Capital Regional District

625 Fisgard St.,
Victoria, BC V8W 1R7

Notice of Meeting and Meeting Agenda
Capital Regional District Board

Wednesday, June 8, 2022 | **1:10 PM** | **6th Floor Boardroom, 625 Fisgard Street, Victoria, BC**

The Capital Regional District strives to be a place where inclusion is paramount and all people are treated with dignity. We pledge to make our meetings a place where all feel welcome and respected.

1. TERRITORIAL ACKNOWLEDGEMENT

2. APPROVAL OF THE AGENDA

3. ADOPTION OF MINUTES

3.1. 22-359 Minutes of the May 11, 2022 Capital Regional District Board Meeting

Recommendation: That the minutes of the Capital Regional District Board meeting of May 11, 2022 be adopted as circulated.

Attachments: Minutes - May 11, 2022

4. REPORT OF THE CHAIR

5. PRESENTATIONS/DELEGATIONS

The public are welcome to attend CRD Board meetings in-person.

Delegations will have the option to participate electronically. Please complete the online application for "Addressing the Board" on our website and staff will respond with details.

Alternatively, you may email your comments on an agenda item to the CRD Board at crdboard@crd.bc.ca.

5.1. Presentations

5.1.1. 22-259 Presentation: Paul Gerrard (CRD Representative) and Geoff Dickson (President/CEO), Victoria Airport Authority; Re: Report to Nominators

Attachments: Presentation: VAA Report to Nominator

5.2. Delegations

5.2.1. **22-394** Delegation - Marie-Terese Little; Representing Victoria Family Court and Youth Justice Committee (Chair): Re: Agenda Item 8.5.: Victoria Family Court Committee - Central Saanich Withdrawal Request

5.2.2. **22-395** Delegation - Marcie McLean; Councillor, District of Highlands: Re: Agenda Item 8.5.: Victoria Family Court Committee - Central Saanich Withdrawal Request

6. CONSENT AGENDA

6.1. 22-382 Southern Gulf Islands Transportation Integration Plan

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

Attachments: Staff Report: SGI Transportation Integration Plan

Appendix A: SGI Transportation Integration Plan

6.2. 22-311 Curbside Blue Box Recycling - 2024 and Beyond

Recommendation: [At the May 18, 2022 Environmental Services Committee meeting, part 1 of the recommendation was amended to add collection vehicle emissions to the RFP process.]
The Environmental Services Committee recommends to the Capital Regional District Board:
1. That staff be directed to issue a Request for Proposals for a six-year contract for Board approval to provide residential curbside blue box collection, from January 1, 2024 to December 31, 2029, and include in the Request for Proposals incentives or a scoring system to increase the likelihood of the provision of low or zero emission collection vehicles;
(NWA)
2. That staff be directed to return to the Environmental Services Committee and the Capital Regional District Board for direction prior to awarding the Request for Proposals; and
(NWA)
3. That staff accept the Recycle BC one-year extension to their current agreement with the CRD to provide service to the end of 2024, and then enter into a new five-year agreement with Recycle BC to provide residential curbside recycling services for the capital region on its behalf for January 1, 2025 to December 31, 2029.
(WA)

Attachments: Staff Report: Curbside Blue Box Recycling - 2024 and Beyond

Appendix A: Correspondence from Recycle BC (March 8, 2022)

6.3. 22-312 Disposal of International Cruise Ship Waste at Hartland Landfill

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

Attachments: Staff Report: Disposal of International Cruise Ship Waste at Hartland Landfill

Appendix A: Tymac Presentation to CRD SWAC - May 6, 2022

6.4. 22-325 Clean BC Communities Fund Grant Application - Clean Energy Transportation - Public Electric Vehicle Infrastructure Project

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
1. That staff be authorized to submit the Regional Public Electric Vehicle Charging Network project to the Investing in Canada Infrastructure Program's CleanBC Communities Fund grant program on behalf of the participating local governments and First Nations;
2. That the Capital Regional District participate in the regional charging network by supplying sites found in Appendix A; and
3. That up to $725,000 be assigned from the previously approved 2022-2026 climate action service financial plan for up to 175 public level 2 EV charging ports across the region, as well as a commitment to any associated ineligible costs and cost overruns.
(NWA)

Attachments: Staff Report: Grant Application - Public EV Infrastructure Project

Appendix A: CRD-Owned Properties

6.5. 22-343 Regional Grants-in-Aid Board Policy

Recommendation: The Governance Committee recommends to the Capital Regional District Board:
That the Regional Grants-in-Aid Policy be adopted.
(NWA)

Attachments: Staff Report: Regional Grants-In-Aid Policy

Appendix A: Regional GIA Policy

6.6. 22-345 Timelines for the Notice of Motion Procedure

Recommendation: The Governance Committee recommends to the Capital Regional District Board:
1. That the CRD Board support the current notice of motion process and timelines as set out in the CRD Board Procedures Bylaw and defer consideration of possible amendment to the notice of motion timelines to the incoming Board in early 2023.
(NWA)

[At the June 1, 2022 Governance Committee meeting, the following motion arising was carried:]
2. The Governance Committee recommends to the Capital Regional District Board:
That staff report to the Governance Committee no later than the first quarter of 2023 including the comparative information from other local governments.
(NWA)

Attachments: Staff Report: Timelines for the Notice of Motion Procedure

Appendix A: Notice of Motion Excerpt from Bylaw No. 3828

Appendix B: Notice of Motion Process Flowchart

6.7. 22-353 Correspondence on Agenda Items

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

Attachments: Staff Report: Correspondence on Agenda Items

6.8. 22-298 Radiocommunication and Broadcasting Antenna Systems Applications for Lot A, Section 23, Highland District, Plan VIP83970 - 6933 Willis Point Road

Recommendation: The Juan de Fuca Land Use Committee recommends to the Capital Regional District Board:
That a statement of concurrence be provided to Rogers Communications for the proposed 41 m radio communication and broadcasting antenna system on Lot A, Section 23, Highland District, Plan VIP83970 (LP000032).
(NWP - Voting Block B: JDF, Central Saanich, Highlands, Langford (Blackwell), Saanich (Haynes))

Attachments:
- Staff Report
- Appendix A: Subject Property Map
- Appendix B: Revised Development Proposal
- Appendix C: Public Submissions and Applicant Responses
- Appendix D: Referral Comments
- Appendix E: Evaluation Criteria

6.9. 22-329 Sooke Regional Context Statement

Recommendation: The Planning and Protective Services Committee recommends to the Capital Regional District Board:
That the District of Sooke regional context statement be considered in relation to the 2018 Regional Growth Strategy (Bylaw No. 4017) and be accepted in accordance with the requirements of section 448 of the Local Government Act.
(NWP, All except SGI & SSI)

Attachments:
- Staff Report: Sooke Regional Context Statement
- Appendix A: Sooke Regional Context Statement Referral
- Appendix B: Regional Context Statement Evaluation

6.10. 22-323 Greater Victoria Drinking Water Quality - 2021 Annual Report

Recommendation: The Regional Water Supply Commission recommends to the Capital Regional District Board:
That the Greater Victoria Drinking Water Quality 2021 Annual Report be approved.
(NWA)

Attachments:
- Staff Report: Greater Victoria Drinking Water Quality - 2021 Report
- Appendix A: Greater Victoria Drinking Water Quality - 2021 Annual Report

6.11. 22-301 2022 Master Plan - Regional Water Supply Service

Recommendation: [At the May 18, 2022 Regional Water Supply Commission meeting, the recommendation to forward the 2022 Master Plan to the CRD Board was carried.] There is no recommendation. This report is for information only.

Attachments: Staff Report: 2022 Master Plan - Regional Water Supply Service
Appendix A: 1994 Long Term Water Supply Plan Executive Summary
Appendix B: 1994 Long Term Water Supply Plan Capital Works Rec.
Appendix C: RWS 2022 Master Plan Executive Summary
Appendix D: Conceptual Model of RWS Svc. Op. & Capital Forecast Costs
Presentation: 2022 Long Term Water Supply Master Plan

6.12. 22-391 Complete the Beddis Water Intake Project

Recommendation: That the Electoral Areas Committee recommends to the Capital Regional District Board:
That the 2022 Five Year Financial Plan be amended to transfer $32,725 from the Beddis Capital Reserve Fund so that detailed engineering and design can be completed for both the offshore and onshore portions.
(WA)

Attachments: Staff Report: Complete the Beddis Intake Project

7. ADMINISTRATION REPORTS

7.1. 22-348 Nils Jensen Memorial Bursary 2022

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

Attachments: Staff Report: Nils Jensen Memorial Bursary 2022

7.2. 22-349 Ed MacGregor Memorial Bursary 2022

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

Attachments: Staff Report: Ed MacGregor Memorial Bursary 2022

8. REPORTS OF COMMITTEES

Electoral Areas Committee

8.1. 22-383 Bylaw 4484: Service Establishment for the Southern Gulf Islands Transportation Service

Recommendation: The Electoral Areas Committee recommends to the Capital Regional District Board that:
1. Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022", be introduced and read a first, second, and third time;
2. That staff be directed to implement the elector approval process by way of referendum;
3. That Kristen Morley be appointed Chief Election Officer with the power to appoint one or more Deputy Chief Election Officer(s);
4. That the wording of the referendum question for the purposes of the ballot shall be as follows:
Are you in favour of the Capital Regional District (CRD) Board adopting Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022" authorizing the CRD to establish an integrated transportation service for the Southern Gulf Islands Electoral Area to raise a maximum annual requisition up to the greater of SIX HUNDRED AND SEVENTY FIVE THOUSAND DOLLARS ($675,000) or $0.1414 per ONE THOUSAND DOLLARS ($1,000.00) of taxable land and improvements for the purpose of funding the operating costs of the service.
YES or NO?
5. That general voting be held on Saturday, October 15, 2022 in concurrence with the General Local Election, with Advance voting opportunities held on dates and voting places to be determined by the Chief Election Officer;
6. That the synopsis of Bylaw No. 4484, attached as Appendix B, be approved for advertising purposes.
(NWA)

Attachments: Staff Report: SGI Transportation Bylaw No. 4484

Appendix A: Bylaw No. 4484

Appendix B: Synopsis of Bylaw No. 4484

8.2. 22-354 Electoral Areas Water Conservation Bylaw No. 1, 2022 (Bylaw No. 4492)

Recommendation: The Electoral Areas Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4492, "Capital Regional District Electoral Areas Water Conservation Bylaw No. 1, 2022", be introduced and read a first, second, and third time; and
(WP - JDF, SSI, SGI)
2. That Bylaw No. 4492 be adopted.
(WP - 2/3 on adoption)
3. That Bylaw No. 4499, "Capital Regional District Ticket Information Authorization Bylaw, 1990, Amendment Bylaw No. 74, 2022", be introduced and read a first, second and third time; and
(WP - JDF, SSI, SGI)
4. That Bylaw No. 4499 be adopted.
(WP - 2/3 on adoption)

Attachments: Staff Report: Electoral Areas Water Conservation Bylaw

Appendix A: Bylaw No. 4492

Appendix B: Bylaw No. 4499

Environmental Services Committee

8.3. 22-321 Goose Management Update

Recommendation: The Environmental Services Committee recommends to the Capital Regional District Board:
That staff bring back a report outlining costs for a Canada Goose Management Service.
(NWA)

Attachments: Staff Report: Goose Management Update

Appendix A: Canada Goose Mitigation & Population Monitoring Report

Appendix B: CRD 2022 Canada Goose Mitigation Draft Action Plan

Governance Committee

8.4. 22-352 Updates to the Election and Voting Procedures Bylaw

Recommendation: The Governance Committee recommends to the Capital Regional District Board:
1. That Bylaw 4486, the "Capital Regional District Election and Voting Procedures Bylaw, 2008, Amendment Bylaw No. 3, 2022" be introduced, read a first, second, and third time;
(NWA)
2. The Bylaw 4486 be adopted.
(WA, 2/3 on adoption)

Attachments: Staff Report: Updates to the Election and Voting Procedures Bylaw

Appendix A: Bylaw 4486

Appendix B: Bylaw 3543 (Unofficial Consolidation) - Redlined

8.5. 22-351 Victoria Family Court Committee - Central Saanich Withdrawal Request

Recommendation: The Governance Committee recommends to the Capital Regional District Board:
1. That Bylaw No. 4493, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997, Amendment Bylaw No. 4, 2022", be introduced, and read a first, second, and third time;
(WP - All except SGI & SSI)
2. That Bylaw No. 4493 be referred to the participants for consent on behalf of the electors, and if successful, forwarded to the Inspector of Municipalities for approval.
(NWA)
3. That Bylaw No. 4494, "Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022, Amendment Bylaw No. 1, 2022", be introduced, read a first, second, and third time.
(WP - All except SGI & SSI)

Attachments: Staff Report: VFCYJC - Central Saanich Withdrawal Request

Appendix A: March 11 2022 Central Saanich Letter to CRD

Appendix B: Bylaw 4493, “FCC Extended Svc. Est. BL Amd No.4" [Updated]

Appendix C: Bylaw 4494, “VFCYJC Bylaw - Amendment No. 1"

Appendix D: Bylaw 2560 (Unofficial Consolidation) - Redlined

9. BYLAWS

10. NOTICE(S) OF MOTION

10.1. 22-332 Motion with Notice: Mount Maxwell Conservation Covenant (Director Holman)

Recommendation: That CRD Parks staff provide a report to the Capital Regional District Board regarding a possible maximum contribution of $100,000 to the proposed 75 acre Mount Maxwell park land acquisition, in return for the placement of a satisfactory conservation covenant on forested lands contiguous to the Provincial park and protected watershed lands.
(NWA)

11. NEW BUSINESS

12. MOTION TO CLOSE THE MEETING

12.1. 22-362 Motion to Close the Meeting

Recommendation: 1. That the meeting be closed for Appointments in accordance with Section 90(1)(a) of the Community Charter. [1 item].
2. That the meeting be closed for Land Acquisition in accordance with Section 90(1)(e) of the Community Charter. [1 item]
3. That such disclosures could reasonably be expected to harm the interests of the Regional District. [1 item]
4. That the meeting be closed for Legal Update in accordance with Section 90(1)(i) of the Community Charter. [1 item]

13. RISE AND REPORT

14. ADJOURNMENT

Votinq Key:
NWA - Non-weighted vote of all Directors
NWP - Non-weighted vote of participants (as listed)
WA - Weighted vote of all Directors
WP - Weighted vote of participants (as listed)

Making a difference...together

625 Fisgard St.,
Victoria, BC V8W 1R7

Capital Regional District

Meeting Minutes

Capital Regional District Board

Wednesday, May 11, 2022 | **1:10 PM** | **6th Floor Boardroom, 625 Fisgard Street, Victoria, BC**

PRESENT:
Directors: C. Plant (Chair), R. Mersereau (Vice Chair), D. Blackwell, P. Brent (for D. Howe), S. Brice, B. Desjardins, L. Helps, F. Haynes, M. Hicks (EP), G. Holman, B. Isitt, J. Loveday, R. Martin, C. McNeil-Smith, K. Murdoch (EP), G. Orr, J. Ranns, L. Seaton, M. Tait (EP), N. Taylor (EP), K. Williams, R. Windsor (EP), G. Young

Staff: R. Lapham, Chief Administrative Officer; N. Chan, Chief Financial Officer; L. Hutcheson, General Manager, Parks and Environmental Services; K. Lorette, General Manager, Planning and Protective Services; K. Morley, General Manager, Corporate Services; T. Robbins, General Manager, Integrated Water Services; M. Lagoa, Deputy Corporate Officer; S. Orr, Senior Committee Clerk (Recorder)

EP - Electronic Participation

Regrets: Directors Howe, Screech

The meeting was called to order at 1:20 pm.

1. TERRITORIAL ACKNOWLEDGEMENT

A Territorial Acknowledgement was provided in the preceding meeting.

2. APPROVAL OF THE AGENDA

MOVED by Director Mersereau, SECONDED by Director Brice,
That the agenda for the May 11, 2022 Session of the Capital Regional District Board be approved.
CARRIED

3. ADOPTION OF MINUTES

3.1. 22-314 Minutes of the April 13, 2022 Capital Regional District Board Meeting

MOVED by Director Seaton, SECONDED by Director Mersereau,
That the minutes of the Capital Regional District Board meeting of April 13, 2022 be adopted as circulated.
CARRIED

4. REPORT OF THE CHAIR

I want to say thank you for a productive meeting this morning. It is what we intended, to have a conversation about the strategic priorities and highlight what are looking to in the next term, for those of us who will be here, and also to comment on the last three and half years. I want to share with you that prior to the COVID situation, if you recall, we used to do tours of our facilities, and that was something that was quite enjoyable, that we were able to see facilities as they were coming online. I have been working with staff to look at potentially having a site tour of the Southern Gulf Islands this summer so that we could potentially see the impact of the work that the CRD does in those jurisdictions, it would be educational and also some comradery, spending time together to see the beautiful islands. If that comes to fruition, it would be in July or August and I hope that you could find an afternoon to join us.

