* Table 6.1 illustrates these cost factors for an example project with a base construction cost estimate of $1,000,000. For comparative purposes the percentages used in this study are the same as those used in previous studies. We have assumed the mid-point of construction is four years or 2019.

Table 6.1 - Capital Cost Breakdown

Description	Total
Construction Cost	$ 1,000,000
General Requirements (Mobilization, Demobilization, Bonds, Insurance, etc.) – 10%	$ 100,000
Contractor Profit/Overhead – 10%	$ 100,000
Construction/Project Contingency – 35%	$ 350,000
Subtotal of Direct Costs	**$ 1,550,000**
Engineering – 15%	$ 233,000
CRD Administration and Project Management and Miscellaneous – 8%	$ 124,000
Interim Financing and Inflation During Project – 4%	$ 62,000
Escalation to Mid-Point of Construction – 2%/year (compounded over 4 years)	$ 124,000
Total Capital Project Cost	**$ 2,093,000**

6.3 Pump Stations

The pump stations that will be used to pump effluent from the existing CRD collection system to the proposed treatment plants are typically designed to be low-lift, high-volume facilities. Because of the unique nature of each pump station (siting, access, pump capacity, proximity to major utilities and sensitive areas, geotechnical considerations, etc.), costs for such facilities can vary widely.

Class D cost estimates (-15%/+25%) are commonly derived from cost curves which are based on extensive cost data gathered from the combination of a wide range of pump stations throughout the industry. These curves typically plot station costs against the size of the stations in L/s. Typical curves are shown in Appendix E and were developed by an extensive study undertaken 11 years ago for the Ministry of Public Infrastructure Renewal in Ontario. In conducting our estimates we assessed the application of estimates from Ontario against our experience in the BC market. The unit rates have been multiplied by 1.6 with consideration of the following:

a. 20% - for temporary and permanent site work.
b. 20% - for standby power and SCADA
c. 20% - inflation from 2004 to 2015.

Where possible, the unit rates have been compared to cost data available from recently designed and constructed projects, to confirm general data conformance. These facilities typically comprise a concrete below grade wet well, in which the sewage is collected and from which the sewage is pumped using submersible pumps. An at-grade superstructure (usually concrete block or similar durable material) is located on top of the wet well (typically poured in place concrete), to house mechanical and electrical equipment, including MCCs, PLCs and standby power.

Where pump stations will be included in the design and construction of a wastewater treatment plant, i.e., are not stand alone facilities, experience informs that a 30% cost deduct should be applied to the unit costs rates to account for common infrastructure and other facility synergies.

Below is a summary of a few examples of anticipated pump station costs, based upon the curves in Appendix E and including the 1.6 multiplier. All rates are in 2015 dollars and pertain only to the Construction Cost portion as outlined in Section 6.2, which would be factored up as per Table 6.1.

Pump Station Size	Construction Cost (CDN$)
350 L/s	$ 3,400,000
750 L/s	$ 6,400,000
925 L/s	$ 8,000,000

The Craigflower Pump Station upgrade tendered price not including GST was $11,000,000 and the capacity is approximately 1,000 L/s. This value aligns quite well with the Ontario curves given that this number includes contractor profit/overhead and general requirements and was constructed in the last two years.

6.4 Piping

The piping systems that will be used to service the Core Area option sets will comprise PVC pipe installed in existing rights-of-ways, typically existing road allowances. As such, the unit cost rates allow for pavement and any existing surface improvement restoration. In addition, an allowance has been included for temporary site works, traffic control and associated above ground work.

In general, these pipes will provide the connectivity between the existing CRD sewer trunk mains, proposed pump stations, proposed wastewater treatment plants and proposed outfalls. Typically sanitary collection systems are designed for minimum flow velocities of 0.8 m/sec to ensure that material does not build up within the piping systems. From a capital cost and energy perspective, ideally flows should be near 2.5 m/sec. Given the wide range in flows within the CRD system (0 to 4 x ADWF), detailed analysis is required for any pumped and piped system to ensure that the optimum life cycle range of costs are achieved.

For the purposes of this costing exercise, we have sized our pipes such that the resultant velocities are in the 1.5 to 2.5 m/sec range, based upon 2 x ADWF.

The unit cost rates developed are based upon meeting or exceeding accepted industry design standards, such as those detailed by AWWA.

The following is a summary of the unit cost rates developed by Urban Systems as part of the ongoing work with the CRD. All rates are in 2015 CDN dollars and pertain only to the Construction Cost portion outlined in Section 6.2.

Pipe Diameter (mm)	Construction Unit Cost $/m
300	$ 700
350	$ 740
400	$ 780
450	$ 820
500	$ 870
600	$ 950
750	$ 1,130
900	$ 1,350
1050	$ 1,620
1200	$ 1,850
1350	$ 2,100
1575	$ 2,450

6.5 Outfalls

Developing unit cost rates for outfalls into a marine environment proved to be the most challenging task, given the wide range of unknowns and variabilities. Not too dissimilar from pump stations and their unique features, the unit cost rates for outfalls also vary widely. In particular, geotechnical considerations and seabed profiles will have significant impacts on these costs. However, unlike, pump stations, there is not a large data base on which to draw upon and develop cost curves.

Outfalls are anticipated using steel pipes, installed with concrete collars and anchors. Based upon the data available, 2015 costs for these two sizes were developed as summarized below and pertain only to the Construction Cost portion outlined in Section 6.2.

Pipe Diameter (mm)	Construction Unit Cost $/m
600	$ 6,150
750	$ 7,000
900	$ 7,800
1050	$ 8,600
1200	$ 9,600
1350	$ 10,800

6.6 Methodology to Provide WWTP Cost Estimates

For Wastewater Treatment Plants the costing methodology is more complicated since each plant includes both liquids and solids treatment processes and costs are largely dependent on the indicative technology selected. For this project we will use the experience database developed by Carollo and Urban Systems in order to determine appropriate costs for the indicative facilities. Only the representative technology will be costed in order to arrive at comparative cost estimates between the option sets.

6.7 Revenue Sources

Revenue sources will cover the range of incomes based on exchange of goods or services and also monies that offset costs including potential development contributions or potential partnerships which minimize the extent and impact of new works. Phase II analysis for Westside does not include detailed life-cycle costing analysis including each of the following revenue examples, however these will be assessed further as part of Phase 2 for the Core Area:

- Utility billings, requisitions, transfers and interest gains
- Retail rates for resource recovery systems including water rates, gas/fuel rates (solids recovery) and incomes collected for any sales related to solids residuals
- Development cost charges and other potential private sector development contributions available to local governments
- Municipal cost-shares for example where infrastructure upgrades are needed for both local and regional benefit
- Grants in terms of secured monies available to Westside
- Other offsetting costs for example, homeowner cost savings that may arise through waste diversion as part of integrated solids recovery

Three important notes about revenues at this time include:

- Water revenues increase over time as irrigation customers are phased-in and as growth and development potentially incorporate recycled water for toilet flushing
- Energy recovery revenues are currently offset by costs associated with disposal of byproducts eliminating any addition revenues from wastewater solids; further analysis is required as part of Phase 2 analyses
- Carbon offsets are being studied so that they can be included, where appropriate

6.8 Operating and Life Cycle Cost Assumptions

Life-cycle costs will be prepared for each of the option sets. Life cycle costing includes capital, as well as operating costs and later, consideration to revenues as part of the aggregate financial scenarios. Operating costs will consider typical cost elements as well as revenue (outlined in Section 6.7) which can reasonably be assumed to accrue given the resource recovery opportunities available.

Below is a summary of the inputs into our life cycle costing model. As this is a constant dollar analysis, all costs will be in $2015. The only escalation that will be included will be 2% per year for initial capital projects for the time from today until midway through construction which is assumed to be 2019.

We propose to conduct sensitivity analysis on the discount rate, escalation factors and revenue projections to monetize the risks inherent in long-term capital financing and service delivery. As a base case, our life cycle analysis will be guided by previous analysis and in particular, will suit treasury board guidelines to suit the funding partners.

We will assume that chemical and energy costs will be linearly proportional to flow. For example, the current Langford flow is 5.2 MLD and 2030 design is 14.2 MLD. Electricity cost in year one will be:

$\frac{5.2}{14.2}$ x 100% of the 2030 design year.

Life Cycle:	15 years (2015-2030)
Interest Rate:	to be confirmed with funding partners (as needed) e.g. 4%
Inflation Rate:	to be confirmed with funding partners (as needed) e.g. 2%
Discount Rate:	to be confirmed with funding partners (as needed) e.g. 3%
Water Cost:	Distribution cost from distribution supplier (e.g., CRD for Westshore & Sooke) is $1.81/m^3
Electricity Cost:	Average rate $0.08/kwh

Chemical Costs; Current market prices

Labour Rates:

Labour Type	2015 Annual Salary [1]
Plant Manager	$ 158,000
Chief Plant Operators	$ 135,000
Chief Area Operator	$ 113,000
Plant Operator	$ 90,000
Labourer	$ 56,000

[1] Including benefits and administration

Vehicle Rates: $40,000/yr./vehicle

Trucking Rates: Current market prices

Disposal Rates: Current tipping charges to CRD Landfill (i.e., $157 per tonne for screenings and pumpings from Sewage Treatment Plants and $121/tonne for waste sludge < 80% moisture)

Maintenance/Repairs Pump Stations: 1% of Capital/yr.

Equipment Replacement Reserve: 1% of Capital/yr.

Operation & Maintenance Contingency: 10% (includes testing, insurance, miscellaneous)

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7.0 Description of Option Sets

7.1 Introduction

After discussions with the Westside Technical Committee it was agreed that the three option sets to be examined in more detail are:

Option 4A (Revised)	Langford/North Colwood/View Royal/Esquimalt First Nation
Option 1B	Esquimalt First Nation
Option 2C (Revised)	North Colwood/Esquimalt First Nation

The rationale for selecting these three option sets is as follows:

Four Plant Option

- Distributed model with each community contributing to a sub-regional solution.
- Increasing the opportunities for reuse of treated effluent and heat recovery since there are multiple plants.
- Increased potential for revenue from reuse/recovery options.

One Plant Option

- Single plant may be the most cost effective since it involves the least amount of new pipe and pump stations.
- Operations are consolidated in one location.

Two Plant Option

- This specific option takes advantage of all the reuse work that has been undertaken by Colwood.
- Does not require solids dewatering of treatment in Colwood, which simplifies that plant.
- The large plant becomes the “alternative method of disposal” required by the Ministry of Environment in the event of plant failure. As such a second ocean outfall is not required.

Note that all plants will have ultraviolet disinfection to achieve the required concentration of faecal coliforms, whether for secondary or tertiary plants. Since the demand for effluent reuse is not likely to be 100% of the capacity of any of the plants it is proposed that chlorination not be included in the plants. Rather, it is suggested that wherever the takeoff points are from the treated effluent line that chlorine be

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added there. This will ensure that any discharge to the ocean will not have a chlorine residual > 0.02 mg/L.

7.2 Site Prioritization

Site prioritization was conducted simultaneous to option set design and costing. Insights from sizing, infrastructure and resource recovery potential signal a pared-down list of sites, as detailed in Appendix F, and summarized here as:

- Site 2a Langford VMP and Meaford Avenue
- Site 11 Colwood Park and Ride
- Site 14 Colwood West Shore Parks and Recreation
- Site 15 Esquimalt First Nation
- Site 16 View Royal Burnside and Watkiss
- Site 17 Esquimalt Bullet Park Site 17

Esquimalt Village Site 17 was originally part of Option 4A and 2C and can be considered further however it is a relatively small site and will require flow synergies with plants located on the Eastside. Further feasibility analysis in Phase 2 can confirm the potential for Site 17. Additional costs related to maintaining its use as a park will increase site improvement costs. Also, Site 4 in South Colwood was not considered for 2030 design scenarios however it demonstrates some potential for phasing new sites over time to accommodate population growth and increased flows.

7.3 Option 4A (Revised) – Four Plants

7.3.1 Description

Figure 7.1 illustrates four treatment plants across the Westside with one facility in each community. Plant technologies and processes for small, medium and large plants meet the representative design considerations laid out earlier in the memo. In particular, the larger plant would be constructed to treat the full 4 x ADWF to a primary level as well as the balance of 2 x ADWF to a secondary level, recognizing that the largest portion of the effluent will be discharged to the ocean. Option 4A is revised in this analysis because the only site that has enough area is the Esquimalt First Nation, so it replaces the Esquimalt Village site (#17).

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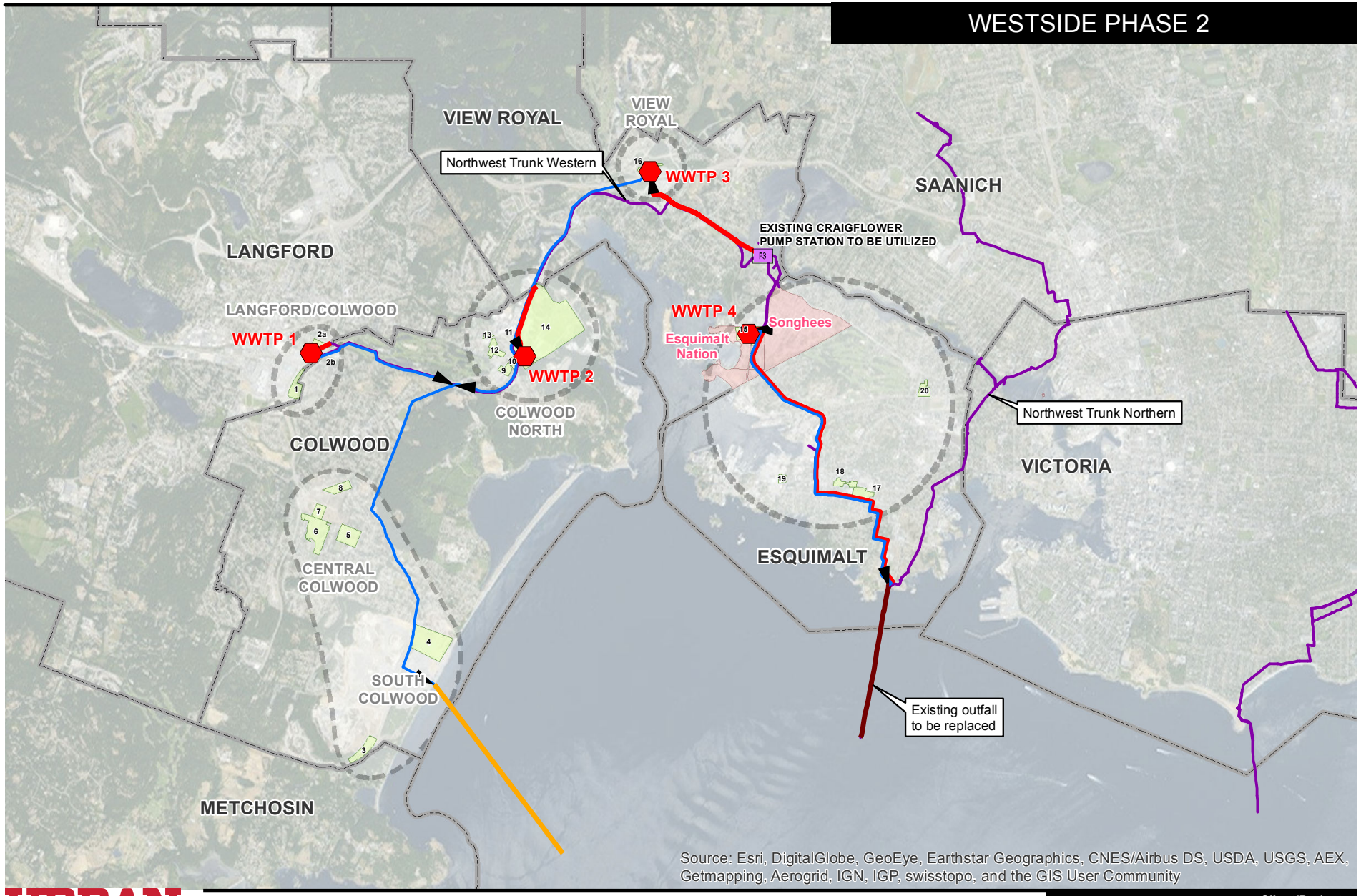
WESTSIDE PHASE 2



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Legend

- Municipal Boundary
- First Nation Reserve
- Site Nodes
- Existing Sanitary Trunkmain
- Existing Pump Station
- Raw Sewage Forcemain
- Treated Effluent Forcemain
- New Outfall
- Potential WWTP

Client/Project
CAPITAL REGIONAL DISTRICT WESTSIDE PHASE 2

Scale	Date (y/m/d)	Figure
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WESTSIDE OPTION SETS
FOUR PLANT OPTION

Table 7.1 summarizes usable areas for each of the four sites, as well as a footprint requirement for 2030 and a conceptual estimate of area required for 2045.

Table 7.1 – Site Locations Area and Ownership

Community	WWTP Site	Estimated Usable Area	Estimated Required Area (ha)		Ownership
			2030	2045	
Langford	2a	1.89 ha	1.1	1.6	Private
Colwood	11	0.74 ha	0.6	1.1	Municipal
View Royal	16	1.13 ha	0.4	0.8	Provincial
Esquimalt First Nation	15	3.72 ha	2.4	3.7	First Nation

The estimated site area requirements in Table 7.1 illustrate that there is sufficient area at all four plant sites to accommodate the 2045 design flows.

7.3.2 Option Set Components

Plant 1 – Langford

1. Tie-in to CRD trunk main.
2. Sewage pump station adjacent to CRD trunk at east boundary of Langford (to pump 2 x ADWF from Langford). Note the 2 to 4 x ADWF is left in the trunk for treatment at EFN.
3. Short sewage forcemain to plant on Site 2a.
4. Plant on Site 2a with headworks (grit and screens), tertiary treatment with UV disinfection. Residual solids would be dewatered and trucked to the EFN treatment site.
5. Effluent pump station (part of the plant).
6. Effluent forcemain to connect to the other forcemains.

Plant 2 – Colwood North

1. Tie-in to CRD trunkmain at east boundary of Colwood.
2. Sewage pump station at east boundary of Colwood and CRD trunk (2 x ADWF from Colwood) to pump to new plant on Site 11. Note 2 to 4 x ADWF is left in the trunk to be treated at EFN.
3. Sewage forcemain to plant.
4. Plant on Site 11 with headworks (grit and screening), tertiary treatment with UV disinfection. Residual solids will be dewatered and trucked to EFN.
5. Effluent pump station (part of plant).

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6. Effluent forcemain to connect to other forcemains and new outfall.
7. Outfall to handle Langford/Colwood/View Royal flows.

Plant 3 – View Royal

1. Reorient part of Craigflower Lift Station to pump 2 x ADWF (from most of View Royal) to the new plant on Site 16. The other portion of the Craigflower LS will continue to pump the 2 to 4 x ADWF from Langford/Colwood and View Royal on to EFN.
2. Sewage forcemain to plant.
3. Plant on Site 16 to provide headworks (grit and screens), and tertiary treatment with UV disinfection. Note residuals solids can be discharged back into the raw sewage pipe network for treatment at EFN.
4. Effluent pump station (part of plant).
5. Effluent forcemain to connect to other effluent forcemains.

Plant 4 – Esquimalt First Nation

Refer to Figure 7.2 for a process schematic of this plant and the various pump stations required.

1. Tie-in to CRD trunkmain.
2. Pump station beside trunkmain to lift into plant.
3. Short forcemain into new plant.
4. Tie-in to pipe just downstream of the Macaulay Point screens.
5. Pump station at Macaulay Point to pump all flows (0 to 4 x ADWF) to new plant at EFN.
6. Screened sewage forcemain to plant (tie-in after screens at new plant).
7. Primary and secondary plant to include headworks (grit, screens), equalization, primary clarifiers with chemical addition, moving bed bioreactors, clarifiers and ultraviolet light disinfection.
8. Residual solids treatment facility (anaerobic digestion).
9. Effluent pump station.
10. Primary and secondary effluent forcemain with tie-in downstream of Macaulay screens.
11. Outfall to replace existing corroded one.

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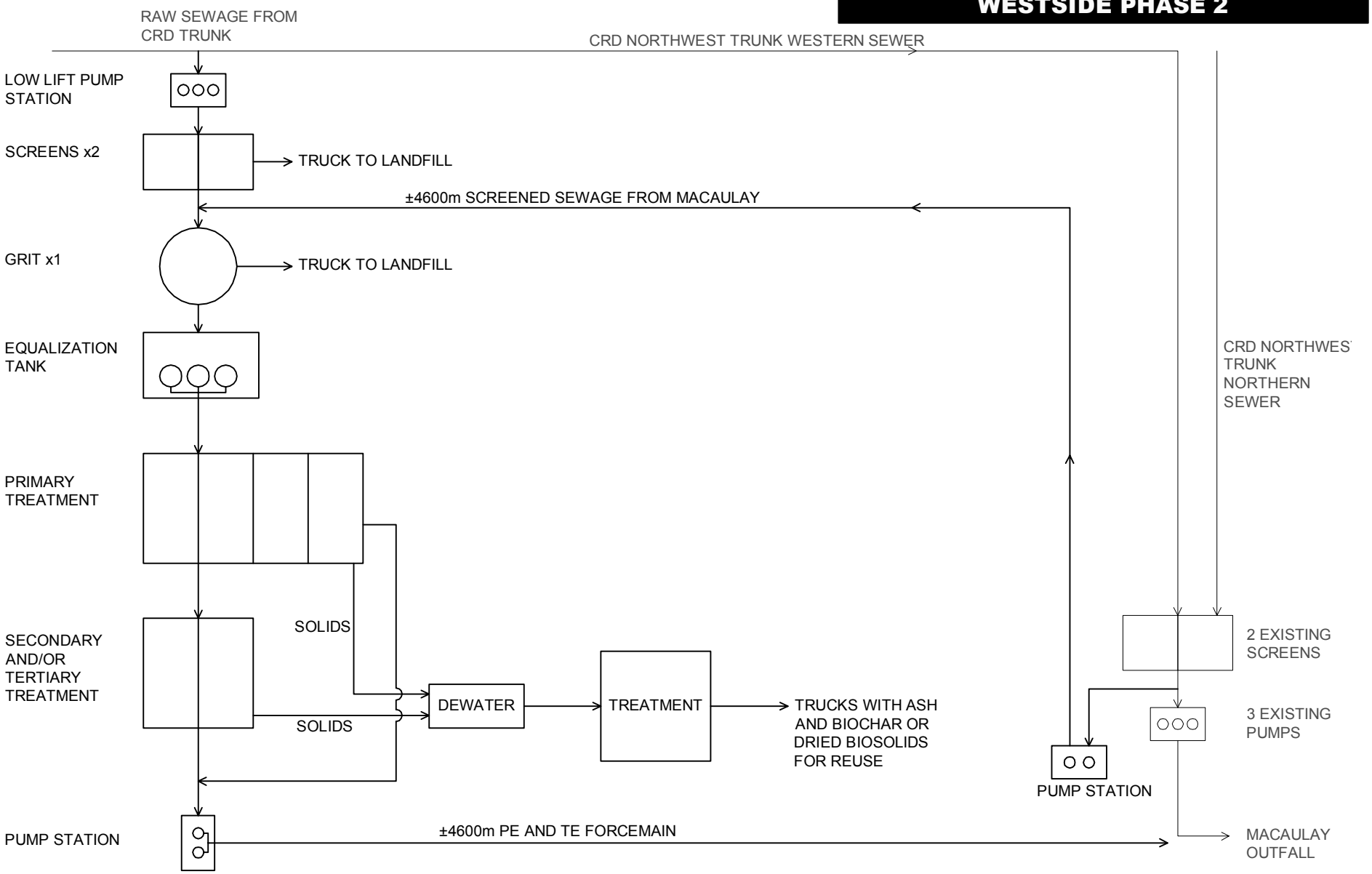

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CAPITAL REGIONAL DISTRICT
WESTSIDE PHASE 2

Scale	Date (y/m/d)	Figure
nts	2015-10-07	7.2

1692.0034.08	Title

ESQUIMALT FIRST NATION PLANT

U:\Projects_VAN\1692\0037\01D-Drafting-Design-Analysis\CAD\CURRENT\PRODUCTION\FIG-1692003701-SingerPlant-WestsideOnly-Flows.dwg, FIG 7.2 SCHEMATIC, 2015/10/07 12:52 pm jcrosman

7.3.3 Cost Estimates

7.3.3.1 Capital Cost

The capital cost estimates are comprised of four main components – pump stations, piping, treatment plants and outfalls. It is noted that the pump stations and WWTPs have costs to the 2030 design flows, but the pipes have been costed to the 2045 design flows. Table 7.2 summarizes the capital costs for the four plant option.

Table 7.2 Capital Cost Estimate for Four Plants

Item	Estimated Cost
1. Langford WWTP (28 MLD) Tertiary and Centrifuge	$ 50,600,000
2. Colwood WWTP (10 MLD) Tertiary and Centrifuge	$ 31,300,000
3. View Royal WWTP (7 MLD) Tertiary	$ 21,600,000
4. Esquimalt First Nation WWTP (145/50 MLD Primary/Secondary) plus Solids Treatment	$ 81,770,000
5. CRD Trunk Tie-Ins (4)	$ 3,300,000
6. Piping 23,350 m, not including reuse networks	$ 27,397,000
7. Esquimalt Effluent Reuse Network	$ 5,950,000
8. Colwood Effluent Reuse network	$ 7,000,000
9. Ten Pump Stations, Including Esquimalt Reuse Pump Station	$ 34,200,000
10. New Outfall 2,550 m @ 0.75 m Ø	$ 17,850,000
11. Replace Macaulay Outfall 1,700 m @ 1.2 m Ø	$ 16,320,000
Subtotal	**$ 297,287,000**
General Requirements (Bonding, Mobilization/Demobilization, etc.) - 10%	$ 29,728,700
Contractor Profit/Overhead - 10%	$ 29,728,700
Construction Contingency - 35%	$ 104,050,450
Total Direct Costs	**$ 460,794,850**
Engineering - 15%	$ 69,119,228
CRD Administration - 8%	$ 36,863,588
Interim Financing - 4%	$ 18,431,794
Escalation to Mid-Point of Construction – 2%/year (4 years)	$ 37,984,315
TOTAL PROJECT COSTS	**$ 623,194,000**

7.3.3.2 Operating Costs

The annual operating costs assuming 2030 design flows and 2015 dollars are summarized in Table 7.3.

Table 7.3 – Operating Cost Estimate for Four Plants

Item		Estimated Annual Cost
1. Langford WWTP	(28 MLD) - Liquid	$ 2,877,000
	(28 MLD) – Solids - Centrifuge	$ 175,000
2. Colwood WWTP	(10 MLD) - Liquid	$ 1,514,500
	(10 MLD) - Solids	$ 93,000
3. View Royal WWTP	(7 MLD) - Liquid	$ 1,139,500
	(7 MLD) - Solids	$ 0
4. Esquimalt First Nation WWTP	(145/50) - Liquid	$ 3,968,500
	(145/50) - Solids	$ 2,128,000
5. Pump Stations and Piping and Effluent Reuse Systems (2)		$ 1,324,000
Subtotal		**$ 13,219,500**
Contingency (10%)		$ 1,321,950
TOTAL ANNUAL ESTIMATED OPERATING COST		**$ 14,541,450**

7.3.3.3 Anticipated Revenue

- Revenues from solids-energy recovery can be utilized to offset the costs of treatment and solids processing and market development but are unlikely to present incomes beyond the expenditures of the system.
- Water revenues phase in over-time with the potential of approximately $3,000,0000 in 2045. This amount may cover the operating costs of one of the distributed plants (e.g. Colwood) that is if capital financing is not included. This means that based on projected demand for treated effluent reuse, that there will be much less revenue than there will be added cost for three MBR plants. Further life-cycle analysis and risk considerations, including any reductions to potable water revenues (other CRD service) are needed as part of Phase 2.
- Carbon offsets typically range in the order of $10 - $20 per tonne of CO2 equivalent. Carbon offsets for solids recovery will be analysed in Phase 2 for the Core Area.

7.3.3.4 Life Cycle Costs

Preliminary results strongly suggest that higher levels of treatment including MBR technologies provide for opportunities for reuse but notably increase capital as well as operating and maintenance costs. Water revenues alone are unlikely to recover these costs over time although there are may be opportunities to reduce the need for outfalls (the case of Colwood) which may create notable cost-offsets from reuse.

7.3.4 Relevant Considerations

1. No new environmental impact study (EIS) is expected for the Macaulay outfall.
2. The flow from all Westside, West Saanich and Vic West are included in this option.
3. Aesthetically pleasing structures could enhance the neighbourhoods.
4. Reclaimed water could be extracted from the treated effluent line for reuse around each plant and between EFN and Macaulay Point and between Sites 16, 10, 2a and the new outfall.
5. Heat recovery is possible at the treatment plants and along all trunk lines.
6. Can intercept 0 to 4 x ADWF from trunk line beside EFN to avoid repumping it from Macaulay.
7. Colwood would have to relocate the Park n' Ride on Site 11.
8. A new EIS would be required for the new outfall.
9. There will likely be some constraints on Site 16 imposed by a BC Hydro easement for the high voltage power lines.
10. Maximum reuse opportunities with four plants, including effluent reuse networks in Colwood and Esquimalt.
11. Purchase of land from private landowners is required.
12. Agreements with EFN need to be made for use of their land.
13. This the highest life cycle cost of the three options.

7.4 Option 1B

7.4.1 Description

This 1-plant option is located on the Esquimalt First Nation as illustrated in Figure 7.3. Recent site area analysis requirements indicate that there is sufficient area for the 2030 liquid and solids treatment processes, but may be too small to accommodate flows well beyond 2030. Space constraints at the Esquimalt Nation site should be considered in future phases as 2045 flows become available. The primary intent of this option is to meet the federal and provincial regulations with discharge through the Macaulay outfall. The plant is located close to the CRD trunk sewer on Admirals Road. Consequently, it will be possible to capture and pump all of the upstream flows from Langford, Colwood and View Royal.

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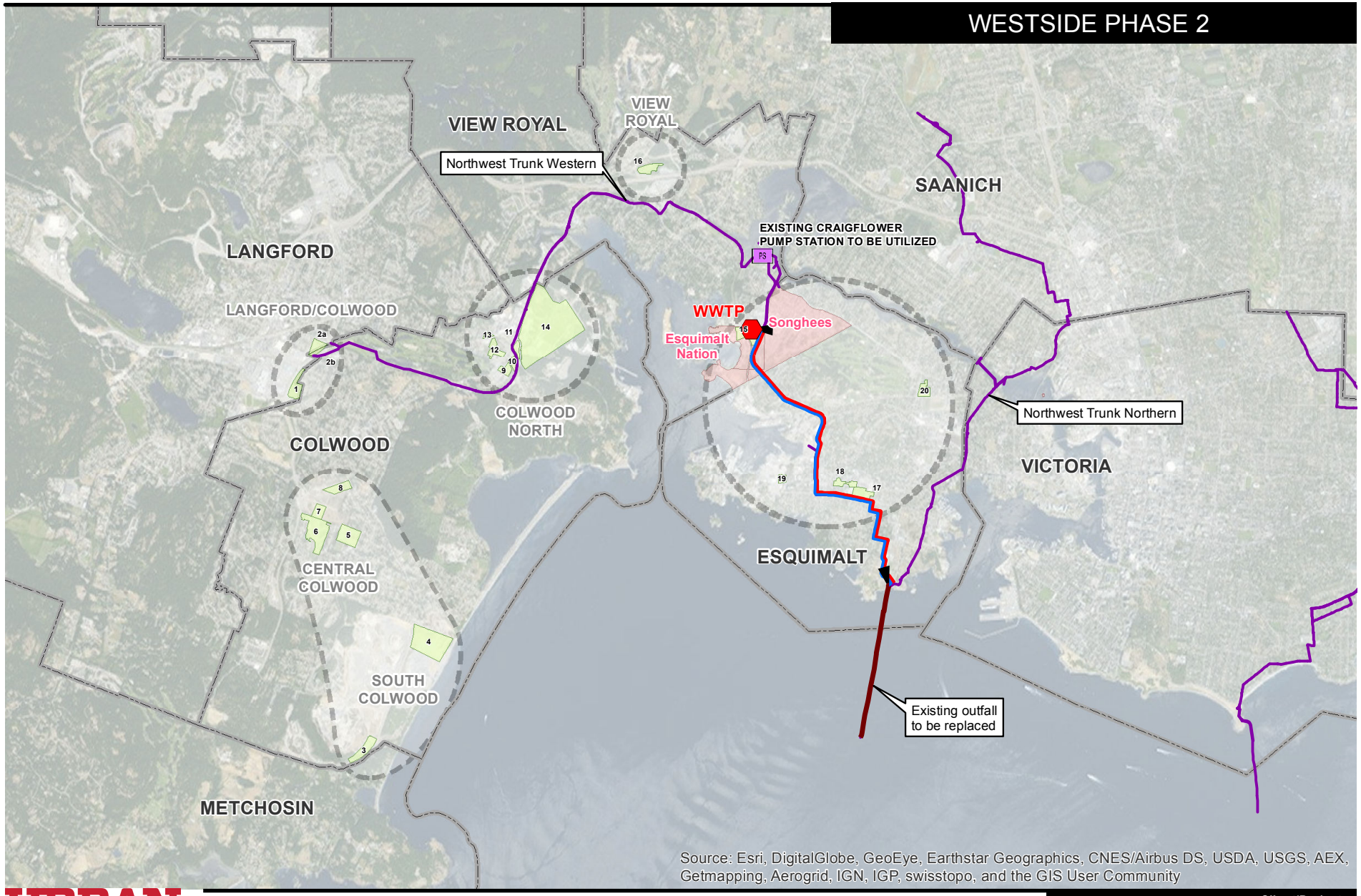
WESTSIDE PHASE 2



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Legend

- Municipal Boundary
- First Nation Reserve
- Site Nodes
- Existing Sanitary Trunkmain
- Existing Pump Station
- Raw Sewage Forcemain
- Treated Effluent Forcemain
- New Outfall
- Potential WWTP

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CAPITAL REGIONAL DISTRICT
WESTSIDE PHASE 2

Scale	Date (y/m/d)	Figure
nts	2015-10-07	7.3
1692.0034.08		Title

WESTSIDE OPTION SETS
ONE PLANT OPTION

The balance of the flows from the two First Nations, Esquimalt, west Saanich and west Victoria will be pumped to the plant from the Macaulay Point outfall. After treatment all of the flow will be pumped back to the Macaulay outfall.

The plant will be able to treat the full 4 x ADWF to a primary level, as well as the first 2 x ADWF to a secondary level.

7.4.2 Option Set Components

Figure 7.2 also illustrates the various components required for this option. The following components are noted:

1. Tie-in to CRD trunkmain.
2. Pump station beside trunkmain to lift into plant.
3. Short forcemain into new plant.
4. Tie-in to pipe just downstream of Macaulay screens.
5. Short pipe into pump station.
6. Pump station at Macaulay Point to pump all flows (0 to 4 x ADWF) to new WWTP at Esquimalt First Nation.
7. Screened sewage forcemain to new WWTP (tie-in after screens at new plant).
8. Primary and Secondary plant to include headworks (grit, screens), equalization, primary clarifiers with chemical addition, moving bed bioreactors, clarifiers, and ultraviolet light disinfection.
9. Residual solids treatment including anaerobic digestion and dewatering.
10. Effluent pump station (part of plant).
11. Primary and secondary effluent forcemain back to Macaulay Point outfall, tie-in downstream of the screens.
12. Outfall to replace existing corroded one.

7.4.3 Cost Estimates

7.4.3.1 Capital Cost

The capital cost estimates are comprised of four main components – pump stations, piping, treatment plants and outfalls. It is noted that the pump stations and WWTPs have costs to the 2030 design flows, but the pipes have been costed to the 2045 design flows. Table 7.4 summarizes the capital costs for the one plant option.

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Table 7.4 Capital Cost Estimate for One Plant

Item	Estimated Cost
1. Esquimalt First Nation WWTP (190/95 MLD Primary/Secondary) Plus Solids Treatment	$ 139,000,000
2. CRD Trunk Tie-Ins (two)	$ 2,400,000
3. Piping 9,500 m, Not Including Effluent Reuse	$ 20,335,000
4. Esquimalt Effluent Reuse Network	$ 5,950,000
5. Four Pump Stations, Including Esquimalt Reuse Pump Station	$ 28,800,000
6. Replace Macaulay Outfall – 1,700 m @ 1.2 m Ø	$ 18,360,000
Subtotal	**$ 214,845,000**
General Requirements (Bonding, Mobilization/Demobilization, etc.) - 10%	$ 21,484,500
Contractor Profit/Overhead - 10%	$ 21,484,500
Construction Contingency - 35%	$ 75,195,750
Total Direct Costs	**$ 333,009,750**
Engineering - 15%	$ 49,951,763
CRD Administration - 8%	$ 26,640,740
Interim Financing - 4%	$ 13,320,870
Escalation to Mid-Point of Construction – 2%/year (4 years)	$ 27,450,824
TOTAL PROJECT COSTS	**$ 450,374,000**

7.4.3.2 Operating Costs

The annual operating costs assuming 2030 design flows and 2015 dollars, are summarized in Table 7.5.

Table 7.5 – Operating Cost Estimate for One Plant

Item		Estimated Annual Cost
1. Esquimalt First Nation WWTP	Liquid	$ 7,167,000
	Solids	$ 3,689,000
2. Pump Stations and Piping and Effluent Reuse System		$ 856,000
Subtotal		**$ 11,712,000**
Contingency (10%)		$ 1,171,200
TOTAL ANNUAL ESTIMATED OPERATING COST		**$ 12,883,200**

7.4.3.3 Anticipated Revenue

The anticipated revenues are listed below.

- Revenues from solids-energy recovery can be utilized to offset the costs of treatment and solids processing and market development but are unlikely to present incomes beyond the expenditures of the system.
- Water revenues phase in over-time with the potential of approximately $1,000,0000 in 2045. This amount is unlikely to cover the operating costs of a small MBR ('slipstream' type installation) even when capital financing is not included. Further life-cycle analysis and risk considerations, including any reductions to potable water revenues (other CRD service) are needed as part of Phase 2.
- Carbon offsets typically range in the order of $10 - $20 per tonne of CO2 equivalent. Carbon offsets for solids recovery will be analysed in Phase 2 for the Core Area.

7.4.3.4 Life Cycle Costs

Preliminary costing analysis suggests that the 1-plant option provides for the lowest capital and operating option for the Westside. Further cost savings may be realized by looking for further efficiencies and synergies through Core Area analysis.

7.4.4 Relevant Considerations

1. The usable area of the EFN site (3.72 ha) is inadequate to handle the full 2045 flows.
2. No new environmental impact study (EIS) is expected for the Macaulay outfall.
3. The flow from all Westside, West Saanich and Vic West are included in this option.
4. Aesthetically pleasing structures could enhance the neighbourhoods.
5. Heat recovery is possible at the treatment plants and along all trunk lines.
6. Can intercept 0 to 4 x ADWF from trunk line beside EFN to avoid repumping it from Macaulay.
7. Reclaimed water could be extracted from the 4,600 m long effluent forcemain for reuse between the plant and Macaulay outfall.
8. Agreements need to be made with the Esquimalt First Nation for their land.
9. This option incorporates an effluent reuse network in Esquimalt.
10. This is the option with the lowest life cycle cost.

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7.5 Option 2C Revised – Two Plants

7.5.1 Description

Option 2C is illustrated in Figure 7.4 and includes two important improvements from the original version (June 2015). First is that the plant in Colwood North does not discharge to its own outfall. Instead all of the effluent is reused for irrigation and aquifer recharge – which is estimated to have a maximum capacity of 10 MLD to 30 MLD. If the plant were not able to meet the effluent criteria, for whatever reason, it would be discharged into the CRD trunkmain for treatment at the large plant at Esquimalt Nation.

The second revision to Option 2C is that the extra-large plant is located at the Esquimalt First Nation, not on the Esquimalt Village site (#17). This is because site 17 does not appear able to accommodate the large facility as it increases in size and capacity to meet growth. Phase 2 analysis as part of the Core Area should consider synergies between sites on both Eastside and Westside for longer-term upsizing potential.

7.5.2 Components

Colwood Plant (10 MLD)

1. CRD tie-in to trunk at east boundary of Colwood.
2. Sewage pump station at east boundary of Colwood and CRD trunk (2 x ADWF from Colwood) to pump to new plant on Site 11. Note that 2 to 4 ADWF remains in trunk to be treated by plant at EFN.
3. Sewage forcemain to plant.
4. Plant on Site 11 with headworks (grit, screens), tertiary treatment with UV disinfection. Residual solids will be directed back into the CRD trunk for treatment at the new plant at EFN.
5. Effluent pump station (part of plant).
6. Network of pipes, valves, controls to distribute around Colwood for irrigation/aquifer recharge.
7. Failsafe valving and piping for effluent back to the CRD trunk in the event effluent quality does not meet the criteria for reuse.

Esquimalt First Nation Plant

1. Tie-in to CRD trunkmain.
2. Pump station beside trunkmain to lift into plant.
3. Short forcemain into new plant.
4. Tie-in to pipe just downstream of Macaulay screens.

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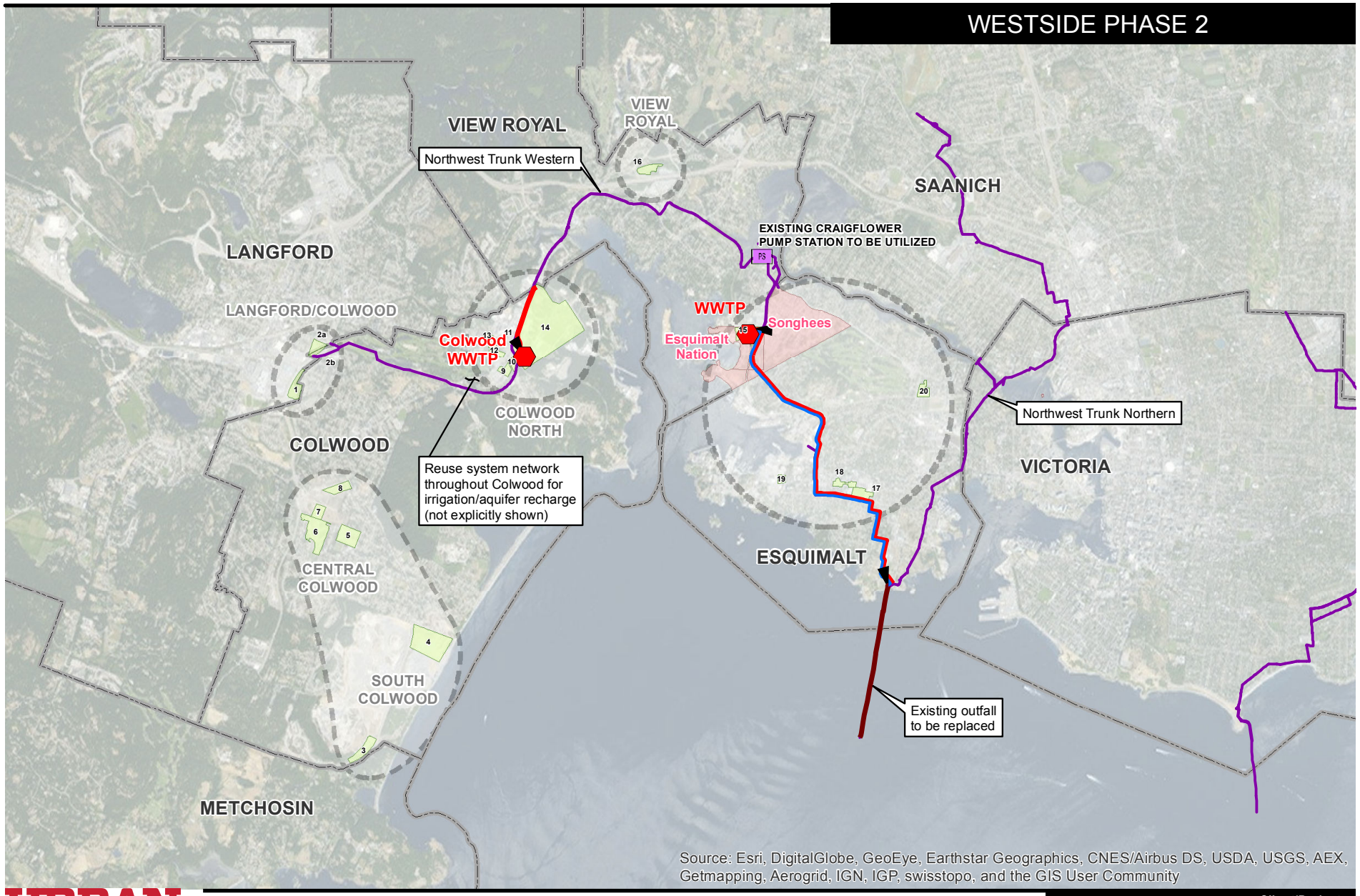

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Legend

- Municipal Boundary
- First Nation Reserve
- Site Nodes
- Existing Sanitary Trunkmain
- Existing Pump Station
- Raw Sewage Forcemain
- Treated Effluent Forcemain
- New Outfall
- Potential WWTP

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CAPITAL REGIONAL DISTRICT WESTSIDE PHASE 2

Scale	Date (y/m/d)	Figure
nts	2015-10-07	7.4
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WESTSIDE OPTION SETS
TWO PLANT OPTION

5. Short pipe into pump station.
6. Pump station at Macaulay Point to pump all flows (0 to 4 x ADWF) to new WWTP at Esquimalt First Nation.
7. Screened sewage forcemain to new WWTP (tie-in after screens at new plant).
8. Primary and Secondary plant to include headworks (grit, screens), equalization, primary clarifiers with chemical addition, moving bed bioreactors, clarifiers, and ultraviolet light disinfection.
9. Residual solids treatment including dewatering anaerobic digestion and dewatering.
10. Effluent pump station (part of plant).
11. Primary and secondary effluent forcemain back to Macaulay Point outfall, tie-in downstream of the screens.
12. Outfall to replace existing corroded one.

7.5.3 Cost Estimates

7.5.3.1 Capital Cost

The capital cost estimates are comprised of four main components – pump stations, piping, treatment plants and outfalls. It is noted that the pump stations and WWTPs have costs to the 2030 design flows, but the pipes have been costed to the 2045 design flows. Table 7.6 summarizes the capital costs for the two plant option.

Table 7.6 Capital Cost Estimate for Two Plants

Item	Estimated Cost
1. Esquimalt First Nation WWTP (190/95 MLD Primary/Secondary) Plus Solids Treatment	$ 139,000,000
2. Colwood WWTP (10 MLD) – No Solids Dewatering	$ 29,800,000
3. CRD Trunk Tie-Ins (3)	$ 2,850,000
4. Piping 10,650 m, Not Including Reuse Piping in Colwood & Esquimalt	$ 21,071,000
5. Colwood Reuse Network	$ 7,000,000
6. Esquimalt Reuse Network	$ 5,950,000
7. Six Pump Stations, Including Esquimalt Reuse Pump Station	$ 31,700,000
8. Replace Macaulay Outfall – 1700 m @ 1.2 m Ø	$ 18,360,000
Subtotal	**$ 255,731,000**
General Requirements (Bonding, Mobilization/Demobilization, etc.) - 10%	$ 25,573,100
Contractor Profit/Overhead - 10%	$ 25,573,100
Construction Contingency - 35%	$ 89,505,850
Total Direct Costs	**$ 396,383,050**

Item	Estimated Cost
Engineering - 15%	$ 59,457,458
CRD Administration - 8%	$ 31,710,644
Interim Financing - 4%	$ 15,855,322
Escalation to Mid-Point of Construction – 2%/year (4 years)	$ 32,674,711
TOTAL PROJECT COSTS	**$ 536,081,000**

7.5.3.2 Operating Costs

The annual operating costs assuming 2030 design flows and 2015 dollars, are summarized in Table 7.7.
.

Table 7.7 – Operating Cost Estimate for Two Plants

Item		Estimated Annual Cost
1. Esquimalt First Nation WWTP	Liquid	$ 7,167,000
	Solids	$ 3,689,000
2. Colwood WWTP	Liquid Only	$ 1,514,500
3. Pump Stations and Piping and Effluent Reuse Systems (2)		$ 1,052,100
Subtotal		**$ 13,422,600**
Contingency (10%)		$ 1,342,260
TOTAL ANNUAL ESTIMATED OPERATING COST		**$ 14,764,860**

7.5.3.3 Anticipated Revenue

The anticipated revenues are listed below.

- Revenues from solids-energy recovery can be utilized to offset the costs of treatment and solids processing and market development but are unlikely to present incomes beyond the expenditures of the system.
- Water revenues phase in over-time with the potential of approximately $3,000,0000 in 2045. This amount may cover the operating costs of the Colwood plant when capital financing is not included. Further life-cycle analysis and risk considerations, including any reductions to potable water revenues (other CRD service) are needed as part of Phase 2. If ‘slipstream’ MBR is added to the main plant at Esquimalt, it will likely add additional capital and operating costs that will not be recovered through water reuse revenues.

- Carbon offsets typically range in the order of $10 - $20 per tonne of CO2 equivalent. Carbon offsets for solids recovery will be analysed in Phase 2 for the Core Area.

7.5.3.4 Life Cycle Costs

Preliminary results strongly suggest that higher levels of treatment including MBR technologies provide for opportunities for reuse but notably increase capital as well as operating and maintenance costs. Water revenues alone are unlikely to recover these costs over time although there are may be opportunities to reduce the need for outfalls (the case of Colwood) which may create notable cost-offsets from reuse. The two-plant option provides for greater water reuse, is appreciably less cost than the four-plant option yet is notably greater cost than the 1-plant option.

7.5.4 Relevant Considerations

1. The area of the EFN site (3.72 ha) is inadequate to handle the full 2045 flows.
2. No new environmental impact study (EIS) is expected for the Macaulay outfall.
3. The flow from all Westside, West Saanich and Vic West are included in this option.
4. Aesthetically pleasing structures could enhance the neighbourhoods.
5. Heat recovery is possible at the treatment plants and along all trunk lines.
6. Colwood would have to relocate the Park n' Ride on Site 11.
7. Reclaimed water could be extracted from the 4,600 m long effluent forcemain for reuse between the plant and Macaulay outfall.
8. Agreements with EFN need to be made for use of their land.
9. Can intercept 0 to 4 x ADWF from trunk line beside EFN to avoid repumping it from Macaulay.
10. This option maximizes the known (or at least well studied) reuse opportunities of irrigation/aquifer recharge in the Colwood area.
11. This option includes an effluent reuse network in Esquimalt as well.
12. The alternative method of disposal for the Colwood plant is discharge back into the CRD trunk for treatment of the extra-large EFN plant.
13. Residual solids do not need to be dewatered and trucked away from the Colwood plant, since the waste solids can be put into the CRD sewer for treatment at EFN.
14. This option has higher life cycle costs than the one plant option.

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Appendix A

Derivation of 2045 Flows

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2045 ADWF Calculation

Area	2015 - 2045 Residential Growth Rates (%) [1]	2045 Residential & ICI Total Population Equivalents [1]	2045 Residential & ICI Flows (MLD) [2]	2045 Base Groundwater Infiltration (MLD) [5]	2045 ADWF (MLD)	
Saanich	0.5	184,424	36.0	9.7	45.7	
Victoria	0.5	151,589	[3]	[3]	40.8	[3]
Esquimalt	0.5	30,140	[4]	[4]	7.9	[4]
Langford	2.9	93,189	18.2	4.9	23.1	
Colwood	1.5	52,697	10.3	2.8	13.1	
View Royal	1.5	31,867	6.2	1.7	7.9	
Oak Bay	0.1	26,670	5.2	1.4	6.6	
Subtotal		**570,576**			**145.1**	
Esquimalt First Nation	-	-	-	-	0.4	[6]
Songhees First Nation	-	-	-	-	0.5	[6]
				Total	**146**	

West = 32.9 / East = 12.8

West = 6.8 / East = 34.0

(1) 033-DP-1

(2) Assume 195 Lcd, from CALWMP Amendment #8

(3) Equilavent Population increase estimate from 2030 is 10,000 people - increase 2030 flow by 10,000 x 195 Lcd x 1.27 = 2.5 MLD or 38.3 + 2.5 = 40.8

(4) Population increase estiamte from 2030 is 3274 - increae 2030 flow by 3274 x 195 Lcd x 1.27 = 0.8 MLD or 7.1 + 0.8 = 7.9

(5) LWMP Amendment 8 - 2030 ADWF = 108 MLD for Core Area

Equivalent Population in 2030 is 436,032 x $195 \frac{L}{person \cdot day} = 85$ MLD

Base GWI = 108 - 85 = 23

BGWI is $\frac{23}{85}$ = 27% of the Residential + ICI Flows

(6) Increase 2030 EFN and SFN flows by 145.1/108 = 1.33

Appendix B

2014 Influent Quality Data

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Macaulay **Screened Raw Sewage 2014**

Parameter	State	Unit	Frequency of Detectio	Average Concentration	n	Max Concentration	Min concentration	1:175 Dilution	BC WQG	CCME WQG
alkalinity - total - pH 4.5	TOT	mg/L	75%	217.7	9	273.0	188.0	1.1		
biochemical oxygen demand	TOT	mg/L	100%	275.8	12	376.7	180.0	1.5		
chemical oxygen demand	TOT	mg/L	100%	632.5	12	816.0	433.3	3.3		
carbonaceous biochemical ox	TOT	mg/L	100%	226.4	12	291.0	162.0	1.2		
cyanide-SAD	TOT	mg/L	100%	0.00256	9	0.00334	0.00173	0.00001		
cyanide-WAD	TOT	mg/L	100%	0.00148	10	0.00263	0.00083	0.00001	0.001b	
hardness (as CaCO3)	DISS	mg/L	100%	76.8	12	112.7	55.1	0.5		
hardness (as CaCO3)	TOT	mg/L	100%	88.6	12	127.7	63.6	0.5		
oil & grease, total	TOT	mg/L	100%	8.8	10	17.3	4.9	0.1		
oil & grease, mineral	TOT	mg/L	25%	ND	3	3.30	2.00	0.01		
pH	TOT	pH	100%	7.34	12	7.71	7.10	0.03		
pH @ 15° C	TOT	pH	100%	6.99	12	7.19	6.77	0.03		
specific conductivity - 25°C.	TOT	µS/cm	100%	794.4	12	971.0	649.3	4.0		
sulphate	TOT	mg/L	100%	29.3	2	39.6	18.9	0.2		
sulfide	TOT	mg/L	100%	0.353	11	0.632	0.125	0.003	0.002cf	
temperature	TOT	°C	100%	17.2	12	20.5	13.3	0.1		
enterococci	TOT	CFU/100 mL	100%	2,584,848	12	4,266,667	1,633,333	17,000	20j	35/70n
fecal coliforms	TOT	CFU/100 mL	100%	8,563,636	12	29,000,000	4,200,000	118,000	200j	
N - TKN (as N)	TOT	mg/L	100%	54.4	12	70.3	40.5	0.3		
N - NH3 (as N)	TOT	mg/L	100%	42.4	8	49.0	35.3	0.2		
N - NH3 (as N)- unionized	TOT	mg/L	100%	0.115	12	0.190	0.058	0.001	19.7e	
N - NO2 (as N)	TOT	mg/L	75%	0.041	9	0.253	0.005	0.001		
N - NO3 (as N)	TOT	mg/L	25%	ND	3	0.020	0.005	---		
N - NO3 + NO2 (as N)	TOT	mg/L	0%	ND	0	0.0200	0.0200	---		
P - PO4 - total (as P)	DISS	mg/L	100%	4.3	10	5.75	2.63	0.02		
P - PO4 - total (as P)	TOT	mg/L	100%	5.5	12	6.81	3.89	0.03		
P - PO4 - ortho (as P)	TOT	mg/L	100%	3.8	12	4.96	2.02	0.02		
total organic carbon	TOT	mg/L	100%	82	11	144.0	42.6	0.6		
total suspended solids	TOT	mg/L	100%	270	12	332	168	1.4		
aluminum	TOT	mg/L	100%	0.3	12	0.365	0.203	0.001		
antimony	TOT	mg/L	100%	0.0003	12	0.000399	0.000243	0.000002		
arsenic	TOT	mg/L	100%	0.0006	12	0.00084	0.00044	0.000003	0.0125cg	0.0125
barium	TOT	mg/L	100%	0.02	12	0.0387	0.0137	0.0002	0.5ac	
beryllium	TOT	mg/L	0%	ND	0	0.0000100	0.0000100	---		
cadmium	TOT	mg/L	100%	0.0002	12	0.000275	0.000139	0.000001	0.00012c	0.000120
calcium	TOT	mg/L	100%	21.7	12	29.3	16.8	0.1		
chloride	TOT	mg/L	100%	89.1	8	140.3	75.0	0.6		
chromium	TOT	mg/L	100%	0.002	12	0.00298	0.00116	0.00001		
chromium VI	TOT	mg/L	25%	ND	3	0.00120	0.00100	---		
cobalt	TOT	mg/L	100%	0.0009	12	0.001310	0.000504	0.000005	0.000004	
copper	TOT	mg/L	100%	0.12	12	0.169	0.081	0.001	0.001	0.003bh

Clover **Screened Raw Sewage 2014**

Parameter	State	Unit	Frequency of Detection	Average Concentration	n	Max Concentration	Min concentration	1:175 Dilution	BC WQG	CCME WQG
alkalinity - total - pH 4.5	TOT	mg/L	75%	168	9	179.3	154.3	1.0		
biochemical oxygen demand	TOT	mg/L	100%	238	12	305.0	184.0	1.7		
chemical oxygen demand	TOT	mg/L	100%	530	12	686.0	301.3	3.9		
carbonaceous biochemical oxygen	TOT	mg/L	100%	192	12	248.3	118.3	1.4		
cyanide-SAD	TOT	mg/L	100%	0.002	9	0.00257	0.00158	0.00001		
cyanide-WAD	TOT	mg/L	100%	0.0013	10	0.00216	0.00071	0.00001	0.001b	
hardness (as CaCO3)	DISS	mg/L	100%	63.9	12	90.4	49.0	0.5		
hardness (as CaCO3)	TOT	mg/L	100%	73.2	12	97.9	60.1	0.6		
oil & grease, total	TOT	mg/L	100%	9.7	10	24.3	3.5	0.1		
oil & grease, mineral	TOT	mg/L	42%	ND	5	4.00	2.00	0.02		
pH	TOT	pH	100%	7.33	12	7.71	7.10	0.04		
pH @ 15° C	TOT	pH	100%	6.89	12	7.15	6.24	0.04		
specific conductivity - 25°C.	TOT	µS/cm	100%	528.1	12	568.0	481.0	3.2		
sulphate	TOT	mg/L	100%	20.6	2	24.1	17.0	0.1		
sulfide	TOT	mg/L	100%	0.246	11	0.424	0.092	0.002	0.002cf	
temperature	TOT	°C	100%	18.4	12	21.2	14.9	0.1		
enterococci	TOT	CFU/100 mL	100%	2,255,556	12	4,500,000	766,667	25,714	20j	35/70n
fecal coliforms	TOT	CFU/100 mL	100%	6,433,333	12	14,333,333	3,033,333	81,886	200j	
N - TKN (as N)	TOT	mg/L	100%	40.8	12	51.7	28.9	0.3		
N - NH3 (as N)	TOT	mg/L	100%	27.1	8	34.0	13.3	0.2		
N - NH3 (as N)- unionized	TOT	mg/L	100%	0.058	12	0.120	0.012	0.001	19.7e	
N - NO2 (as N)	TOT	mg/L	92%	0.063	11	0.187	0.005	0.001		
N - NO3 (as N)	TOT	mg/L	50%	ND	6	0.489	0.006	0.003		
N - NO3 + NO2 (as N)	TOT	mg/L	0%	ND	0	0.0200	0.0200	0.0001		
N - Total (as N)	TOT	mg/L	100%	40.3	1	40.3	40.3	0.2		
P - PO4 - total (as P)	DISS	mg/L	100%	3.40	10	4.30	1.88	0.02		
P - PO4 - total (as P)	TOT	mg/L	100%	4.36	12	5.74	2.76	0.03		
P - PO4 - ortho (as P)	TOT	mg/L	100%	2.91	12	4.04	1.75	0.02		
total organic carbon	TOT	mg/L	100%	61.9	11	118.0	30.8	0.7		
total suspended solids	TOT	mg/L	100%	238.4	12	292.0	166.0	1.7		
aluminum	TOT	mg/L	100%	0.310	12	0.435	0.217	0.002		
antimony	TOT	mg/L	100%	0.000258	12	0.000380	0.000186	0.000002		
arsenic	TOT	mg/L	100%	0.00066	12	0.00111	0.00050	0.00001	0.0125cg	0.0125
barium	TOT	mg/L	100%	0.0214	12	0.0253	0.0120	0.0001	0.5ac	
beryllium	TOT	mg/L	8%	ND	1	0.0000103	0.0000100	0.0000001		
cadmium	TOT	mg/L	100%	0.000157	12	0.000260	0.000100	0.000001	0.00012c	0.00012
calcium	TOT	mg/L	100%	18.8	12	25.4	16.3	0.1		
chloride	TOT	mg/L	100%	42.8	8	45.7	39.0	0.3		
chromium	TOT	mg/L	100%	0.00100	12	0.00155	0.00069	0.00001		
chromium VI	TOT	mg/L	0%	ND	0	0.00133	0.00100	0.00001		
cobalt	TOT	mg/L	100%	0.000360	12	0.000506	0.000289	0.000003	0.000004	

Appendix C

Ammonia Toxicity Memorandum

DRAFT

MEMORANDUM

URBAN systems

Date:	September 23, 2015
To:	Chris Town, P.Eng.
cc:	Ehren Lee, P.Eng., Steve Brubacher, P.Eng.
From:	Dr. Joanne Harkness, R.P.Bio.
File:	1692.0037.01
Subject:	Requirements for Ammonia Treatment

1. INTRODUCTION

The CRD is currently assessing options for the management of the sanitary sewage which is produced by the area. The purpose of this memorandum is to provide a summary of the assessment which was completed to determine if treatment for ammonia will be required in order to meet Federal and Provincial regulatory requirements.