5. PRESENTATIONS/DELEGATIONS

There were no presentations or delegations.

6. CONSENT AGENDA

Item 6.13. was removed from the consent agenda and moved to be considered under Reports of Committees as item 8.7.

MOVED by Director Mersereau, SECONDED by Director Blackwell,
That consent agenda items 6.1. through 6.12. and 6.14. be approved.
CARRIED

6.1. 22-322 2019-2022 Board Strategic Priorities-Annual check-in

1. That the current level of effort on CRD Board Priorities be maintained and that staff, through the next service planning process, provide recommendations in funding, timing and service levels for 2023 focused on operational adjustments.
2. That the CRD Board heighten its advocacy regarding protection of E&N Corridor as a transportation corridor including reinstatement of passenger and freight rail services.
CARRIED

6.2. 22-299 Board Orientation and Strategic Plan 2023-2027

That the Board Orientation and Strategic Planning process and timeline be endorsed.
CARRIED

6.3. 22-273 Southern Gulf Islands Housing Strategy

That the Southern Gulf Islands Housing Strategy be endorsed.
CARRIED

That staff investigate the possibility of a non-enforcement policy for trailers, yurts, and other forms of housing for the electoral areas.
CARRIED

6.4. 22-260 Capital Regional District Climate Action - 2021 Annual Report

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

6.5. 22-236 Meeting the Solid Waste Management Plan Targets through Material Stream Diversion

1. That staff be directed to initiate a procurement process for further processing of divertible materials, and return to the Environmental Services Committee in January 2023 with financial implications and proposed amendments to the Hartland Tipping Fee and Regulation Bylaw No. 3881 and associated operational implications.
2. That further attention be focused towards construction material source separation, and information be brought back to the Solid Waste Advisory Committee on what can be done.
CARRIED

6.6. 22-262 Solid Waste - 2021 Annual Report

That the Solid Waste Advisory Committee, in its plan monitoring role, be directed to review the 2021 Plan Monitoring Update (Appendix A - of the Solid Waste 2021 Annual Report).
CARRIED

6.7. 22-085 Capital Regional District 2021 Audit Findings Report & Statement of Financial Information

That the Capital Regional District 2021 Statement of Financial Information be approved.
CARRIED

6.8. 22-159 2023 Service and Financial Planning Guidelines

That the financial planning guidelines as presented be approved and that staff be directed to prepare the draft financial plan review based on the timeline presented.
CARRIED

6.9. 22-217 Capital Regional District External Grants Update

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

6.10. 22-193 Capital Regional District External Grants 2021 Annual Report

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

6.11. 22-267 2021 Safe Restart Program Update

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

6.12. 22-268 2022 Federal Budget Highlights

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

6.14. 22-271 First Nations Relations Communications Framework

That the First Nations Relations Communication Framework report be circulated to member municipalities.
CARRIED

7. ADMINISTRATION REPORTS

7.1. 22-285 Capital Regional District 2021 Annual Report

B. Lapham spoke to Item 7.1.

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

7.2. 22-286 Capital Region Housing Corporation Annual General Meeting

K. Lorette spoke to Item 7.2.

The Board thanked staff for their work.

MOVED by Director Loveday, SECONDED by Director Mersereau,
That the unanimous shareholder's resolution attached as Appendix A to the Capital Region Housing Corporation Annual General Meeting report be approved, and the Chair and Corporate Officer execute it on behalf of the Capital Regional District.
CARRIED

8. REPORTS OF COMMITTEES

Electoral Areas Committee

8.1. 22-310 SGI and JDF Local Service Committee/Commission Bylaw Amendments - Annual General Meeting and Appointments

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
1) That Bylaw No. 4446 cited as, "Lyall Harbour/Boot Cove Water Local Services Committee Bylaw, 1990, Amendment Bylaw No. 1, 2022", be introduced and read a first, second, and third time.
2) That Bylaw No. 4446 be adopted.
CARRIED

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
3) That Bylaw No. 4447 cited as, "Magic Lake Estates Water and Sewer Committee Bylaw 1995, Amendment Bylaw No. 1, 2022", be introduced and read a first, second, and third time.
4) That Bylaw No. 4447 be adopted.
CARRIED

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
5) That Bylaw No. 4448 cited as, "Sticks Allison Water Local Service Committee Bylaw No. 1, 1998, Amendment Bylaw No. 1, 2022", be introduced and read a first, second, and third time.
6) That Bylaw No. 4448 be adopted.
CARRIED

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
7) That Bylaw No. 4449 cited as, "Surfside Park Estates Water Service Committee Bylaw No. 1, 2003, Amendment Bylaw No. 1, 2022", be introduced and read a first, second, and third time.
8) That Bylaw No. 4449 be adopted.
CARRIED

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
9) That Bylaw No. 4450 cited as, "Skana Water Service Committee Bylaw No. 1, 2003, Amendment Bylaw No. 1, 2022", be introduced and read a first, second, and third time.
10) That Bylaw No. 4450 be adopted.
CARRIED

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
11) That Bylaw No. 4451 cited as, "Port Renfrew Utility Services Committee Bylaw No. 1, 2005, Amendment Bylaw No. 4, 2022", be introduced and read a first, second, and third time.
12) That Bylaw No. 4451 be adopted.
CARRIED

MOVED by Director Hicks, SECONDED by Alternate Director Brent,
13) That Bylaw No. 4452 cited as, "Wilderness Mountain Water Service Commission Bylaw No. 1, 2008, Amendment Bylaw No. 1, 2022", be introduced and read a first, second, and third time.
14) That Bylaw No. 4452 be adopted.
CARRIED

Finance Committee

8.2. 22-161 Bylaw No. 4490: Financial Plan Amendment No. 1, 2022

MOVED by Director Brice, SECONDED by Director Orr,
1. That Bylaw No. 4490, "2022 to 2026 Financial Plan Bylaw, 2022, Amendment Bylaw No. 1, 2022" be introduced and read a first, second, and third time.
CARRIED

MOVED by Director Brice, SECONDED by Director Orr,
2. That Bylaw No. 4490 be adopted.
CARRIED

Juan de Fuca Land Use Committee

8.3. 22-211 Development Variance Permit for Lot 1, Section 89, Sooke District, Plan 26576, except part in Plan 35281 - 1381 Pike Road

MOVED by Director Hicks, SECONDED by Director Blackwell,
That Development Variance Permit VA000156 for Lot 1, Section 89, Sooke District, Plan 26576, except part in Plan 35281 to vary the Juan de Fuca Land Use Bylaw, 1992, Bylaw No. 2040, Schedule A, Part 1, Section 3.10(4)(a) by reducing the minimum frontage requirement for proposed Lot 1 from 10% of the lot perimeter (34.3 m) to 3 % of the lot perimeter (10.51 m) for the purpose of permitting a three-lot subdivision, be approved.
CARRIED

Sooke and Electoral Area Parks and Recreation Commission

8.4. 22-288 Asset Management Planning Program: Union of British Columbia Municipalities - 2022 Grant Application

MOVED by Director Tait, SECONDED by Director Hicks,
1. That an application to the Union of British Columbia Municipalities Asset Management Planning Program for 2022 be supported; and
2. That staff be directed to provide overall grant management.
CARRIED

Transportation Committee

8.5. 22-258 Regional Parks Strategic Plan Update

The Board thanked staff for their work.

MOVED by Director Loveday, SECONDED by Director Mersereau,
1. That the CRD Board change the name of the Regional Parks Strategic Plan to Regional Parks and Trails Strategic Plan upon adoption.
2. To direct staff to include actions in the Regional Parks and Trails Strategic Plan to improve the service levels for trails, including detour route considerations, trail maintenance, consideration of network expansion to address gaps and educational and enforcement activities to support mode shift and reduce users conflicts.
3. To direct staff to develop a funding strategy for regional trails to support the Regional Parks and Trails Strategic Plan, which also includes the widening and lighting plan.
CARRIED

8.6. 22-261 Update on Transportation Priorities

MOVED by Director Loveday, SECONDED by Director Mersereau,
To direct staff to, in conjunction with reporting on the 2022 Origin and Destination Survey, report back on options and implications on improving data collection in support of monitoring changes in active transportation, mode shift, and emissions reductions, including interim surveys that complement the Origin and Destination Survey surveys and Screen Line surveys to help monitor daily trends for all transportation modes.
CARRIED

8.7. 22-290 Procurement Policy Amendments for Procurement from Indigenous Businesses

MOVED by Director Tait, SECONDED by Director Helps,
That the Procurement Policy be amended as attached as Appendix "A".

MOVED by Director Ranns, SECONDED by Director Young,
That the main motion be amended by replacing it with:
To postpone this decision until there has been a thorough consultation with Chief and Council of each participating nation.

Discussion ensued regarding:
- consultation with First Nations
- government to government relationship versus economic development
- staff resources required to undertake consultation

MOVED by Director Blackwell, SECONDED by Director Isitt,
That the amendment be amended to include the words "and reporting back at the next First Nations Relations Committee meeting in June".
DEFEATED
OPPOSED: Brent, Brice, Desjardins, Haynes, Helps, Hicks, Holman, Loveday, Martin, McNeil-Smith, Mersereau, Murdoch, Orr, Plant, Ranns, Seaton, Tait, Taylor, Williams, Windsor

MOVED by Director Ranns, SECONDED by Director Isitt,
That the amendment be amended to remove the words "a thorough".
CARRIED
Opposed: Brent, Helps, Hicks, Holman, Loveday, Plant, Seaton, Tait, Taylor

The question was called on the amendment:
To postpone this decision until there has been consultation with Chief and Council of each participating nation.
DEFEATED
Opposed: Brent, Brice, Haynes, Helps, Hicks, Holman, Loveday, Martin, McNeil-Smith, Mersereau, Murdoch, Orr, Plant, Seaton, Tait, Taylor, Windsor

The question was called on the main motion:
That the Procurement Policy be amended as attached as Appendix "A".
CARRIED
Opposed: Ranns

9. BYLAWS

There were no bylaws for consideration.

10. NOTICE(S) OF MOTION

10.1. 22-265 Motion with Notice: COVID Sewage Monitoring (Director Desjardins)

MOVED by Director Desjardins, SECONDED by Director Loveday,
That the Capital Regional District Board request that staff bring a report to the CRD Board on the benefit and implementation of monitoring Sewage from McLoughlin for the benefit of understanding COVID levels in our community and that the report includes activities on this within the CRD.

Discussion ensued regarding:
- committee referral
- interest from public health in sewage monitoring
- financial implications
- staff resources
- external funding

MOVED by Director Desjardins, SECONDED by Director Loveday,
That the motion be amended to add the word "directly" after the word "report".
CARRIED

The question was called on the main motion as amended.
That the Capital Regional District Board request that staff bring a report directly to the CRD Board on the benefit and implementation of monitoring Sewage from McLoughlin for the benefit of understanding COVID levels in our community and that the report includes activities on this within the CRD.
CARRIED
Opposed: Mersereau

10.2. **22-334** Notice of Motion: Mount Maxwell Park Land Acquisition

Director Holman provided the following Notice of Motion for consideration at a future meeting:
"That CRD Parks staff provide a report to the Capital Regional District Board regarding a possible maximum contribution of $100,000 to the proposed 75 acre Mount Maxwell park land acquisition, in return for the placement of a satisfactory conservation covenant on forested lands contiguous to the Provincial park and protected watershed lands."

11. NEW BUSINESS

There was no new business.

12. MOTION TO CLOSE THE MEETING

12.1. 22-317 Motion to Close the Meeting

MOVED by Director Mersereau, SECONDED by Director Blackwell,
1. That the meeting be closed for Appointments in accordance with Section 90(1)(a) of the Community Charter.
CARRIED

MOVED by Director Mersereau, SECONDED by Director Blackwell,
2. That the meeting be closed for Labour Relations under Section (90)(1)(c) of the Community Charter.
CARRIED

MOVED by Director Mersereau, SECONDED by Director Blackwell,
3. That the meeting be closed for Land Acquisition in accordance with Section 90(1)(e) of the Community Charter.
CARRIED

MOVED by Director Mersereau, SECONDED by Director Blackwell,
4. That such disclosures could reasonably be expected to harm the interests of the Regional District.
CARRIED

MOVED by Director Mersereau, SECONDED by Director Blackwell,
5. That the meeting be closed for Intergovernmental Negotiations in accordance with Section 90(2)(b) of the Community Charter.
CARRIED

The Capital Regional District Board moved to the closed session at 2:22 pm.

13. RISE AND REPORT

The Capital Regional District Board rose from the closed session at 3:08 pm and reported on the following:
In accordance with Bylaw No. 3450, that the following be appointed to the Salt Spring Island Transportation Commission for a term expiring December 31, 2023: Luke Campbell
In accordance with Bylaw No. 3749, that the following be appointed to the Southern Gulf Islands Electoral Area Emergency Advisory Commission for a term expiring December 31, 2022: Wayne Quinn

14. ADJOURNMENT

MOVED by Director Seaton, SECONDED by Director Brice,
That the May 11, 2022 Capital Regional District Board meeting be adjourned at 3:09 pm.
CARRIED

CHAIR

CERTIFIED CORRECT:

CORPORATE OFFICER

Report to Nominators Presentation

Capital Regional District

June 8, 2022

YYJ

Introduction - Victoria Airport Authority

- **Paul Gerrard**
  Capital Regional District Nominee
  - Chair - Planning and Development Committee
  - Steering Committee
  - Audit and Finance Committee