2. BACKGROUND TO AMMONIA IN MUNICIPAL WASTEWATER

Ammonia is the predominant form of nitrogen in untreated municipal wastewater and in municipal wastewater effluents where there is no nitrification (biological reduction of ammonia). Ammonia is one of the key parameters of concern with respect to sewage effluents and aquatic toxicity. Both acute and chronic toxicity need to be considered.

Acute toxicity refers to a rapid and extreme response to environmental conditions – i.e. death normally occurs within a short period of time. The standard test for determining acute toxicity in an aquatic environment is the LC50 96 hour rainbow trout bioassay. In this test, 10 young rainbow trout are used per test. If 6 fish die within 96 hours, the test solution is determined to be acutely toxic and has failed the toxicity test. Acute toxicity is the focus for effluent prior to release to the environment.

Chronic toxicity is less easy to define than acute toxicity as this type of toxicity refers to effects which may be observed over a long time period and which may be subtle in nature. Chronic toxicity could equate to impacts on off-spring of exposed individuals, metabolic differences or subtle changes in the ability to survive or reproduce. Due to the complexity of chronic toxicity, acute toxicity has historically been the primary focus for legislation and the regulatory government agencies. Chronic toxicity is the focus for environmental conditions, once the effluent has been released.

Ammonia is present in two forms: ionised and un-ionised, the proportion of which is dependent on pH and temperature. It is the un-ionised form of ammonia which is of particular interest, as this is the form which is toxic to fish. The un-ionised form of ammonia becomes the predominant form of ammonia as the pH increases. As a result, under alkaline conditions, it is possible for very low concentrations of ammonia to cause aquatic toxicity. Total ammonia is the sum of the ionised and un-ionised forms of ammonia.

3. REGULATORY BACKGROUND

3.1 Provincial Legislation and Guidelines

The Municipal Wastewater Regulation (MWR) is the regulatory framework for management of sewage in British Columbia. The MWR was published in April 2012, and replaced the Municipal Sewage Regulation,

which was promulgated in 1999. The MWR outlines the effluent quality standards and discharge requirements for municipal wastewater treatment plants in British Columbia. For discharge to surface waters, the MWR indicates the expectations for effluent quality, dilution and defines the concept of an initial dilution zone (IDZ). The IDZ is an area immediately around the point of discharge where it is acceptable for degradation in water quality to occur. With respect to ammonia, the MWR focuses on meeting chronic ammonia concentrations at the edge of the IDZ. The concentration of ammonia in the effluent is to be back calculated based on the need to meet site-specific chronic conditions at the edge of the IDZ.

The Capital Regional District (CRD) has an approved Liquid Waste Management Plan (LWMP). A LWMP is a powerful document which is based on the current legislation. The completion of a LWMP results in a document which takes precedence over any existing permit or the MWR. Although a LWMP can provide an avenue for flexibility, the general intent of a LWMP is to develop a plan which will be implemented over time in order to meet the intent and conditions of the MWR.

The BC Water Quality Guidelines provide guidance as to suitable water quality for a range of different uses including drinking water, aquatic life, recreation and agriculture. The guidelines do not have any direct legal standing but are intended to be used as a tool to provide policy direction for decisions relating to water quality. These guidelines can be used to evaluate appropriate effluent criteria for release from a municipal wastewater treatment plant. For ammonia, there are acute and chronic guidelines for the protection of aquatic life for both marine and freshwater surface waters. The guideline value varies, depending on the temperature and pH. For marine waters, the salinity also needs to be taken into consideration. The BC Water Quality Guidelines define chronic as a 30 day average, based on 5 weekly samples taken over a 30 day period. This definition allows for an increased likelihood that a particular condition may both exist and persist in an environment.

3.2 Federal Legislation and Guidelines

The Federal wastewater regulation (the Wastewater Systems Effluent Regulations) was published in July, 2012 and applies to any surface water discharge in Canada where the average annual incoming flow to the sewage treatment plant is ≥ 100 m^3/d, with the focus being to protect surface waters which are regarded as fisheries resources. The regulation contains National Performance Standards, with the standard for ammonia being a maximum concentration of un-ionised ammonia of 1.25 mg/L, prior to release. The Federal regulation also recognises ammonia conditions after dilution in the receiving environment. In the event that the un-ionised ammonia concentration of 1.25 mg/L cannot be met before effluent release, then there is no need to upgrade for ammonia treatment as long as an un-ionised ammonia concentration of 0.016 mg/L is met in the receiving environment, 100 m away from the point of release. The discharger would need to apply for a temporary authorisation which is valid for 3 years. Re-application for the temporary authorisation would be required every 3 years, if the effluent is still acutely toxic.

3.3 Summary of Legislation

There are three regulatory criteria for ammonia, all of which have direct relevance to each other.

1. The Federal wastewater regulation stipulates a maximum un-ionised ammonia concentration of 1.25 mg/L, before release. This focuses on acute toxicity to fish.
2. The Federal wastewater regulation stipulates that in the event that the effluent un-ionised ammonia concentration is above 1.25 mg/L, treatment for ammonia is not required as long as the concentration of un-ionised ammonia in the receiving environment is ≤ 0.016 mg/L, at a distance 100 m from the point of effluent release. This focuses on chronic toxicity to fish.
3. The MWR stipulates that the concentration of ammonia at the edge of the IDZ is to meet fisheries chronic concentrations, based on conditions in the receiving environment for temperature and pH. There is no requirement in the MWR for acute ammonia toxicity.

4. EFFLUENT AMMONIA EVALUATIONS

4.1 MWR Evaluations

In order to estimate the chronic total ammonia concentration at the edge of the IDZ, historical data for temperature, pH and salinity were taken from the CRD monitoring program database for locations at the edge of the IDZ. The data indicated little variability in the pH (range pH 7.50 to 7.96). The 90th percentile of the whole dataset (pH 7.83) was used for the evaluation. There was also consistency in the temperature throughout the year, ranging from a low of 7.07 ^{o}C in January to a high of 12.44 ^{o}C in July. The 90th percentile of the July dataset (11.10 ^{o}C) was used for the evaluation. The data indicated that the salinity was in the order of 30 g/kg, which is the highest threshold indicated in the BC Water Quality Guidelines. Based on these data the total ammonia concentration at the edge of the IDZ should be less than or equal to 3.4 mg/L.

The evaluations focused on 90th percentile data rather than the maximum data. Maximum data represent the worst case scenario and the intent was to evaluate the potential for a chronic effect to occur, which requires conditions which have a likelihood of occurring on a regular basis for an extended period of time. Maximum data represent extreme events which occur for short periods of time. This is not the intent of the definitions in the BC Water Quality Guidelines, where chronic conditions are evaluated using 5 data points taken on a weekly basis over 5 consecutive weeks.

Table 4.1 summarises the chronic total ammonia concentration at the edge of the IDZ and the corresponding effluent total ammonia concentration for both the Macauley Point and Clover Point outfalls. The dilution ratio was taken from CRD customized oceanographic/plume modelling of the effluent dilution and dispersion at both outfall locations. The estimations do not take into account the background total ammonia concentration. However, this is a low concern given that the background total ammonia concentration is expected to be close to the analytical detection limit (e.g. in the order of 0.005 mg/L) and the estimated effluent concentrations which would be required to cause chronic ammonia conditions at the edge of the IDZ are significantly higher than what would be expected for untreated municipal wastewater. From this evaluation, since untreated municipal wastewater would have a maximum total ammonia concentration of 45 mg/L, there are no requirements to treat for ammonia to meet chronic ammonia conditions at the edge of the IDZ.

Table 4.1: Summary of End of IDZ Chronic Ammonia Concentration and the Corresponding Effluent Total Ammonia Concentration

Outfall Location	Edge of IDZ Chronic Total Ammonia Concentration to Meet MWR (mg/L)	Edge of IDZ Dilution Ratio	Corresponding Effluent Total Ammonia Concentration (mg/L)
Macaulay Point	≤ 3.4	245:1	≤ 833
Clover Point	≤ 3.4	175:1	≤ 595

4.2 Federal Wastewater Regulation Evaluations

The Federal wastewater regulation recognises both acute toxicity before effluent release and chronic toxicity at a point 100 m away from the point of release. For the effluent prior to release, the standard is a maximum un-ionised ammonia concentration of 1.25 mg/L. Table 4.2 summarises the pH range expected for a typical municipal wastewater effluent and the corresponding total ammonia concentration which would equate to an un-ionised ammonia concentration of 1.25 mg/L. The standard total ammonia concentration for untreated municipal wastewater is 25 mg/L. However, it is reasonable to expect that there will be periodic increases in the wastewater total ammonia concentration, with the concentration potentially being in the order of 45 mg/L. For a wastewater treatment plant that is not designed to nitrify, it is reasonable to expect that the effluent total ammonia concentration will typically be in the 25 mg/L range, but could periodically be as high as 45 mg/L. From this, although there would be no concerns with the acute un-ionised ammonia threshold of 1.25 mg/L being exceeded if the effluent pH is 7.5 or less, this may not be the case if the pH is in the order of 8.0, as the maximum effluent total ammonia concentration is very close to the acutely toxic threshold under these conditions.

Table 4.2: Effluent Total Ammonia Concentration to be Non-acutely Toxic

Effluent pH	Total Ammonia Concentration (mg/L)
7.0	≤ 455
7.5	≤ 148
8.0	≤ 47

In the event that the effluent is acutely toxic before release, there will be the need to consider the ability to meet chronically toxic concentrations after the release. Table 4.3 summarises the effluent un-ionised and total ammonia concentration required in order to meet an un-ionised ammonia concentration of 0.016 mg/L at the edge of the IDZ, which is approximately 100 m away from the point of effluent release, for both the Macaulay Point and Clover Point outfalls. Using the worst case effluent pH of 8.0, the information presented in Table 4.3 indicates that, in the event it is not possible to meet the pre-discharge un-ionised ammonia concentration of 1.25 mg/L, it will be possible to meet the receiving environment concentration of 0.016 mg/L. The calculated corresponding total ammonia concentration for both the Macaulay Point and Clover Point outfalls is significantly higher than what would be expected for ammonia

to be present in untreated municipal wastewater. As a point of reference, the effluent pH would need to be in the order of 8.4 before there would be concerns regarding the ability to meet an un-ionised ammonia concentration of 0.016 mg/L in the receiving environment.

Table 4.3: Summary Effluent Total and Un-ionised Ammonia Concentration to Meet Chronic Conditions 100 m Away from the Outfall

Outfall Location	Effluent Un-ionised Ammonia Concentration (mg/L)	Edge of IDZ Dilution Ratio	Effluent Total Ammonia Concentration (mg/L)
Macaulay Point	≤ 3.9	245:1	≤ 146
Clover Point	≤ 2.8	175:1	≤ 104

From the above information, there are no requirements to treat for ammonia to meet the requirements of the Federal wastewater regulation. In the event that the effluent ammonia concentration is deemed to be acutely toxic, the chronic concentrations in the receiving environment can be met and, therefore, this site would be eligible to apply for a temporary authorisation, which is renewable every 3 years, if required.

5. ADDITIONAL INFORMATION – REGULATORY CHANGES

This document considers both the Federal wastewater regulation and the MWR. However, discussion is currently underway to harmonize the BC regulation with the Federal wastewater regulation, which will mean that the Federal wastewater regulation will no longer apply in BC, and the default regulation for an effluent release to a surface water will be the MWR. Preliminary discussions with the BC Ministry of Environment have indicated that, with respect to ammonia, the approach will be to focus on meeting chronic concentrations in the receiving environment, which is consistent with the current conditions in the MWR. However, this approach will need to be confirmed once the harmonization process is complete.

The timing of the harmonization agreement has not been set, but prior to the end of 2015 is considered to be reasonable.

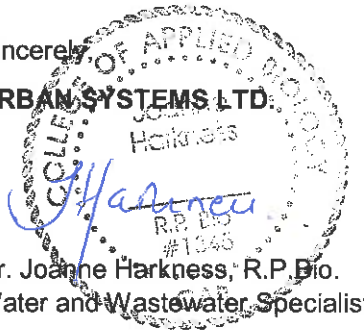
6. SUMMARY

At this point in time, both the Federal and Provincial wastewater regulations need to be considered with respect to effluent ammonia standards. This may not be the case in the future, if the harmonization process is finalised. The default regulation will be the MWR.

The information presented above indicates that there is no requirement to reduce ammonia in order to meet the MWR. Chronic conditions at the edge of the IDZ can be met without ammonia treatment. There is also no requirement to treat for ammonia to meet the Federal wastewater regulation. There could be a slight risk that the effluent could be periodically acutely toxic for ammonia, depending on the operational

pH. However, there is no risk that the chronic concentration would not be met in the receiving environment. Therefore, in the event that there is an issue with acute effluent toxicity, this site would be eligible to apply for a temporary authorisation, which is renewable every 3 years, if required.

Sincerely,
URBAN SYSTEMS LTD.



Dr. Joanne Harkness, R.P.Bio.
Water and Wastewater Specialist

/jh

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Appendix D

Options for Management of Residual Solids Memorandum

DRAFT

MEMORANDUM

URBAN systems

Date:	September 14, 2015
To:	Chris Town, P.Eng.
cc:	Ehren Lee, P.Eng., Steve Brubacher, P.Eng.
From:	Dr. Joanne Harkness, R.P.Bio.
File:	1692.0037.01
Subject:	Options for Management of Residual Solids

EXECUTIVE SUMMARY

Westside is currently assessing options for the management of the sanitary sewage which is produced by the area. The purpose of this memorandum is to provide an outline of the management approaches available for the residual solids which will be produced as part of the wastewater treatment process. This will include an outline of the acceptable methods of reuse and disposal, the regulatory considerations and treatment approaches. There are a variety of different words which can be used for the residual solids which are produced during municipal wastewater treatment. For the purpose of this memorandum, the use of the word “sludge” will relate to the untreated residual solids which are produced during wastewater treatment and the use of the word “biosolids” will relate to sludge which has undergone treatment and meets the regulatory standards outlined in the BC Organic Matter Recycling Regulation (OMRR).

In this memorandum, the focus for the management options was disposal to landfill, use for plant growth and use as an energy source.

With respect to disposal to landfill, it is expected that no authorisation is required from the BC Ministry of Environment as long as the receipt of the sludge/biosolids does not contravene the conditions of the landfill operating permit. The landfill owner needs to be willing to accept the sludge/biosolids. This is becoming more challenging with time, due to the diversion of organic matter away from landfills. Treatment would not be required prior to disposal to landfill, but a tipping fee will be charged.

For application to land, while this approach is long-practiced and well documented, there can be significant opposition, despite the clear benefit to plant growth and soil conditions. Treatment requirements can be costly, with little to no return on the capital and operational costs through sales opportunities. No authorisation is needed from the BC Ministry of Environment, but there is the need to register biosolids activities under the OMRR, e.g. a compost operation or a Land Application Plan. A policy statement was passed by the CRD Board indicating the desire not to apply biosolids to land.

For use as an energy source, the focus was both incineration and gasification. The common approach to using sludge as an energy source is an incineration-type process. However, this results in high capital and operational costs, which could include the need to dry the sludge before combustion in order to increase process efficiency. There are risks associated with the gasification process, as this approach is relatively new for sludge/biosolids management and, as such, there is little information on the long-term operation. Moisture content and calorific value are both important when considering process efficiency. There is a risk with respect to the authorisation requirements, until incineration and gasification of

sludge/biosolids becomes established in BC. From the information available, it is expected that no authorisation is needed from the BC Ministry of Environment for the development of a combustion process for sludge/biosolids. Depending on the management approach for the waste solids and any wastewater which may be produced as a result of combustion, it is possible that no further authorisations are needed from the BC Ministry of Environment, with the only authorisation being a permit for air emissions. There is also a risk with respect to the requirement of a BC environmental assessment, although this may be avoided, depending on interpretations regarding the material for combustion and wording in the approved CRD Liquid Waste Management Plan. Clarification on these interpretations would be required from the BC Environmental Assessment Office.

1. INTRODUCTION

Westside is currently assessing options for the management of the sanitary sewage which is produced by the area. The purpose of this memorandum is to provide an outline of the management approaches available for the residual solids which will be produced as part of the wastewater treatment process. This will include an outline of the acceptable methods of reuse and disposal, the regulatory considerations and treatment approaches.

2. TERMINOLOGY

There are a variety of different words which can be used for the residual solids which are produced during municipal wastewater treatment. For the purpose of this memorandum, the following terminology and definitions will be used:

Sludge: The excess organic solids which are produced as a result of treating liquid wastes at wastewater treatment plants. These solids consist primarily of the excess micro-organisms which are used to treat wastewater. Sludge has not been treated by any recognised solids treatment process in order to produce biosolids. Therefore, the health and environmental risks associated with sludge can be high. Common concerns with sludge are the production of strong malodours, illness and environmental contamination.

Biosolids: Wastewater sludge which has been treated in order to create a product which has a lower pathogen concentration and is stable organically. The treatment processes to produce biosolids can result in a final product which has low risks to human health and the environment. Concerns relating to the production of strong malodours, illness and environmental contamination are low with biosolids.

3. OPTIONS FOR DISPOSAL AND REUSE

There are three common options for the management of sludge and biosolids. These options are:

1. Disposal
2. Use for plant growth
3. Use as an energy source

These three options are outlined in greater detail below.

3.1 Disposal

There are two approaches to the disposal of sludge/biosolids: landfill or incineration. With respect to landfill, the intent is that the sludge/biosolids will be incorporated into the landfill as waste material, rather than being used for cover. There are three different types of cover used at a landfill: daily cover, intermediate cover and final cover. However, there is a perception that if sludge/biosolids are used for daily cover, or even in some cases intermediate cover, then this should be classified as disposal, rather than a use. There is general agreement that use of sludge/biosolids for final cover is beneficial and should not be considered as disposal. With respect to incineration, in the event that sludge/biosolids are incinerated without any intent for energy recovery, this should be considered disposal and not use. For the purpose of this discussion, any consideration for disposal will focus solely on landfilling, rather than incineration, as it is assumed that if incineration is selected as a suitable opportunity for Westside, then this would be accompanied by energy recovery.

Generally, the disposal of sludge/biosolids to landfill does not need any direct authorisation or approval from the BC Ministry of Environment. The ability for a landfill to receive sludge/biosolids is typically authorised under general operating conditions through a permit or operational certificate, which is issued by the BC Ministry of Environment. The general operating conditions for landfills typically include restrictions relating to accepting wastes that are liquid in nature. Therefore, only dewatered sludge/biosolids can be received at a landfill. Although no strict number is given with respect to the desired solids content of sludge/biosolids for disposal to landfill, a good rule of thumb is a minimum of 12% for solids content, as this material can be handled as a solid. A solids content of 12% can be easily achieved by more simple dewatering processes, however, the standard dewatering process (i.e. the centrifuge) typically achieves a solids content in the order of 20%. Wording in the operational certificate for the Hartland Landfill does not expressly recognise sludge or biosolids, with the exception of the composting operation, which indicates that digested sewage sludge can be composted at this site.

The receipt of sludge/biosolids at landfill sites will incur trucking costs and tipping fees. Moisture content associated with the sludge/biosolids is an important factor with respect to both of these costs. A wetter sludge/biosolids will result in higher trucking and tipping fees, so there is an advantage to achieving a higher solids content during dewatering.

It is not necessary to treat the sludge to create biosolids before disposal to landfill. Treatment to create biosolids would help control odours and reduce the presence of potential pathogens. While odours associated with sludge may be a concern, odours are naturally associated with the material which is disposed to landfill and the use of daily cover is implemented as standard practice, regardless of whether sludge is present, to help control nuisance conditions, including odour. There is also a low concern with respect to human contact and the potential pathogens present in the sludge, due to the nature of a landfill operation. Treatment to create biosolids from sludge would incur costs, and the benefits associated with this capital and operational expenditure are questionable for a disposal practice. There could also be issues with perceptions regarding the disposal of biosolids, compared with sludge, as discussed below.

There is an increasing desire to divert organic matter from landfills. For example, the City of Calgary has banned the disposal of organic matter to landfill. The first phase of this policy will come into effect in 2017 with a complete ban to be effective 2019. Diversion of traditional waste into use is not just being encouraged from the local level, but is also being directed by Provincial and Federal policy. In 2012, the development of the Biosolids Management Strategy through the Canadian Council of the Ministers of the Environment (CCME) set policy throughout Canada to encourage the development of beneficial use approaches for sludge and biosolids, rather than disposal. This direction was fully embraced by the BC government. The CCME biosolids strategy highlighted the potential valuable nature of biosolids and the need to conserve landfill space for materials which truly do require disposal. As such, the document provided direction and outlined the desire for sludge to be treated to create biosolids, which could then be available for beneficial use. It is becoming harder to dispose of sludge/biosolids to landfill, and it is possible that this option may be eliminated in the future.

Although it may be possible to dispose of dewatered sludge/biosolids to landfill, it is necessary for the landfill owner to agree to accept the material. For many communities, this can be challenging as the sludge/biosolids provider is often different to the landfill owner. However, in this case, the CRD would bear responsibility for both sludge/biosolids production and landfill operations. Therefore, the ability to co-ordinate these two operations could easily be facilitated.

The advantages and disadvantages of disposing sludge/biosolids to landfill are summarised in Table 3.1.

Table 3.1: Advantages and Disadvantages of Disposal to Landfill

Advantages	Disadvantages
No need to incur costs to treat to create biosolids. Treatment is limited to dewatering only.	Approach is inconsistent with Federal and Provincial policy to encourage reuse not disposal.
Costs are limited to dewatering, trucking and tipping fees.	Potential to be short-term option only, due to desire to divert organic waste from landfills.

Table 3.1: Advantages and Disadvantages of Disposal to Landfill *(continued . . .)*

Advantages	Disadvantages
No authorisations needed – only an agreement from the landfill operator.	Using dewatered sludge for daily or intermediate cover may not address odour issues.
High potential to amalgamate sludge/biosolids and landfill operations as the CRD will be responsible for both activities.	There could also be issues with the dewatered sludge/biosolids becoming slippery when wet, due to the use of polymer for dewatering. This could affect the desire to use sludge/biosolids for daily or intermediate cover.

To summarise for the approach of disposal to landfill:

1. The landfill owner needs to be willing to accept the sludge/biosolids. This should be relatively easy to reach an agreement on, given that the CRD will be responsible for both sludge/biosolids and landfill operations.
2. It is expected that no authorisation is needed from the BC Ministry of Environment, but the receipt of sludge/biosolids is not to contravene any requirements in the operating permit or certificate for the landfill. The typical concern relates to liquid content, but this can be overcome through dewatering. Dewatering will be required to an approximate minimum solids content of 12%.
3. No treatment is required to produce a biosolids. This presents a capital and operational cost savings. It is relatively acceptable to dispose sludge to landfill but the production of biosolids could cause complications due to the concept that biosolids are a higher quality than sludge and, therefore, are more suitable for reuse than disposal.
4. A tipping fee will be charged.
5. The sludge/biosolids may be used as daily or intermediate cover, but this is not necessarily the case. It is possible for this material to be incorporated directly into the landfill, with waste matter.

3.2 Use for Plant Growth

This is the main approach to sludge and biosolids management throughout the world, and recognises the nutritional value that this type of organic matter can provide to plant life.

Although there are policy guidelines published by the CCME to encourage the use of biosolids in Canada, there are no Federal regulations governing the use of biosolids. In 2002, the Province of BC promulgated the Organic Matter Recycling Regulation (OMRR), which is intended to facilitate the management of septage, sludge and biosolids to encourage use, rather than disposal. The OMRR outlines the practices

for the acceptable treatment and application of organic matter to land for plant growth. There are three aspects to the OMRR:

1. Quality requirements
2. Treatment requirements
3. Requirements for the application to land

All three aspects are important when considering the requirements for the use of biosolids and biosolids products to land.

3.2.1 Quality Requirements

Under the OMRR, organic matter is separated into five different categories:

- Class A compost;
- Class B compost;
- Class A biosolids;
- Class B biosolids; and,
- A biosolids growing medium.

Table 3.2 summarises the quality of the 5 organic products which are identified in the OMRR. Biosolids growing medium and Class A compost have the highest quality. These products have no restrictions regarding their uses or access by the public. The quality requirements for a biosolids growing medium are higher than a Class A compost, as a biosolids growing medium is intended to be used in place of a soil. A Class A compost is intended to be used as an organic amendment and blended with soil to enhance soil nutrient content. A Class A biosolids is still a high quality product, and is intended to be blended with soil to enhance soil nutrient content. For quantities less than 5 m^3, the conditions for use of a Class A biosolids are exactly the same as those for a biosolids growing medium and a Class A compost, with no use or access restrictions. However, there are constraints on the use of Class A biosolids when the intent is to use more than 5 m^3 per year per parcel of land. The lowest quality categories apply to a Class B compost and Class B biosolids, and the use of these materials is subject to a number of constraints. In both cases, these biosolids products are intended to be blended with soil to enhance the soil nutrient content.

URBAN systems

Table 3.2: Summary of Material Quality under the OMRR

Parameter	Medium Type				
	Biosolids Growing Medium	**Class A Compost**	**Class B Compost**	**Class A Biosolids** (Note 1)	**Class B Biosolids**
Access	Unrestricted	Unrestricted	Restricted	Some restrictions	Restricted
Foreign Matter Content (% dry weight)	< 1	< 1	<1	<1	< 1
Sharp Foreign Matter	None present	None present	None present	None present	None present
C:N Ratio	> 15:1	> 15:1 and < 35:1	N/A	N/A	N/A
Faecal Coliforms (MPN/g dry weight)	< 1,000	< 1,000	< 2,000,000	< 1,000	< 2,000,000
Maximum Element Concentration (µg/g dry weight)					
Arsenic	13	13	75	75	75
Cadmium	1.5	3	20	20	20
Chromium	100	100	1,060	1,060	1,060
Cobalt	34	34	150	150	150
Copper	150	400	2,200	757	2,200
Lead	150	150	500	500	500
Mercury	0.8	2	15	5	15
Molybdenum	5	5	20	20	20
Nickel	62	62	180	180	180
Selenium	2	2	14	14	14
Zinc	150	500	1,850	1,850	1,850

Note 1: The quality criteria for a Class A biosolids is based on Federal requirements, stated in the Trade Memorandum T-4-93. This trade memorandum has no standards for copper or chromium, both of which are important for biosolids and biosolids products. The values stated in Table 3.2 for these metals are the proposed standards which have been indicated as reasonable by the BC Ministry of Environment.

3.2.2 Treatment Requirements

The treatment requirements under the OMRR relate to pathogen reduction and vector attraction reduction. Pathogen reduction is the decrease in micro-organisms which may have the potential to cause illness or disease and vector attraction reduction is the reduction in the potential for nuisance conditions (e.g. odour, attracting flies, etc.).

The requirements for pathogen reduction are outlined in Schedule 1 of the OMRR and are based on a temperature-time relationship for the destruction of enteric micro-organisms. The temperature-time relationship allows for either short periods of time when the sludge is exposed to elevated temperature or long periods of time when the sludge is exposed to low or ambient temperatures. The higher quality biosolids products (i.e. a biosolids growing medium, Class A compost and Class A biosolids) all require a period of elevated temperature (i.e. ≥ 50 ^{o}C) for an enhanced pathogen destruction to be achieved. Class B products (i.e. Class B biosolids and Class B compost) only require low or ambient temperature conditions, with the result being that there will likely be higher concentrations of potential pathogens associated with a Class B biosolids product.

From Schedule 1 of the OMRR, a biosolids growing medium or a Class A biosolids product can be achieved using a digestion process (aerobic or anaerobic digestion or composting) under elevated temperature conditions. The high temperature digestion processes are the most common approach for sludge treatment to create a biosolids product. Aerobic or anaerobic digestion normally requires an external energy source to achieve the elevated temperatures, but composting will achieve these temperatures naturally, as long as the organic matter is highly biologically active. The OMRR also recognises the potential to produce a Class A biosolids/biosolids growing medium by the addition of a highly alkaline substance, which will cause the temperature and pH to be raised. Treatment with the highly alkaline substance is not sufficient on its own to create a Class A biosolids/biosolids growing medium. Once treated, the biosolids must then be air dried to a minimum solids content of 50%. Lime is the most common alkaline substance which is used for sludge treatment. The wording in Schedule 1 of the OMRR also allows for any heat treatment method to be recognised as suitable to create a Class A biosolids/biosolids growing medium, as long as certain temperature conditions are met for a specified length of time. This wording in the OMRR was intended to allow the future inclusion of treatment processes which either were not developed or were not being used for sludge treatment at the time of the development of the regulation.

The acceptable processes to produce a Class B biosolids or a Class B compost are similar to those outlined for the Class A products (i.e. namely aerobic or anaerobic digestion, composting or lime stabilisation), however, the temperature-time requirements are less stringent. There are two further differences to the acceptable treatment processes for a Class B product: there is no requirement for air drying after treatment with lime, and air-drying on open beds under ambient temperature conditions is recognised as an acceptable treatment process.

Vector attraction reduction is the process by which the organic matter undergoes a change which will result in a biosolids or compost having low biological activity and a low odour potential. The acceptable vector attraction reduction methods are outlined in Schedule 2 of the OMRR and, unlike the pathogen reduction processes, there is little difference between a Class A and a Class B treatment process. The most common methods of vector attraction reduction involve biodegradation (i.e. composting and aerobic or anaerobic digestion). However, the use of an alkaline substance to increase the pH to the pH 11 to 12 range and the drying the sludge to at least 90% solids content are also acceptable treatment processes in the OMRR. However, in both of these cases, the treatment process does not destroy the organic matter but simply creates conditions which are not conducive to microbial activity. Should the conditions change either by a decrease in the pH or if the biosolids should become wet, it microbial activity can commence and nuisance conditions could be created. Therefore, unlike a digested/composted product, it is important that a pH-treated or dried product is handled carefully and appropriately in order to avoid nuisance conditions. In the case of the dried product, the OMRR does state that there is a requirement to maintain the dryness of the biosolids until application to land. This is to avoid nuisance conditions during storage.

The OMRR does identify alternatives to implementing one of the recognised treatment processes for vector attraction reduction. These alternatives are:

1. Laboratory testing to prove that there is low, or the potential for low, biological activity associated with the organic matter. The approach to this testing is open-ended, allowing flexibility within the regulation and emerging processes, technologies and analyses.
2. If the product does not meet the Class B biosolids or a Class B compost requirements, then the organic matter can still be applied to land for beneficial use as long as the risks associated with an unclassified product are managed through the land application practices, such as direct sub-surface injection or tilling into the soil within a short period of time.

3.2.3 Requirements for Application to Land

Under the OMRR, organic matter can be used to enhance vegetation or plant growth. There is a whole range of different types of lands where biosolids and biosolids products could be used, including back yards, community parks, agricultural lands, forestry lands and the rehabilitation of disturbed lands, such as mines, gravel pits and landfills. In the case of landfills, as indicated above, the use of biosolids/biosolids products for final cover to enhance rehabilitation of the land is perceived as a beneficial use, whereas use for daily and intermediate cover is perceived as disposal and is discouraged. The type of biosolids or biosolids product is important when developing direction for application to land.

A Class A compost, a biosolids growing medium and a Class A biosolids (for volumes less than 5 m^3/parcel of land) can be used without restriction. As such, it is possible for these types of products to be used in back yards, community parks as well as the standard approaches to application such as agricultural land and the rehabilitation of disturbed lands. However, there are more restrictions for a

Class B compost, a Class B biosolids or larger volumes of Class A biosolids, and a Land Application Plan is required in each case. The Land Application Plan is to be prepared by a qualified professional and submitted to the BC Ministry of Environment before the organic matter is used. The Land Application Plan outlines appropriate application methods, timing, weather conditions, crop and soil needs, testing and monitoring requirements, and site-specific precautions which are needed.

Although the OMRR focuses on allowing the land application of biosolids or biosolids products which have met both treatment and quality requirements, it is possible for sludge to be applied to land, even if the sludge does not meet all of the quality or treatment criteria outlined in the OMRR. In this case, additional testing or site specific controls or application methods would likely be needed in order to protect public health and the environment.

3.2.4 Discussion on Land Application

The land application of biosolids and biosolids products is a controversial subject with many prejudices, misunderstandings and concerns. On the positive side, the use of biosolids and biosolids products for the enhancement of plant growth has been a practice throughout the world for many centuries. There is a clear nutritional benefit to the use of these products, with advantages including:

- The nutrients present in biosolids and biosolids products provide a good balance of macro and micro-nutrients, organics and minerals – i.e. the full package needed for plant growth.
- The use of biosolids and biosolids products will reduce, and may even eliminate, the need for chemical fertilizers.
- Biosolids and biosolids products will allow for a slow release of the nutrients over time, which reduces risk associated of a fast flush of nutrients through the soils. The fast flush of nutrients is often associated with rainfall/irrigation after a period of dryness and is related to the inability of the plants to take up the excess nutrients which have been applied to the soil through a heavy fertilizer application. The flushing of nutrients through the soil raises risks with respect to run-off and groundwater contamination. The slow release of nutrients from biosolids/biosolids products also allows for the nutrients to be used by the plants throughout the growing season.
- The organic nature of biosolids and biosolids products can result in improved soil structure and increase the ability of the soil to hold water. This increases in importance in dry conditions as it can result in the need for less watering.

The use of biosolids and biosolids products for the enhancement of plant growth is regulated by the OMRR, which was developed based on scientific information. The treatment, quality and application of the biosolids and biosolids products are all controlled, which provides the ability to manage health and environmental concerns. By comparison, there is no control over the use of manures, which could contain significant concentrations of pathogens, heavily metals or medications used in agricultural processes, and there is no control over the use of chemical fertilizers, which can easily be misused or

over-applied. From this, there could be both health and environmental impacts as a result of using manures or fertilizers, due to the lack of control.

However, concerns are raised with the use of biosolids and biosolids products. Some of these concerns relate to misunderstandings, but some are valid. Some of these concerns are discussed in further detail below.

It is possible that malodours could be caused as a result of biosolids and biosolids products, with the risk of odours being greater for a Class B or Class A biosolids, compared with a compost or biosolids growing medium. The cause of the odours is related to the continued self-digestion of the biosolids/biosolids product during storage and will become a higher risk during prolonged storage of large stockpiles. Although similar odours can be associated with manures, there is a perception that manure odours are acceptable, but an odour which results from biosolids/biosolids products is not acceptable. The risks associated with odours can be managed through increased treatment (vector attraction reduction), storage conditions and application conditions. However, one unfortunate factor is that a little odour can travel a long way and, once neighbours become aware of a disagreeable odour, there is an increased sensitivity to even slight odour conditions.

Biosolids and biosolids products can be seen as human waste and, therefore, are automatically perceived as being toxic to human health and the environment. There are many misquotes where biosolids and biosolids products are described as human sewage. There is a lack of understanding that biosolids and biosolids products are not sewage, but are the excess micro-organisms which are used to treat sewage and most of these micro-organisms are found naturally in the environment, e.g. a wetland or in lake sediments, but have simply been concentrated as part of the sewage treatment process. There is also a lack of understanding of the treatment to create a biosolids/biosolids product and that there is a difference between biosolids and sludge. However, while it should be recognised that biosolids and biosolids products are not sewage, they are created from sewage and components of that sewage could affect the quality, with three key concerns being pathogens and the presence of pharmaceuticals and heavy metals.

Pathogens or micro-organisms which could cause illness or disease will be present in sewage and may also be present in the sludge, biosolids or biosolids products. This is no difference to similar micro-organisms being present in manures which are also used to enhance plant growth. These micro-organisms can be treated, as indicated in the various pathogen reduction processes for Class A and Class B standards, but they are also at a disadvantage to surviving during the sewage treatment process or in soils, as their natural environment is the digestive system. In addition, other considerations such as direct contact, ingestion and the need to be in contact/ingest a certain number of specific disease-causing organisms is required before illness or disease can occur. The presence of pathogens or micro-organisms which could cause illness or disease are regulated under the OMRR.

Pharmaceuticals or other similar substances are present in sewage and the concern is that these substances can interfere with the endocrine system. The best documented effect is the feminisation of male species as a result of contact with female hormones which are present in sewage effluents. The challenge with these substances is that they are only found in trace amounts and are difficult and expensive to analyse for. Some of these substances remain associated with the effluent and should not be considered as a concern for the land application of biosolids or biosolids products. However, some of these substances adhere to sludge and will be present during land application. Scientific research has indicated that these substances prefer to remain associated with the biosolids, which lessens the concern that they have the ability to migrate through soils to contaminate the environment. Scientific research has also indicated that by being associated with biosolids/biosolids products, this increases the potential and rate at which these substances are broken down biologically. The presence of pharmaceuticals and similar substances is not regulated under the OMRR. This is largely due to several factors such as the emerging nature of this topic, challenges with analysis and detection, and the extremely low concentrations in which these substances are found. Pharmaceuticals and other similar substances can also be present in manures.

Heavy metals are present in sewage and have a natural tendency to migrate to and accumulate in the sludge. Therefore, heavy metals will be present in biosolids and biosolids products. While heavy metals can be used as trace nutrients, there is a concern with contamination and, although heavy metals prefer to be associated with sludge/biosolids/biosolids products, it may be possible for them to become soluble and move through soils, potentially entering groundwater and surface water. The presence of heavy metals is regulated under the OMRR, with standards including pre-application concentrations and post-application concentrations, which also consider the presence of heavy metals in soils and the need to protect health and the environment. Heavy metals are also found in manures and commercial fertilizers, and there is limited ability to regulate or control activities related to the application of manures and commercial fertilizers.

Sludge, biosolids and biosolids products are also perceived to be associated with pollution. However, commercial fertilizers and the use of manures can also cause pollution if used in the wrong place at the wrong time. Unlike commercial fertilizers and the use of manures, there are strict controls over the use of sludge, biosolids and biosolids products in order to reduce the risk that pollution could occur.

With respect to the CRD, there is an additional roadblock relating to the application of waste organic solids from a wastewater treatment plant to land – a policy statement was passed by the CRD Board indicating the desire not to apply biosolids to land.

The advantages and disadvantages of using sludge/biosolids and biosolids products to enhance plant growth are summarised in Table 3.3.

Table 3.3: Advantages and Disadvantages of Land Application

Advantages	Disadvantages
Provide valuable nutrients to enhance plant growth and soil conditions.	Treatment to develop a high quality product is costly and will not be realised through sales.
Can result in less water usage.	Costs incurred could also include trucking to the application site, the Land Application Plan (development, monitoring and reporting) and the physical application.
Can result in less commercial fertilizer use.	Public perception, concerns and fears can result in challenging situations and strong bias against land application.
Can reduce risks to the environment as a result of the slow release of nutrients.	A policy statement was passed by the CRD Board indicating the desire not to apply biosolids to land.
Strict controls for treatment, quality and application.	Lower quality products can result in limitations to their use – i.e. only available use is application to agricultural lands, forestry lands or disturbed lands.
High quality products can be sold, with some cost recovery and many potential outlets, including back yards and municipal projects. High quality products can have very high support from members of the community.	

To summarise for the approach of use for land application:

1. The land application of sludge, biosolids and biosolids products has been practiced throughout the world for centuries, with clear benefit to plant growth and soil conditions.
2. The higher quality products can be used without restrictions and could be sold. The lower quality products require greater control and there is no real opportunity for sale of the product.
3. There are treatment, quality and application requirements in the OMRR. The higher the quality of the product, the greater the treatment requirement, which could be costly with little return on these costs through sales. However, treatment is not always necessary and it is possible to land apply a sludge, but this may require additional testing and more stringent application controls.

4. No authorisation is needed from the BC Ministry of Environment, but there is the need to register biosolids activities under the OMRR, e.g. a compost operation or a Land Application Plan.

5. There could be significant public opposition to land application, due to misconceptions, prejudice and misunderstandings. This opposition may be less if a Class A compost or biosolids growing medium is developed, which could be given away or sold to members of the public. However, with the large volume of product which could be available in the local area, there is also a risk that the market for individual sales could be saturated, leaving a potential stockpile with limited additional opportunities for use.

6. A policy statement was passed by the CRD Board indicating the desire not to apply biosolids to land.

3.3 Use as an Energy Source

3.3.1 Introduction to Incineration and Gasification

This approach considers the use of processes such as incineration and gasification where organic matter undergoes combustion in order to produce heat and the potential ability to generate electricity. Incineration is the heating of organic matter using excess oxygen. The sludge does not have to be dry before it is fed into the incinerator, although a higher moisture content will result in an increased need for supplemental fuel. Incineration has been used as a means of sludge management throughout the world for several years. In Switzerland, incineration is the only acceptable approach to sludge management. The basic principle of gasification is to convert organic matter into gases (syngas) which can then be used as a fuel source. Unlike incinerators, gasifiers require the feed organic matter to have a low moisture content (e.g. only 10 to 20%). Although gasification has been used to produce energy from coal for over 200 years, gasification is a relatively new technology with respect to sludge management and, as such, there is limited information available on the performance of full-scale units. Gasification has the potential to be a successful approach to the management of sludge/biosolids, but there is a level of uncertainty and the need for sufficient information to prove the viability of this process.

3.3.2 Operational Considerations

The organic content of the sludge/biosolids is a suitable potential alternative or additional energy source for incinerators or gasifiers. Organic matter and moisture content are both important when considering diverting sludge/biosolids to use as an alternative energy source. The highest calorific value will be achieved for an organic material which has a high organic matter and low water content.

With respect to the organic matter, the highest calorific value will be associated with a young sludge. Treatment for vector attraction reduction through composting or aerobic/anaerobic digestion or even a simple long-term storage of sludge will result in the biological degradation of the organic matter into a more stable product. This will lower the calorific value. Therefore, unless concerns are raised regarding nuisance conditions such as odours, there is no advantage to treating sludge to create a

biosolids/biosolids product if the intent is to use the organic matter as an energy source. (Note that the odours relate to operator considerations at the incineration/gasification site, rather than a nuisance factor to surrounding properties, as the odours can be contained and foul air treated before release.) Avoiding the need for treating sludge will also avoid the additional capital and operational costs which are incurred to create a biosolids or biosolids product. There is an additional concern with respect to allowing biological degradation of the sludge before incineration/gasification. The action of biological degradation will also reduce the amount of organic matter which is available for burning. This could result in the inability to provide sufficient organic matter to allow the efficient operation of an incinerator/gasifier.

With respect to the water content, although a sludge/biosolids does not have to have significant water removed before it can be considered as a suitable energy source, the drier the material the higher will be the calorific value and ease of handling, especially with respect to the feed conveyor. For incinerators, it is possible that a solids content as low as 15% could be suitable, but this would require a sufficient balance with dry material being fed into the energy recovery process. It is important that this balance is maintained, as the potential result could be the need to supplement the heating process with propane or electricity. The direction is to improve process efficiency by seeking approaches which will further increase the solids content from the standard 20 to 30% range through to the 35 to 50% range. Incinerators are more flexible for operation with a higher moisture feed, compared with gasifiers, where drying to a solids content in the 85 to 93% solids content is required. Pre-drying of the sludge is possible and can be assisted by capturing and recycling heat generated from the combustion process. The ultimate goal for combustion processes is to produce energy which could be sold, but the reality is to aim for a process which will produce sufficient energy to cover the operational requirements. For the information which is available on sludge incinerators which have been in operation for a number of years, in some cases, this goal is not even met.

3.3.3 Regulatory Considerations

In theory, the use of sludge or biosolids/biosolids products as an alternative energy source does not need any direct authorisation or approval from the BC Ministry of Environment, but any emissions do need to be authorised. The products from a combustion process include gases, heat, a solid waste and, in some cases, a liquid waste stream. Authorisations for gases, solid waste and the liquid stream need to be considered, with no further consideration for the produced heat, as it is assumed that this would be recirculated within the facility to increase process efficiency.

The release of gases will require a permit from the BC Ministry of Environment for air quality emissions. This would include the need for studies to determine the movement of contaminants within the airshed and the potential for environmental and health impacts. As this process is approval by permit, there is the need to include public consultation. There could be complications with respect to public input and the release of gases due to the potential for toxic substances to be present in the emissions.

The solid waste could be regarded as a potential beneficial product which could be applied to land to enhance plant growth, especially with regards to the ash being a valuable source of phosphorus. It may be possible to register this activity under the OMRR, however, this would require discussion with the BC Ministry of Environment as the definitions in the OMRR are not necessarily clearly aligned with the nature of the solid waste. There could be regulatory challenges as to how land application of the solid waste could be authorised or approved. The solid waste could also have the potential to be incorporated into building materials, such as bricks and asphalt. As a result of the combustion process, metals become concentrated in the waste solids and, in some instances, this has resulted in the solids being regarded as a toxic waste which requires disposal to landfill or even a special disposal site for contaminated waste. Disposal to an authorised site would not necessarily need approval from the BC Ministry of Environment, but must not contravene the requirements of the landfill permit or operational certificate.

The liquid stream would only need to be authorised by the BC Ministry of Environment if it is to be released to the environment, either with or without on-site treatment. As this liquid stream is no longer considered to be sewage, this authorisation would likely be under a permit. The release of the liquid stream to the sanitary sewer system would need agreement with the local municipality and would need to comply with any sewer by-laws and the quality standards outlined in the BC Hazardous Waste Regulation. By receiving the liquid stream, it is the responsibility of the local municipality to ensure that there are no detrimental impacts on the sanitary sewer system or effluent quality.

There is also the risk that an energy source solution could trigger the BC Environmental Assessment Act. This risk increases if the immediate intent is to co-combust sludge/biosolids with municipal solid waste. Sludge and biosolids typically fall under the definition of “municipal liquid waste”, rather than “municipal solid waste” and, therefore, are dealt with under the Liquid Waste Management Plan process, rather than the Solid Waste Management Plan process. If the immediate intent is to use the incinerator or gasifier to combust only sludge/biosolids, the resulting project could be seen as a local government liquid waste management facility. Under the BC Reviewable Project Regulation local government liquid waste management facilities do not require a BC environmental assessment as long as the facility is part of an approved Liquid Waste Management Plan.

3.3.4 Discussion

The advantages and disadvantages of using sludge/biosolids as an alternative energy source are summarised in Table 3.4.

Table 3.4: Advantages and Disadvantages of Use as an Alternative Energy Source

Advantages	Disadvantages
Ability to generate energy.	Uncertainties regarding authorisations until these processes become more established in BC, including interpretations which require input from the BC Ministry of Environment and the BC Environmental Assessment Office.
Ability to utilise the excess heat generated by the combustion.	Public perception on air emissions can be poor and controversial.
Possibility of developing an energy neutral process which will allow for the recovery of operational costs.	Permitting for air emissions can be lengthy and require complex technical information on airshed conditions.
Good documentation on incineration process for sludge in Europe, including approaches to optimise.	Uncertainties regarding waste solids from combustion process – may be classified as toxic waste.
Ability to avoid capital and operational costs for pathogen reduction and vector attraction reduction.	High capital and operational costs for incinerators.
If disposal of combustion solid waste is required, this will have lower trucking and tipping costs compared with raw sludge, due to moisture and volume reduction.	Energy production may not cover energy requirements.
Lower footprint requirements compared with traditional processing of sludge for land application (such as anaerobic/aerobic digestion and composting).	Risk with gasification as relatively new process for sludge/biosolids management.
Potential for waste solids (ash) to be used as a fertilizer or valuable source of phosphorus for land application.	

To summarise for the approach of use as an energy source:

1. The common approach to using sludge as an energy source is an incineration-type process. However, this results in high capital and operational costs, which could include the need to dry the sludge before combustion in order to increase process efficiency.

2. There are risks associated with the gasification process, as this approach is relatively new for sludge/biosolids management and, as such, there is little information on the long-term operation.

3. The process efficiency is dependent on the calorific value and moisture content of the sludge. There is no advantage to treating the sludge to create biosolids or a biosolids product, unless there are concerns from the site operators regarding odours. As the odours can be contained and managed, there is no concern with respect to nuisance conditions for neighbouring properties.

4. There is a risk with respect to the authorisation requirements, until incineration and gasification of sludge/biosolids is established in BC. From the information available, it is expected that no authorisation is needed from the BC Ministry of Environment for the development of a combustion process for sludge/biosolids. Depending on the management approach for the waste solids and any wastewater which may be produced as a result of combustion, it is possible that no further authorisations are needed from the BC Ministry of Environment, with the only authorisation being a permit for air emissions. There is also a risk with respect to the requirement of a BC environmental assessment, although this may be avoided, depending on interpretations regarding the material for combustion and wording in the approved CRD Liquid Waste Management Plan. Clarification on these interpretations would be required from the BC Environmental Assessment Office.

4. SUMMARY

There are three common options available for the management of sludge. These options are: disposal to landfill, use for plant growth and use as an energy source. Figure 4.1 summarises the potential for these options with respect to sludge. For disposal to landfill and use for energy recovery, treatment to create biosolids or a biosolids product is not required. In fact, such treatment would be of detriment to the proposed management option through the perception that biosolids is a product which should have a beneficial use and should not be disposed to landfill, and the reduced organic matter as a result of treatment will lower the calorific value and the amount of organic matter available for combustion, both of which are essential to maximise the energy recovery process. Although it is possible to apply a sludge to land for plant growth, the preferred route would be to treat the sludge to create biosolids or a biosolids product. The treatment options and the resulting type of organic matter produced are summarised in Figure 4.2. These treatment options are all recognised in the OMRR, although the regulation does include flexibility to acknowledge additional processes, depending on the technical information which is available.

URBAN systems

The following authorisations and approvals would be needed for each management option:

Disposal to landfill	No approval needed from the BC Ministry of Environment as long as this is in accordance with the permit or operational certificate. Agreement would be needed with the landfill owner.
Use for plant growth	Registration under the BC OMRR.
Use as an energy source	There is a risk with respect to the authorisation requirements, until incineration and gasification of sludge/biosolids is established in BC. Clarification on regulatory interpretations would be required from both the BC Ministry of Environment and the BC Environmental Assessment Office. Permit required from the BC Ministry of Environment for air emissions. No approval needed from the BC Ministry of Environment for disposal of solids to landfill, as long as this is in accordance with the permit or operational certificate. Agreement would be needed with the landfill owner and solids may have to be disposed at a special site for contaminated waste. Use of waste solids on land could be registered under the OMRR, but discussion required with the BC Ministry of Environment on whether this is possible or if another authorisation route is needed. Liquid stream could be released to sanitary sewer – will require agreement with local sanitary sewer owner and will need to meet by-law and BC Hazardous Waste Regulation requirements. If approach is to treat and release, this will need authorisation by BC Ministry of Environment, likely under a permit.

Sincerely,

URBAN SYSTEMS LTD.

Dr. Joanne Harkness
Water and Wastewater Specialist

/jh

U:\Projects_VAN\1692\0037\01\R-Reports-Studies-Documents\R1-Reports\2015-09-14 MEM biosolids overview updated draft.docx

Appendix E

Pump Station Cost Curves

DRAFT

Sewage Lift Stations

PIR Base Asset Code:

C2 Sewage Lift Stations <500 L/s

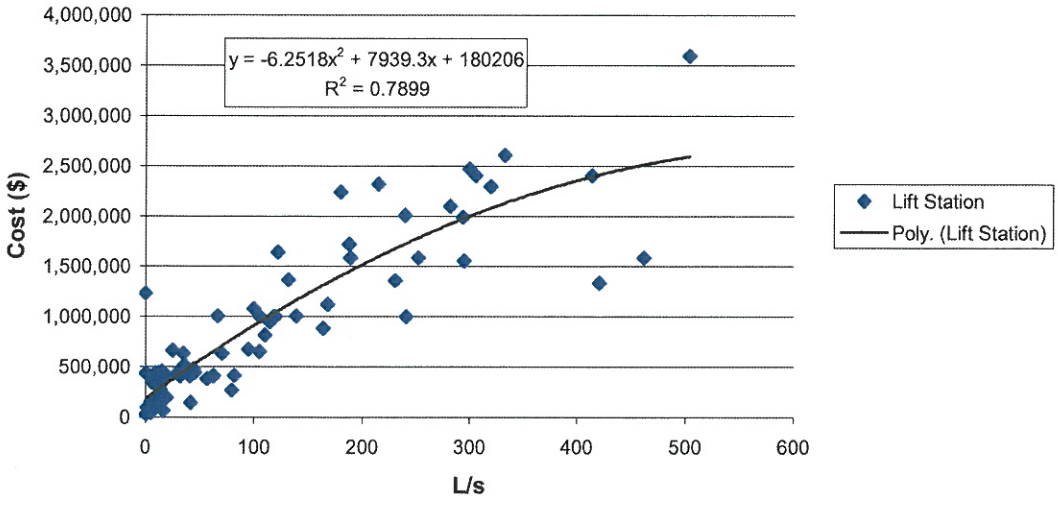
Capacity Measure:

Capacity of the wastewater pumps in L/s

Equation: <500 L/s $y = -6.2518x^2 + 7939.3x + 180206$

R^2: <500 L/s 0.7899

C2 Lift Station <500 L/s



Assumptions and Comments:

- Combined General Multiplier = 1.33 (to be added to base cost curve)
- Costs associated with this asset include the wastewater pumps, manhole structure and associated mechanical and electrical components
- Breakpoint identified at +/- 500 L/s

Sewage Lift Stations

PIR Base Asset Code:

C2 Sewage Lift Stations >500 L/s

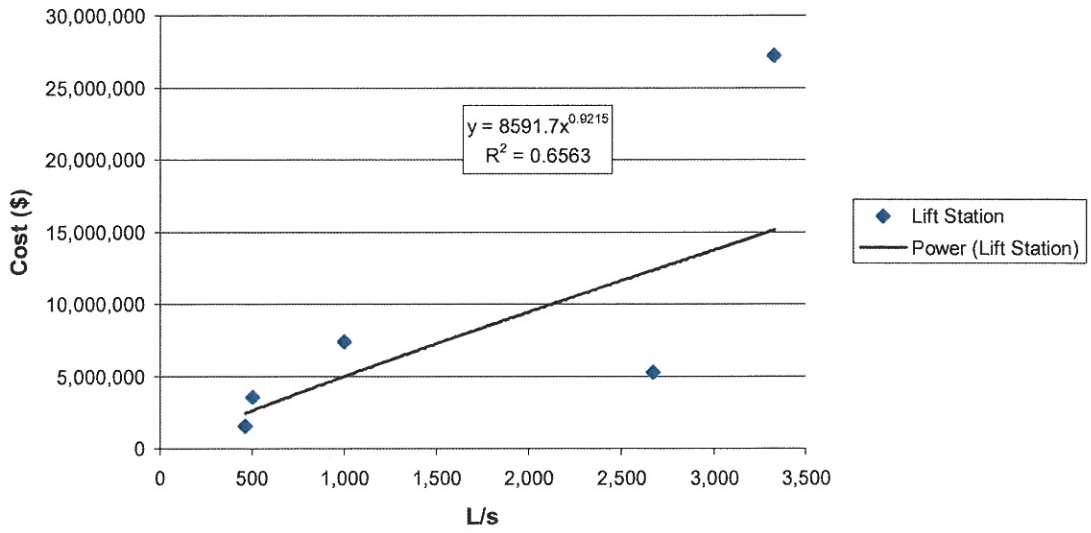
Capacity Measure:

Capacity of the wastewater pumps in L/s

Equation: >500 L/s $y = 8591.7x^{0.9215}$

R^2: >500 L/s 0.6563

C2 Lift Station >500 L/s



Assumptions and Comments:

- Combined General Multiplier = 1.33 (to be added to base cost curve)
- For additional comments see C2 < 500 L/s

Appendix F

Updated Site Prioritization

DRAFT

Appendix F – Updated Site Prioritization

Site Number	Site Name	Estimated Usable Area (ha)	Comments	Conclusion
1	Langford VMP at Kelly Road	1.85	By way of comparison to Site 2a there is no appreciable advantage and Site 2a is closer to the trunk sewer. It is not close to another piece of property that could be combined with it.	Not Preferred
2a	Langford VMP at Meaford Avenue	1.89	This site is in Langford, is large enough to handle the 2045 flows and adjoins Site 2b which if required could be added. It is close to the CRD trunk sewer and is in a commercial district.	Preferred
2b	Colwood VMP at Meaford Avenue	0.50	This site is in Colwood and is not large enough on its own to handle the 2045 flows from Langford.	Not Preferred
3	Colwood Gravel Storage	2.64	The South Colwood node is significantly further away from the CRD trunk, which increases the infrastructure required, compared to the North Colwood node. The South Colwood sites are also further away from the reuse opportunities (boulevard irrigation, golf course irrigation and aquifer recharge) that have been identified compared to the North Colwood sites.	Not Preferred
4	Colwood Gravel Pit	9.72	The South Colwood node is significantly further away from the CRD trunk, which increases the infrastructure required, compared to the North Colwood node. The South Colwood sites are also further away from the reuse opportunities (boulevard irrigation, golf course irrigation and aquifer recharge) that have been identified compared to the North Colwood sites.	Not Preferred
5	Colwood City Hall	3.06	The South Colwood node is significantly further away from the CRD trunk, which increases the infrastructure required, compared to the North Colwood node. The South Colwood sites are also further away from the reuse opportunities (boulevard irrigation, golf course irrigation and aquifer recharge) that have been identified compared to the North Colwood sites.	Not Preferred
6	Colwood Pattison Pit	4.97	The South Colwood node is significantly further away from the CRD trunk, which increases the infrastructure required, compared to the North Colwood node. The South Colwood sites are also further away from the reuse opportunities (boulevard irrigation, golf course irrigation and aquifer recharge) that have been identified compared to the North Colwood sites.	Not Preferred

Appendix F – Updated Site Prioritization

Site Number	Site Name	Estimated Usable Area (ha)	Comments	Conclusion
7	Colwood Lower Allandale Pit	1.24	The South Colwood node is significantly further away from the CRD trunk, which increases the infrastructure required, compared to the North Colwood node. The South Colwood sites are also further away from the reuse opportunities (boulevard irrigation, golf course irrigation and aquifer recharge) that have been identified compared to the North Colwood sites.	Not Preferred
8	Colwood Upper Allandale Pit	1.66	The South Colwood node is significantly further away from the CRD trunk, which increases the infrastructure required, compared to the North Colwood node. The South Colwood sites are also further away from the reuse opportunities (boulevard irrigation, golf course irrigation and aquifer recharge) that have been identified compared to the North Colwood sites.	Not Preferred
9	Colwood City Centre	1.02	This is a private site that is encumbered with some extensive building foundations already built. It is also further from the north boundary of Colwood than other sites in the North Colwood node.	Not Preferred
10	Colwood VMP City Centre Adjacent	0.66	This is a private site that is encumbered with a lot of commercial businesses.	Not Preferred
11	Colwood Park and Ride	0.74	This site is owned by the City of Colwood and is large enough to handle the 2045 flows assuming tertiary liquid treatment and no solids treatment is required on the site.	Preferred
12	Colwood Island highway	1.70	This a relatively large private site, but compared to Site 11 it is not preferred because of risks associated with private landowners.	Not Preferred
13	Colwood Wale Road	0.41	This a private site that is too small to handle the 2045 flows.	Not Preferred
14	Colwood West Shore Parks :& Rec.	6.62	This park site is owned/managed by five municipalities. It is ideal from a land area perspective, but may be complicated to secure. It would be possible to use land on the site that is not currently used for recreational purposes.	Preferred

Appendix F – Updated Site Prioritization

Site Number	Site Name	Estimated Usable Area (ha)	Comments	Conclusion
15	Esquimalt Nation	3.72	This land is owned by the Esquimalt First Nation and is the second largest site available. It is also the closest, large site to the Macaulay Outfall. It is large enough to handle the liquid treatment to 2045 but not the liquid and solids to 2045. The site is on Admirals Road right beside the CRD trunk.	Preferred
16	View Royal Burnside & Watkiss	1.13	This site is owned by the Province and has a high voltage BC Hydro line bisecting the property. Since the site would only handle View Royal flows the area is okay for 2045 flows.	Preferred
17	Esquimalt Bullen Park	2.18	This park site requires restoration of the recreational aspects, which means much of the plant would have to be underground. The area is inadequate to treat 2045 flows. The site is in a residential neighbourhood as well.	Not Preferred
18	Esquimalt Town Centre	0.77	This site is too small to handle 2045 flows.	Not Preferred
19	Esquimalt Works Yard	0.69	This site is too small to handle 2045 flows.	Not Preferred
20	Esquimalt Lampson Field	1.38	This site is too small to handle 2045 flows.	Not Preferred
21	Colwood Golf Club	0.60	This site is too small to handle 2045 flows.	Not Preferred

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EHQ 15-135

REPORT TO WESTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEE
MEETING OF TUESDAY, NOVEMBER 24, 2015

SUBJECT **TECHNICAL ANALYSIS FOR FURTHER COMPREHENSIVE EVALUATION OF POTENTIAL SITES, SCENARIOS AND TECHNOLOGIES**

ISSUE

To provide Select Committee members with Terms of Reference and expected outcomes of the next phase of technical analysis on possible wastewater/resource recovery facilities on the Westside.

BACKGROUND

The Westside technical committee, consisting of technical staff and consultants from the participating communities, has been involved in guiding the technical work and analysis of Westside activities.

Under the direction of the municipal technical committee, Urban Systems and Corollo Engineers prepared and presented a report to the Westside Select Committee on October 29, 2015. The objectives of the report included:

- Wastewater Treatment Technologies (liquids): focus on technologies that span secondary to tertiary treatment for potential costing.
- Solids Treatment and Recovery: focus on technologies for gasification and digestion for one-plant, two-plant and four-plant comparisons.
- Resource Recovery Target Market: focus on target markets and highest potential locations for reclaimed water and solids recovery.
- Indicative Design: focus on instructional outcomes from the workshop to guide option set analysis and costing.
- Order of Magnitude: focus on costing for one-plant, two-plant or four-plant option sets.
- Site Reprioritization: focus on incorporating technical analysis, real estate findings and overall feasibility into a node-by-node update.

The technical committee conducted a high-level assessment and provided comment on the report's findings and analysis (see Appendix A). The analysis concluded that while there were valuable information and insights in the report, there needed to be a further, more detailed look at a number of critical factors.

Urban Systems and Corollo are in the process of integrating the technical and financial analysis they produced for the Westside, with sites and scenarios brought forward by the Eastside Select Committee in conjunction with the Technical Oversight Panel. This work will be brought forward for public consultation in December and January.

In a meeting with the Westside technical committee on November 16, 2015, Urban Systems provided a verbal update as to how they are addressing the issues raised by the technical

committee for the December report to the Core Area Liquid Waste Management Committee (Technical Memo #3). That report will consist of a more thorough analysis of sites, scenarios, technologies and order of magnitude costing associated with the various options.

Urban Systems has agreed to provide a verbal report to the Westside Select Committee on their technical analysis and how it responds to issues raised by the Westside municipal technical committee.

CONCLUSION

As Technical Memo #3 will be presented to the Core Area Liquid Waste Management Committee in December and then brought forward for public consultation, a Westside Select Committee update from Urban Systems is a critical step in ensuring that the committee's Terms of Reference and Project Framework are being met.

WESTSIDE STAFF WORKING GROUP

The Westside staff working group is in agreement with this report.

RECOMMENDATION

That the Westside Select Committee receive this report for information.

Submitted by:	Dan Telford, P.Eng., Project Manager, Core Area Wastewater and Resource Recovery Project
Concurrence:	Glenn Harris, Ph.D., R.P.Bio., Acting General Manager, Parks & Environmental Services

CH:cl

Attachment: Appendix A – Westside Technical Team Analysis

WESTSIDE SOLUTIONS
Westside Wastewater Treatment & Resource Recovery

Westside Technical Team Analysis

In the time available to fully consider the report authored by Urban Systems for Phase 2 of the Westside Wastewater Treatment Plant Siting Analysis, the technical committee has conducted a high level assessment to help inform recommendations and actions in moving the wastewater treatment and resource recovery process forward for the Westside. Regardless of the time constraints, the technical team has great confidence in the work done by Urban Systems in the short period of time and limited budget available to do the level of analysis that this important project deserves.

The report highlights several important points for consideration, most notably issues regarding dealing with solids, and enlisting the private sector in providing solutions that meet the outcomes to be articulated by decision makers.

As this report is only one step in the overall project, it is hoped that following steps will incorporate a more comprehensive and detailed evaluation of the following factors in order to arrive at a decision that best meets the needs, values and aspirations of the communities:

- Integration of public opinions as indicated in the various public engagement activities over the last year and how it applies to the characteristics of each solution set,
- Full life cycle costing as per industry standards - potentially over 50 years
- Further and a more thorough cost analysis including potential revenues and cost offsets with sensitivity analyses for those factors that are very difficult to forecast, e.g., availability and value of water,
- Inclusion of costs associated with acquiring sites for proposed facilities,
- Exclusion of those sites that are not available for acquisition,
- Quantifying non-financial benefits and liabilities associated with options particularly associated with water reclamation, energy recovery and climate change, and
- Addressing the need for resiliency within proposed solutions.

As a final note it needs to be documented that the flows used in the report do not match the flows now anticipated from Saanich and Victoria West. Unfortunately these revisions were received too late to be used in the calculations. Clearly the conclusions on viable sites – particularly in Esquimalt - could be affected by the significant difference in these numbers and must be addressed without delay.

WESTSIDE SOLUTIONS
Westside Wastewater Treatment & Resource Recovery

Based on the draft report the following matrix broadly summarizes the characteristics of the three solution sets covered by the report and in accordance with the decision criteria support by the Select Committee in its Project Framework.

					NC	North Colwood		Lang	Meaford			
West Side Option Set Matrix	Positive	Neutral	Fair		EFN	Esquimalt First Nation		VR	View Royal			
Criteria	Option 4A - Lang/NC/VR/EFN Four Plant				Option 1B - EFN One Plant				Option 2C - NC/EFN Two Plant			
Capital $												
Operating $												
Life Cycle $												
Existing Infrastructure												
Revenue and Resource												
Water re-use												
Capacity Phasing												
Carbon Footprint												
Positive and Safe for Public												
Water Quality Tertiary												
Size												
Near Trunk Main												
Near Truck Route												
On Site Solids (EFN)												
Include other waste (EFN)												

The matrix presented above is not intended to be an in depth and definitive recommendation from the WTC, however it may assist the reader in comparing the 3 options presented.

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EHQ 16-29

REPORT TO WESTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEE MEETING OF TUESDAY, MARCH 8, 2016

SUBJECT Westside Concept Planning – Phase 2 Budget Update No. 4

ISSUE

To provide the Westside Wastewater Treatment and Resource Recovery Select Committee (Westside Select Committee) with a monthly budget update.

BACKGROUND

At its meeting of November 5, 2014, the Westside Select Committee directed staff to provide a budget status update on a monthly basis for the identification of potential treatment sites and public consultation phase of the project.

Phase 1 of the Concept Planning for this project was completed and closed out on August 31, 2015. The Phase 1 Final Budget Update No. 8 was approved by the Westside Select Committee on September 29, 2015 with actual expenditures of $366,870. Phase 1 invoices that were received after September 29 have been added to the Phase 2 budget, in the Revised Budget column of Appendix A.

Phase 2 of the Concept Planning for this project commenced September 1, 2015 and at the committee's October 25 meeting, Budget Update No. 2 was approved.

Aurora Innovations' contract to provide consulting services to support the Westside Liquid Waste Management Project was extended by 1 month to expire on January 31, 2016 for an additional maximum fee of $15,000 plus GST. Aurora Innovations' contract received an additional 2-month extension for an additional maximum fee of $25,000 plus GST. These additional amounts are reflected in the Revised Budget columns in Appendix A.

Phase 2 Budget Update No. 4 provides actual expenses and outstanding commitments to January 31, 2015, as summarized in Appendix A.

FINANCIAL IMPLICATIONS

Under the Core Area Wastewater Treatment Program budget, requisitioned funds can only be apportioned on the cost sharing basis on which they were raised. The cost sharing of the Program budget is currently apportioned based on 2030 design capacity, 70% average dry weather flow and 30% average annual flow, as previously declared by each participant. This cost sharing may be revisited by the participants in the service. The Westside collectively accounts for 26.76% of the total Core Area requisition funds raised. Westside expenditures will be funded from the four Westside municipal participant's requisition funds as follows.

Colwood	15.92%
Esquimalt	24.85%
Langford	47.31%
View Royal	11.92%

CONCLUSION

Phase 2 Concept Planning for the project commenced on September 1, 2015. Due to the accelerated pace of work on the project, invoicing received from some of the suppliers and consultants has tended to lag somewhat. The actual expenditures incurred but invoiced after the reporting cutoff date are carried forward to the following update report. The Committee will continue to receive monthly budget updates through the course of the project.

RECOMMENDATION

That the Westside Wastewater Treatment and Resource Recovery Select Committee receive this report for information.

Submitted by:	Dan Telford, P.Eng., Senior Manager, Environmental Engineering
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

DT:mer

Attachment: Appendix A – Westside Concept Planning – Phase 2 Budget Update No. 4

APPENDIX A

WESTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY
SELECT COMMITTEE

Westside Concept Planning - Phase 2 Budget Update No. 4
January 31, 2016

	BUDGET	REVISED BUDGET (Oct 2015)	REVISED BUDGET (Dec 2015)	REVISED BUDGET (Feb 2016)	ACTUAL	COMMITTED	TOTAL	REMAINING
Outreach								
Consultants								
Outreach and Consultation	48,562	67,799	82,799	122,799	56,487	63,750	120,237	2,562
Technical Support	60,000	64,260	64,260	64,260	64,307		64,307	- 47
Outreach Disbursements	40,000	44,928	44,928	44,928	5,728		5,728	39,201
								-
Project Management								-
Staff and Wages	20,000	20,000	20,000	20,000	-		-	20,000
Miscellaneous	5,000	5,022	5,022	5,022	22		22	5,000
Westside Total	**$ 173,562**	**$ 202,009**	**$ 217,009**	**$ 257,009**	**$ 126,544**	**$ 63,750**	**$ 190,294**	**$ 66,715**

Revised Budget (Oct 2015) due to late invoices from Phase 1.
Revised Budget (Dec 2015) due to Aurora contract extension in Phase 2 (for Jan16)
Revised Budget (Feb 2016) due to Aurora contract extension in Phase 2 (for Feb/Mar16)

Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda

Eastside Wastewater Treatment and Resource Recovery Select Committee

Wednesday, February 17, 2016 | **2:30 PM** | **6th Floor Boardroom**

L. Helps (Chair), V. Derman (Vice Chair), M. Alto, R. Atwell, S. Brice, J. Brownoff, B. Isitt, N. Jensen, C. Plant, G. Young

1. Approval of Agenda

2. Adoption of Minutes

2.1. **16-250** Adoption of the Minutes of the January 6, 2016, Meeting of the Eastside Wastewater Treatment and Resource Recovery Select Committee

Recommendation: That the minutes of the January 6, 2016, meeting of the Eastside Wastewater Treatment and Resource Recovery Select Committee be adopted.

Attachments: 2016-01-06 Minutes EastsideWTRRSC

3. Chair's Remarks

4. Presentations/Delegations

4.1. **16-10** Presentation: Eastside Public Advisory Committee - Verbal Update

5. Committee Business

5.1. **16-251** Eastside Public Consultation Update - Verbal Update

5.2. **16-248** Eastside Concept Planning - Phase 2 Budget Update No. 3

Recommendation: That the Eastside Wastewater Treatment and Resource Recovery Select Committee receive this budget update for information.

Attachments: Staff Report: Eastside Concept Planning - Phase 2 Budget Update No. 3

Appendix A: Budget Table

5.3. **16-13** Westside Wastewater Treatment and Resource Recovery Select Committee - Verbal Update

5.4. **16-252** Minutes of the Eastside Public Advisory Committee for Information

Recommendation: That the January 6, 2016, minutes of the Eastside Public Advisory Committee be received for information.

Attachments: 2016-01-12 Minutes Eastside Public Advisory Committee

5.5. **16-253** Motion (1) from January 12 Meeting of the Eastside Public Advisory Committee

Recommendation: That the Eastside Select Committee provide direction on what they need of Eastside Public Advisory Committee, whether to continue to work as a focus group for the consultant, or to function as a public advisory committee and if so, what advice they need from the Eastside Public Advisory Committee.

5.6. **16-254** Motion (2) from January 12 Meeting of the Eastside Public Advisory Committee

Recommendation: That the Eastside Select Committee provide the Eastside Public Advisory Committee with a project timeline backing up from federal funding deadlines that provides key milestones.

6. New Business

7. Adjournment

Next Meeting: TBA

To ensure quorum, please advise Nancy More (250-360-3024) if you or your alternate CANNOT attend.

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Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Meeting Minutes
Eastside Wastewater Treatment and Resource Recovery Select Committee

Wednesday, January 6, 2016 | **2:30 PM** | **6th Floor Boardroom**

PRESENT
DIRECTORS: L. Helps (Chair), V. Derman (Vice Chair), R. Atwell, S. Brice, J. Brownoff, B. Isitt, J. Loveday (for M. Alto), K. Murdoch (for N. Jensen), C. Plant, G. Young
ALSO PRESENT: Board Chair B. Desjardins; A. Gibbs, Public Assembly; C. Houghton, Westside Solutions; S. Marks, Eastside Public Advisory Committee
STAFF: R. Lapham, Chief Administrative Officer; L. Hutcheson, General Manager, Parks and Environmental Services; D. Lokken, General Manager, Finance and Technology; A. Orr, Senior Manager, Corporate Communications; B. Reems, Corporate Officer, and N. More, Committee Clerk (Recorder)

The meeting was called to order at 2:30 p.m.

1. Approval of Agenda

MOVED by Director Plant, SECONDED by Director Brice,
That the agenda be approved with the addition of the delegations and item 6.1.
CARRIED

2. Adoption of Minutes

2.1. **16-8** Adoption of the Minutes of October 21, 2015

MOVED by Director Derman, SECONDED by Alternate Director Loveday,
That the minutes of October 21, 2015, be adopted.
CARRIED

3. Chair's Remarks

The Chair remarked that the Commitee had a decision to make on what to recommend to the Core Area Liquid Waste Management Committee on item 5.2, Cost Sharing Options.

4. Presentations/Delegations

4.1. **16-10** Presentation: Eastside Public Advisory Committee - Verbal Update

S. Marks spoke on behalf of the Eastside Public Advisory Committee and expressed that Phase 1 of the public engagement process had been succesful and had resulted in an indication that the majority public opinion was to avoid delays and minimize cost to the taxpayer. She recommended that the Eastside Wastewater Treatment and Resource Recovery Committee act promptly to finalize decisions so the next phase of public engagement can proceed. She

expressed concern over the relevancy of the Eastside Public Advisory Committee if the Select committee decisions were not forthcoming.

The Committee sought clarification on what basis the remarks were made about public opinion and requested that recommendations coming from the Eastside Public Advisory Committee come from motions made at the Eastside Public Advisory Committee meetings.

This Presentation was presented.

4.2. 16-16 Delegation: David Langley, re item 5.2

D. Langley was concerned that the information in item 5.2 was not an adequate basis for review of cost sharing options or recommendations to the Core Area Liquid Waste Management Committee and posed a series of questions highlighting information he felt was missing. The delegation provided a written submission, on file at Legislative and Information Services.

This Delegation was presented.

4.3. 16-21 Delegation: Bryan Gilbert re items 5.1 and 5.2

B. Gilbert felt that a 100% distributred tertiary with advanced gasification system was possible, could be referred to as a "$250 million option", and should be presented to the public before any discussion of cost sharing allocation. The delegation provided a written submission, on file at Legislative and Information Services.

This Delegation was presented.

5. Committee Business

5.1. 16-11 Eastside Public Consultation Update

With the aid of a PowerPoint presentation, A. Gibbs presented a summarization and highlights of plans for public engagement, and showed a sample of the survey being planned. She also provided a handout of a draft public guideline on the basics of wastewater treatment and resource recovery. She requested that if there were additional options, they would be presented to the public within the process already planned out.

The Committee sought clarification on the scope of the public consultation and provided feedback on the draft public guideline and on the plan.

MOVED by DIrector Derman, SECONDED by Alternate Director Murdoch,
That the Eastside Public Consultation Update be received for information.
CARRIED

5.2. 16-14 Core Area Sewage and Resource Recovery System Cost Sharing

L. Hutcheson provided highlights of the report. D. Lokken discussed the costing methodology and provided highlights of the appendix to the report.

On the motion, the Committee discussed the timing and value of deciding on a change to the cost sharing allocation. Discussion points included:
- wastewater treatment costs are as yet undetermined
- resource recovery could provide unknown benefits
- funding model took time and negotiation with municipalities
- changes would require 2/3 majority

MOVED by Director Isitt, SECONDED by Director Young,
That it be recommended to the Core Area Liquid Waste Management Committee:
That it be recommended to the Capital Regional District Board:
That the current cost sharing under Bylaw No. 2312 "Liquid Waste Management Core Area and Western Communities Service Establishment Bylaw No. 1, 1995", as amended, and based on design capacity benefit, be retained.
CARRIED
OPPOSED Atwell, Derman and Plant

MOVED by Director Brownoff, SECONDED by Alternate Director Murdoch,
That the report be received for information.
CARRIED
OPPOSED Plant and Isitt

MOVED by Director Plant, SECONDED by Director Isitt,
That the decision and recommendation to retain the current cost design capacity benefit cost sharing be forwarded to the Westside Wastewater Treatment and Resource Recovery Select Committee.
CARRIED

5.3. 16-12 Eastside Concept Planning - Phase 2 Budget Update No. 2

L. Hutcheson provided highlights of the report. On the motion, the Committee sought clarification on the flow data and budget details.

MOVED by Director Plant, SECONDED by Director Isitt,
That the Eastside Wastewater Treatment and Resource Recovery Select Committee receive this budget update for information.
CARRIED

5.4. 16-13 Westside Wastewater Treatment and Resource Recovery Select Committee - Verbal Update

Chair Desjardins reported that she will no longer be co-chair of the Westside Wastewater Treatment and Resource Recovery Select Committee.

This verbal update was presented.

5.5. 16-9 Minutes of the Meetings of the Eastside Public Advisory Committee of October 27, November 10, December 1, and December 15, 2015 for Information

MOVED by Director Derman, SECONDED by Alternate Director Loveday,

That the Eastside Public Advisory Committee minutes of October 27, November 10, December 1, and December 15, 2015, be received for information.
CARRIED

6. New Business

6.1. 16-19 Amendment to Section 7.0 of the Eastside Public Advisory Committee Terms of Reference

Chair Helps summarized that due to time constraints, herself as Chair and Director Derman as 2015 Vice Chair of the Eastside Wastewater Treatment and Resource Recovery Select Committee had withdrawn from attending the Eastside Public Advisory Committee meetings in 2015.

MOVED by Director Derman, SECONDED by Alternate Director Murdoch,
That it be recommended to the Core Area Liquid Waste Management Committee to recommend to the Capital Regional District Board:
That section 7.0 of the terms of reference for the Eastside Public Advisory Committee be amended to add the words "or designated members", as follows: "The Chair and Vice Chair or designated members of the Eastside Select Committee will also Chair and Vice Chair the Eastside Public Advisory Committee."
CARRIED

The Commitee discussed the frequency of the Eastside Public Advisory Committee meetings and the opportunity to participate as chair or co-chair.

MOVED by Alternate Director Loveday, SECONDED by Director Plant,
That Director Atwell attend as chair of the next Eastside Public Advisory Committee meeting.
CARRIED

7. Adjournment

MOVED by Alternate Director Loveday, SECONDED by Director Plant,
That the meeting be adjourned at 4:17 p.m.
CARRIED

_____
CHAIR

_____
RECORDER

Making a difference...together

EHQ 16-24

REPORT TO EASTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY SELECT COMMITTEE
MEETING OF WEDNESDAY, FEBRUARY 17, 2016

SUBJECT **Eastside Concept Planning – Phase 2 Budget Update No. 3**

ISSUE

To provide the Eastside Wastewater Treatment and Resource Recovery Select Committee (Eastside Select Committee) with a monthly budget update.

BACKGROUND

A detailed operating budget for the identification of potential treatment sites and public consultation phase with actual expenses and commitments is provided to the Eastside Select Committee on a monthly basis. Phase 1 of the Concept Planning for this project was completed and closed out on August 31, 2015. The Phase 1 Final Budget Update No. 5 was approved by the Committee on September 16, 2015. The actual expenditures for Phase 1 equaled $443,877. Phase 1 invoices that were received after September 29 have been added to the Phase 2 budget, in the Revised Budget column of Appendix A.

Phase 2 of the Concept Planning for this project commenced on September 1, 2015 and at its October 21, 2015 meeting, the Eastside Select Committee received and approved Phase 2 Budget Update No. 1.

Phase 2 Budget Update No. 3 provides actual expenses and outstanding commitments to January 31, 2016, as summarized in Appendix A.

FINANCIAL IMPLICATIONS

Under the Core Area Wastewater Treatment Program budget, requisitioned funds can only be apportioned on the cost sharing basis on which they were raised. The cost sharing of the Program budget is currently apportioned based on 2030 design capacity, 70% average dry weather flow and 30% average annual flow, as previously declared by each participant. This cost sharing may be revisited by the participants in the service. The Eastside collectively accounts for 73.24% of the requisition funds raised. The funds raised by the three Eastside municipal participants will be shared as follows:

Oak Bay	8.81%
Saanich	41.70%
Victoria	49.49%

CONCLUSION

Phase 2 Concept planning for this project commenced on September 1, 2015. Due to the accelerated pace of work on the project, invoicing received from some of the suppliers and consultants has tended to lag somewhat. The actual expenditures incurred but invoiced after the reporting cutoff date are carried forward to the following update report. The committee will continue to receive monthly budget reports through the course of this project.

RECOMMENDATION

That the Eastside Wastewater Treatment and Resource Recovery Select Committee receive this budget update for information.

Submitted by:	Dan Telford, P.Eng., Project Manager, Core Area Wastewater and Resource Recovery Project
Concurrence:	Larisa Hutcheson, P.Eng., General Manager, Parks & Environmental Services

DT:mer

Attachment: Appendix A – Eastside Concept Planning – Phase 2 Budget Update No. 3

APPENDIX A

EASTSIDE WASTEWATER TREATMENT AND RESOURCE RECOVERY
SELECT COMMITTEE

Eastside Concept Planning - Phase 2 Budget Update No. 3
January 31, 2016

	BUDGET	REVISED BUDGET (Nov 2015)	ACTUAL	COMMITTED	TOTAL	REMAINING
Outreach						
Consultants						
Outreach and Consultation	157,000	165,976	58,844	107,133	165,976	-
Technical Support	20,000	29,268	9,268		9,268	20,000
Outreach Disbursements	40,000	42,639	11,149		11,149	31,490
Project Management						
Staff and Wages	40,000	40,293	293		293	40,000
Miscellaneous	10,000	10,000	-		-	10,000
Eastside Total	**$ 267,000**	**$ 288,176**	**$ 79,553**	**$ 107,133**	**$ 186,686**	**$ 101,490**

Revised Budget due to late invoices from Phase 1.

Making a difference...together

Minutes of a Meeting of the Eastside Public Advisory Committee
Held Tuesday, January 12, 2016, in Room 107, 625 Fisgard St., Victoria, BC

Present: Director R. Atwell (A/Chair), D. Broad, B. Gilbert, J. Knock, S. Marks, B. Mumford, D. Sutton, N. Thambirajah (4:39)
Staff: Lindsay Taylor, Communications Coordinator, Corporate Communications; A. Bains, Manager, Information Services; N. More, Committee Clerk (recorder)
Consultant: A. Gibbs, Public Assembly
Absent: T. Davies, G. Klima

The meeting was called to order at 4:05 p.m.

1. Approval of Agenda

MOVED by B. Gilbert, **SECONDED** by S. Marks,
That the agenda be approved as circulated.

CARRIED

2. Adoption of Minutes

MOVED by D. Broad, **SECONDED** by B. Gilbert,
That the minutes of the December 15, 2015, meeting be adopted as previously circulated.

CARRIED

3. Chair's Remarks

Acting Chair Atwell reported on the activities of the Select committees.

4. Freedom of Information and Protection of Privacy Follow-Up (Angila Bains)

A. Bains clarified points on what constitutes a record, responsibility for records under CRD custody and control, the terms of reference and procedures for reporting out via motions to the Eastside Select Committee, and the role of the Fairness and Transparency Advisor.

5. Role of Committee and Reporting (Discussion)

A. Gibbs reviewed the feedback received from the Eastside Select Committee and the Core Area Liquid Waste Management Committee after the Eastside Public Advisory Committee presentation on January 6, 2016. The Committee discussed its role in light of the decision by the Core Area Liquid Waste Management Committee in December that postponed implementation of the public engagement plan. The Committee was concerned about the clarity of its purpose and considered whether the frequency of its meetings should be decreased or if it should continue to exist.