- **Geoff Dickson**
  President and CEO

Social Responsibility Award

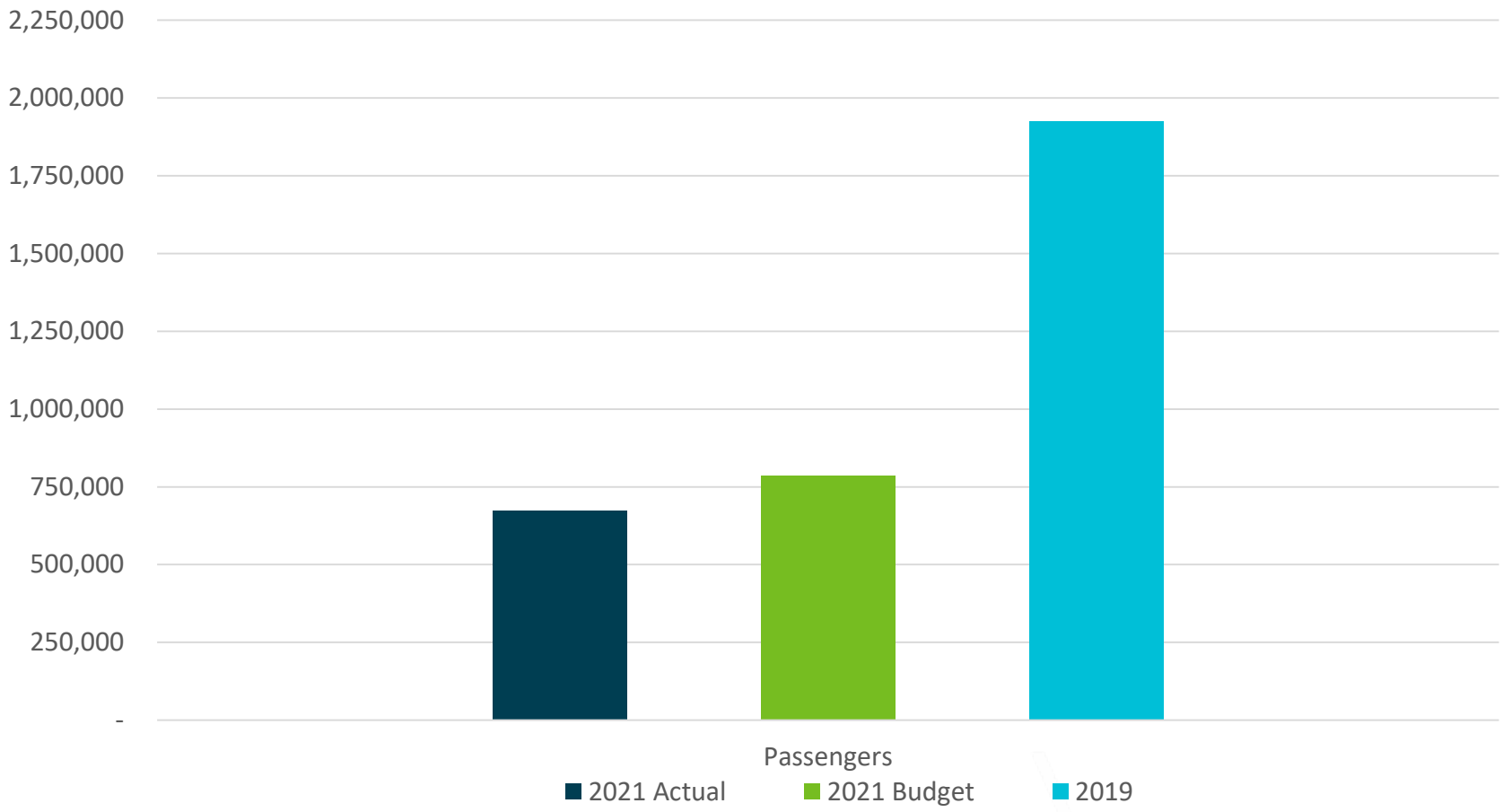
4VI
A SOCIAL ENTERPRISE, DEFINING OUR DESTINATION



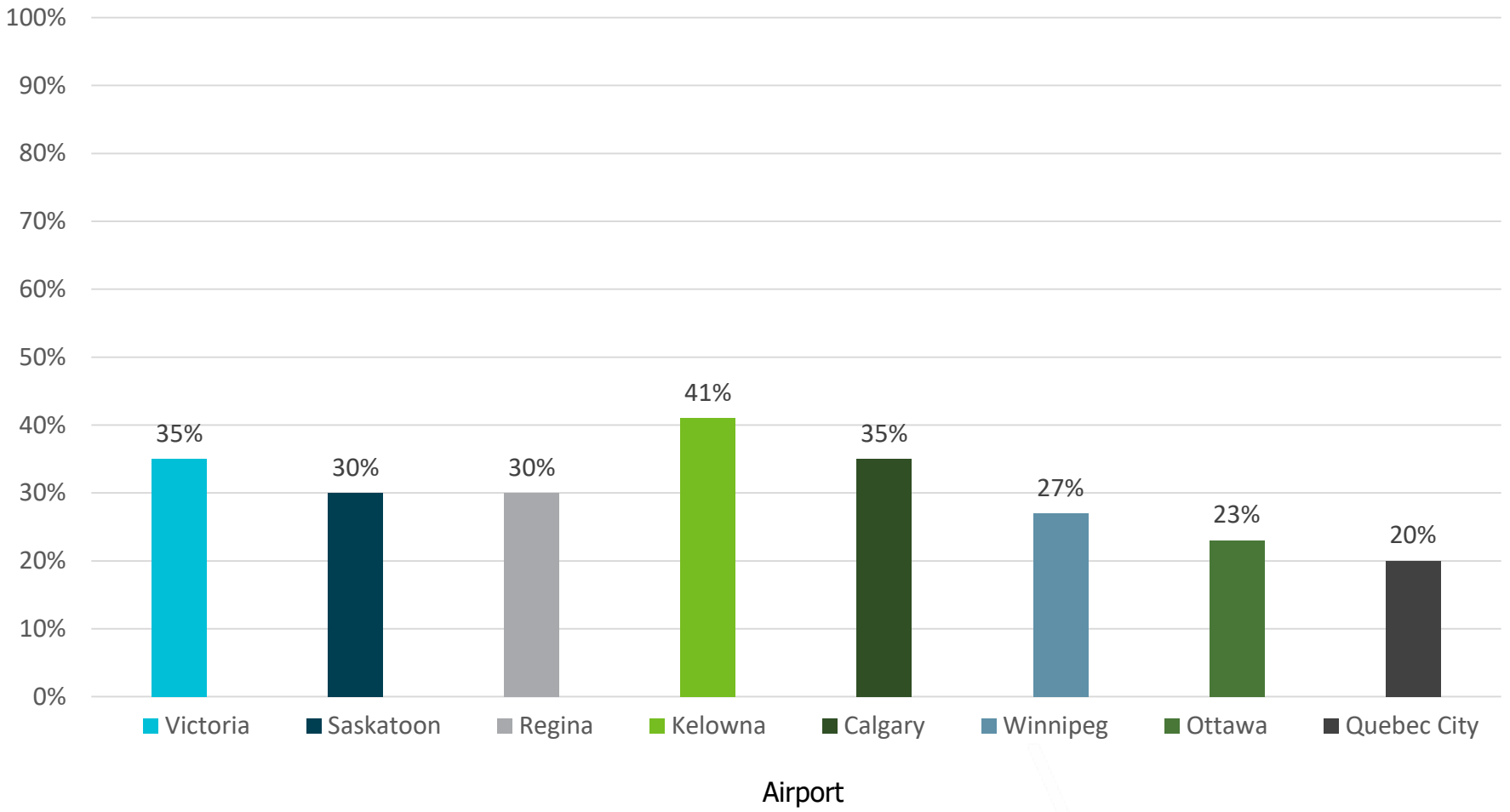


YYJ

2021 Passengers



2021 Passengers as % of 2019



Ultra Low-Cost Carriers

flair airlines

- Toronto, Edmonton, Calgary, Kelowna

SWOOP

- Toronto, Edmonton

Lynx AIR

- Calgary

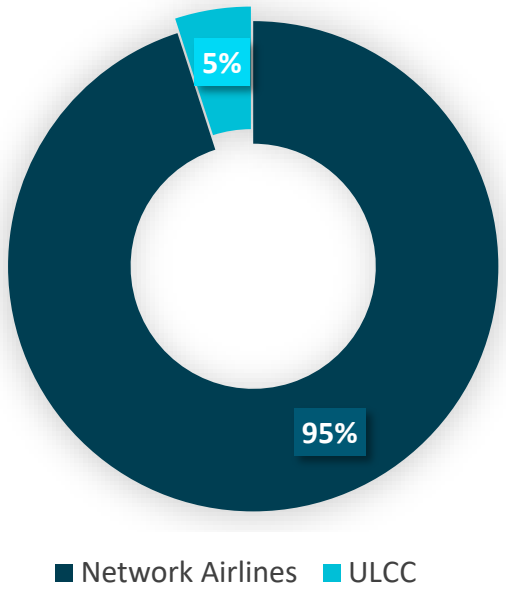
jetlines

- Possibly 2023

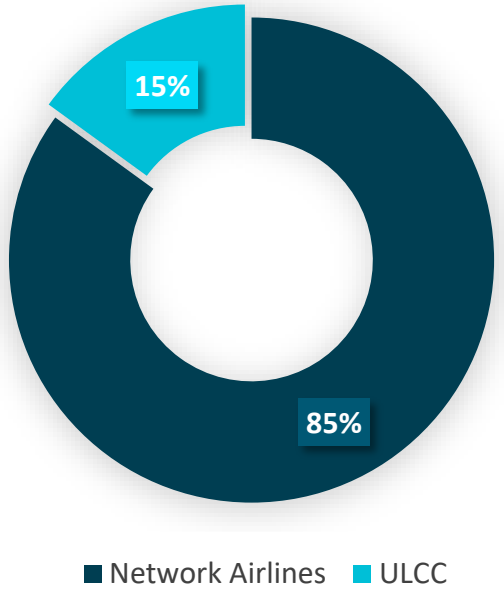
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Ultra Low-Cost Carrier Domestic Market Share