The Committee discussed formally adopting speaking points before making presentations to the Select Committee and the strength of a carried motion in showing agreement of the members. They discussed the need for advice and discipline, and a communications plan that the politicians commit to.

N. Thambirajah entered the meeting at 4:39 p.m.

The Committee discussed their role, objectives, challenges, and relationship with the Eastside Select Committee. The discussion included the following points:

- The role has been defined as an advisory committee to receive information from the Select Committee, take the information out to public, then take the public feedback and give it back to the Select Committee. The Advisory Committee functions well, but the communication between the Advisory Committee and the Select Committee is lacking.
- In the first phase, the Advisory Committee was fairly clear on their role to make sure of robust public participation. In the current phase, it was unclear what the Eastside Select Committee needed from the Advisory Committee.
- The need for strong political leadership to set the agenda for this committee was identified, unless the committee was meant to be a focus group for the public engagement consultant.

Acting Chair Atwell remarked that the Eastside Select Committee was looking for an innovative solution best for the taxpayer, and a fulsome process that was complete and captured all stakeholders, so people could look back at the end and know the decision was arrived at by following a practice and charting a process.

A. Gibbs remarked that the consultation plan presented to the Core Area Liquid Waste Management Committee was a living document as the deadlines and other things had changed. The first phase was a democracy model, combining statistical results with qualitative information. The current phase would inform the public about the options, receive their feedback, and provide that feedback to decision-makers.

Acting Chair Atwell clarified that the Liquid Waste Management Plan amendment process with the Provincial Ministry provides for a summary indicating the public has been consulted.

6. Review of Updated Materials and Approach to Consultation (including timelines)

A. Gibbs reported that the video of the public event on January 8, 2016 was now available on the CRD website. She provided an update on presentations to the Eastside Select Committee. The info-graphic on the decision-making process was ready for publication.

The Committee discussed the Eastside Select Committee's possible understanding of the work plan and timelines for the Committee. The format for the public consultation was in place and it now depended on input from Technical Memo #3 to add content to the consultation plan.

MOVED by N. Thambirajah, **SECONDED** by D. Sutton,
That the Eastside Select Committee provide direction on what they need of Eastside Public Advisory Committee, whether to continue to work as a focus group for the consultant, or to function as a public advisory committee and if so what advice they need from the Eastside Public Advisory Committee.

CARRIED
Gilbert **OPPOSED**

7. New Business

a) Citizen Experts Presenting to Technical Oversight Panel

B. Gilbert commented on the ruling of the Fairness and Transparency Advisor that the Technical Oversight Panel acted outside of their mandate to hear the presentations from citizen experts on a proposed new option with technology. On the motion, the Committee discussed that this was similar to previous motions, and as before, there were objections based on the scope of the Advisory Committee's terms of reference.

MOVED by B. Gilbert, **SECONDED** by D. Broad,
To recommend to the Core Area Liquid Waste Management Committee that this needs to be corrected and bring in some process that allows in information from other than vendors, engineers, procurement experts, engineers and staff.

DEFEATED
J. Knock, S. Marks, B. Mumford, D. Sutton, N. Thambirajah **OPPOSED**

b) Destination of Residuals

It was moved by B. Gilbert and seconded by D. Broad to clearly define or describe in the public consultation the end location of the residuals but the motion was then tabled.

c) Project Timelines Backing Up From Federal Funding with Key Milestones

MOVED by N. Thambirajah, **SECONDED** by J. Knock,
That the Eastside Select Committee provide the Eastside Public Advisory Committee with a project timeline backing up from federal funding deadlines that provides key milestones.

CARRIED

8. General Discussion: There was none.

9. Adjournment

MOVED by Sutton, **SECONDED** by N. Thambirajah,
That the meeting be adjourned at 6:28 p.m.

CARRIED

_____
CHAIR

_____
RECORDER

AECOM/Graham Joint Venture
Fourth Floor, 3292 Production Way
Burnaby, BC, Canada V5A 4R4
T 604.444.6400 F 604.294.8597

February 18, 2016

Chair Desjardins and the CRD Board of Directors
Capital Regional District
625 Fisgard Street
Victoria, British Columbia
Canada V8W 2S6

BY E-MAIL TO: CRDBoard@crd.bc.ca

Subject: **Harbour Resource Partners Affordable and Bylaw Complaint Solution for the CRD CALWMP Liquid Treatment Plant**

Dear Chair Desjardins and Directors:

Harbour Resource Partners (HRP) remains committed to providing a superior solution for the CALWMP. Accordingly we would like to take this opportunity to remind the board that our winning proposal at McLoughlin Point is demonstrably the best value for money and lowest community impact solution that meets the budget and time constraints for the mandatory treatment plant requirements imposed by the province and committed to by the region. Further, it has the significant benefit of meeting the terms of the senior government grants, thereby preserving this 2/3 funding which otherwise risks being lost forever in 6 weeks time.

Recently we have observed a great deal of misunderstanding and misconception regarding what HRP offered when comparing just the treatment plant element of our winning proposal with the new option sets. We would therefore like to take this opportunity to set the record straight. HRP's offer has the following characteristics that are superior to any other alternatives currently under consideration:

1. Our design is competitively bid at approximately $170M (for the liquid treatment component), compared to $392M and $450M for other options. This is a committed competitive bid as opposed to budget estimates provided by others.
2. We have already negotiated scope and contract terms, and have a design that is six months ahead of other options in development. With no new site remediation, outfall siting study, or other lengthy processes as required with other options we could begin work in 30 days, and be complete by 2020.
3. We have provided to CRD a design which meets future capacity requirements to 2030 and is fully compliant with the current Esquimalt zoning bylaws;

We urge the region to honour the commitment made to the engineering and construction community, the province, and geographic neighbours and proceed to implement our winning proposal for a new state-of-the-art treatment plant at McLoughlin Point without further delay.

Very Truly Yours,

Harbour Resource Partners

Ernie Maschner, DBIA
Respondent Team Lead Director
Harbour Resources Partners
AECOM / Graham Joint Venture
:

Distribution

CRD Board Chair Desjardins
CRD Vice Chair Howe
Director Alto
Director Atwell
Director Blackwell
Director Brice
Director Brownoff
Director Derman
Director Finall
Director Hamilton
Director Helps
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Director Isitt
Director Jensen
Director Kasper
Director McIntyre
Director Plant
Director Price
Director Ranns
Director Screech
Director Seaton
Director Williams
Director Windsor
Director Young
Chief Sam
Chief Thomas

ESQUIMALT NATION

1189 Kosapsum Drive
Victoria, BC, V9A 7K7
Phone: 250-381-7861
Fax: 250-384-9309

SONGHEES NATION

1100 Admirals Road
Victoria, B.C. V9A 2P6
Phone: (250) 386-1043
Fax: (250) 386-4161

February 19, 2016

MAYOR'S OFFICE
FEB 19 2016
VICTORIA, B.C.

Mayor Lisa Helps
Director/Chair
Core Area Liquid Waste Management Committee
Capital Regional District
c/o City of Victoria
1 Centennial Square
Victoria, BC V8W 1P6

Dear Mayor Helps:

Re: CRD Sewage Treatment Facility – Rock Bay Lands

We are writing in regards to the potential location of the future CRD sewage treatment plant on lands at Rock Bay. As you are aware, we have been working diligently with staff at the CRD to clarify the various issues that will need to be resolved if the CRD ultimately decides that it wishes to locate the facility on lands that are under the control of our two Nations. Those lands include parcels that will come from Transport Canada and from BC Hydro.

While the consolidation of these parcels and the identification of the respective needs of all the parties is complex from a legal, economic, engineering and political perspective, our Nations remain committed to facilitating the plant going on these lands in a timely and cost effective manner if that is the CRD's desire. We are currently examining the possibility of transferring the lands to the CRD by way of an option.

It is the Nations' strong preference that bio solids not be treated on this site. It is our understanding that this may enable us to reacquire portions of this property in the future. As we have noted in the past, it is very important to our communities that we re-establish a First Nation presence in the inner harbour. This area is the heart of our historic past and central to our identity.

For now however, let us reiterate that we are fully committed to assisting the CRD in resolving the difficulties around a sewage treatment plant by bringing forward lands that should meet the CRD's needs.

Best wishes

Chief Andy Thomas

Chief Ron Sam

01183719

Burnside Gorge Community Association
471 Cecelia Road, Victoria, BC V8T 4T4
T. 250-388-5251 | F. 250-388-5269
info@burnsidegorge.ca | www.burnsidegorge.ca

Date: February 22, 2016

To: Directors , Core Area Liquid Waste Management Committee

Dear Directors:

On behalf of the Burnside Gorge Community Association (BGCA), I am writing to share the views of our organization regarding the recent public engagement process, the proposed options for wastewater treatment including solids processing, and the community concerns and benefits that must be fully addressed should a project proceed in our neighbourhood. All options presented to the public include an extra-large treatment plan located in the Rock Bay area of our neighbourhood, and therefore we are the area of the Capital Regional District that stands to be the most directly affected in the short and long term from any wastewater plant.

Two key roles of the BGCA include engaging and consulting with our communities concerning issues and developments important to the lives of residents and businesses, and advocating in the best interests of the community and ensuring a representative voice for of all of those we serve. The information discussed below is focused on our responsibility to represent and advocate for the interests of those who live, work and play in Burnside Gorge. Although the options for wastewater treatment presently have substantial and uncertain implications for property taxes, carbon footprint and other issues highly important to citizens at large, the BGCA is not providing comment on such issues at this time.

<u>Process of public participation</u>

In accordance with the International Institute for Public Participation, BGCA believes that public participation means to involve those who are affected by a decision in the decision-making process. It means providing participants with the information they need to be involved in a meaningful way, and it must include communicating to participants how their input affects the decision.

We acknowledge that the Core Area Liquid Waste Management Committee (CALWMC) has made efforts in recent months to provide citizens of the region with information regarding the selection of sites and technology for a wastewater treatment plant. We must also respectfully inform you that the process for *directly engaging* with Burnside Gorge, as the area that will experience the highest level of impacts from an extra-large plant, has not been meaningful or adequate. Effective consultation with stakeholders is a significant investment in time, and the character of our neighbourhood requires sustained and diverse outreach activities. Although we have greatly appreciated the recent efforts of Ms. Amanda Gibbs of Public Assembly to provide supplemental

information regarding potential impacts of an extra-large plant on key technical factors (noise, traffic, odour and visuals) as well as on community values, the recent four-week public consultation initiatives on the option sets has been very rushed with inadequate notice and too little information to reasonably expect the average local resident to provide an informed opinion. We believe that the Capital Regional District has had many opportunities to come to the Burnside Gorge community for open dialogue much earlier in the process and we were disappointed that there was no response to our invitations. We trust that the CALWMC will proceed differently for any subsequent steps in the process.

Burnside Gorge views on wastewater treatment option sets

As the process of the CRD's outreach to the neighbourhood has been incomplete to date, BGCA is only able to present the perspectives of our Board of Directors, our associated Land Use Committee, and the residents and businesses that were able to attend the limited public information sessions in the neighbourhood. We also do not have the results of the survey that closed on February 20 and we are unclear on whether that survey will capture demographic information including where respondents live.

The views we present below are affected by the fact that we are concerned that the Core Area Wastewater Treatment selection process has not provided even minimal information about the direct adverse impacts that the different types of treatment technologies and locations would have on surrounding residents and businesses through approximately five years of construction and a century of operations. BGCA must state that there are hundreds of residences in multi-family dwellings located within 200 metres of all the Rock Bay sites, and therefore the notion that site selection is more acceptable if not adjacent to single-family dwellings demonstrates a lack of regard for local residents and a lack of awareness that the Rock Bay area may substantially increase its residential and mixed-use dwellings over the next several decades.

We were also disappointed that the process was not able, even at a high level, describe what opportunities, benefits and amenities could be available as potential community improvements that could mitigate the placement of a wastewater plant in the neighbourhood. While we appreciate that some information will become available through the rezoning process, we believe the public needs to have a better understanding of the range of issues and scenarios as part of providing informed views into any questions about site and technology selection.

Based on available information, **BGCA is neither willing nor able to take a position for or against any of the six wastewater option sets presented to the public**. We note that there are three site options described for all option sets within Rock Bay, with no information on whether there is differentiation of adverse impacts to the neighborhood between those sites. Therefore, at this point, we also neither support nor oppose any of the three possible locations for a wastewater treatment plant in Rock Bay.

Based on available information, **BGCA is wholly unsupportive of the processing of bio-solid residuals in Rock Bay, regardless of whether the technology is anaerobic digestion or gasification**. The long-term plan for revitalization of waterfront areas in Rock Bay is essential to our neighbourhood and has been repeatedly raised as a community aspiration in the Local Area Planning process currently underway with the City of Victoria. In our view, the additional land requirements that may be tentatively earmarked for solids processing should instead be dedicated to local public amenities associated with any wastewater facility. We are currently of the view that there are no mitigation measures nor an offsetting amenities package that would reduce or eliminate the 24/7 effects of noise, odour, dust and truck traffic due to solids processing to an acceptable level for the valuable Rock Bay area. We understand that piping solids to Hartland is the least disruptive and most technically effective method in the long term.

<u>Site expectations, design excellence, offsets and community-accrued benefits</u>

The CALWMC Project Charter makes three important commitments that BGCA completely agrees with and would like to see enshrined as covenants and/or conditions of any related processes that may move forward:

- "deliver a solution that adds value to the surrounding community and enhances liveability of neighbourhoods"
- "add benefit to host communities, including meaningful neighbourhood design and potential for needed amenities and co-location with other organizations or community uses"
- "provide the highest level of odour and noise control"

If the CALWMC proceeds with selecting an option set that includes a wastewater treatment plant in Rock Bay, BGCA wishes to share the following expectations regarding neighbour/community benefits, offsetting amenities, and on-site plant design excellence.

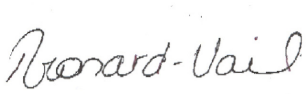
Any wastewater treatment plant and surrounding property should itself be designed and operated as a major community asset, incorporating the highest standards, best ideas and design excellence possible from around the world. An extra-large plant in our neighbourhood must be entirely compatible with attractive, diverse mixed-uses in the immediately adjacent areas. The Burnside Gorge community has generated many ideas to date, and many more will be forthcoming should this project proceed in Rock Bay. The process of gathering feedback and genuinely collaborating with the community on wastewater treatment plant design, reducing disruption, mitigation of negative effects and maximizing benefits requires substantial time and a commitment to open, iterative process and dialogue. Community involvement regarding design, construction, and eventual operational strategy of the site is necessary to ensure the neighbourhood remains a viable place for residential and business growth.

We cannot emphasize enough how important it will be, if a Rock Bay wastewater treatment plant is to move forward, that the CALWMC and the City of Victoria deeply engage with the neighbourhood

at all subsequent stages of decision-making that affect our community. During recent public engagement, the Burnside Gorge community was advised that any project in Rock Bay would include increased waterfront access, view preservation, integration with surrounding streets and developments, and creative ideas about how the site could offer award-winning benefits to the neighbourhood and the region at large. BGCA expects that CALMCW and the City of Victoria will demonstrate an ongoing commitment to work with citizens to make this project exactly right and supportive of local goals.

We appreciate the opportunity to provide comment.

Regards,



Tamara Leonard-Vail
Board Chair

CC: Burnside Gorge Community Association Board of Directors
Carolyn Gisborne, Chair, Burnside Gorge Land Use Committee
Geoff Young, City of Victoria Councillor and Council Liaison to Burnside Gorge
Jonathan Tinney, City of Victoria – Director, Sustainable Planning and Community Development

TOURISM VICTORIA

Marketing our favourite destination

February 25, 2016

Regarding: Sewage Treatment

Dear Capital Regional District Directors:

Late today we were made aware of the following action from the Washington State Legislature by one of our key partners, Clipper Navigation. They wanted to make to ensure we were aware of a Washington State House Bill that was introduced today and which if passed would restrict, except under certain emergency or court ordered business, Washington State employees from receiving reimbursement for travel to Victoria. This restriction would remain in effect until the earlier of July 1, 2017 or the completion of a primary sewage treatment system.

Tourism Victoria is concerned about the press that debate or passage of this bill will generate and the decline in travel to Victoria by area residents that will ensue. This action puts the destination, our 900 business members and the 19,000 private sector employees in a difficult position. While this action is symbolic and related to Washington State employees, it is clearly intended to inspire other organizations to follow suit.

It goes without saying that Seattle and Washington State are key source markets. You may also be aware the that Greater Victoria tourism industry is driving significant economic growth and renewal in our region with tens of millions of dollars in private sector investment currently in place. We know that you have an important meeting on this matter tomorrow and we hope that you will come away with a resolution so that we can protest the legislation and argue that Victoria is making progress and that this tactic is unnecessary.

Please see the proposed language below from Washington State:

NEW SECTION. Sec. 920. STATE EMPLOYEE TRAVEL TO VICTORIA,BRITISH COLUMBIA.

(1) State agencies of the legislative, executive, and judicial branches shall not make expenditures for the cost or reimbursement of state employees travel to Victoria, British Columbia, Canada, where the travel is not related to an emergency or other catastrophic event that requires government action to protect life or public safety, or direct service delivery, and the travel occurs after the effective date of this section and before the earlier of July 1, 2017, or the completion of a primary sewage treatment system for the city of Victoria, British Columbia and the surrounding Capital Regional District.

(2) This section also does not apply to costs related to carrying out a court order.

(3) Exceptions to the restrictions in subsection (1) of this section may be granted for the critically necessary work of an agency as provided in this section.

(4) For agencies of the executive branch, the exceptions shall be subject to approval by the director of financial management or the director's designee. For agencies of the judicial branch, the exceptions shall be subject to approval of the chief justice of the supreme court. For the house of representatives and the senate, the exceptions shall be subject to approval of the chief clerk of the house of representatives and the secretary of the senate, respectively, under the direction of

the senate committee on facilities and operations and the executive rules committee of the house of representatives. For other legislative agencies, the exceptions shall be subject to approval of both the chief clerk of the house of representatives and the secretary of the senate under the direction of the senate committee on facilities and operations and the executive rules committee of the house of representatives.

(5) Exceptions approved under subsection (4) of this section shall take effect no sooner than five business days following notification of the chair and ranking minority member of the ways and means committees in the house of representatives and the senate. The person approving exceptions under subsection (3) of this section shall send the exceptions to the legislature for consideration every thirty days from the effective date of this section, or earlier should volume or circumstances so necessitate.

(6) Exceptions approved and taking effect under this section shall be published electronically at least quarterly by the office of financial management on the state fiscal web site.

(7) This section does not apply to agricultural commodity commissions and boards, and agricultural inspection programs operated by the department of agriculture.

In the recent years, Tourism Victoria has taken a consistent view that sewage treatment is necessary. As an organization we have stayed out of the municipal and neighborhood discussions as we felt it was not our place. Over the last year there has been plenty of input and discussion on the various options. It is time to make a decision so that we can put this ongoing risk and uncertainty behind us and move forward as a region to an environmentally sustainable and prosperous future.

Best regards,

Bill Lewis,
Chair, Board of Directors.

CC – Paul Nursey, President & CEO

Making a difference...together

625 Fisgard Street
Victoria, BC V8W 2S6

F: 250.360.3000
www.crd.bc.ca

February 29, 2016

File: 0360-20
Core Area Liquid Waste Management Committee
Correspondence

Mayor Barbara Desjardins and Council
Township of Esquimalt
1229 Esquimalt Road
Esquimalt, BC V9A 3P1

Dear Mayor Desjardins and Council,

RE: CORE AREA WASTEWATER TREATMENT

I'm writing to you as chair of the Core Area Liquid Waste Management Committee to bring you up to speed on the progress made last week on the sewage file. My friend and colleague Mayor Desjardins will do this as well. At the same time, I think it's really important for me to reach out directly to Mayor and Council at Esquimalt to share some thoughts about where we are, and where we might go, together.

In the past, and still in some circles today, Esquimalt Council has been accused of "refusing to rezone McLoughlin" thus holding up the treatment of sewage in the region. This kind of framing does not respect the democratic decision making authority of Councils or honour members of the public who participate in the process. It is not helpful and I hope we can all let this language go.

Last week at the sewage committee, McLoughlin Point was put back on the table by majority vote. It came with what I see as a positive twist from the point of view of the region and hopefully of Esquimalt Council as well; there are other options currently in play, some as a complement to McLoughlin that might fit with the current zoning of the site.

There was a motion made for staff and consultants to examine the feasibility of a "centralized advanced (tertiary) wastewater treatment plant with capacity for the 108 ML/D at Rock Bay or a possible tertiary wastewater plant at either McLoughlin or Macaulay Points as an alternative to Rock Bay, a tertiary wastewater plant at Clover Point, and provision for a tertiary plant on the Westside." Further, "Hartland Landfill [identified] as the preferred site for sludge processing with technology to be confirmed through the submission of project concepts outlined below."

We know you'll be following this discussion closely. As a committee, we're searching around the region for the best possible solution. We haven't determined the best and most responsible decision yet. But please know that we will keep you as informed and involved as possible. It will take all of us, coming together, to get this done.

My hope is that we can put all put our fear, anger, frustration, past-hurts and bad feelings behind us and rally as a region to create cost-effective and innovative wastewater and resource recovery that will make us all proud. I look forward to working with Esquimalt Council and Councils across the region in the coming months and years to make this so.

Thanks for your kind consideration.

Sincerely,

Lisa Helps
Chair, Core Area Liquid Waste Management Committee

CORPORATION OF THE TOWNSHIP OF ESQUIMALT

Municipal Hall, 1229 Esquimalt Road, Esquimalt, B.C. V9A 3P1
Website: www.esquimalt.ca Email: info@esquimalt.ca

Voice: (250) 414-7100
Fax: (250) 414-7111

Office of the Mayor

March 3, 2016

Mayor Lisa Helps
Chair, Core Area Liquid Waste Management Committee
Capital Regional District
625 Fisgard Street
Victoria, BC V8W 2S6

Dear Mayor Helps:

RE: CRD (Mayor Helps) Letter of February 29, 2016

I am writing to you as the Mayor of the Township of Esquimalt, after consultation with my Council, in response to your letter of February 29, 2016, and the decision of the Core Area Liquid Waste Management Committee to re-introduce analysis of McLoughlin Point and, after almost a decade, Macaulay Point, as potential sites for a wastewater treatment plant. Township Council expressed unanimous concern including that this direction does not respect the democratic decision making authority of Councils nor honour members of the public who participated in the process. This is or could lead to a serious breach of the Project Charter.

THE CORE AREA COMMITTEE'S MOTION

Your letter noted that:

> There was a motion made for staff and consultants to examine the feasibility of a "centralized advanced (tertiary) wastewater treatment plant with capacity for the 108 ML/D at Rock Bay **or** a possible tertiary wastewater plant **at either** McLoughlin **or** Macaulay Points as an alternative to Rock Bay, **a** tertiary wastewater plant at Clover Point, **and** provision for a tertiary plant on the Westside." [Emphasis Added]

It was important that the Special Meeting of March 2nd clarified that consideration of these Esquimalt sites was *in conjunction with* Clover Point as the other "end of pipe" solution, plus a third site as a combination for a (somewhat) distributed model.

Nevertheless, the debate continues to evidence that some continue to consider a single site centralized plant at McLoughlin Point as the "approved site", or the fallback "Option B".

THE PROJECT CHARTER, AND THE UNFORTUNATE HISTORY THAT INSPIRED IT

More than a year ago, the CRD realized that imposing a single site centralized system against a member municipality's decision, made after extensive public consultation by the municipality, was a top-down, heavy-handed approach that soundly failed. At that time, every member municipality signed on to the Project Charter, which committed to respect Council decisions to voluntarily put forward sites for consideration of a wastewater treatment plant. Neither McLoughlin Point nor Macaulay Point were advanced by the Township.

The Core Area Committee's motion would unravel this and effectively throw the Project Charter out the window. There has been no public consultation around McLoughlin and Macaulay Point, and thus the Project Charter commitments to the public would also be rendered meaningless. This is a misguided regression, and inspires little confidence in the CRD to manage these services. That is surely not the message that should be sent to senior government funders, our neighbours to the south, and, most importantly, all residents of the Region.

McLOUGHLIN AND MACAULAY ZONING

It is important to note that Macaulay Point is not zoned for sewage *treatment* facilities. That I-5 Zone only permits "regional sewage pumping facilities" and "sewage screening facilities".

The McLoughlin Point Special Use Zone should also be put into context. You will recall that the CRD Seaterra's most recent application for amendment to the Township's Official Community Plan and Zoning Bylaw under Amendment Bylaws 2829 and 2830 was unanimously rejected after extensive public consultation, including four (4) nights of public hearings. This was a strong signal to remove "wastewater treatment plant use" from the existing I-3 Zone, however that became unnecessary as the zoning permitted multiple other uses and CRD clearly and unequivocally stated that it would not further consider McLoughlin Point as a potential site:

> CRD's May 27, 2014 News Release entitled, "**Seaterra Program will not proceed with Wastewater Treatment Facility at McLoughlin Point**".

Township Council, relying on that CRD statement in good faith, focused on the more pressing matters of working with other member municipalities and the CRD, including through the Westside Select Committee and under the Project Charter. In short, the Core Area Committee and CRD should not assume that the current zoning of McLoughlin Point reflects the Township's intent regarding a wastewater treatment plant on that property.

We also hope to never again have to address the misinformation that the Township directed the CRD to McLoughlin Point. That site was initially put forward for *further study as part of* a distributed model where each of the municipalities would have a small treatment plant site; it was never advanced as the single or even the primary site for all or most of the region's sewage.

The Township looks forward to continued participation in a decision making process that is compliant with the Project Charter agreed to by all member municipalities.

Sincerely,

Barbara Desjardins

Barbara Desjardins,
Mayor, Township of Esquimalt

c.c. Capital Regional District Board

Brent Reems

From: Geoff Young
Sent: Tuesday, February 23, 2016 9:32 PM
To: Nancy More
Cc: Leif Wergeland (wergeland@shaw.ca); Cynthia Day; CRD Chair; Ben Isitt; Carol Hamilton; Chief Andy Thomas; Chief R. Sam (Songhees Nation); Colin Plant; David Screech; Denise Blackwell; Judy Brownoff; Lanny Seaton; Lisa Helps; Marianne Alto; Nils Jensen; Richard Atwell; Susan Brice; Vic Derman; Amber Genero; Andy Orr; Angila Bains; Brent Reems; Cathy Leahy; Dan Telford; Diana Lokken; Jennifer Grelson; Joshua Frederick; Larisa Hutcheson; Lindsay Taylor; Lisa Lou; Margaret Montague; Robert Lapham; Sheila Norton; Shelley Travis; Sonia Santarossa; Stephen Henderson; Sue Hallatt; Ted Robbins; Amanda Gibbs (Consultant); Christine Clarke (Songhees Nation); Christine Houghton (Consultant); Debbie Nadeau; Diane Knight (Esquimalt); Janice, Esquimalt Nation; Jenn Cochrane (View Royal); Saanich Admin
Subject: Comments on IRM for Feb. 24

Dear colleagues,

I am a member of the IRM task force, but cannot agree with their recommendations. I am circulating this in advance to cut down the length of my comments.

I found the summaries of the presentations to be accurate, but I drew different conclusions. I do NOT believe IRM should change our basic direction of a single liquids plant near the outfall and a single biosolids plant served by a pipeline.

The IRM proposals we heard had some common elements. These suggest that these sites will NOT be locatable on small sites, underneath roads, or in existing pump stations, but on the contrary will require significant sites and will impose significant impact on host neighbourhoods.

* All systems require on site electric generators based on standard internal combustion engines (such as a Caterpillar or Cummins diesel) because syngas (which is partly Carbon Monoxide) is uneconomic or dangerous to ship. The generators will run at all hours and will require muffling, emission controls, and electrical equipment to feed the grid.

* All systems need pretreatment of municipal solid waste (MSW) to produce small sized, consistent input (or "pellets") and need to reduce inorganic materials (glass, etc.) and especially heavy metals to the lowest possible levels. This pretreatment installation would require many acres for receiving garbage trucks, sorting lines, etc.

* If the individual sites do not host MSW sorting facilities and instead a centralized site is chosen, they will still have to host trucks coming in with treated MSW from the remote sorting/prep plant.

* The gasifiers or reformers will also require flue gas scrubbers under some technologies.

* Heavy metals and elements such as chlorine found in some plastics (e.g. Polyvinyl chloride) are not destroyed and will need to be dealt with either in the flue gas emissions, the generator emissions, or the biochar or ash.

* Technologies that produce liquid fuel will require fuel storage tanks or pipelines

* I assume that re-use or disposal of treated water, and use of waste heat, will require space for pumps, heat pumps etc. However, none of the proponents dealt with local water re-use or disposal options or with local heat use, and in most cases this was not their expertise (which is destruction of biosolids).

I am sure some form of heat based disposal (gasification, arc reforming, incineration) of both residual MSW and sludge is practical or will be in the future. It may or may not be combined with anaerobic digestion. However, all the evidence I have seen suggests a single site with facilities for sorting, pre-treatment, electric generation, flue gas scrubbing, noise muffling, reception of trucks, storage of created liquid fuel etc. is by far the most likely option. Multiple dispersed sites will create many issues besides cost.

I see no reason to carry out a pilot study. A pilot might be useful

* if Victoria's sludge and municipal solid waste (MSW) were fundamentally different from other municipalities', but we heard no evidence of that (and the nature of our MSW is likely to change over time).
* to test out and perfect an experimental system that the CRD wished to market and to sell to others, but we are not an engineering firm.