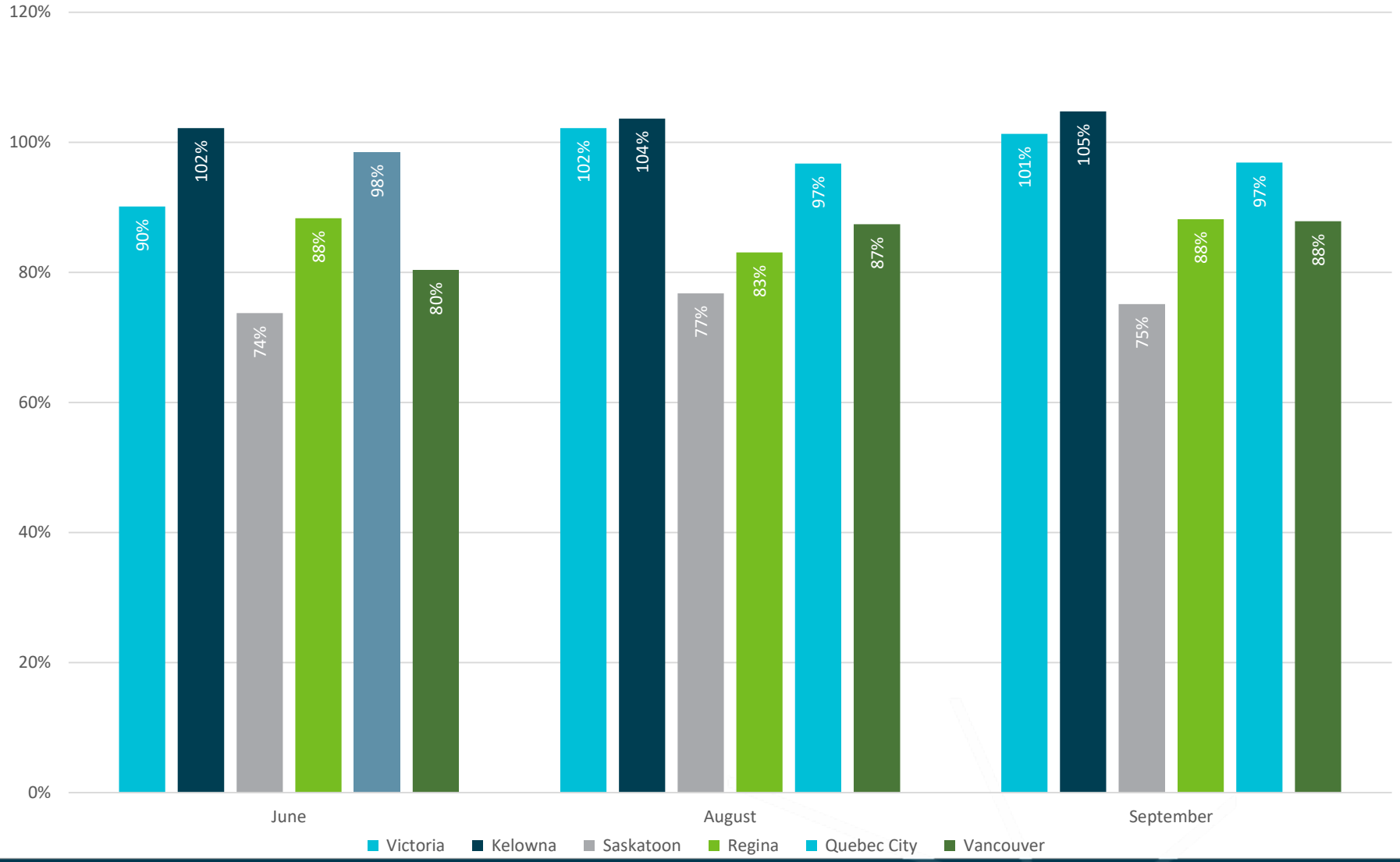
Summer 2019 - 5%



Summer 2022 - 15%



2022 Capacity vs 2019

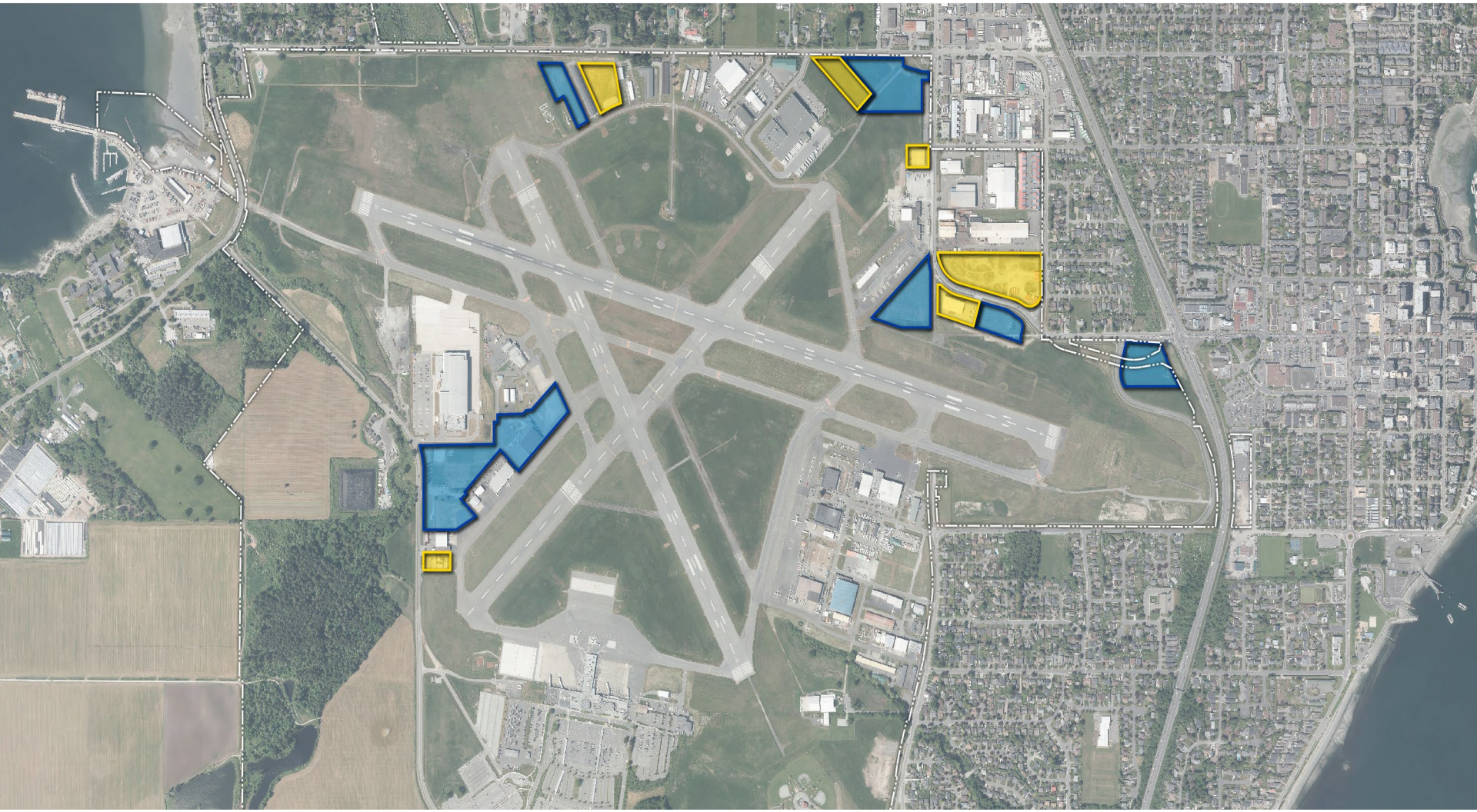


New Route Focus



YYJ

Land Development



Amazon



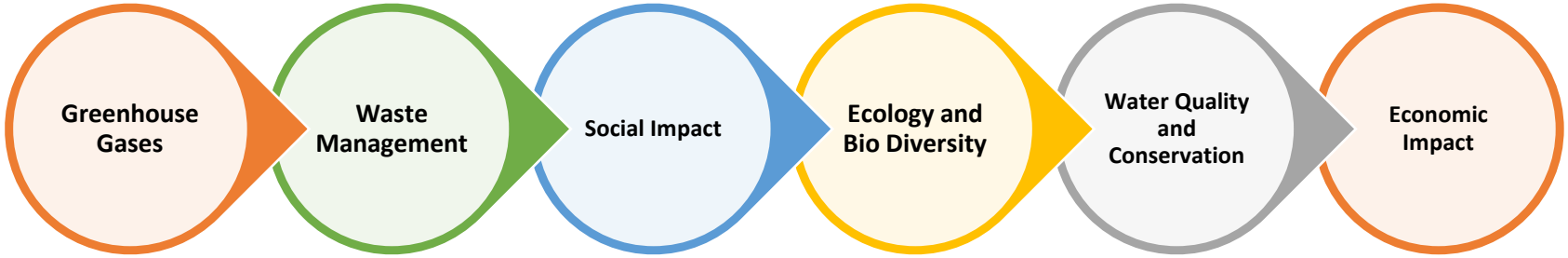
Beacon/Galaran Roundabout Design



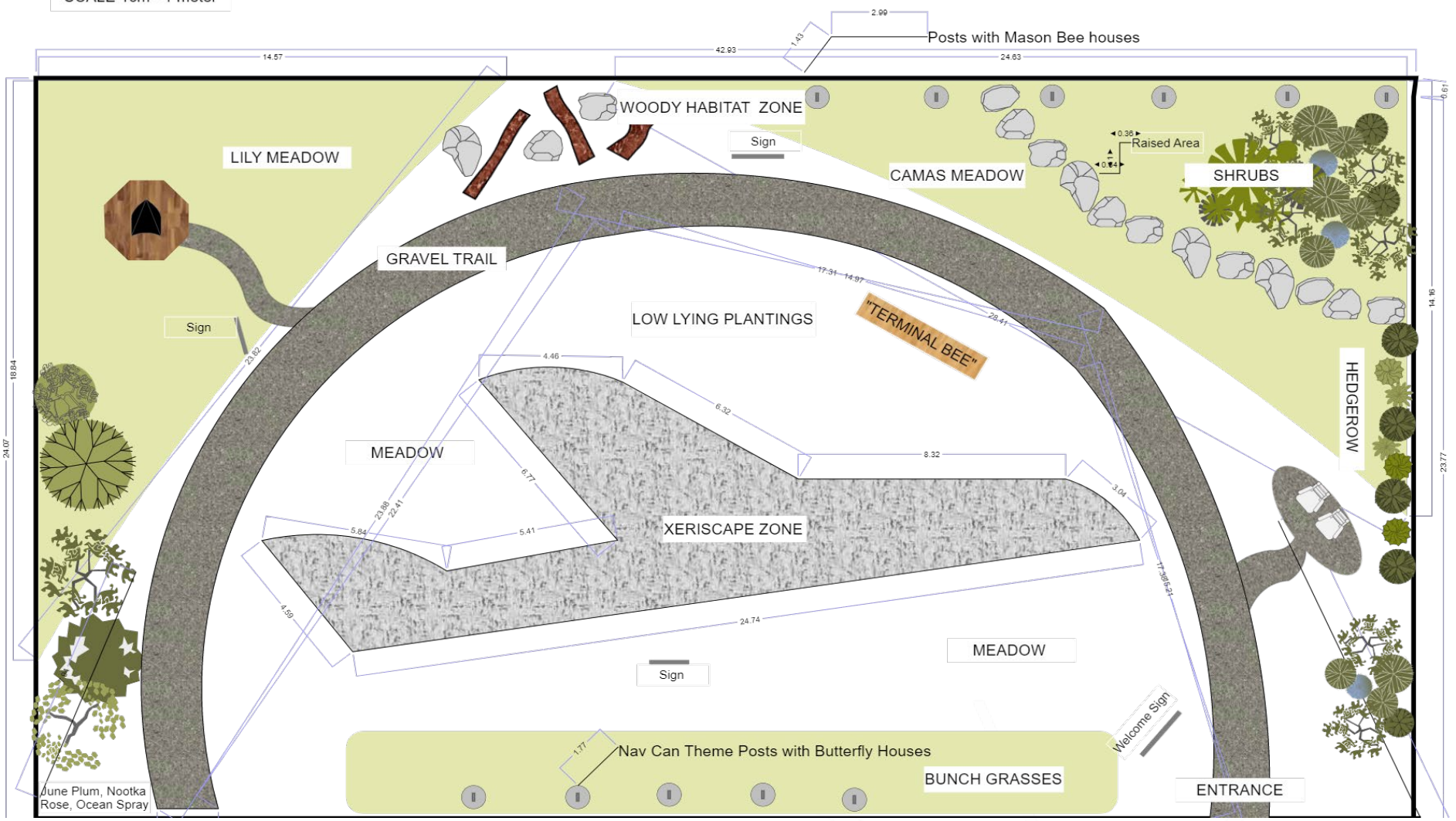
Runway 09 Approach Lighting - SSALR



Sustainability Plan



Pollinator Garden





YYJ

Making a difference...together

REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, JUNE 08, 2022

SUBJECT **Southern Gulf Islands Transportation Integration Plan**

ISSUE SUMMARY

Receipt of the *Southern Gulf Islands Transportation Integration Plan,* submitted by Watt Consulting Group (May, 2022), to present a business case for a new transportation service for the Southern Gulf Islands Electoral Area.

BACKGROUND

In 2021, Watt Consulting was engaged to undertake a comprehensive *SGI Transportation Integration Plan* that included a business case for service model options and quantified costs, as well as a standalone Active Transportation Plan for SGI. The process was grounded in an in in-depth community engagement and stakeholder consultation program.

The SGI Transportation Integration Plan (SGI TIP) presents a business case for a new CRD transportation service for the Southern Gulf Islands Electoral Area (SGI EA). The primary objective of an SGI transportation service would be to provide financial and coordination support to the active transportation, community public transit, and water-based mobility initiatives that have been—and would continue to be—led by local non-profit and private organizations on the islands. The CRD service would support transportation by filling gaps in the existing local transportation framework: providing supplemental funding in the way of grants to non-profit transportation providers; holding tenure as required by the Ministry of Transportation in the Road Right of Way; acting as the sponsoring local government when required for transportation infrastructure investment and funding applications to higher levels of government; and, providing coordination for a transportation network that is integrated across the different modes and different islands of the SGI EA. The SGI transportation service would be guided by an SGI Transportation Commission made up of local representatives from each island.

This report is companion to a subsequent report for consideration of Bylaw 4485, to establish an integrated transportation service for the Southern Gulf Islands Electoral Area, which is also on the Electoral Areas Committee and CRD Board agendas of June 8, 2022.

ALTERNATIVES

Alternative 1

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

Alternative 2

The Electoral Areas Committee requests the *Southern Gulf Islands Transportation Integration Plan,* be referred back to staff for more information.

IMPLICATIONS

Social Implications

The proposal to establish a new transportation service for the SGI EA is supported by community and stakeholder input. Targeted outreach took place in spring 2021 and involved virtual workshops with the Transportation Advisory Groups (TAGs) (there was one TAG per transportation mode), agency stakeholder outreach, and information provided to the community via the CRD website, posters, and a media release. Community mapping events were held at tables that were part of farmers markets and other community events during late August and early September 2021, to gather public feedback on gaps and opportunities.

Round 1 engagement took place in fall 2021 and invited the public to provide feedback using Bang the Table, which included interactive mapping, quick polls, a survey, and an ideas forum. A mail out FAQ was sent to every SGI mailbox to encourage people to fill out the survey. During the Round 1 engagement, 2.5k people visited the online Get Involved (Bang the Table) site, and 695 surveys were submitted. This is very high engagement per capita by industry standards.

Overall, the theme heard repeatedly from the public and stakeholders was that there was a need to improve alternate transportation options on the Southern Gulf Islands, particularly due a lack of safety for users of the hilly, winding, and narrow road network. Improved transportation alternatives would:

- Better connect major origins and destinations on the islands;
- Provide alternatives to single occupancy vehicles;
- Reduce car dependency;
- Provide seniors and low-income populations with better travel options;
- Better enable kids the ability to travel safely and independently;
- Be more sustainable and better stewards for the environment.

In response to the feedback received, Watt prepared a range of service level options that would be possible according to four tax requisition levels, based on 2021 property assessment values. The options were costed using real numbers from operational costs provided by the community bus and trail societies, BC Transit, and actual staff costs within a range of classification levels:

1. “Option A- Status Quo” (no increase in requisition. No change in service level);
2. Option B – Basic Level,” (small grants to community bus and trail groups) - $270,000 annual budget based on a requisition of up to $7.49/ $100,000 of assessed property value;
3. “Option C –Semi-Integrated Transportation System” (supports active transportation and community buses, with only minor support for water-based modes) - $450,000 annual budget based on a requisition of up to $12.34 per $100,000 of assessed property value; and
4. “Option D - Fully Integrated Transportation Service,” that supports all three modes with an annual budget of $675,000 annually based on up to $18.51 per $100,000 of assessed value.

Round 2 engagement took place in winter, 2022 and sought feedback on the level of support for the various funding options and the range of proposed transportation solutions. It involved an online survey and four virtual Q&A sessions (conducted over Zoom). A mail out FAQ was sent

to every SGI mailbox. This mail out explained the proposals and encouraged people to fill out the survey and attend the virtual meetings. During the Round 2 engagement, 1.5k people visited the Bang the Table site, and 365 surveys were submitted.

The Round 2 Engagement found the majority of people supported a tax requisition to increase transportation solutions in the islands. Eighty-five percent of respondents to the survey indicated a desire for change from the current level of transportation service on the islands. A fully integrated transportation system was the first preference for most participants, and a semi-integrated transportation system was the second preference for most participants.

In February 2022, the SGI Community Economic Sustainability Commission received the consultation results and passed a resolution recommending the CRD Board implement "Option D," of the SGI Transportation Options.

Environmental & Climate Implications

The CRD's Regional Climate Action Strategy ("RCAS") has identified on-road transportation as the region's most significant source of greenhouse gas emissions ("GHGe"), and notes that the CRD needs to focus on mitigating impacts of transportation by "moving towards lower carbon emissions options such as walking, cycling, transit and electric vehicles" (RCAS, 2017). In 2019, the CRD declared a climate emergency and committed to reducing GHGe by 40% by 2030. An SGI Transportation service would enable the islands to advance low carbon transportation solutions.

Service Delivery Implications

If approved by referendum and the CRD Board, the new service will be established for transportation improvements in the SGI EA and will be accompanied by the establishment of an SGI Transportation Advisory Commission. The Commission would include representation from each island, as well as representation by stakeholders in each of the three transportation modes.

The service options in the SGI TIP were put forward with the recognition that the SGI tax base alone would not be enough to afford the level of infrastructure required to achieve the ultimate vision heard from islanders. The role of the CRD in providing transportation solutions is therefore not to become a transportation service provider but rather to leverage more significant infrastructure funds and to be an enabler, supporting coordination and contributing funding for integrated services to be provided by 3rd parties and community organizations.

Financial Implications

Bylaw 4485 is proposed for the CRD Board and the electorate to consider service establishment for a Southern Gulf Islands Transportation Service. The bylaw responds to the proposal for a fully integrated transportation service (Option D). The proposed service bylaw is based on the 2022 property assessments for the SGI EA to generate a maximum requisition equaling the greater of $675,000 or $0.1414 per $1,000 of assessed value (this is a slightly different amount than was presented earlier due to the difference between the 2021 and 2022 property assessments). For communications purposes, the amount can also be expressed as $14.10 per $100,000 of assessed property value. Subject to CRD Board direction, Bylaw 4485 will be considered by a referendum question to coincide with the 2022 General Election on October 15, 2022.

Alignment with Board & Corporate Priorities

- 2018-22 Board Priority: Community Wellbeing (Transportation & Housing)
- 2019-22 Corporate Business Plan – 2e - EA transportation services

CONCLUSION

The SGI Transportation Integration Plan, developed by Watt Consulting Group, presents a business case for a new CRD transportation service for the Southern Gulf Islands Electoral Area. The plan includes a summary of community engagement, and presents service model options and quantified costs for the CRD to consider in the scope of an establishment bylaw for an SGI integrated transportation service.

RECOMMENDATION

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

Submitted by:	Justine Starke, MCIP, RRP, Manager, Southern Gulf Islands Service Delivery
Concurrence:	Stephen Henderson, Senior Manager, Real Estate and SGI Service Delivery
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: SGI Transportation Integration Plan, Watt Consulting Group, 2022.









Southern Gulf Islands
Transportation Integration Plan

CRD
Making a difference...together

WATT
Consulting Group

May 2022

Southern Gulf Islands
Transportation Integration Plan

CRD
Making a difference...together

ACKNOWLEDGEMENTS

The Capital Regional District conducts its business within the traditional territories of over 20 First Nations, including Songhees, xʷsepsəm (Esquimalt), W̱JOŁEŁP (Tsartlip), BOḰEĆEN (Pauquachin), SṮÁUTW̱ (Tsawout), W̱SIKEM (Tseycum), MÁLEXEŁ (Malahat), Sc'ianew (Beecher Bay), T'Sou-ke, Pacheedaht and Pune'laxutth' (Penelakut). It recognizes the First Nations governments across this region, all of whom have a long-standing relationship with the land and waters from time immemorial that continues to this day.

EXECUTIVE SUMMARY



The Southern Gulf Islands Transportation Integration Plan presents a business case for a new Capital Regional District (CRD) transportation service for the Southern Gulf Islands Electoral Area (SGI EA). An SGI transportation service would be guided by an SGI Transportation Commission made up of local representatives, similar to the model already successfully implemented to further sustainable transportation in the CRD's Salt Spring Island Electoral Area.

The primary objective of an SGI transportation service would be to provide financial and coordination support to the active transportation, community public transportation (such as community bus) and water-based mobility initiatives that have been—and would continue to be—led by local non-profit and private organizations on the islands. The CRD service would be targeted to fill the gaps in the existing local transportation framework by holding tenure and/or acting as the sponsoring local government when required for transportation infrastructure investment and funding applications to higher levels of government.



The role of the CRD transportation service would also be to encourage investment in active transportation road improvements and cycling infrastructure, provide integration of water and land public transportation systems, and facilitate partnerships between other agencies and community groups advancing transportation solutions in the region. Without establishing a transportation service for the SGI EA, the CRD does not have the authority or resources to support a locally controlled network of trails and cycling routes, public transit options, or support more effective inter-island travel. Legislative and legal restrictions prevent regional districts from cross-funding across services, so the CRD is currently unable to shift funding from other internal funding streams to support local transportation solutions on the islands.

Transportation Service Concept Exploration and Development

The request to explore an SGI transportation service originated in May 2018 when the Southern Gulf Islands Community Economic Sustainability Commission (CESC) requested that the CRD establish a new transportation service for the SGI Electoral

Area. The CESC motion specified the service should be guided by a commission with representatives from Galiano Island, Mayne Island, Pender Islands, and Saturna Island with a mandate to oversee and coordinate the transportation initiatives relating to on-island and inter-island transportation, trails and bikeways and liaising with the SGI Harbours. The CRD Board endorsed the request and the CRD subsequently advanced a process to consider an integrated transportation service for the region.

As a result of this, in 2021, Watt Consulting was engaged to undertake a comprehensive SGI Transportation Integration Plan that included developing a business case for service model options and quantified costs, as well as a standalone Active Transportation Plan for SGI. The process was grounded in an in-depth community engagement and stakeholder consultation program that included spring and summer 2021 virtual workshops with Transportation Advisory Groups (TAGs) comprised of community transportation groups from each of the modes, outreach to area First Nations, interviews with agency stakeholders, and information provided to the community via the CRD website, posters, and a media release.

In late summer and early fall 2021, the project gathered further feedback from the public on transportation gaps and opportunities at community mapping events and a round of public online engagement that included interactive mapping, quick polls, a survey, and an ideas forum. A Frequently Asked Questions (FAQ) was sent to every SGI mailbox to encourage people to fill out the survey.



During the Round 1 engagement, 2.5k people visited the Get Involved (Bang the Table) virtual engagement site, and 695 surveys were submitted.

Service Level Options

In response to the feedback received from stakeholders and the community, Watt prepared a range of service level options that would be possible for the SGI. The service levels were guided by recognition that the SGI functions with strong volunteer economies and that there were many community-based transportation solutions that could become more viable with just a little more sustainable and predictable support.

The service options were put forward with the understanding that the SGI tax base alone would not be enough to afford the level of infrastructure required to achieve the ultimate desired transportation vision heard from the islanders. Therefore, the recommended approach builds off existing grassroots organizations and volunteer networks as much as possible. The suggested role for the CRD is not to become a

transportation service provider, but rather to leverage more significant infrastructure funds and to be an enabler, supporting coordination and contributing funding for integrated services to be provided by 3rd parties and community organizations.

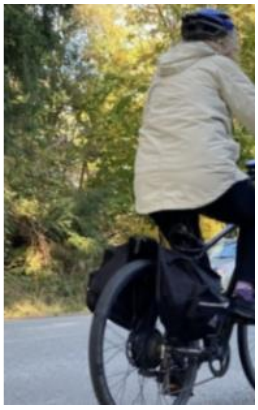
Based on this approach, the project developed a sample range of service level options that would be possible for the SGI at four tax requisition levels:

- **Option A – Status Quo** – No increase in requisition. No change in service level;
- **Option B – Basic Level** – Would provide small grants to community bus and trail groups, with an annual budget of up to $270,000;
- **Option C – Semi-Integrated Transportation System** – Would support active transportation and community buses, with only minor support for water-based modes, with an annual budget of up to $450,000; and
- **Option D – Fully Integrated Transportation Service** – Would support all three modes with an annual budget of up to $675,000.

Sample tax requisition amounts based on 2021 property assessments were also included with the service level options and ranged from $7.49 per $100,000 of assessed property value for Option B, to $18.51 per $100,000 for Option D. Updated figures based on 2022 property assessments have since **lowered** these projected amounts to instead range from $5.50 per $100,000 assessed value for Option B (or $0.055 per $1,000) to $14.10 per $100,000 for Option D (or $0.141 per $1,000).

Round 2 engagement took place in winter 2022 and sought feedback on the level of support for the various funding options (based on the original 2021 property assessment amounts shown) and the range of proposed transportation solutions. It involved an online survey and four virtual Q&A sessions (conducted over Zoom). An FAQ was sent to every SGI mailbox. This mail-out explained the proposals and encouraged people to fill out the survey and attend the virtual meetings.





During the Round 2 engagement, 1.5k people visited the Get Involved (Bang the Table) site, and 365 surveys were submitted.

The Round 2 Engagement found that the majority of respondents (67%) supported a tax requisition to increase transportation solutions in the islands. Eighty-five percent of respondents to the survey indicated a desire for change from the current level of transportation service on the islands. “Option D - Fully Integrated Transportation Service” was the first preference for the highest number of participants (45%), and

"Option C - Semi-Integrated Transportation Service" was the second preference for most participants (50% of participants had it as their second choice).

In February 2022, the SGI Community Economic Sustainability Commission received the consultation results and passed a resolution recommending the CRD Board implement "Option D," of the SGI Transportation Options.

Recommendations and Next Steps



An integrated transportation system encompassing walking, cycling, public transportation, and water-based transportation would change the economic geography of the region and enable shared services and increased connections throughout the islands. Investment in active transportation and public transportation would improve safety, equity, and access among residents of all ages while also reducing greenhouse gas impacts from residents and visitors.

The prerequisite for the CRD to have a formal role in funding and supporting locally-led transportation initiatives in the Southern Gulf Islands is the creation of an SGI transportation service, which in turn can only be enabled through a Service Establishment Bylaw and voter assent process.

Should the CRD wish to pursue an SGI transportation service, recommended next steps would include:

- CRD Board consideration of a Service Establishment Bylaw and voter assent process.
- Preparing for a referendum in the 2022 General Election.
- Presentation of information on the service proposal in lead up to the referendum.

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APPENDICES

Appendix A: Public Engagement Summary

1.0 INTRODUCTION

The Capital Regional District (CRD) developed the Southern Gulf Islands (SGI) Transportation Integration Plan to understand the demand for, and propose future improvements to, mobility networks in the SGI Electoral Area, including walking, cycling, public transportation and passenger ferry services. Developed with the CRD and the community by Watt Consulting Group in partnership with Dreadnought Marine Consultants, this Plan presents a range of service models and estimated budget requirements to implement the vision of an integrated transportation service.





Building on past studies and community feedback, the purpose of the project was to assess how to most effectively move from ideas to action when it comes to transportation on and between the largest Southern Gulf Islands: Galiano, Mayne, Saturna, and North and South Pender Islands, with possible links to Sidney and Salt Spring Island.

This document summarizes the outcomes of the SGI Transportation Integration Plan project, with a focus on describing the potential role, attributes and scope of a CRD Southern Gulf Islands transportation service function should the CRD Board and the SGI electorate wish to move forward with establishing one through a Service Establishment Bylaw and referendum. This plan also provides a high-level summary of the outcomes of engagement and analysis undertaken for the project and how they shaped the recommendations.

More detailed information on the engagement and outreach activities and their results are provided in Appendix A, as well as in the Southern Gulf Islands Active Transportation Plan that also resulted from this work.

A major barrier to funding ongoing transportation improvements in the SGI is the Electoral Area's lack of a formal transportation service function through its governing Regional District, the CRD.

Unlike municipalities which have more flexibility in shifting their budget and service priorities, regional districts must formally define services Without such a service, the area cannot access CRD funding towards local transportation projects or apply for larger provincial and federal transportation grants.

SGI Transportation Integration Plan – Project Objectives & Deliverables:

- **Developing and costing out transportation service options** that are practical, feasible and right-sized to meet the needs for each community and inter-island connection.
- **Undertaking community mapping and engagement** to capture existing and proposed trails envisioned by stakeholder organizations and community members, determining community needs and future priorities, and refining recommendations.
- **Outlining the action steps and recommendations** for how a CRD transportation service could be structured to enable the creation, phasing and integration of land-based public transportation, inter-island water passenger service, and supporting active transportation improvements on each of the Southern Gulf Islands.
- **Understanding the CRD's role** in supporting identified community needs and integrated transportation going forward.

1.1 Project Evolution & Engagement Approach

The request to explore an SGI transportation service originated in May 2018 when the Southern Gulf Islands Community Economic Sustainability Commission (CESC) requested that the CRD establish a new transportation service for the SGI Electoral Area. The CESC motion specified the service should be guided by a commission with representatives from Galiano Island, Mayne Island, North and South Pender Islands, and Saturna Island, with a mandate to oversee and coordinate the transportation initiatives relating to on-island and inter-island transportation, trails and bikeways and liaising with the SGI Harbours.

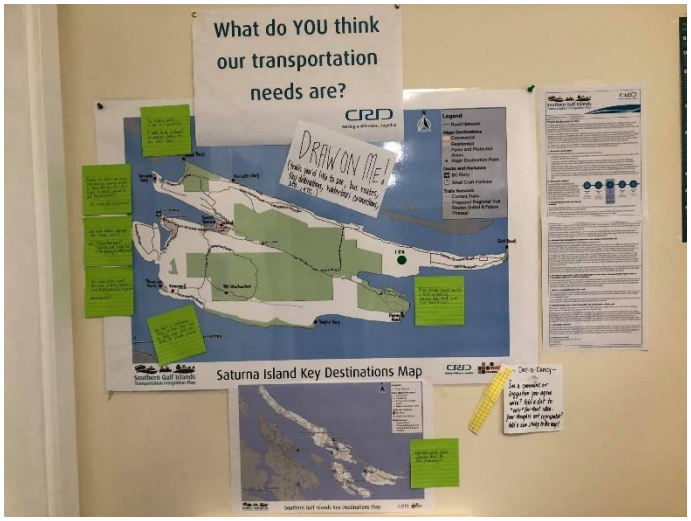
The CRD Board endorsed the request and the CRD subsequently advanced a process to consider an integrated transportation service for the region. Subsequently in 2021, Watt Consulting was engaged to undertake the SGI Transportation Integration Plan.

Project Timeline



The project's process was grounded in an in-depth community engagement and stakeholder consultation program:

- **Targeted Outreach** took place in spring 2021 and involved virtual workshops with Transportation Advisory Groups (TAGs) that included community organization representatives for each of the three modes: active transportation (trail societies, walking, cycling), public transportation / community bus, and water-based transportation. This phase also included outreach to area First Nations, interviews with stakeholder organizations, and information provided to the community via the CRD website, posters, and a media release.
- **Community mapping events** were held at tables at farmers markets and other community events during late August and early September to gather public feedback on transportation gaps and opportunities.



- **Round 1 engagement** took place in fall 2021 and invited the public to provide feedback on transportation gaps and opportunities using the CRD's digital engagement platform which included interactive mapping, quick polls, a survey, and an ideas forum. A Frequently Asked Questions (FAQ) was sent to every SGI mailbox to encourage people to fill out the survey.
- **Round 2 engagement** took place in winter 2022. It presented potential transportation solutions developed based on Round 1 engagement results and sought feedback on the level of support for the various options and funding levels. It involved an online survey and four virtual Q&A sessions (conducted over Zoom), as well as anFAQ sent to every SGI mailbox. The mail out explained the proposals and encouraged people to fill out the survey and attend the virtual meetings.

Community Involvement by the Numbers:

- **ROUND 1** – 2,500 project page visits, 695 surveys
- **ROUND 2** – 1,500 project page visits, 365 surveys, 43 Q&A participants

In tandem with the above engagement, the project process also included:

- **Review of past community and transportation plans** to ensure that the project built from previous community direction and analysis.
- **Analysis and development of mode-specific options** guided by the specific conditions of the Southern Gulf Islands and the input of local transportation providers, as well as the best practices and similar past projects in other Canadian island and rural communities.

Project Involvement

First Nations: W̱SÁNEĆ Leadership Council, Penelakut Tribe

Transportation Advisory Group Participating Organizations:

General (Across all Modes)
- Community Economic Sustainability Commission
- Southern Gulf Islands Tourism Partnership
- Experience the Gulf Islands
- Southern Gulf Islands Community Resource Centre
- CRD Liaisons + Senior Transportation Planner
- Cycling advocates
- Other community organizations

Active Transportation
- Galiano Trails Society
- Mayne Island Pathways
- Moving Around Pender
- SGI Parks and Recreation Commissions
- Gulf Islands Trails Society

Public Transportation
- Mayne Island Bus Society
- Saturna Shuttle
- Moving Around Pender
- Galiano Bus Society
- Gertie/ BC Community Bus Coalition

Water Transportation
- Penelakut Tribes
- Coast Salish Peoples of Galiano Society
- Southern Gulf Islands Harbour Commission
- Ferry Advisory Committee
- Water taxi providers
- SGITP Water taxi pilot
- Salish Sea Inter-Island Transportation Society

Other Organizations Interviewed:
- Internal CRD departments (Regional Planning, Regional Parks and Trails, SGI Harbours, Real Estate, Salt Spring Island Transportation Service, etc.)
- Islands Trust
- School District 64 Administration
- SD 64 School Trustees + PAC
- BC Ferries
- BC Transit
- Ministry of Transportation and Infrastructure
- Emcon
- Parks Canada

Southern Gulf Islands
Project Context and Demographics

This project focused on the five largest islands within the SGI Electoral Area: **Galiano, Mayne, North and South Pender, and Saturna**.

Engagement and outreach also encompassed other nearby islands like Penelakut and Salt Spring, as well as part-time residents and visitors who may also reside on Vancouver Island, the lower mainland, and other locations.



- Communities in the Southern Gulf Islands were generally experiencing a decline in population from 2016 to 2011 (-2.8%). This trend has now reversed with an almost 30% increase in population in the SGI EA based on initial information from the 2021 census.
- The Southern Gulf Islands' population is older than average. In 2021, the median age was 62 years for the Electoral Area, compared to 43 years in all of BC.
- The summer population is also impacted by part-time residents returning to their summer homes as well as visitors travelling to resorts, hotels, and campgrounds and marine traffic arriving by personal boat.
- While summer population figures are not available, it is estimated that during that period the population of Galiano and Saturna both increase about 2-3 times, and the population of Mayne, North Pender and South Pender increase about 2 times.
- The population is mostly concentrated on: North and South Pender Islands, in the areas of Magic Lake and Trincomali; Galiano Island, in the areas of Sturdies Bay, the South End, and Montague Harbour; Mayne Island, in the areas of Dinner Bay/Spinnaker, Miners Bay, Georgina Point and Bennett Bay; and Saturna Island around Lyall Harbour.

2.0 SGI TRANSPORTATION ISSUES AND OPPORTUNITIES

Based on the engagement and research outlined in Section 1.1, clear themes emerged in terms of transportation issues and opportunities in the Southern Gulf Islands. The following summarizes the key findings based on what was found through the analysis and jurisdictional research, heard from the public, and then what was heard from First Nations, existing local transportation organizations and stakeholder organizations. Please also see **Appendix A** – What We Heard Reports for the detailed outcomes from the two rounds of public engagement.



Desire for Improved Transportation Safety, Connection, Equity

Overall, the theme heard repeatedly from the public and stakeholders was that there was a need to improve alternate transportation options on the Southern Gulf Islands, particularly due to the perception of a lack of safety for users of the hilly, winding and narrow road network. The need for improved transportation alternatives stemmed from the desire by respondents to:

- Be better connected to major origins and destinations on the islands.
- Have alternatives to motor vehicles.
- Provide seniors and low-income populations better travel options.
- Be more cohesive and comprehensive in the availability of transportation choices.
- Better enable kids the ability to travel safely and independently.
- Be more sustainable and better stewards for the environment.

SGI Issues and Opportunities – Summary of Key Themes:

JURISDICTIONAL	FROM THE PUBLIC	FROM STAKEHOLDERS
• Lack of an existing transportation service function for the SGI means that the CRD cannot allocate funding to local transportation projects, leverage and receive transportation funding grants from other levels of government, or hold land tenure or licenses of occupation required for larger infrastructure initiatives.	• Low satisfaction levels with the different transportation modes. • Overall desire to improve transportation options and many ideas on how to do so. • Range of perspectives on level of appropriate financial support to improve this but majority willing to pay more.	• Existing local transportation groups know their communities and can make things work effectively. • Biggest challenges for these groups are lack of dependable ongoing funding and lack of access to major grants (due to no sponsoring municipality.) • Openness to further exploring partnerships.

2.1 Jurisdictional Issues and Opportunities

In addition to being an unincorporated Electoral Area within the Capital Regional District, jurisdiction within the SGI is relatively complex, with the Islands Trust providing local land use planning services and broader oversight to foster the preservation and protection of the Trust Area, the Ministry of Transportation and Infrastructure (MoTI) responsible for road maintenance and improvements, BC Ferries providing ferry service, and School District 64 overseeing schools, including running a water taxi service to connect grade 8-12 SGI students to schools on North Pender Island and Salt Spring Island.

Without an SGI Transportation Service Function, the CRD Cannot:

- Fund or support local transportation projects (CRD Regional Parks & Trails projects may still move forward but on regional rather than local timelines; local Parks & Recreation trails may not serve interconnected transportation goals)
- Secure grants from other sources
- Hold Licenses of Occupation on Ministry of Transportation & Infrastructure roads for roadside paths

The SGI EA does not currently have a transportation service function within the CRD, unlike other regional district electoral areas with a formal transportation service function such as the CRD's Salt Spring Island's Electoral Area and the Regional District of Nanaimo's Gabriola Island (Electoral Area B). This lack of a formal transportation service has meant that the CRD has not been able to provide operational funding or support on the islands for initiatives like cycling improvements and public transportation.

On the one hand, this lack of CRD transportation jurisdiction has resulted in an extremely diverse collection of local volunteer-supported non-profit groups (trail societies, community bus organizations, etc.) and private water-taxi operators who are all contributing towards mobility in different ways. (**See Section 2.3 Stakeholder Feedback**). However, the downsides to this multiplicity and lack of formal governmental jurisdiction are that:

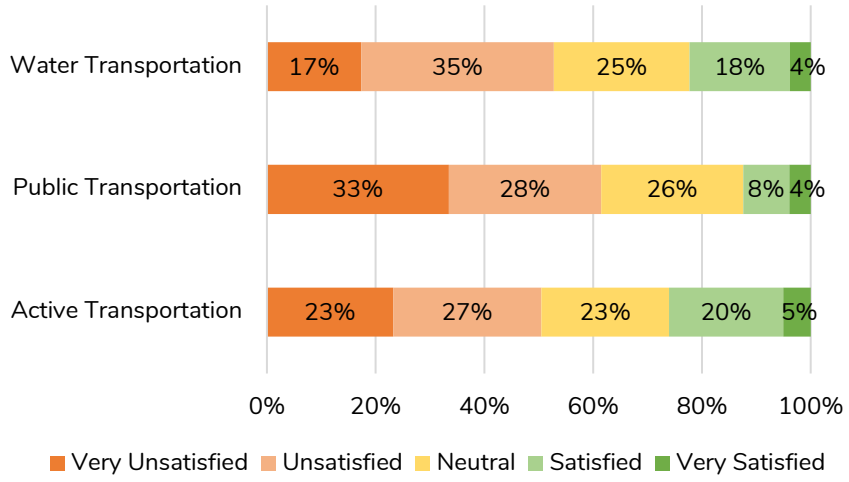
- **The local transportation organizations do not have reliable and predictable funding sources** to support their work in an ongoing way, which means that projects and their resulting services may be sporadic. In the past the CRD has channeled one-time grants-in-aid towards local groups like the community bus societies, but this funding cannot be used for operational expenses, is project based and amounts are limited.
- **Transportation improvements are slower to achieve than in other similar B.C. rural communities** since the SGI are not able to access large provincial and federal funding streams for active transportation and public transportation, due to the lack of a formally-designated sponsoring local government.
- **Initiatives may not necessarily be coordinated** or serve broader community transportation goals since projects are guided by individual island groups that may have less capacity to coordinate on an ongoing basis between the islands and/or between the different modes of transportation.

2.2 Public Feedback

The initial rounds of public engagement were focused on understanding the "**what, why and how**" of the transportation issues and opportunities on all four islands and included Community Mapping events and Round 1 online engagement tools (survey, interactive mapping tool and quick polls). These initial rounds of engagement informed the identification of transportation issues and opportunities, with key findings as follows:

- There are low satisfaction levels for transportation modes on the islands, with 50-61% of respondents either very unsatisfied or unsatisfied.
- **Improving public transportation** ranked as highest overall mobility priority, especially for seniors and people who are unable to walk or cycle. There is a desire for year-round community bus service complemented by car stops, ridesharing, and taxi service.
- **Walking and cycling** were close as second priorities. Improving available infrastructure and connections for these are the active transportation priorities, with safety being a main concern.
- **Water transportation services** should connect with other modes and need to be affordable. They should also align with school extra-curricular schedules and allow for day trips.

Round 1 Public Survey Results – Level of Satisfaction by Transportation Mode



Top Priorities for Transportation Improvement

1. **Improve public transportation options** available on each island, such as community bus, shuttles, taxis or Car Stop programs to complement transit. — Highest Priority
2. **Improve pedestrian trails and walking routes** connecting community destinations.
3. **Improve water transportation between islands**, such as small passenger ferry services to complement BC Ferries.
4. **Improve cycling routes** between community destinations.