Grants may be available to firms wishing to develop new technologies, and the Saanich Peninsula or Sooke systems may be good places to try them out - but those pilots should be led by those areas, not the CRD as a whole.

Geoff Young

Brent Reems

From:	Richard Atwell
Sent:	Tuesday, February 23, 2016 11:21 PM
To:	Geoff Young
Cc:	Nancy More; Leif Wergeland (wergeland@shaw.ca); Cynthia Day; CRD Chair; Ben Isitt; Carol Hamilton; Chief Andy Thomas; Chief R. Sam (Songhees Nation); Colin Plant; David Screech; Denise Blackwell; Judy Brownoff; Lanny Seaton; Lisa Helps; Marianne Alto; Nils Jensen; Susan Brice; Vic Derman; Amber Genero; Andy Orr; Angila Bains; Brent Reems; Cathy Leahy; Dan Telford; Diana Lokken; Jennifer Grelson; Joshua Frederick; Larisa Hutcheson; Lindsay Taylor; Lisa Lou; Margaret Montague; Robert Lapham; Sheila Norton; Shelley Travis; Sonia Santarossa; Stephen Henderson; Sue Hallatt; Ted Robbins; Amanda Gibbs (Consultant); Christine Clarke (Songhees Nation); Christine Houghton (Consultant); Debbie Nadeau; Diane Knight (Esquimalt); Janice, Esquimalt Nation; Jenn Cochrane (View Royal); Saanich Admin
Subject:	Re: Comments on IRM for Feb. 24

Geoff,

Please see my comments below:

Richard Atwell
Mayor of Saanich

> Begin forwarded message:
>
> From: Geoff Young <gyoung@crd.bc.ca> Subject: Comments on IRM for Feb.
> 24
>
> Dear colleagues,
>
> I am a member of the IRM task force, but cannot agree with their
> recommendations. I am circulating this in advance to cut down the
> length of my comments.
>
> I found the summaries of the presentations to be accurate, but I drew
> different conclusions. I do NOT believe IRM should change our basic
> direction of a single liquids plant near the outfall and a single
> biosolids plant served by a pipeline.

There are TWO outfalls serving the core area and it is not possible to locate a single plant that does not require considerable piping at a considerable capital cost to taxpayers.

In the Rock Bay based option sets, $200 million of piping and pumping is required to connect the outfalls to Rock Bay.

We have a gravity based sewage trunk networks with many lift stations and adding force mains that will require day and night pumping will incur substantial and avoidable captial and operating and maintenance costs.

McLouglin costs are similarly exhorbitant because of the unique need to go under the harbour with a dedicated crossing for sewage conveyance. The seismic stability of this crossing would also be in question.

> To locate The IRM proposals we heard had some common elements. These
> suggest that these sites will NOT be locatable on small sites,
> underneath roads, or in existing pump stations, but on the contrary will
> require significant sites and will impose significant impact on host
> neighbourhoods.

We have only heard from a few proponents to date and both the Pivotal and Ask Power Dynamics technologies were touted for their small footprints.

Hydra Renewable Resources did not go into footprint specifics and the Technical Oversight Panel has collected other technical submissions.

I would say that it is premature to draw this conclusion.

Impacts were not defined or discussed at length at the committee or constrasted to the significat impact from digging up Cook St. from Clover Point to Rock Bay.

> * All systems require on site electric generators based on standard
> internal combustion engines (such as a Caterpillar or Cummins diesel)
> because syngas (which is partly Carbon Monoxide) is uneconomic or
> dangerous to ship. The generators will run at all hours and will
> require muffling, emission controls, and electrical equipment to feed
> the grid.

This is incorrect. The Hybury presentation focused on cogeneration of combined heat and power (CHP) and the slides demonstated that electricity, heat or power could be generated, separetely or in combination.

For worker safety, engines are enclosed in sound muffling enclosures. This is proven technology.

Further, the overall safety of the system has been proven by the mere location of their pilot facility at UBC which is surrounded by other buildings and has to meet very stringent standard of a university campus.

> * All systems need pretreatment of municipal solid waste (MSW) to
> produce small sized, consistent input (or "pellets") and need to reduce
> inorganic materials (glass, etc.) and especially heavy metals to the
> lowest possible levels. This pretreatment installation would require
> many acres for receiving garbage trucks, sorting lines, etc.

What is the limiation here? The Technical Oversight Panel identifed Hartland as a location where these "synergies" could occur.

We have long ago started the process of sorting out materials from the waste stream, to recover paper, plastics and other "wastes". We would simply be increasing our level of source control to enable further resource recovery.

> * If the individual sites do not host MSW sorting facilities and instead
> a centralized site is chosen, they will still have to host trucks coming
> in with treated MSW from the remote sorting/prep plant.

Why is this an issue? There are already dozens of MSW trucks on the road every day and driving to Hartland.

I think it is a misunderstanding that if there was a multiple plant configuration there would be a waste-to-energy unit at each plant in the optimized configuration.

> * The gasifiers or reformers will also require flue gas scrubbers under
> some technologies.

Of course and so will anaerobic digsters that have a flue stack. This is documented in our own documents.

> * Heavy metals and elements such as chlorine found in some plastics
> (e.g. Polyvinyl chloride) are not destroyed and will need to be dealt
> with either in the flue gas emissions, the generator emissions, or the
> biochar or ash.

During the presentation, it was suggested that PVC based plastics be removed at the source. You've already alluded to a sorting facility above.

> * Technologies that produce liquid fuel will require fuel storage tanks
> or pipelines

Edmonton is storing liquid methanol and ethanol on site at their Clover Bar facility much in the same way that a corner gas station has a large propane tank.

> * I assume that re-use or disposal of treated water, and use of waste
> heat, will require space for pumps, heat pumps etc. However, none of
> the proponents dealt with local water re-use or disposal options or with
> local heat use, and in most cases this was not their expertise (which is
> destruction of biosolids).

After the dewatering process, the water from the sludge was to be returned to the treatment plant.

Heating equipment will be required anyway and a replacement of heating equipment with heat exchangers like we have at the SPWWTP for the Panorama Rec Center will not necessarily be duplicated.

> I am sure some form of heat based disposal (gasification, arc
> reforming, incineration) of both residual MSW and sludge is practical or
> will be in the future. It may or may not be combined with anaerobic
> digestion.

It makes no financial sense to spend $250 million on anaerobic digestion and then to spend another $50 million to thermally destroy the biosolid residuals when you can deal with the sludge in the gasifier in the first place and save $200 million.

In Oct 2013, CRD staff estimated the cost to thermally destruct biosolids at $38 million.

Since anaerobic digestion at best reduces the volume of sludge by 50%, it would suggest that a waste to energy solution that does not include anaerobic digestion would cost $76 million as estimated in 2013 and far less than any anaerobic digestion only based solution.

> However, all the evidence I have seen suggests a single site
> with facilities for sorting, pre-treatment, electric generation, flue
> gas scrubbing, noise muffling, reception of trucks, storage of created
> liquid fuel etc. is by far the most likely option. Multiple dispersed
> sites will create many issues besides cost.

That maybe Hartland or elsewhere more suitable.

> I see no reason to carry out a pilot study. A pilot might be useful
>
> * if Victoria's sludge and municipal solid waste (MSW) were
> fundamentally different from other municipalities', but we heard no
> evidence of that (and the nature of our MSW is likely to change over
> time). * to test out and perfect an experimental system that the CRD
> wished to market and to sell to others, but we are not an engineering
> firm.

It is imperative and incumbent on us that due diligence is performed when the risk to the taxpayers is on the order of $200 million.

We have an opportunity to locate a gasifier at the SPWWTP as a demonstration plant to verify the cost savings unless a commercial plant is proposed from the start.

If a pilot is done as proposed with a combination or private financing and or grant monies, why wouldn't we do it?

There is 5 years to go and a pilot could be completed in less than 2 years, leaving 3 years to build a $250m digester farm if no other viable options proved themselves.

It's too risky NOT to pursue a pilot.

> Grants may be available to firms wishing to develop new technologies,
> and the Saanich Peninsula or Sooke systems may be good places to try
> them out - but those pilots should be led by those areas, not the CRD as
> a whole.

Sludge disposal is a regional problem. It affects the Saanich Peninsula, Sooke, the Gulf Islands and includes plants like Dockside Green and Septic Systems.

As a federation we should be working together to find a cost effective solution for all using economies of scale. That's the point of CRD isn't it?

I respectfully disagree with most of your conclusions based on the evidence, the possibilities and potential for savings for the taxpayer in the order of $200 million dollars on the solids recovery solution alone.

AECOM/Graham Joint Venture
Fourth Floor, 3292 Production Way
Burnaby, BC, Canada V5A 4R4
T 604.444.6400 F 604.294.8597

March 3, 2016

Chair Desjardins and the CRD Board of Directors
Capital Regional District
625 Fisgard Street
Victoria, British Columbia
Canada V8W 2S6

BY E-MAIL TO: CRDBoard@crd.bc.ca

Subject: **Harbour Resource Partners Affordable and Bylaw Compliant Solution for the CRD CALWMP Liquid Treatment Plant**

Dear Chair Desjardins and Directors:

Given recent events, Harbour Resource Partners is pleased to provide updated costing information relative to our winning proposal of 2014.

- **Harbour Resource Partners pricing**
  In March 2014, Harbour Resource Partners submitted a cost proposal to the CRD for a base price of $235.0 M plus two optional items per CRD's requirements: Barging of bulk materials to the site to reduce trucking through the Township of Esquimalt in the amount of $8.0 M, and advanced oxidation treatment in the amount of $5.2 M. This was a firm fixed price, secured by a letter of credit when we were named the Preferred Proponent. With respect to escalation, when the award of contract was delayed, HRP agreed a mechanism with Seaterra for contract price adjustments to address escalation, foreign exchange rate fluctuations, and extraordinary market conditions. Reviewing these factors, we estimate that a nominal escalation of approximately 6% applies to our proposal to bring it to current day.

  In Summary, our updated price in 2016 dollars would be:

Treatment Plant Only (Liquid Treatment)	$170.4 M
New Outfall on the permitted alignment	$30.5 M
Harbour Crossing force main to convey sewage from Clover Point to McLoughlin Point	$34.1 M
Total HRP Proposal – March 2014	**$235.0 M**
Option: Advanced Oxidation	$5.2 M
Total Proposal including Advanced Oxidation option	$240.2 M
Escalation – 6% approx	$15.0 M
Revised Proposal – March 2016	**$255.2 M**

  Any final commitments would be subject to negotiations with CRD.

- **Scope of project**
  HRP's proposal included a single treatment plant capable of treating 124 Ml/day, which would serve the region's projected needs to 2065. This proposal required minimal modifications to the existing Esquimalt zoning bylaw. In the fall of 2014, and in cooperation with Seaterra staff, HRP modified our design to be fully compliant with the existing Esquimalt zoning bylaw. This required lowering the treatment capacity to 108 Ml/day, which is still compliant with the RFP, providing projected capacity to 2035. As noted before, our proposal also includes a new outfall, and the conveyance pipe underneath Victoria Harbour.

- **Oxidation**
  As noted above, our proposal included advanced oxidation as an option for additional treatment beyond conventional secondary treatment.

- **Evaluation of costs compared to other options**
  We understand that the Carollo/Urban Systems cost evaluation includes a factoring of construction costs to determine total project costs. (See attachment) Please note that in their model, "General Requirements (Mobilization, Demobilization, Bonds, Insurance etc.) – 10%", "Contractor Profit/Overhead – 15%", "Engineering – 15%", "Interim Financing – 4%", and "Escalation to Midpoint of Construction (2%/year – 4 years)" are all included in part or in full as part of the HRP proposal price, and should not be doubly added when comparing to other alternatives. Further, our firm fixed price also transferred a significant portion of the design and construction risks to HRP, therefore a large portion of the "Construction/Project Contingency – 35%" was also included in our price; to put this in context, most owners would consider that their residual risk on a fixed price design-build-finance contract would be in the order of 5% to 10%.

Please don't hesitate to contact me if you require further information. We would appreciate the opportunity for equal time before the board to discuss either of our lowest cost options.
.

Very Truly Yours,

Harbour Resource Partners

Ernie Maschner, DBIA

Respondent Team Lead Director

Harbour Resources Partners

AECOM / Graham Joint Venture

:

Distribution

CRD Board Chair Desjardins
CRD Vice Chair Howe
Director Alto
Director Atwell
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Director Brice
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Table 5.1 - Capital Cost Breakdown

Description	Total
Construction Cost	$ 1,000,000
General Requirements (Mobilization, Demobilization, Bonds, Insurance, etc.) – 10%	$ 100,000
Contractor Profit/Overhead – 10%	$ 100,000
Construction/Project Contingency – 35%	$ 350,000
Subtotal of Direct Costs	**$ 1,550,000**
Engineering – 15%	$ 233,000
CRD Administration and Project Management and Miscellaneous – 8%	$ 124,000
Interim Financing– 4%	$ 62,000
Escalation to Mid-Point of Construction – 2%/year (4 years)	$ 124,000
Total Capital Project Cost	**$ 2,093,000**

5.3 Pump Stations

The pump stations that will be used to pump effluent from the existing CRD collection system to the proposed

16-393

Washington State Legislature

March 3, 2016

The Honorable Lisa Helps
Mayor of Victoria
1 Centennial Square
Victoria, BC V8W 1P6

Dear Mayor Helps

We wish to share with you our frustration regarding your city's (and the region's) lack of primary sewage treatment. We also hope Victoria Capitol Regional District (CRD) will select a final treatment site by the March 31, 2016 deadline established by PPP Canada – or lose $83 million in potential funding.

Our frustration is over the following timeline of broken promises:

1. 1993: Washington state launched a tourism boycott against Victoria because of the region's lack of formal sewage treatment. State lawmakers forced British Columbia's premier to enter into an informal agreement with then-Gov. Mike Lowry that Victoria would build primary sewage treatment by 2002 and secondary treatment by 2008. In 1993, boycotts against Victoria's tourism sector had just started when a treatment deal was struck. This deal averted further boycotts, but not before major conferences and hotel bookings were cancelled in Victoria. In the new deal, Harcourt promised Lowry that Victoria would have primary sewage treatment in place by 2002 and secondary treatment between 2008 and 2013. Victoria, through the Capitol Regional District (CRD) Chair, also committed to this timeframe for installing secondary treatment.

2. 2006: Then-Gov. Chris Gregoire notes Victoria's broken promises during discussions on the 2010 Winter Olympics. B.C. Environment Minister Barry Penner orders the CRD to make good on those promises.

3. 2009: Washington supported B.C.'s bid to host the Olympics partly because of the commitment on sewage treatment. Then-Victoria Mayor Dean Fortin said the city's "reputation has been tarnished by our sewage treatment."

4. 2014: Gov. Jay Inslee and King County Executive Dow Constantine sent a letter to B.C. Premier Christy Clark demanding action. Later that year, the preferred treatment facility site in Esquimalt was rejected in a rezoning dispute. The B.C. government did not intervene, ending the project.

5. 2015: King County's representative resigns from a CRD board because of "lost confidence" in progress toward a treatment facility. A new siting process begins, but no capital projects are planned.

We implore you: Take action now.

While we recognize the difficulty in siting critical infrastructure, decades of process and excuses around tidal actions fail the straight face test when events happen as reported recently in the Victoria Times

Colonist ("Heavy rain prompts health advisories at capital's outfalls"). A quote from this story: "The sewage in some areas is unscreened and there's the potential for "floatables" including plastics washing up on local beaches," said Ted Robbins, general manager for CRD integrated water services.

We recognize the shared risk in short-term loss of tourism activity on both sides of the border from publicity surrounding this issue. However, we believe the long-term damage to marine mammals, in particular, but all marine wildlife does more long-term damage to ecotourism.

We can no longer tolerate the long-term risk that the chemical loading caused by Victoria CRD's inaction has brought to our shared waters. Our hope is that you will move ahead with a selected location by the March 31st, 2016 deadline.

Sincerely,

Representative Jeff Morris
40th Legislative District

Representative Kristine Lytton
40th Legislative District

Representative Luis Moscoso
1st Legislative District

Representative Cindy Ryu
32nd Legislative District

Representative Zack Hudgins
11th Legislative District

Representative Brian Blake
19th Legislative District

Representative Sherry Appleton
23rd Legislative District

Representative Chris Hurst
31st Legislative District

Representative Strom Peterson
21st Legislative District

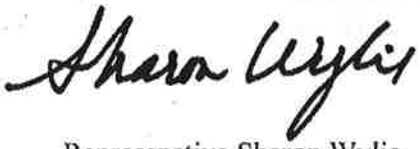
Representative Fitzgibbon
34th Legislative District

Representative Tana Senn
41st Legislative District

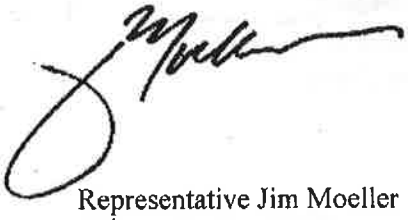
Representative Mike Sells
38th Legislative District

Representative Derek Stanford
1st Legislative District

Representative Ruth Kagi
32nd Legislative District



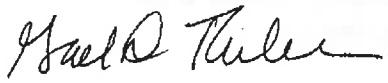
Represenative Sharon Wylie
49th Legislative District



Representative Jim Moeller
49th Legislative District

Representative Jessyn Farrell
46th Legislative District

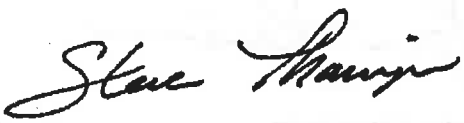
Representative Gerry Pollet
46th Legislative District



Representative Gael Tarleton
36th Legislative District

Representative Brady Walkinshaw
43rd Legislative District

Representative Mia Gregerson
33rd Legislative District



Representative Steve Tharinger
24th Legislative District

Representative Patty Kuderer
48th Legislative District

Representative Kevin Van De Wege
24th Legislative District

Representative Sam Hunt
22nd Legislative District

Senator Jeannie Darneille
27th Legislative District

Senator Marko Liias
21st Legislative District

Senator Kevin Ranker
40th Legislative District

Senator John McCoy
38th Legislative District

Senator Reuven Carlyle
36th Legislative District

Representative Sharon Tomiko Santos
37th Legislative District

Representative Vincent Buys
42nd Legislative District

Senator Karen Keiser
33rd Legislative District

Senator Primila Jayapal
37th Legislative District

Senator Maralyn Chase
32nd Legislative District

Representative Norma Smith
10th Legislative District

Representative Richard DeBolt
20th Legislative District

Making a difference...together

Capital Regional District
625 Fisgard Street, PO Box 1000
Victoria, BC, Canada V8W 2S6

T: 250.360.3000
F: 250.360.3234
www.crd.bc.ca

March 17, 2016

File: 0620-20
Core Area Liquid Waste Management Plan
Amendments / Progress Reports to MOE

The Honourable Mary Polak
Minister of Environment
PO Box 9047 Stn Prov Govt
Room 247, Parliament Buildings
Victoria, BC V8W 9E2

Dear Minister Polak:

RE: CAPITAL REGIONAL DISTRICT CORE AREA LIQUID WASTE MANAGEMENT PLAN AMENDMENT NO. 10

On behalf of the Capital Regional District (CRD), please find enclosed submission of Amendment No. 10 (Appendix A) to the Core Area Liquid Waste Management Plan (CALWMP) for your conditional approval. Amendment No. 10 builds on information submitted to the ministry in Amendment No. 9, which was approved on July 3, 2014.

The purpose of Amendment No. 10 is to modify the CALWMP as summarized below:

1. *New Sewage Treatment Facilities Proposed at Both McLoughlin Point/Macaulay Plain and Clover Point*
   After extensive evaluation of potential sites across the region, a two-plant option is being proposed for wastewater treatment as a base case: one located at McLoughlin Point/Macaulay Plain within the Township of Esquimalt and the other underground at Clover Point within the City of Victoria. Sufficient capacity to treat all of the sewage generated along the Northwest trunk will be built at McLoughlin Point/Macaulay Plain and the second plant would handle all of the sewage flows from the East Coast Interceptor trunk system at Clover Point. An environmental impact study for McLoughlin Point was previously completed and submitted as part of Amendment No. 8. A similar study will be completed for the expanded facility at Clover Point and potentially for Macaulay Plain.

2. *Project Concept Call*
   The CRD plans to issue a call for submission of project concepts for wastewater treatment and biosolids processing, possibly in combination with solid waste streams, to achieve the goals of the Project Charter. The submissions would include sufficient detail to allow for meaningful evaluation of the project concepts against each other and against the base case, including details regarding sites, technology, a feasibility assessment, demonstration of compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages over the base case, including financial backing.

The Board has made integrated resource management a strategic priority. I am very pleased to see the Board advance this innovative approach, one that we are hopeful will not only achieve overall fiscal advantages but significant environmental benefit.

3. *Biosolids Processing to Remain at Hartland Landfill*
   Hartland landfill continues to be the proposed site for biosolids processing. An environmental impact study has been previously completed and submitted for the Hartland North site, and will be updated once a defined approach for biosolids treatment is selected.

4. *Public Involvement and Engagement Program*
   The CRD continues to conduct a comprehensive public involvement and engagement program, working directly with municipalities, including meetings with communities, community associations and open houses in the Core Area municipalities, to keep the public and stakeholders fully informed on all aspects of the CALWMP.
   Although a one- or two-plant solution including a site in Rock Bay was generally supported by the community, we also heard concerns expressed around this location in terms of additional costs and construction impacts for conveyancing to and from the Clover Point outfall. We also heard a desire to include other locations, and technologies, where those costs might be lower (closer proximity to the existing outfalls). This outcome of public consultation lead to the two-plant configuration reflected as the base case in the Plan amendment and the Project Concept Call outlined below.

The decision to revise the Core Area Liquid Waste Management Plan has provided an opportunity for the Region to bring the participating First Nations into the decision-making arena from the beginning of the process, rather than limiting the relationship to that of information sharing and consultation. The Songhees and Esquimalt Nations have shown leadership and good will throughout the process and have played an integral role in options development by being the first to offer technically feasible facility locations. Throughout the evaluation process, both Nations have joined the rest of the Core Area participants at the Committee table and have made this project a priority for their respective communities.

The CRD Board approved the submission of Amendment No. 10 to the Ministry for approval at its meeting of Wednesday March 9, 2016, based on the recommendations from the Core Area Liquid Waste Management Committee.

Should you or your ministry staff have any questions about the attached documents, please contact Larisa Hutcheson, General Manager, Parks & Environmental Services at 250.360.3085 or lhutcheson@crd.bc.ca.

Yours sincerely,

Barbara Desjardins
Chair
Capital Regional District Board

cc: CRD Board of Directors
Honourable Peter Fassbender, Minister of Community, Sport and Cultural Development
Robert Lapham, Chief Administrative Officer, CRD
Larisa Hutcheson, General Manager, Parks & Environmental Services, CRD

APPENDIX A

Core Area Liquid Waste Management Plan

Amendment No. 10

submitted March 2016

CAPITAL REGIONAL DISTRICT
CORE AREA LIQUID WASTE MANAGEMENT PLAN

AMENDMENT NO. 10
(Type of Approval Requested: Conditional)

SECTION 6
(Modifies Section 6 in Amendment No. 8)

PROPOSED SYSTEM CONFIGURATION AND BIOSOLIDS MANAGEMENT PLAN

(REPLACES CHAPTER 14 IN THE EXISTING PLAN)

GOAL

The goal of the proposed wastewater management system is to protect public health and the environment and to comply with provincial and federal regulations in a sustainable and cost effective manner.

COMMITMENTS

1. GENERAL

The Capital Regional District (CRD) and the participating municipalities commit to completing the required wastewater management program in a manner that will:

a) Protect public health and the environment.
b) Incorporate the Capital Region's climate action goals.
c) Be sustainable and optimize the recovery and beneficial use of resources.
d) Avail of opportunities to integrate the solid and liquid waste functions wherever a mutual benefit can be achieved.
e) Provide appropriate wastewater treatment for the participating municipalities that will minimize the cost to taxpayers.
f) Provide facilities that are compatible with neighbouring communities.
g) Comply with the draft operational certificates, which will be amended as required.

2. WASTEWATER TREATMENT

The CRD and the participating municipalities commit to providing, by the end of 2020, wastewater treatment for the Core Area. The system base case, as indicated in Figure 6.1A and described below, will include the following major components:

a) A secondary, advanced (tertiary) or equivalent to advanced (tertiary) wastewater treatment plant at Clover Point, servicing all flows currently directed to Clover Point, up to 2030;
b) A secondary, advanced (tertiary) or equivalent to advanced (tertiary) wastewater treatment plant at McLoughlin Point or Macaulay Plain, servicing all flows currently directed to Macaulay Point outfall, up to 2030;
c) Provision for a Westside wastewater treatment plant for future growth, at a location to be determined;

d) Wet weather flow attenuation tanks and pump station at Arbutus Road in Saanich;
f) Primary treatment of any discharges over four times average dry weather flow (ADWF) after 2030; and
g) New grit removal and screening facilities at the existing Clover Point and Macaulay Point pump stations.

3. BIOSOLIDS PROCESSING

The CRD and the participating municipalities commit to processing the biosolids generated by the liquid treatment process in a manner that will be innovative, optimize opportunities for beneficial use while potentially integrating solid and liquid waste functions. The base case site for this treatment facility is the Hartland landfill.

4. PROJECT CONCEPT CALL

To compare against the base case as described above under items 2 and 3, the CRD intends to issue a call for project concepts to demonstrate solutions for:

a) (i) Two advanced (tertiary) wastewater plants at either McLoughlin Point/Macaulay Plain and a second at Clover Point and provision for a third on the Westside to address future growth; and
   (ii) The treatment of biosolids at Hartland, possibly in combination with food scraps, municipal solid waste and wood waste; or
b) Other feasible alternatives that demonstrate compatibility with current infrastructure, compliance with provincial and federal requirements and demonstration of significant fiscal advantages and/or environmental advantages and financial backing.

5. PROPOSED TREATMENT PLANT LOCATION

The proposed treatment plant will be located at the following lot legal descriptions:

McLoughlin Point

- Lots A-E, Plan 35322 – 337 Victoria View Road
- Lots 1 and 2, Plan VIP87823 – Bed of Victoria Harbour

Macaulay Plain – Vaughan Street and View Point Road

- PID: 017-115-501 Part of Lot 1, Section 11, Esquimalt District, Plan 41833, Except Part in Plan VIP78775 and VIP86676
- PID: 004-816-374 That Part of Lot 5 Block 16 Section 11 Esquimalt Plan VIP195-A Shown Outlined in Red on Plan 1870-R
- PID: 004-816-391 That Part of Lot 6, Block 16, Section 11, Esquimalt District Plan 196-A Shown Outlined in Red on Plan 1870-R
- PID: 004-816-366 Lot 4, Block 16, Section 11, Esquimalt District, Plan VIP195-A, Shown Outlined in Red on Plan 1870R
- PID: 025-629-859 Lot A of Part of the Bed of Victoria Harbour Esquimalt District Plan VIP75079

Clover Point

- PID: 013-026-020 1301 Dallas Road - Those parts of sections 15, 16, 33, 34, 51, and 82, Fairfield Farm Estate, Victoria City, Plan 13, as shown outlined in red on plan 5240S
- No PID: 1303 Dallas Road – Clover Point Pumping Station – in Road Right of Way
- No PID: Part of Dallas Road Right of Way
- No PID: Dallas Road – Part of the Bed of Ross Bay – Filled Foreshore

6. PUBLIC INVOLVEMENT AND ENGAGEMENT PROGRAM

The CRD continues to conduct a comprehensive public involvement and engagement program, including meetings with communities, community associations and open houses in the Core Area municipalities, to keep the public and stakeholders fully informed on all aspects of the CALWMP.

Attachments: Attachment 1 – Proposed System Configuration – Figure 6.1A
Attachment 2 – Public Consultation Summary Report
Attachment 3(a)-(e) – Technical Memoranda 1-4 and Letter of March 4, 2016 from Urban Systems/Carollo Engineers

CORE AREA SEWAGE AND RESOURCE RECOVERY SYSTEM 2.0

Phase 2: Analysis, Options Costing and Public Engagement

Project Charter - FINAL

Approved: October 2, 2015
(updated on November 2, 2015)
(Attachment 2 updated on January 19, 2016)

TABLE OF CONTENTS

1. VISION 1
2. BACKGROUND 1
3. GOALS AND COMMITMENTS 2
4. SCOPE 3
5. KEY STAKEHOLDERS 3
6. ROLES AND RESPONSIBILITIES 3
7. MILESTONES 9
8. BUDGET 9
9. CONSTRAINTS, ASSUMPTIONS, RISKS AND DEPENDENCIES 10

1. VISION

In partnership with the public, the Core Area Liquid Waste Management Committee (CALWMC) will deliver a sewage treatment and resource recovery system that is proven, innovative and maximizes the benefits for people and the planet – economic, social, and environmental – for the long term.

2. BACKGROUND

In 2006, an environmental report commissioned by the Ministry of Environment noted the contamination of seabed sites close to Capital Regional District (CRD) outfalls where the region's wastewater is discharged. As a result, the Province mandated that the CRD plan for and initiate secondary sewage treatment for the region.

In 2007, the CRD received a letter from the Ministry of Environment giving six directives for the Core Area Liquid Waste Management Plan (LWMP). These six directives continue to inform the goals and commitments of this project.