   (2–4: Next Highest Priorities (All with Similar Rankings))
5. **Better coordinate transportation services** and schedules between islands.
6. **Improve signage and information** to communicate transportation options. — Lowest Priority

Round 1 Public Survey Results – Top Three Improvement Priorities by Mode
Based on Responses Across All Islands



1. Community Bus service that operates year-round at commuter times plus other times of day.
2. Taxi or ride-hailing options.
3. Shuttle services to transport residents and visitors to special events.



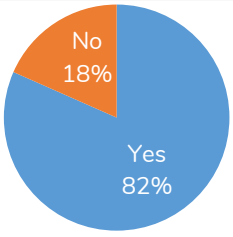
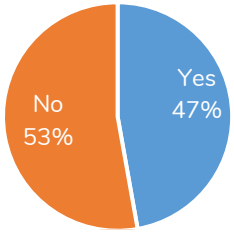
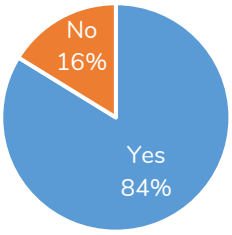
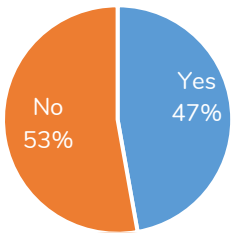
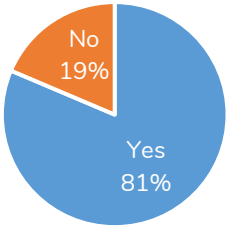
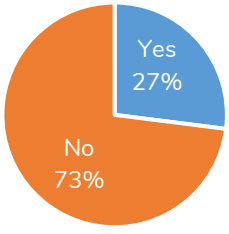
1. Create more space for safe walking and cycling on existing roadways.
2. Develop new off-road trails for walking and cycling that connect key destinations.
3. Improve the accessibility of existing trails for bikes, people using wheelchairs, strollers, etc.



1. Connect docks with public transit.
2. Passenger fare that costs $25 or less each way.
3. A schedule that fills gaps in current service schedules (BC Ferries and school water taxis).

Round 1 Public Quick Poll Results – Likely Use of Transportation Improvements and Support to Fund It

There was strong agreement among online Quick Poll respondents on the need for transportation improvements and likelihood that they would use it, but less agreement on willingness to pay more property tax to fund the improvements. However, it should be noted that the Quick Poll questions around taxation did not state the funding amount, meaning that for active transportation and public transportation, **nearly half of respondents (47%) said that they were willing to pay more property tax to fund those improvements without even knowing at that time how much it would be.**

	Would you use this service?	Would you support an increase to property tax for this service?
Active Transportation:		
Public Transportation:		
Water Transportation:		

2.3 First Nations, Transportation Group, and Stakeholder Feedback

In addition to echoing many of the themes heard in the jurisdictional analysis and public feedback, the conversations with local transportation groups, First Nations and Stakeholders also informed the SGI issues and opportunities, which are summarized here by mode. See also the technical summaries in **Appendices B-D** for further information.

Summary of Local Transportation Group, First Nations and Stakeholder Feedback

Transportation Mode	Feedback Highlights

Active Transportation 	• There are many groups already involved with trail network development and there is a strong belief that this work is most effectively done at grassroots level. However, key gaps identified include:
	  ○ Lack of ongoing and predictable funding sources.
	  ○ Many trails have more of a recreational focus and may not necessarily connect key destinations as transportation corridors or be accessible to bicycles, people using wheelchairs, strollers, etc.
	• Gulf Islands Trail Society is a multi-island organization that can potentially be an integrating forum across multiple trail societies.
	• BC Parks and Parks Canada also have multiple other decision-making factors when it comes to trail development, particularly the priorities of Indigenous cultural preservation and ecological preservation.
	• The existing road network does connect major destinations but there is often little space on road shoulders for pedestrians and cyclists. Development of roadside trails in the SGI is complex due to placement of the roadway in existing rights-of-way, topography, water management and jurisdictional control by the Ministry of Transportation & Infrastructure (MoTI). Developing roadside pedestrian and cycling trails requires coordination with other agencies like MoTI, acquiring License of Occupations in the Road Right of Way, and undertaking technical engineered plans to ensure drainage, maintenance standards and safety requirements are met.
	• There is strong sensitivity on the islands to "over-building" pedestrian and cycling trails: there is a desire for active transportation infrastructure to reflect the rural character.

Public Transportation 	• Each of the islands has previously had community bus or community transportation systems, with Saturna Island's still operating and Mayne Island's recently re-initiated. While a volunteer-based, on-demand model seems to work on Saturna, the challenges noted by community bus societies in the region included:
	  ○ Lack of ongoing and predictable funding sources has affected the sustainability of services from year to year.
	  ○ Reliance primarily on volunteers for operation also impacts when and how often services can operate.
	  ○ Community bus operators have missed out on the ability to access federal capital funding towards vehicle purchase due to lack of a sponsoring local government.

- New “digital on-demand” transit service models—serving customers when and where they need a trip--provides a way to improve the efficient operation of public transportation services on many of the islands, rather than by operating on a fixed route and schedule. However, implementing the customer app and dispatch system that can best meet that need would be cost-prohibitive to do on an island-by-island basis.
- Community bus society representatives expressed interest in potentially working together to share costs and expertise that could be common to all, such as vehicle procurement, administration, integrated marketing, etc.
- Connecting public transportation infrastructure is still lacking at many key destinations, particularly at BC Ferries and CRD docks and sheltered waiting areas in village centres.
- Car stops could still be a feasible way to augment the reach of public transportation services but its level of return in a “post-COVID” world is unknown.

Water-Based Transportation



- Regularly scheduled service for passengers is provided by BC Ferries to each of the Southern Gulf Islands but schedules and service levels do not easily enable travel between the SGI or between SGI and Salt Spring Island, particularly for same-day-return trips.
- Passenger only water taxi service to the Gulf Islands is currently provided by several smaller seasonal operators and two year-round private vessel operators.
    - Gulf Island Water Taxi is one of these operators and is based out of Salt Spring Island. In addition to charter services, they currently hold the School District 64 contract to transport students between islands to attend school.
- In 2021, the Southern Gulf Islands Tourism Partnership’s AquaLink pilot project operated every Saturday and Sunday in September through to October 10, with one scheduled run in the morning and one scheduled run in the afternoon/evening.
    - Operated by Gulf Islands Water Taxi, the service was funded through grants obtained by the Southern Gulf Islands Tourism Partnership, and it featured a new online booking, scheduling and payment system which integrated these business functions.
    - Currently the AquaLink project continues to operate trips Monday – Thursday using any spare capacity on the school bus runs.
- The annual, volunteer-run, Tour des Isles event provides a demonstration of what an interconnected water taxi and public transportation system could look like.
- Interest in potential partnerships around water transportation were expressed by several entities in this project, including members of Penelakut Tribe and private operators.
- Water-based connections have different feasibility requirements depending on distance and season. For instance, the relatively short and protected connection between Galiano and Mayne Islands is more feasible to operate with smaller boats than the longer connection between the Southern Gulf Islands and Salt Spring Island and Sidney, where bigger enclosed boats are required for distance and year-round operation.
- Some desired water-based connections also cross regional district boundaries, such as between Galiano Island, Penelakut Island, and landings within the Cowichan Valley Regional District at Chemainus or Crofton.

3.0 FEASIBLE TRANSPORTATION APPROACHES & CRD ROLE

Based on—and in tandem with—the feedback summarized in **Section 2.0**, the project analyzed potential transportation improvements and feasible supporting service and governance approaches by mode. The results of this analysis were discussed and refined with the respective Transportation Advisory Group for each mode. Opportunities for synergies and increased integration between modes were also considered.

In turn, the analysis of these service approaches informed the recommended role of a CRD transportation service function outlined in the following **Section 3.1** and presented in the example service options in **Section 4.0**. Section 3.1 also provides a high-level summary of the analysis findings and technical background work that were undertaken by mode to summarize and explore the following:



- **Active Transportation** - Existing plans and groups involved with Active Transportation in the SGI, key issues and opportunities related to Active Transportation, best practices, and suggested priorities. Key findings from this work were also summarized in the Southern Gulf Islands Active Transportation Plan.



- **Public Transportation** - Existing and past groups involved in community bus operations within the SGI, types of community transportation services that would be feasible in the islands (such as fixed route shuttles, on demand services, etc.), and operating and governance models. This analysis also explored the potential feasibility for operating public transportation in the SGI as a BC Transit cost-shared service.



- **Water Transportation** - Existing and potential water-taxi operators in the islands, regulatory frameworks, and potential partnerships (such as with area First Nations and School District 64). The analysis also explored service levels and cost and capacity tradeoffs between operating passenger ferry transportation on a seasonal basis (when it is more feasible to use smaller boats), versus year-round operation when larger boats are required due to weather.

3.1 SGI Transportation Service Findings & Recommended CRD Role

The following outlines the key findings and conclusions from the analysis, including a recommended role for the CRD in supporting transportation in the SGI, as well as governance and operating models and service design considerations. These conclusions informed the CRD integrated transportation service options presented in **Section 4.0.**



3.1.1 Key Conclusions – Overall Transportation Integration & CRD Role

- **Recommended Transportation Service Function and CRD Role:** There are potential activities that the CRD would be best-positioned to undertake to support improved transportation options in the SGI. These would require the establishment of a transportation service . These activities primarily relate to supporting funding and coordination across modes and jurisdictions, including:
  - **Provision of funding grants** to local SGI transportation organizations delivering services.
  - **Leveraging infrastructure funding** from other levels of government, and development of partnerships with the School District, BC Ferries and MoTI for coordinated improvements to existing and proposed services.
  - **The ability to hold Licenses of Occupation** (which cannot be held by non-profits) in the provincial road Right of Way that are needed for roadside trails, as well as the ability to provide support for the technical engineering and coordination required by MoTI.
  - **The ability to hold others forms of tenure (land ownership)** as required to support the development of trails or infrastructure.
  - **Support for foundational improvements** that cut across modes of travel and which may be less financially feasible for individual organizations to undertake on their own, including:
    - **Support for marketing and customer communications** across travel modes and islands, such as a website portal.
    - **Trip scheduling, dispatch and customer booking technology** that could be used by community bus organizations on each of the islands plus private water taxi operators, to show available trips or coordinate on-demand service.
    - **Intermodal infrastructure investment** that facilitates connection to and between modes, including bus shelters, bike racks, and wayfinding signage, as well as land-side improvements for connection to active transportation and public transportation at CRD docks, and support for similar coordination with BC Ferries at their terminals.
- **Governance:** It is important that any CRD transportation service function created for the SGI be guided by a **Transportation Commission** made up of local representatives each island and each transportation mode, to ensure that local priorities and opportunities are reflected in its decisions. A similar model exists for Salt Spring Island. The Commission may also itself seek formalized guidance from groups representing each island's interests more broadly, or input from transportation providers for each mode in the way of advisory committees or stakeholder groups.
  - The SGI Transportation Service will also benefit from formalized partnerships with other agencies to achieve economies of scale through shared service models. For example, there was discussion of the opportunities that may exist through collaboration with Penelakut Tribe which has commuter traffic between the islands, or the School District 64 with its contract for daily water taxi service.

- The islands may benefit other **coordinating umbrella entities** for each mode that would span the islands (for example, as exists with the Gulf Islands Trail Society). The Commission could support non-profit organizations to facilitate common functions – for example, the public transportation operators may find an economy of scale if they collaborated on vehicle procurement, administrative and record keeping functions, customer information, etc.).

- **Timing and Phasing** - It would be possible to develop active transportation, public transportation, and water-based transportation networks individually and gradually as funds are available and the coordination between the modes can be designed after they are operational. However, a more holistic approach would be to plan all modes simultaneously and implement them all in a phased and cohesive manner, to ensure that coordination between modes is present from the start of service.



3.1.2 Key Conclusions: Active Transportation

- **Operating Model:** As outlined in the Overall Transportation Integration section above, the active transportation focus for the CRD should be on supporting local SGI organizations and other third parties who would deliver walking and cycling connections where they meet transportation objectives. Depending on funding levels, the range of suggested activities within this role includes:
  - **Annual active transportation grant program** available to local SGI organizations to support the development and maintenance of walking and cycling connections, such as supporting coordination costs and purchase of materials. Criteria for such a grant program would be typically determined by the proposed Transportation Commission but project criteria would ideally prioritize [a] trails or paths that have a transportation objective in connecting key community destinations, and [b] connections that are accessible to both pedestrians and bicycles / other wheeled devices.
  - **Supporting more complex and multi-jurisdictional projects** by leveraging grant funding from other levels of government, holding tenure and Licenses of Occupation as required, coordinating with MoTI and their road maintenance provider to facilitate projects and planning, providing support for technical elements (engineering review of designs, archaeological assessments), and providing project management support.
  - **Providing funding and support towards active transportation infrastructure and information**, such as funding and tenure for the placement of bike racks and maintaining current trail information on the CRD's publicly accessible regional mapping GIS tool.
  - **Organizing an annual trail network coordination event** (potentially in partnership with the Gulf Islands Trails Society) to bring together the multiple organizations working on issues related to the development of trails and pathways within the SGI. Ideally held in the fall when groups are preparing for the busy spring season of construction and maintenance, such an event could involve not only local trail societies, CRD SGI Electoral Area and Regional Trails staff, representatives from the Parks and Recreation Commissions, and the new Transportation Commission, but also Parks Canada and BC Parks staff and potentially also representatives from the Ministry of Transportation and Infrastructure or their maintenance provider staff.

3.1.3 Key Conclusions: Public Transportation

- **Operating Models:** A range of operating models were explored, including [1] a BC Transit model, [2] operation by community bus societies with a greater proportion of paid staff and coordination between them, and [3] status quo delivery by individual community bus societies continuing to operate on a primarily a volunteer-basis. Option 2 or 3 are recommended depending on funding availability, with Option 2 offering the most functional sustainability and local economic benefits.
  - A BC Transit model is **not** recommended for the SGI for the following reasons:
    - It would be more significantly more expensive, even with opportunity for provincial cost-sharing. This is due to vehicle type, requirements for a ratio of spare vehicles, maintenance requirements, staff compensation considerations, and decreased revenue opportunities.
    - BC Transit does not currently allow charter services to be delivered with its vehicles.
    - Under BC Transit, operation of services would likely be grouped together, meaning a single entity would likely be procured to operate all SGI services, which would mean potentially less ability to retain local control and economic development benefits from the operation.

- **Service Type and Levels** – Given the range of population sizes, geographic shapes and road network types on the islands, there is also a corresponding range of potential service levels and types of services to be offered. For instance, fully on-demand passenger transportation has been working well on Saturna Island (which has a lower density population distributed across the island) while the long narrow form of Galiano makes fixed route transit more viable.
  - Future SGI public transportation service models should consider a range of service types, depending on the island and season. In particular, if technology were provided to support it, digital on-demand transit, operating during trip windows oriented to key ferry times, would likely offer the most efficient operation and highest ridership.
  - Depending on funding levels, the recommended priority order for service is:
    - Seasonal services with a focus on the period between the last week of June and Labour Day.
    - Services during the spring/fall shoulder seasons and winter focused on meeting morning and afternoon peak ferry times and school boat runs.
    - Additional midday services, particularly on Fridays and weekends.
  - Complementing public transportation, car stop programs should be maintained/restarted after the pandemic, and other ride hailing, ride sharing and taxi services can also be considered.

- **Vehicle Type** – Smaller vehicles are preferred. While in some cases cars may be viable, minivans and smaller buses with a capacity of 7-15 passengers would likely offer the most flexibility and cost-efficiency.
  - There are significant federal funding programs now available to support procurement of electric vehicles for transit systems, as well as the associated charging infrastructure. However, these programs are only available in partnership with a supporting local government; for the CRD to be a sponsoring partner it needs a dedicated SGI service to be established.

3.1.4 Key Conclusions: Water-Based Transportation

- **Operating Models and CRD Role:** Some of the considerations around water transportation include its cost, regulatory requirements, and operating conditions. In general, water transportation is the most expensive service to operate. For instance:
  - Smaller boats that are viable for fair weather and for year-round operation in more protected routes (such as between Galiano and Mayne) have an operating cost per hour of service that is 3-4 times that of typical community bus services.
  - Larger vessels required for year-round operation on more open routes such as connection to Salt Spring Island, and that remain reliable during more severe weather, have an operating cost per hour of service that is 7-10 times that of typical community bus services.

  Because of the higher cost and regulatory complexity, it is not recommended that the CRD operate or solely contract inter-island water taxi services at this time. Instead, it is recommended that the focus of any CRD involvement in water-based transportation be focused on facilitating partnership development, as well as supporting the implementation of supporting infrastructure and technologies that can make provision of water-taxi services by private operators more viable and connected, for example:
    - Support for marketing and customer communications, such as an SGI integrated transportation website that includes water taxi information.
    - Trip scheduling, dispatch and customer booking technology that could be used by private water taxi operators to show available trips or coordinate on-demand service, such as that developed for the AquaLink project.
    - Land-side infrastructure improvements at docks to enable coordination between modes, such as wayfinding signage, bike racks and benches/shelters for connecting public transportation.

- **Service Levels:** For the purposes of this study, sample service levels and routes were explored to identify potential operational costs for service providers to better serve the SGI and understand the economy of scale and the funding gap between user fares and operation costs to meet desired interisland connections. Based on previous surveys, workshops and more recent stakeholder and public engagement, service preferences cited by both residents and businesses relate largely to the gaps in the existing BC Ferries service.
  - Similar, to the priorities outlined for public transportation, there is a mix of different travel needs and priorities for year-round resident and businesses. Key service priorities relate to building onto the Monday to Thursday commuter connections already taking place between SGI and Salt Spring Islands, and enhancing SGI inter-island connections seasonally and then year-round.

4.0 CREATING AN SGI TRANSPORTATION SERVICE



Based on the community feedback described in **Section 2.0,** and building from the analysis and recommendations for a CRD role outlined in **Section 3.0**, this Transportation Integration Plan supports the creation of a new CRD transportation service function for the Southern Gulf Islands Electoral Area.

Similar to the model already successfully implemented to further sustainable transportation in the CRD's Salt Spring Island Electoral Area, an SGI transportation service would be guided by an SGI Transportation Commission made up of local representatives.

The primary objective of an SGI transportation service would be to provide financial and coordination support to the active transportation, public transportation, and water-based mobility initiatives that have been—and would continue to be—led by local non-profit and private organizations on the islands. The CRD service would be targeted to fill the gaps in the existing local transportation framework by holding tenure and/or acting as the sponsoring local government when required for transportation infrastructure investment and funding applications to higher levels of government.

The role of the CRD transportation service would also be to encourage investment in active transportation road improvements and cycling infrastructure, provide integration of water and land public transportation systems, and facilitate partnerships between other agencies and community groups advancing transportation solutions in the region.

With a formal Southern Gulf Islands transportation service, the CRD can:

- Establish a Transportation Commission with representation from each island, which could:
  - Set budgets to fund locally-based priorities.
  - Provide funding to local groups (eg. trail societies and community bus societies) to deliver transportation services / improvements.
  - Provide funding towards partnerships for inter-island connections.
- Support the development of integrated transportation services.
- Provide staff support to seek larger federal and provincial grants.
- Hold Licenses of Occupation and coordinate with other entities to develop roadside paths.
- Support the implementation of technology and infrastructure that can be shared across local service providers, islands and modes.

4.1 Transportation Service Example Funding Levels and Options

While a portion of funding for a Southern Gulf Islands transportation service function may come from user fares, partnerships, and other funding sources it can leverage, if it is approved by Southern Gulf Islands voters in a referendum the service's ongoing funding would also come from property taxes up to a maximum limit.

Service Establishment Bylaw Process

Establishing a formal Regional District transportation service function for the Southern Gulf Islands Electoral Area would require a service establishment bylaw be approved by the CRD Board, and the electorate in a referendum, which could coincide with the October 2022 general elections.

The level of property tax limit approved determines the level of service and the potential scope of what an SGI transportation service could offer.

This section presents four examples of service options (Options A-D) and funding levels to meet the range of transportation needs identified by the community.

- **The example options are based on information provided by SGI community organizations** including trail and bus societies, costing analysis and best practices from other communities, as well as the results of round 1 engagement. See also **Section 4.1.1 Overview of Cost Assumptions** for further information.
- **The options presented here have been refined based on feedback from the community** in the second round of engagement held in January–February 2022. These current options present the same upper limit maximum tax requisition with those presented for engagement, but the allocations between modes have been adjusted to reflect feedback (see also **Section 4.3**).

Ultimately if an SGI transportation service was established, the funding priorities would be determined by the Commission of local representatives, within its annual budget. Therefore, the options are only examples of the level of service that could be supported with various amounts of funding. The Commission would have the ability (and responsibility) to allocate funding based on local priorities and the merit of grant applications by service providers. This also means that they would be able to "mix and match" elements of service options, including adjusting allocations between islands and between modes, to best meet the needs of each specific island and the integrated transportation network as a whole.

Taxation and Funding Implications

In addition to calculating the cost of each example option based on the level of service provided, the following tables also show the property tax implication for each, based on the 2022 assessed values of properties in the SGI.

The amount per property would vary depending on the property's value. For this reason, a cost per $100,000 and per $1,000 of assessed value is also shown.

4.1.1 Overview of Cost Assumptions

The sample options draw from a wide range of cost inputs, including information from existing service providers, cost details from similar communities, and current CRD financial information and practices. Developing cost estimates was a high-level process for many of the elements due to the following:

- **Ultimately it would be an SGI Transportation Commission that would determine the recommended mix of modes, services and funding levels** (within a total potential requisition amount) if an SGI transportation service is established. The allocation amounts shown reflect feedback and priorities heard through this process. The sample amounts also strive to keep the service levels and cost totals reasonable, within an amount that would be feasible within the population levels, community context, and tax base.
- **Each of the five largest SGI islands has different population levels, needs and capacities between them.** This means that the Commission may adjust funding levels per mode on an island-by-island basis. It also means that cost projections by island and mode are impacted by unknowns, such as the level of volunteer effort that would likely continue to support operation of some of the modes, as well as the degree to which some of the various transportation-related organizations may partner together to share costs, where practical.

A fundamental proposed role for the CRD in an SGI transportation service is to use grants to fund local transportation service providers. These non-profit operators will have varying budgets that reflect their operational and capital needs, depending on the proportion of continued volunteer support (particularly in the case of public transportation), as well as sharing of some of the common cost elements between islands / modes, grant funding, other local fundraising, and revenue sources such as fares, charters, donations in kind, etc.) Grant funding will be application based and the Commission will have criteria to ensure equitable funding is allocated to ensure service needs are met, as demonstrated by the applicant's proposal and as appropriate for the demand and population of each island.

The approximate amount shown per island are rough estimates, but also grounded in real numbers based on the operational budgets of existing service providers; **the distribution by mode and island would ultimately be made by a Transportation Commission**, which would have the discretion to award according to the need advanced by the community groups in order to meet the objective of an integrated, effective transportation network.

The sample options in the following section provide details on service levels by mode. However, general assumptions by mode across the options are as follows:

- **General**: Operating and capital costs were based on 2021/22 actuals or budgets where they were available, with estimates from previous years adjusted for inflation.
- **Local Governance:** Staff costs related to supporting an SGI Transportation Commission (administration, grant support, record keeping, correspondence) are included in the CRD Staffing and Coordination lines for options.
- **Active Transportation**:
  - Amounts shown are a notional level for potential grant amounts to help offset the cost of materials, volunteer appreciation, and administrative / insurance costs for trail society projects, based on the feedback from the primarily volunteer-run societies on some of their key needs.
  - Grant amounts shown **do not include** the significant amounts that are available for active transportation infrastructure through federal and provincial funding programs. (See **Section 7.2 – Funding** in the SGI Active Transportation Plan for a list).These larger senior government amounts would be **in addition to what is shown** and the SGI would have the ability to access these if it had a transportation service through the CRD and therefore a sponsoring local government and the staff to apply for and help manage those projects.

Overview of Cost Assumptions, Continued

- **Public Transportation**:
  - Operating costs reflect a range of operating models and service types, that span from an average of $45 per hour of service (for services operated primarily by volunteers) to $70 per hour of service (for those primarily operated by paid staff). The hours of service per year varies by option and the service levels per island would depend on the operating model. Operating costs include wages and benefits or honouriums for driving, dispatch and administrative staff (as applicable), insurance, maintenance, fuel, tires, cleaning and administrative supplies, and an amount towards office space / vehicle storage.
  - Capital costs assume two vehicles per island (one in service, plus one spare) using vans (in the low estimates) or a mix of vans and minibuses in the high estimates. For purposes of comparing across options, an amortized lease amount per vehicle was used with the assumption that half of the vehicles would be new and half would be used. (Therefore, capital costs may be less in cases where existing purchased community bus vehicles are used or private volunteer vehicles operate the service).
  - A 5% contingency amount, 6% CRD administration amount and notional amounts for marketing and coordination were also included in public transportation estimates.
  - Costs shown are net of revenues and assume amounts for passenger fares and charters to offset costs. The average passenger fare assumes option of discounted travel for regular users (such as tickets), plus also that some services may continue to be on a by-donation basis. Revenue was adjusted by option and operating model to reflect likely ridership based on past performance and peer B.C. communities. It is assumed that some level of fundraising and/or sharing of space and administrative functions would still take place in order to operate service as cost-effectively as possible.
  - Evaluation of a BC Transit model also took into account the vehicle requirements and lease fees, average operating costs, BC Transit administrative costs and potential cost sharing for that type of service. It is not shown in the options here as it cost more and was less feasible. (See **Section 3.1.3**)
- **Water Transportation**: Evaluation of water transportation services, models and costs (outlined in Appendix D) took into account different regulatory requirements, boat size and operating costs depending on route and time of year. Given that costs per hour of service are high (ranging from approximately $200 - $500 per hour depending on size of boat), the options focus on contributions towards partnerships and providing contributions towards foundational improvements that would help all private water taxi operators (trip booking software, dockside improvements, etc.)
- **Supporting Infrastructure and Maintenance**: Includes a notional amount. At lower ends, budget reflects information from CRD on typical insurance and maintenance amounts for what is shown, while higher amounts reflect a small annual budget towards minor infrastructure improvements such as bike racks, dockside amenities, etc.
- **Coordinating and Marketing Tools**: Includes amounts for CRD contribution to these items, such as to an on-island organization(s) that may develop and provide these services or internally.
- **CRD Staffing and Coordination**: Includes wages and benefits amounts for additional CRD staff to support the transportation service function (who could be based on the islands). FTE and job classification details are outlined in each option, with classifications reflecting current pay scales and estimates depending on years of service / experience. A 6% administration fee is also included in the amount shown (as required by CRD) to reflect organizational overhead costs beyond staff hired to support the service (needed for allocations to Finance, IT, Human Resources, etc.)
- **Annual Funding Levels / Costs:** Reflects 2022 SGI property assessments and approximate annual property tax impacts per $100,000 (or per $1,000) assessed value. See also note on bottom of page 23.

Option A – Status Quo

(no additional costs)

This option reflects the current state today. Local SGI transportation organizations operate on their own and seek donations, grants, and other revenues as they can as there is no ability for the CRD to provide service or funding to them. The CRD does not have staff or budgets to access larger provincial and federal funding grant programs on behalf of the SGI transportation societies and there is no specific transportation decision-making structure for the electoral area.

There is no funding available from the CRD for supporting infrastructure, maintenance, or marketing and coordinating tools. There is no coordination for integrated transportation options and no staff support.

Mode	Funding Allocation	Example Service Levels
Local Governance	n/a	**No specific transportation decision-making structure.**
Active Transportation	$0	**Ad hoc grants only**; depends on each island's trail organization(s) to raise funds, seek grants, and build/maintain/operate trails, get insurance, hold tenure where possible.
Public Transportation	$0	**Ad hoc grants only**; depends on each island's community bus society to raise funds, seek grants, own/maintain vehicles, meet regulatory requirements, and operate service.
Water Transportation	$0	**No change.** Water connection would still depend on BC Ferries or unsubsidized, uncoordinated private water taxi operators.
Supporting Infrastructure & Maintenance	$0	**No additional funding from CRD**
Coordination and Marketing Tools	$0	**None** other than what individual organizations create.
CRD Staffing & Coordination	$0	**No change.** CRD does not fund or support transportation in the SGI. No coordination for integrated transportation options. No ability for CRD to apply for transportation grant funding from other levels of government. No staff support, or engineering or planning expertise.
Annual Funding Level & Cost	$0	**No change** to transportation-related property taxes (stays zero)

Option B – Basic Grants

(at a maximum requisition[1] up to ~$270,000 annually)

This option creates a very basic transportation service for the SGI and establishes a Transportation Commission made up of local representatives. The Commission would set priorities and therefore the annual budget funding levels between the three modes and would fine-tune allocation between islands based on their specific needs.

The most limited and lowest cost of the three funded options, this example focuses on providing small grants to existing transportation groups. As part of these grants, some limited funding would be available to local trail societies and community bus societies. The amount for community bus societies would allow public transportation service to operate a few days a week, primarily in summer high season, with most staff volunteers.

Water travel opportunities would primarily be provided by BC Ferries, unless a private operator saw the potential for additional water taxi services. There would be limited funding available for supporting measures like infrastructure, marketing, and communications. This option includes provision for a part-time (0.5 to 0.8 FTE) CRD coordinator role to support the Commission, assist with the grant program functions, and would be able to apply for some external grants on behalf of the SGI EA.

Option B – Basic Grants – Example Attributes by Mode

Mode	Example Funding Allocation	Example Service Levels
Local Governance	Costs are included in CRD staffing & coordination item.	• **Establishes SGI Transportation Commission** with SGI volunteer commissioners to advise on local priorities, guide planning and decision making, and make recommendations for an annual budget. • **Part-time staff support** for the Commission and to administer internal and external grant programs.
Active Transportation	+/- $32,000* * Suggested allocations to travel modes are subject to Commission priorities	• **Could support small annual CRD grants** to local trail societies to help offset costs of materials and coordination for active transportation trails. Roadside trails would be funded through third party grants; see next bullet. • **Funds staff to support application for 3rd party grants to fund construction of roadside trails,** plus manage any tenure held by CRD. • **If requested, CRD could hold tenure** (such as Licenses of Occupation in the public road Right of Way) but would not operate or maintain trails. Trails societies would continue this function as now.

* Suggested allocations between travel modes are subject to Commission priorities

[1] **Important Note on Maximum Requisition**: The CRD would not collect the maximum requisition for many years – initially the service would be funded by a fraction of the maximum allowed by the bylaw and as stated here. The budget/requisition amount would increase according to inflation, and ultimately, the service priorities and budget allocated will be proposed by the Commission for approval by the CRD Board and may change from year to year.

Option B – Basic Grants – Example Attributes by Mode		
Mode	**Example Funding Allocation**	**Example Service Levels**

Public Transportation	+/- $141,000*	• **Could support annual CRD grants** to local community bus societies towards operations costs such as maintenance and insurance. (Total amount would depend on Commission priorities, would likely vary by island and amount shown is net of any revenues).
		• **Funding level likely means:**
		  ○ Operated by combination of volunteers and some paid staff.
		  ○ Likely more limited and seasonal operation.
		• **The community bus societies would own and maintain their own vehicles**. CRD wouldn't operate services but could apply for grants to purchase vehicles, then lease them to providers).
		• **Provision for modest car stop program support** (signage, promotion) in tandem with community bus grant program.

Water Transportation	$0*	• **No change, except for coordinating tools (see below).** Water connection would still depend on BC Ferries or unsubsidized, uncoordinated private water taxi operators.
Supporting Infrastructure & Maintenance	+/- $6,000*	• **Small annual (capital reserve) fund** to support targeted infrastructure improvements and maintenance, such as **bike racks, benches, and bus stop signage.** • **CRD able to fund and own assets** (such as buses, benches, etc.) and secure use of road right-of-way where needed.
Coordination and Marketing Tools	+/- $10,000*	**Funding for coordinating tools, such as:** • **Consolidated SGI transportation website** hub with links to 3rd party schedules. • **Contribution towards land/water transportation trip-booking system** supporting bus and water taxi operators.
CRD Staffing & Coordination	+/- $81,000	• **Modest CRD administration and coordination role (**0.5 – 0.8 FTE), including administering capital/operating grants to non-profits and Commission support. • **Owning assets and holding tenure** when required by other levels of government. • **Securing infrastructure funding** from senior governments •**Limited partnership development** and integrated planning. **Staffing estimates include provision for** 0.8 FTE (J15 position) Administrator to help develop and administer local grant program, support Commission, and support funding applications to other levels of government, licenses of occupation, etc.
Annual Funding Level & Cost	Maximum of $270,000	• At maximum requisition, property tax impacts of up to approx. $39 per year for the average homeowner, or up to $5.50 per $100,000 assessed property value $0.06 per $1,000).

* Suggested allocations between travel modes are subject to Commission priorities.

Option C – Semi-Integrated Transportation System

(at a maximum requisition[1] of up to ~$450,000 annually)

In comparison to Option B, this option provides more enhanced funding to local transportation organizations and coordination support from CRD staff. Like Option B, it establishes a Transportation Commission made up of local representatives to set annual priorities and budget funding levels between modes and islands.