Minister's Requirements:

1. Meet the regulatory standard for liquid waste
2. Minimize total project cost to the taxpayer by maximizing economic and financial benefits, including beneficial reuse of resources and generation of offsetting revenue
3. Optimize the distribution of infrastructure based on number 2 above
4. Aggressively pursue opportunities to minimize and reduce greenhouse gas emissions (e.g., reduced requirement of energy for pumping purposes and beneficial reuse of energy)
5. Optimize 'smart growth' results (e.g., district services, density, Dockside Green-like innovation)
6. Examine the opportunity to save money, transfer risk and add value through a public private partnership

In 2012, the federal government passed a law requiring all high-risk Canadian cities to provide secondary sewage treatment by 2020 at the latest. The CRD's core area was considered to be in the high-risk category.

Between 2009 and 2014, the CALWMC, CRD staff and consultants, and the Core Area Wastewater Program Commission (the Commission) worked to create and implement a publicly acceptable sewage treatment and resource recovery system for the Core Area.

While the approved CALWMP continues to identify McLoughlin Point as the location for the wastewater treatment facility, in April 2014, the CRD's revised McLoughlin Point rezoning application did not meet the zoning requirements for Esquimalt. In June 2014, the plan to build one regional plant at McLoughlin Point was put on hold by the CRD Board, in response to public input.

In June 2014, Langford, Colwood, View Royal, Esquimalt and the Songhees Nation formed the Westside Select Committee to begin planning for a new project to treat sewage and recover resources in those municipalities and the Nation. In September 2015, Esquimalt Nation joined the Westside Select Committee. In January 2015, a similar body – the Eastside Select Committee,

comprised of Saanich, Oak Bay and Victoria – was formed to develop a similar plan for the Eastside municipalities.

Since June 2014 and January 2015, respectively, both Select Committees have been engaged in in-depth public engagement activities to share information with the public, build trust, and seek public input on a range of factors including, but not limited to, level of treatment, treatment technologies, siting of treatment plants, costs, risks and long-term social, economic and environmental benefits.

In July 2015, both select committees presented their work and recommendations to the CALWMC. The CALWMC approved the solution sets and recommendations from the Eastside Select Committee, including potential sites and direction with regard to investigating secondary and tertiary treatment, anaerobic digestion and gasification, and resource recovery and revenue generation. The CALWMC received a presentation from the Westside Select Committee outlining five technically preferred sites and two scenarios, detailing its technical work to date. The Committee accepted the Westside Select Committee's proposal to carry on with further public engagement and more detailed costing and engineering analysis as per its terms of reference to be presented to the CALWMC as more fully-developed solutions in fall 2015.

The work of the Eastside and Westside Select Committees, the CALWMC, and the public between June 2014 and July 2015 lays the groundwork for the current project, *Core Area Sewage and Resource Recovery System 2.0.*

3. GOALS AND COMMITMENTS

The *Core Area Sewage and Resource Recovery System 2.0* project will deliver the following goals and meet the following commitments. *NB goals should be measurable. Each of these goals needs a corresponding metric so at project completion the CALWMC can determine whether it achieved its goals.*

Goals

a) Meet or exceed federal regulations for secondary treatment by December 31, 2020

b) Minimize costs to residents and businesses (life cycle cost) and provide value for money

c) Produce an innovative project that brings in costs at less than original estimates

d) Optimize opportunities for resource recovery to accomplish substantial net environmental benefit and reduce operating costs

e) Optimize greenhouse gas reduction through the development, construction and operation phases and ensure best practice for climate change mitigation

Commitments

a) Develop and implement the project in a transparent manner and engage the public throughout the process

b) Deliver a solution that adds value to the surrounding community and enhances the livability of neighbourhoods

c) Deliver solutions that are safe and resilient to earthquakes, tsunamis, sea level rise and storm surges

d) Develop innovative solutions that account for and respond to future challenges, demands and opportunities, including being open to investigating integration of other parts of the waste stream if doing so offers the opportunities to optimize other goals and commitments in the future

e) Optimize greenhouse gas reduction through the development, construction and operation phases and ensure best practice for climate change mitigation

4. SCOPE

The scope of this phase of the Core Area Sewage and Resource Recovery System 2.0 project, is to complete the Options Development Phase, by submitting an amendment to the Liquid Waste Management Plan and receiving conditional approval from the Minister of Environment of an Amendment for the Core Area. This Plan amendment will be approved by the provincial and federal funding agencies. Completion of this phase includes securing sites for all facilities (wastewater treatment and resource recovery).

The scope of this phase does not include detailed site assessments such as Environmental and Social Reviews, submission of detailed business cases (as may be required by funding agencies), indicative design, finalized cost sharing agreements or the procurement of infrastructure.

5. KEY STAKEHOLDERS

The graphic illustration (see Attachment 1) outlines all of the Core Area Sewage and Resource Recovery 2.0 project stakeholders and displays the relationships between them. For a description of the roles and responsibilities of each stakeholder, please see Section 6.

6. ROLES AND RESPONSIBILITIES

Project Lead (TBD)

Federal Government – In 2012, the federal government passed a law requiring all high-risk Canadian cities to provide secondary sewage treatment by 2020 at the latest. The CRD's Core Area was considered to be in the high-risk category. The federal government agreed to contribute up to $253 million towards the project out of three different funding programs: Building Canada Fund ($120 million), Green Infrastructure Fund ($50 million) and 3P Canada ($83.4 million).

- Secondary treatment mandated by 2020
- Funding up to $253 million

Provincial Government – In 2006, an environmental report commissioned by the Ministry of Environment noted the contamination of seabed sites close to CRD outfalls where wastewater is discharged. As a result, the CRD was mandated by the province to plan for and initiate secondary

wastewater treatment for the region. Provincial funding agreements provide a maximum of $248 million towards the project.

- Funding up to $248 million
- Approval of LWMP amendment and regulatory requirements

Capital Regional District Board (CRD Board) – The CRD Board is responsible for selecting final site locations and securing lands for wastewater treatment facilities, obtaining the rezoning of lands, approving the architectural design for facilities, and approving funding agreements and the budget. The CRD Board is responsible for delivering the project outlined in the Vision.

- Final approving body for funding, budget and major decisions
- Collect and disburse the local portion of the funding of $287 million

Core Area Liquid Waste Management Committee (CALWMC) – A standing committee of the CRD Board, the CALWMC consists of Directors from municipalities and First Nations participating in the Core Area Liquid Waste Management Plan (CALWMP). The committee is responsible for overseeing the CALWMP and making recommendations to the CRD Board about the CALWMP and certain aspects of the Core Area Wastewater Treatment Program.

- Standing Committee of CRD Board
- Responsible for overseeing CALWMP

Core Area Liquid Waste Management Committee (CALWMC) Chair – The CALWMC Chair is selected by the Chair of the CRD Board annually. The CALWMC Chair is responsible for participating in CALWMC agenda meetings and chairing CALWMC meetings. The Chair is also responsible for building and maintaining relationships, and liaising with the Chair of the Core Area Wastewater Program Commission and the Chair of the Technical Oversight Panel. The CALWMC Chair is the public face of the project and is responsible for communicating with other public bodies at the political level, as well as with the media.

Core Area Liquid Waste Management Committee (CALWMC) Vice Chair – The CALWMC Vice Chair is responsible for fulfilling the roles and responsibilities of the CALWMC Chair in the Chair's absence.

Westside Wastewater Treatment and Resource Recovery Select Committee – In June 2014, Westside participants (Colwood, Esquimalt, Langford, View Royal, and Songhees Nation) formed the Westside Wastewater and Resource Recovery Select Committee to evaluate Westside treatment options and develop a sub-regional wastewater treatment and resource recovery plan. The member municipalities' role is to provide political input and take feedback from the public and report to the Westside Select Committee. The participating municipalities also have zoning authority. In September 2015, the Esquimalt Nation joined the Westside Select Committee. The Songhees and Esquimalt Nation representatives provide political input to the Westside Select Committee. The Committee reports to the CALWMC and is supported by CRD staff, Westside staff, consultants and a technical working group.

The Westside Select Committee participants initiated the Westside Solutions Project as a way to engage residents to work collectively to identify solutions for wastewater treatment and resource recovery that meet the unique needs of the Westside communities. The Westside option sets

consider flow scenarios that include Eastside flows from Vic West and Saanich West. This work, along with the work from the Eastside Select Committee, will inform the Core Area Sewage and Resource Recovery 2.0 project and the amendment to the Liquid Waste Management Plan.

- Representatives from Colwood, Esquimalt, Langford, View Royal and Songhees Nation
- Reports to CALWMC
- Evaluates options to develop a sub-regional wastewater treatment plan
- Supported by CRD staff, Westside municipal staff, consultants and a technical working group

Eastside Wastewater Treatment and Resource Recovery Select Committee – In January 2015, Oak Bay, Saanich and Victoria formed the Eastside Wastewater and Resource Recovery Select Committee to engage with their communities and develop wastewater treatment options that meet the needs of the Eastside municipalities. The role of the participating municipalities is to provide political input and take feedback from the public and report to the Eastside Select Committee. The participating municipalities also have zoning authority. The Eastside Select Committee reports to the CALWMC and is supported by CRD staff, participating municipal staff and consultants.

The Eastside option sets consider a regional option, which includes all flows from Eastside and Westside, as well as a sub-regional and distributed option that includes flows from Eastside municipalities only and Eastside Clover Point outfall catchment flows. The Eastside Select Committee's plan, in combination with the work from the Westside Select Committee, will inform the Core Area Sewage and Resource Recovery 2.0 project and could form the basis for an amendment to the CALWMP.

- Representatives from Oak Bay, Saanich and Victoria
- Reports to CALWMC
- Working to develop wastewater treatment options for Eastside municipalities
- Supported by CRD staff, participating municipal staff, and consultants

CRD Chief Administrative Officer – The CAO oversees all administrative operations and staff, ensures CRD Board policies are implemented, oversees the operations and functions of the CRD, and aligns the organization to achieve strategic priorities set by the Board. This includes working with federal and provincial staff to coordinate funding agreements and providing advice to the CRD Board regarding potential risks and opportunities for the CRD Board.

- Oversees CRD operations and staff
- Works with partners and stakeholders
- Provides advice to the CRD Board

General Manager of Parks & Environmental Services – The GM of Parks & Environmental Services provides general direction and leadership to CRD staff and advises the CALWMC and the Eastside and Westside Wastewater Treatment and Resource Recovery Select Committees regarding the technical and legal aspects of the CALWMP and the wastewater treatment planning process. The General Manager's role is also to provide information to the Core Area Municipalities' CAOs and First Nations Administrators.

- Provides general direction and leadership to CRD staff

- Advises on technical and legal aspects of the CALWMP
- Informs Core Area Municipal CAOs and First Nation Administrators about the project

General Manager of Finance & Technology – The GM of Finance & Technology is the Chief Financial Officer for the CRD. The GM of Finance and Technology is responsible for the budget and all financial services, information technology and geographic information services (IT & GIS), property and real estate services, insurance and risk management, facilities management, and arts development for the Capital Region.

Corporate Officer – The CRD Corporate Officer provides support and procedural advice to the CRD Board and the CALWMC, and is responsible for maintaining the official records of these bodies. The officer also processes requests for records in accordance with the Freedom of Information and Protection of Privacy Act.

First Nations Liaison – The First Nations Liaison serves as a point of contact for First Nations communities involved with the project and provides departmental support and assistance in the areas of service delivery, referral processes, outreach, engagement and relationship building.

Manager, Corporate Communications – The Senior Manager of Corporate Communications provides professional expertise and leads the CRD Corporate Communications team, which works with the General Manager of Parks & Environmental Services and the CAO on overall communications for the CRD Board. There is a communications coordinator dedicated to working on the CALWMP.

Technical Oversight Panel (ToP) – The role of the Technical Oversight Panel is to review the costing and feasibility studies developed by the Engineering Team during the planning phase of the project and to ensure that the studies for the wastewater treatment options include the necessary due diligence. The Technical Oversight Panel will also advise on how to best engage the private sector in this phase of the project. Fundamental to providing independent technical oversight and confirming due diligence is to ensure that the engagement of the private sector in this phase of the project and the innovative solutions that may come forward is informed by, not necessarily bound by (as per the ToP Terms of Reference), decisions to date regarding sites, option sets, timelines, definitions of treatment and other potential limitations on analysis and costing.

The role of the ToP does not include public consultation, media interaction, land acquisition and rezoning, contract management or direction of the Engineering Team The ToP receives information from and liaises with the Engineering Team (Urban Systems and Carollo Associates), and provides feedback and recommendations to the CALWMC. The Chair of the ToP reports to the CALWMC biweekly. The ToP liaises with the Eastside and Westside Select Committee.

- Independent Technical Oversight Panel
- Reviews costing and feasibility studies
- Reports findings to the CALWMC

Independent Engineering Resources – The Independent Engineering Team's role is to conduct the Feasibility and Costing Analysis (Urban Systems partnered with Carollo) for the CALWMP Wastewater Treatment System. The Engineering Team is also working with the Westside Select Committee to do a more detailed analysis on the Westside flows. The team provides information

to and liaises with the ToP, and reports to and receives direction from the CALWMC. Additional external resources may be required for staff to prepare the LWMP amendment. The team is assessing the feasibility of a regional and sub-regional system in the Core. The team is also looking at a distributed system option based on the potential sites put forward from the Eastside Select Committee and Westside Select Committee.

- Conducts feasibility and costing analysis
- Assesses feasibility of regional and sub-regional systems in the Core Area
- Assists with preparation of LWMP amendment

Fairness and Transparency Advisor (FTA) – The FTA's role is to act as a point of contact for the public to submit complaints regarding the process of costing the options, working with the host jurisdiction(s) and preparing an amendment to the LWMP and to ensure that the process is fair, transparent, impartial and objective. The FTA is independent of the CRD. The FTA's role is to investigate appropriate complaints and report to the Board, through the CALWMC, the results of an investigation, to help strengthen the fairness, transparency or objectiveness of the process followed. The FTA is to provide monthly status reports to the CALWMC. The role of the FTA does not restrict the public from going to other sources for complaints and requests to review processes, such as the office of the Ombudsperson.

- Independent of the CRD
- Investigates public complaints regarding process
- Ensures process is fair, transparent, impartial and objective

Core Area Wastewater Treatment Program Commission (the Commission) – As part of the funding negotiations with the Province, the CRD was required to establish an independent non-political governance body to manage, implement and commission the Core Area Wastewater Treatment Program. The Commission governs the implementation and operation of the Wastewater Treatment Program and oversees the procurement process for all components of the Program. The Commission operates autonomously of the CALWMC and Regional Board; however, the Commission is required to seek CRD Board and funder approval on predetermined items as detailed in the CRD Commission bylaw. Several steps have been taken to scale back operations and reduce costs as the CRD continues its planning work to find a new solution to wastewater treatment. The Commission remains in place waiting to implement whatever system of wastewater projects the CRD Board decides upon, and is approved by the Province.

- Independent Commission required by Province
- Manages implementation and operations of the Wastewater Treatment Program
- Oversees procurement process

Technical and Community Advisory Committee (TCAC) – The Technical and Community Advisory Committee is an LWMP requirement of the province, and provides technical and community consultation advice and input to the CALWMC. TCAC assists the CALWMC in making appropriate recommendations to the CRD Board in the following areas: (a) plant design criteria and treatment technology, including opportunities for resource recovery, sludge management, odour control and general plant design criteria, (b) number and location of treatment plants, and (c) timing/scheduling of treatment.

- Provides technical and community consultation advice

- Makes recommendations regarding design criteria, treatment technology, number and location of treatment plants, and schedule for treatment

Eastside Public Advisory Committee (EPAC) – The Eastside Public Advisory Committee takes input from the public and provides guidance to the Eastside Wastewater and Resource Recovery Select Committee on the public consultation process.

- Takes input from the public
- Provides Eastside Select Committee on the public consultation process

Core Area CAOs + First Nation Administrators – The Core Area CAOs and First Nations Administrators are the principal policy advisors to councils, and provide support to the Eastside and Westside Select Committees. The Core Area CAOs and First Nations Administrators receive project-specific information and updates from the CRD's General Manager of Parks & Environmental Services regarding the progress of the CALWMC and the Eastside and Westside Select Committees.

- Principle policy advisors
- Receive project information
- Provide recommendations from municipal staff perspective

Municipal Councils – The role of municipal councils is to make land-use decisions for facility siting and to negotiate development agreements with the CRD.

Westside Communications Team – The Westside Communications Team is made up of Communications Coordinators from Colwood, Esquimalt, CRD and Aurora Consultants. The Team provides communication and public consultation support to the Westside Select Committee.

Eastside Communications Team – The Eastside Communications Team consists of a consultant from Public Assembly and the CRD Communications Manager and CRD CALWMP Communications Coordinator. The Eastside Communications Team provides communication and public consultation support to the Eastside Select Committee

Westside Technical Team – The Westside Technical Team consists of municipal staff, supported by Urban Systems. The technical team provides technical information and input to the Westside Select Committee.

- Comprised of municipal staff and supported by Urban Systems and Aurora Innovations for facilitation and coordination support
- Provides technical advice to the Westside Select Committee

Eastside Technical Team – The Eastside Technical Team is comprised of municipal staff and supported by Urban Systems and CRD Staff. The Technical Team provides support and input to the Eastside Select Committee.

- Comprised of municipal staff; provides support and information to the Eastside Select Committee

7. MILESTONES

The Proposed Work Plan Overlay, which was adopted and submitted to 3P Canada in March 2014, provides the overarching timelines and milestones through the completion of the project (Attachment 2). A draft schedule identifying key tasks and milestones of the feasibility and costing exercise to be achieved by the end of 2015 during Phase 2 of the Core Area Sewage and Resource Recovery System 2.0 project is included for discussion (Attachment 3). The scheduling and implementation of the public consultation on the preferred solution sets (after the costing analysis) is anticipated to occur in early December, but is dependent on all of the deadlines being met up until that point.

A detailed schedule is under development and will be circulated for comment.

8. BUDGET

Funding for the project will be drawn from the Core Area Liquid Waste Management Plan operating reserve, funded by all participants in the service based on projected design capacity for 2030. A total budget of $1,450,000 has been identified to support this phase of the project, including engineering and public consultation consulting fees, Technical Oversight Panel honorarium and disbursements, Fairness and Transparency Advisor, public consultation process delivery and CRD staff time.

Phase 2 Budget

Item	Cost
Project Oversight (FTA & ToP)	$280,000
Public Consultation	$240,000
Feasibility and Costing Analysis	$450,000
Property and Zoning	$75,000
LWMP Amendment No. 10	$75,000
Staff and Wages	$300,000
Miscellaneous and Legal	$30,000
TOTAL	$1,450,000

9. CONSTRAINTS, ASSUMPTIONS, RISKS AND DEPENDENCIES

a) Constraints

- The timelines for this phase of the project are extremely aggressive with no buffer
- The schedule is dependent on multiple parties and governance bodies meeting their sub-project schedules

b) Assumptions

- The Minister of Environment will provide direct *conditional* approval of the Liquid Waste Management Plan upon submission to the Province

c) Risks

- The costing analysis and public consultation processes will be subject to criticism due to time constraints
- The governance model of the project is complex, leading to miscommunication or contradictory decision making
- Municipal councils do not endorse siting preferences of the CRD Board
- Potential loss of senior government funding if timelines are not met

d) Risk Mitigation

- Ensure regular, open reporting of all parties to the Core Area Liquid Waste Management Committee to ensure “no surprises” when public consultation is formally conducted
- Engage in close municipal council and staff involvement as preferred sites emerge and municipal planning/siting processes are initiated
- Ensure ongoing and open discussions with the funding agencies to ensure “no surprises” when the LWMP amendment is submitted for approval and the project is submitted for funding
- Ensure transparent and deep engagement with the community
- Ensure there is enough time required to rezone and that there is public support for rezoning

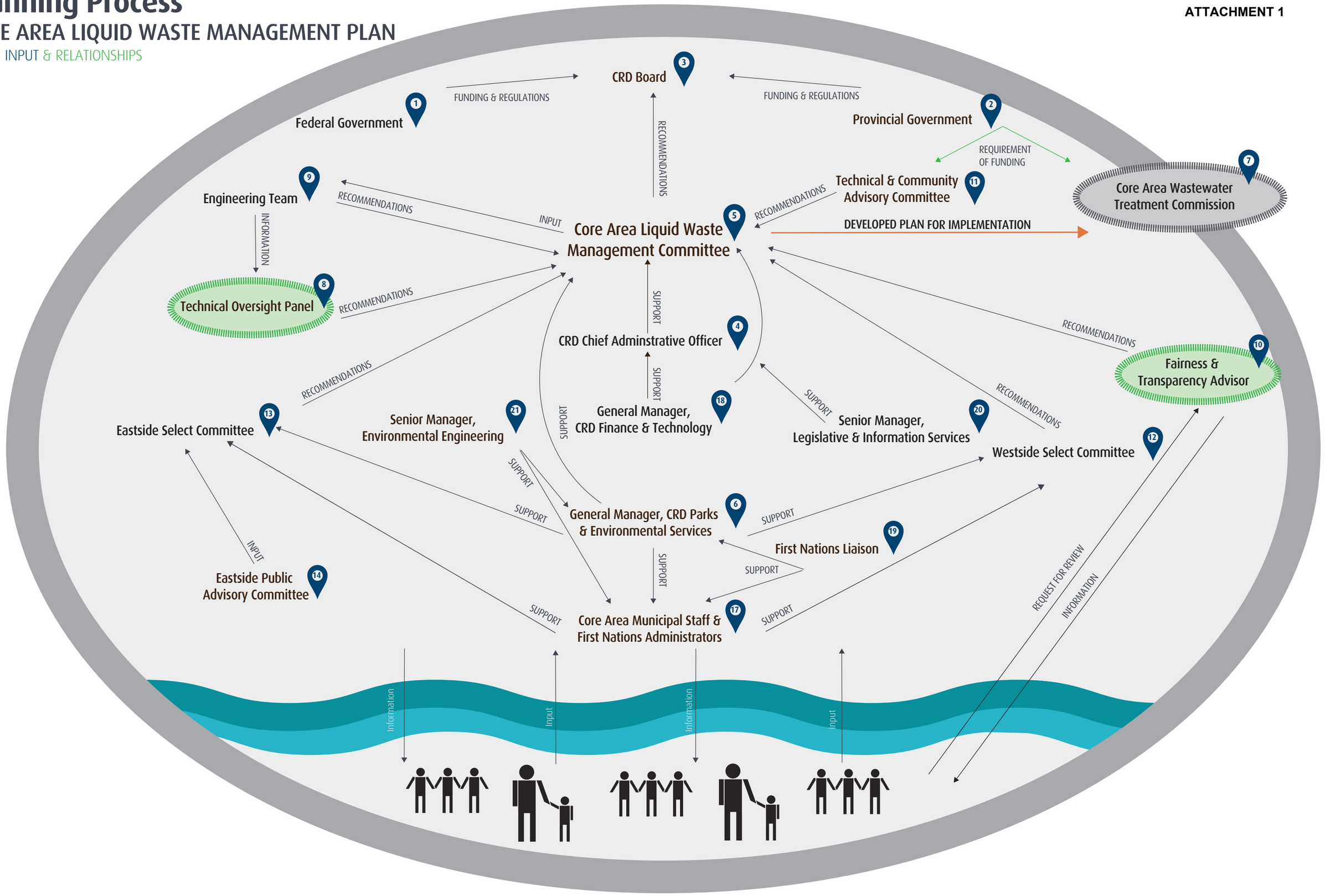
Attachments:	Attachment 1:	Planning Process – Core Area Liquid Waste Management Plan – Roles, Input & Relationships
	Attachment 2:	Proposed Work Plan Overlay – 3P Canada Funding Considerations
	Attachment 3:	Proposed Feasibility and Costing Analysis Schedule (Urban Systems) – August 31, 2015

Planning Process

CORE AREA LIQUID WASTE MANAGEMENT PLAN

ROLES, INPUT & RELATIONSHIPS

ATTACHMENT 1



ATTACHMENT 2

Proposed Work Plan Overlay

3P CANADA FUNDING CONSIDERATIONS

OPTION DEVELOPMENT, PLANNING & IMPLEMENTATION PHASES

JAN 13-FEB 24 — PHASE 2: PUBLIC CONSULTATION

FEB 24 - MAR 9 — PREPARATION OF PLAN AMENDMENT BASED ON PREFERRED OPTION, REFERRAL TO TCAC

MAR 9 2016 — CALWMC/BOARD APPROVES PREFERRED OPTION

$83.4 M

3P CANADA FUNDING DEADLINE >

FEDERAL TRANSITIONAL AUTHORIZATION DEADLINE >

POLITICAL CONDITIONAL APPROVAL OF PLAN BY PROVINCE

MAR 2015 — WORK PLAN COMPLETE

JUNE 2015 — EASTSIDE & WESTSIDE SOLUTION SETS SUBMITTED

NOV 2015 — TECHNICAL ANALYSIS COMPLETE

DEC 2015 — COSTING & FINANCIAL ANALYSIS COMPLETE

JAN 2016 — CALWMC APPROVAL OF OPTION SETS FOR CONSULTATION

FEB 2016

MAR 31 2016 — BOARD APPROVAL COMPLETE

SUBMISSION OF PLAN AMENDMENT TO PROVINCE

DEC 2017 — SITE ZONING PROCESS COMPLETE

PROVINCIAL APPROVAL

PLANNING PHASE COMPLETE

DEC 2020 — REGULATORY ACCEPTANCE & FUNDING COMPLETION

LWMP AMENDMENT PREPARATION & BOARD APPROVAL — 1-2 YEARS

≥1 YEAR — Procurement Process

4 YEARS — Program Construction

SOLUTION OPERATIONAL 2023/2024

PHASE 1: SITING PUBLIC CONSULTATION

TECHNICAL ANALYSIS

PHASE 2: OPTIONS PUBLIC CONSULTATION

CONSULTATION

- EASTSIDE SELECT COMMITTEE
- WESTSIDE SELECT COMMITTEE
- HOST MUNICIPALITIES, FIRST NATIONS & COMBINED PARTICIPANTS

AMENDING/APPROVAL OF LWMP & PLANNING ACTIVITIES

- Environmental Impact Study **1-2 YEARS**
- Funding Negotiation
- Outfall Modeling **1-2 YEARS**
- Site Acquisitions
- Permits & Other Approvals

ASSUMES CONCURRENT PROCESSES OR CONSTRUCTION

PROGRAM DEVELOPMENT

- Wastewater Treatment Plant(s)
- Conveyance Infrastructure
- Resource Recovery Infrastructure

OPTION DEVELOPMENT PHASE | **PLANNING PHASE** | **IMPLEMENTATION PHASE**

January 2016

6.2 Proposed Schedule

URBAN systems

Capital Regional District
Core Area Liquid Waste Management Plan
Wastewater Treatment System Feasiblity & Costing Analysis
RFP 15-1834

Revised August 31, 2015

		2015																				
		August					September					October				November				December			
		Ju.y 27 - Aug 2	Aug 3 - 9	Aug 10 - 16	Aug 17 - 23	Aug 24 - 30	Aug 31 - Sept 6	Sept 7 - 13	Sept 14 - 20	Sept 21 - 27	Sept 28 - Oct 4	Oct 5 - 11	Oct 12 - 18	Oct 19 - 25	Oct 26 - Nov 1	Nov 2 - 8	Nov 9 - 15	Nov 16 - 22	Nov 23 - 29	Nov 31 - Dec 6	Dec 7 - 13	Dec 14 - 20	Dec 21 - 31
Task 1.0 - Background/Technical Foundation																						
1.1	Kick off Meeting					■																
1.2	Assess/Refine Cost Unit Rates							■	■	■												
1.3	Design Criteria							■	■	■												
1.4	Liaise with MoE to Guage Acceptance of Alternative Recovery/Reuse Options							■	■	■												
1.5	Refine Evaluation Criteria for Technical Analysis of the Option Sets							■	■	■												
1.6	Propose Analysis Methodology and Criteria with CALWM Committee										■											
TASK 2.0 - Review and Refine Solution Sets																						
2.1	Quantify Option Sets											■										
2.2	Conveyance and Pumping												■									
2.3	Treatment Including Technology Options							■	■	■	■	■	■									
2.4	Effluent management - Water Reclamation and Outfall							■	■	■	■	■	■	■								
2.5	Solids Residual Resource Recovery							■	■	■	■	■	■	■								
2.6	Energy/Heat Recovery							■	■	■	■	■	■	■								
2.7	Carbon Footprint							■	■	■	■	■	■	■								
2.8	Facility/Community Context														■							
2.9	Liaise with MoE														■							
2.10	Core Area Municipalities and CRD Presentation Meeting														■							
2.11	Finalize Option Sets															■						
TASK 3.0 - Costing and Financial Anaysis																						
3.1	Setup Costing and Financial Framework																■					
3.2	Cost Development (Lifecycle Costs, Operations, Expansions)																	■				
3.3	New Revenues, eg., Resource Recovery																	■				
3.4	Community Allocation																		■			
3.5	Procurement Assessment																		■			
3.6	Review Meeting - Core Area Municipalities and CRD																		■			
TASK 4.0 - Decision Making and Reporting																						
4.1	Prepare Materials for Public Input																			■		
4.2	Develop Materials for Political Engagement																			■		
4.3	Prepare Report: Methodology, and Option Set Details																			■		
4.4	Presentations - Core Area Municipalities																				■	■
4.5	Summarize Zoning Considerations																					■
TASK 5.0 - Engagement with Technical Oversight Panel																						
5.1	Orientation/Workshop								■													
5.2	Conference Calls										■		■				■				■	■
5.3	Review Meetings (in person)														■				■			