However, it also increases funding to augment service levels, particularly for community buses which would then be able to operate across more days and months of the year and with a higher proportion of paid staff (which in turn supports local employment in the islands). This option also provides additional support for leveraging larger funding grant programs from other levels of government, as well as increased marketing and communications tools and strategic planning to support the development of an integrated transportation network.

Water travel would still be primarily provided by BC Ferries and private water taxi operators, but this option would have a small amount of capacity to support developing water transportation partnerships. This option includes provision for one full-time (1.0 FTE) CRD coordinator / planner role to support the Commission and provide more fulsome support towards funding programs to local transportation groups, external grant applications, partnership development, service promotion and strategic planning.

Option C – Semi-Integrated Transportation System – Example Attributes by Mode		
Mode	**Funding Allocation**	**Example Service Levels**
Local Governance	Costs are included in CRD staffing & coordination item.	• **Establishes SGI Transportation Commission** with SGI volunteer commissioners to advise on local priorities, guide planning and decision making, and make recommendations for an annual budget. • **Full-time staff support** for the Commission and for strategic integrated transportation planning and to administer internal and external grant programs.

[1] **Important Note on Maximum Requisition**: The CRD would not collect the maximum requisition for many years – initially the service would be funded by a fraction of the maximum allowed by the bylaw and as stated here. The budget/requisition amount would increase according to inflation, and ultimately, the service priorities and budget allocated will be proposed by the Commission for approval by the CRD Board and may change from year to year.

Option C – Semi-Integrated Transportation System – Example Attributes by Mode		
Mode	**Funding Allocation**	**Example Service Levels**
 **Active Transportation**	+/-$60,000*	• **Could create more robust CRD grants** to local trail societies to help offset costs of materials and coordination for active transportation trails. Roadside trails would be funded through third party grants. • **Funds staff to support application for 3rd party grants to fund construction of roadside trails,** plus manage any tenure held by CRD and assist in coordinating between groups. • **If requested, CRD could hold tenure** (such as Licenses of Occupation in the public road Right of Way) but would not operate or maintain trails. Trails societies would continue this function as now.

 **Public Transportation**	+/-$243,000*	• **Could support annual CRD funding** to community bus societies for more regular service. (Total amount would depend on Commission priorities and amount would likely vary by island depending on travel need, operating model and service levels; amount shown is net of revenue from fares, charters, fundraising).
		• **Funding level likely means:**
		  ○ Greater proportion of paid coordinator and driving staff
		  ○ More days and months of service than Option B
		• **The community bus societies would own and maintain their own vehicles**. CRD could apply for grants to purchase and own vehicles, then lease them to service providers.
		• **Provision for funding support and regional coordination** for car stop programs + car share, etc.

 **Water Transportation**	+/-$10,000*	• **Funding available to convene partnerships** aimed at supporting regular scheduled water taxi services, but likely cannot fund service without other budget trade-offs. • **Coordinating tools (see below).**
 **Supporting Infrastructure & Maintenance**	+/- $6,000*	• **Small annual (capital reserve) fund** to support targeted infrastructure improvements and maintenance to better connect modes, such as **bike racks, benches, and bus stop signage.** • **CRD able to fund and own assets** (such as buses, benches, etc.) and secure use of road right-of-way where needed.
 **Coordination and Marketing Tools**	+/-$15,000*	**Funding for coordinating tools, such as:** • **Support for consolidated SGI transportation communications and marketing**, online information, promoting car shares, etc. • **Contribution towards land/water transportation trip-booking system** that can be used by bus and water taxi operators.

* Suggested allocations between travel modes are subject to Commission priorities.

Option C – Semi-Integrated Transportation System – Example Attributes by Mode		
Mode	**Funding Allocation**	**Example Service Levels**
CRD Staffing & Coordination	+/- $116,000	• **More substantive CRD administrative and support role** (1.0 FTE total), including grant and contract management, administration, work planning and Commission support. • **Owning assets and holding tenure** when required by other levels of government, including technical requirements (geological studies, archeological studies, etc.). • **Securing infrastructure funding** from senior governments. • **Partnership development**, such as water taxi •**Strategic planning and coordination** to implement an integrated transportation system, with enhanced ability for it to function and be communicated as a regional network. **Staffing estimates include provision for** 1.0 FTE (J17 position) Analyst to give professional level service such as managing licenses of occupation, roadside trail project management, and strategic planning, funding applications to other levels of government, and local grant programs. Would also support Commission and manage records and correspondence.
Annual Funding Level & Cost	Maximum of $450,000	• At maximum requisition levels, property tax impacts of up to approx. $65 per year for the average homeowner, or $9.17 per $100,000 assessed property value ($0.09 per $1,000)

* Suggested allocations between travel modes are subject to Commission priorities.

Why Are Staff Needed for the Transportation Service?

- Providing CRD service requires staff to **manage, coordinate, and administer** the various functions expected of the service. Staff would provide a range of expertise, including writing tenders, procurement, contract management, grant writing and administration, engineering review, negotiating Licenses of Occupation, integrated scheduling, etc. that are specialized skills that the volunteer commissions may not have, or if they do, could be taken off their plates.
- **Staffing in the right places and times in turn can better enable precious volunteer capacity to be used where it is the most valuable**, such as by providing staff support to volunteer Transportation Commission members or specialized grant and procurement support to help get transportation societies the resources they need.
- **Having a staff role can provide the continuity of knowledge and relationships** to support long term priorities and project success, especially more complex ones that may involve multiple organizations. This helps projects move forward in a more timely way, and assists local groups with more effectively connecting into and benefiting from other resources and capacity available through the CRD.

Option D – Fully-Integrated Transportation System

(at a maximum requisition[1] of up to ~$675,000 annually)

This option provides the highest level of funding towards SGI transportation services. However, to be clear, the example service levels are still modest as they try to maintain funding at a level that reflects the nature of the islands as smaller, more rural communities and also the fact that many residents are on fixed incomes and may have less capacity to pay more. This option's example service levels provide a fulsome starting point for an integrated transportation network that leverages funding from other levels of government, while also still building off of the islands' volunteer capacity and community connectedness to deliver services as cost-efficiently as possible.

Like Options B and C, it establishes a Transportation Commission made up of local representatives to set annual priorities and budget funding levels between modes and islands. However, at this level community bus operations would likely be able to operate year-round and primarily with paid staff. This option also provides for the ability to not only convene water transportation partnership discussions but also potentially to contribute to water transportation service partnerships.

This option includes provision for up to 1.5 FTE positions, including a full-time administrator / planner role, a part-time coordinator, and engineering/ professional contract expertise to support development of roadside trails with MoTI. The coordinator and administrator roles would support the Commission and provide more fulsome support towards funding programs to local transportation groups, external grant program applications, partnership development and strategic planning, including support for year-round operation of community bus services.

Option D – Fully-Integrated Transportation System – Example Attributes by Mode		
Mode	**Funding Allocation**	**Example Service Levels**
Local Governance	Costs are included in CRD staffing & coordination item.	• **Establishes SGI Transportation Commission** with SGI volunteer commissioners to advise on local priorities, guide planning and decision making, and make recommendations for an annual budget. • **Full time staff support** for the Commission and for strategic integrated transportation planning and to administer internal and external grant programs.

[1] **Important Note on Maximum Requisition**: The CRD would not collect the maximum requisition for many years – initially the service would be funded by a fraction of the maximum allowed by the bylaw and as stated here. The budget/requisition amount would increase according to inflation, and ultimately, the service priorities and budget allocated will be proposed by the Commission for approval by the CRD Board and may change from year to year.

Option D – Fully-Integrated Transportation System – Example Attributes by Mode		
Mode	**Funding Allocation**	**Example Service Levels**
 **Active Transportation**	+/-$124,000*	• **Could create CRD grants** to local trail societies to help offset costs of materials and coordination for active transportation trails. Roadside trails would be funded through third party grants; see next bullet. • **Funds increased staff to support application for 3rd party grants to fund construction of roadside trails,** plus provide engineering expertise to facilitate their planning and construction, manage any tenure held by CRD and assist in coordinating between groups. • **CRD could hold tenure** (such as Licenses of Occupation in the public road Right of Way) and work with trails societies to support continued operation and maintenance of trails.

 **Public Transportation**	+/- $294,000*	• **Could support annual CRD funding** to local community bus societies towards year-round service. (Total amount would depend on Commission priorities and be allocated as part of an application process. Grant requests by the different bus societies would be based on operating models and service levels; estimates shown are net of any revenues from fares, charters, fundraising).
		• **Funding level likely means:**
		  ○ Greater proportion of paid coordinator and driving staff
		  ○ Year-round operation with more days and months of service than Option C. For instance, service seven days a week in the summer and 3-6 days per week rest of the year depending on service levels per day.
		• **The community bus societies would own and maintain their own vehicles**. CRD could apply for grants to purchase and own vehicles, then lease them to service providers (but CRD would not operate the bus services).
		• **Funding support and regional coordination** for car stop programs + car share, etc.

 **Water Transportation**	+/- $57,000*	• **Convenes and supports a financial contribution** towards partnerships for seasonal and potentially year-round water taxi services. • **Coordinating tools (see below).**
 **Supporting Infrastructure & Maintenance**	+/- $16,000*	• **More robust annual (capital reserve) fund** to support targeted infrastructure improvements and maintenance to better connect modes, such as bike racks, benches, and bus stop signage **plus dockside improvements.** • **CRD able to fund and own assets** (such as buses, benches, etc.) and secure use of road right-of-way where needed.

* Suggested allocations between travel modes are subject to Commission priorities.

Option D – Fully-Integrated Transportation System – Example Attributes by Mode		
Mode	**Funding Allocation**	**Example Service Levels**
Coordination and Marketing Tools	+/- $15,000*	**Funding for coordinating tools, such as:** • **Support for consolidated SGI transportation communications and marketing**, online information, promoting car shares, eBike, etc. • **Contribution towards land/water transportation trip-booking system** that can be used by multiple bus and water taxi operators.
CRD Staffing & Coordination	+/-$169,000	• **As outlined in Option C** with additional assistance required to manage/coordinate community bus and integrated network in year-round operation, enhanced water taxi operation, PLUS access to enhanced technical support for the transportation service, such as engineering for development of roadside improvements. **Staffing estimates include provision for:** ○ 1.0 FTE (J17 position) Analyst to give professional level service such as managing licenses of occupation, roadside trail project management, and support strategic planning, funding applications, marketing, and local grant programs. ○ 0.5 FTE (J12 position) Administrative support to manage records, correspondence, Commission support.
Cost	Maximum of $675,000	• At maximum requisition levels, property tax impacts of up to approximately $98 per year for the average homeowner, or $14.10 per $100,000 assessed property value ($0.14 per $1,000)

* Suggested allocations between travel modes are subject to Commission priorities.

Why an Integrated Approach to Transportation Matters

Resilience and Choice: Seamless multimodal connectivity gives people diversity of options and the ability to choose a mode that suits their needs, financial capacity and physical abilities.

Using Resources More Effectively: An integrated network can fine tune its offerings based on distance and demand, and use its budget to support the transportation needs of a wider section of the community.

Equity and inclusivity: An integrated transportation system develops a number of different modes in a community at the same time, thereby balancing out the needs of the various users.



4.2 Option Evaluation

A high-level evaluation of these options was carried out based on how much each option contributed to the priorities identified in the first round of engagement. When collated across all modes, these priorities are to:

- Better connect to major origins and destinations on the islands.
- Improve safety of roadside conditions for pedestrians and cyclists.
- Reduce the need to drive for everyone as well as provide better travel options for youth, seniors and lower-income populations.
- Reduce greenhouse gas emissions and environmental impact.
- Increase the cohesiveness of transportation options to better facilitate connection and economic development on and between islands.

The development of options and their evaluation also took into account community members who expressed a reluctance to see an increase in taxes to support improved services, as well as strong community feedback on ensuring local control, continued support of grassroots organizations and that solutions are right-sized and specific to the unique character and opportunities of the islands.

While Option A – Status Quo does not have any tax impacts on the community, it also does nothing to improve transportation options on the islands.

The other options respond to the improvements requested by the community in varying degrees. They:

- **Fund grants to local trail societies** to help them more easily plan for and build walking and cycling routes connecting key community destinations.
- **Provide stable funding to island community bus societies** to help them continue operations, provide service across more times of the year, and be able to financially support a larger share of their drivers.
- **Create coordinating tools that support multiple types of travel,** including a website for integrated SGI transportation showing travel options and trip booking software.
- **CRD sponsorship and staff support to access even more funding for projects in the SGI through provincial and federal programs,** such as funding for roadside trails and to offset the cost of public transportation vans.
- **Other CRD support as needed** to help local organizations make transportation happen, such as developing partnerships, holding the Licenses of Occupation required to develop roadside trails, maintaining insurance, and leasing or owning land and vehicles if required and a local organization is not able to do so.

The graphic below summarizes the example service options and how they compare against each other. Based on the evaluation above, Option C and D meet all the priorities identified by the community.

Of those two options, Option D has the higher cost, but it is also better able to meet the key community priorities of supporting improvements to roadside trail safety, enabling year-round access to community bus services, and beginning to support inter-island water transportation in a limited way through partnerships. At the same time, Option D also strives to balance providing a sustainable and appropriate starting point for an integrated transportation network with the need to be as cost-effective as possible.

Summary of Transportation Service Example Options

Option Attributes by Mode	Option A – Status Quo	Option B – Basic Grants & Support	Option C – Semi-Integrated Transportation System	Option D – Fully Integrated Transportation System
Decision-Making Structure (Governance)				
Active Transportation				
Public Transportation				
Water Transportation				
Supporting Infrastructure and Maintenance				
Coordination and Marketing Tools				
CRD Staffing & Coordination				
Costs				

Ranges from ○ = No Change to ● = Substantial Change / Improvement

4.3 Round 2 Engagement Results

Round 2 engagement took place in winter 2022 and sought feedback on the level of support for the four service options (Options A to D) described in **Section 4.0.**

Engagement involved an online survey and four virtual Q&A sessions (conducted over Zoom). An FAQ was sent to every SGI mailbox. This mail-out explained the proposals and encouraged people to fill out the survey and attend the virtual meetings.

During the Round 2 engagement, 1.5k people visited the Get Involved (Bang the Table) site, and 365 surveys were submitted.

The Round 2 Engagement found that the majority of people (67%) supported a tax requisition to increase transportation solutions in the islands.

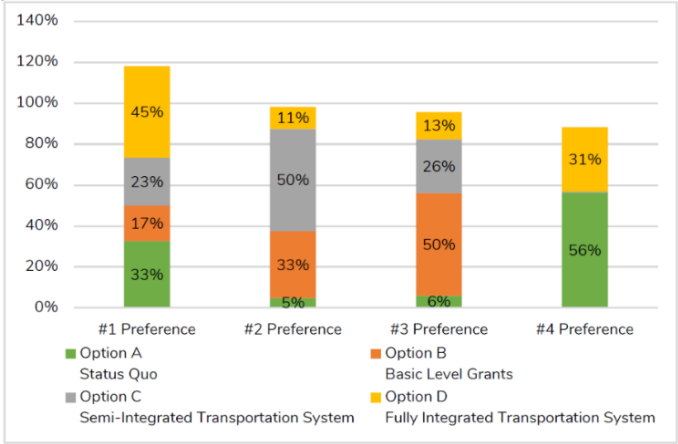
Eighty-five percent of respondents to the survey indicated a desire for change from the current level of transportation service on the islands.

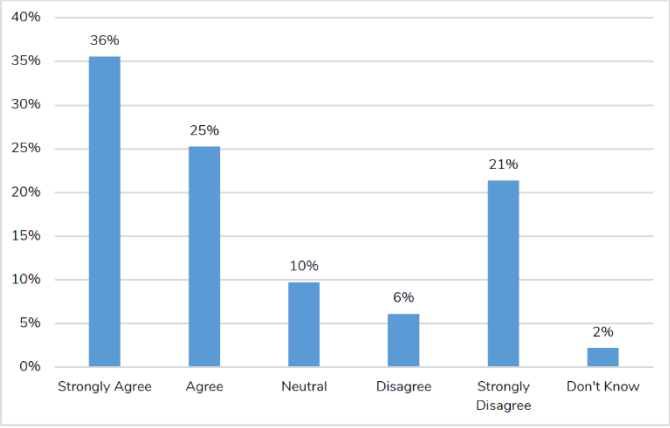
The "Option D - Fully Integrated Transportation Service" was the first preference for the highest number of participants (45%), and "Option C - Semi-Integrated Transportation Service" was the second preference for most participants (50% of participants had it as their second choice).

Respondents were also asked whether they agree or disagree with bringing a proposed Service Establishment Bylaw forward to a referendum. Respondents either strongly agree (36%) or agree (25%). About a quarter of respondents strongly disagree (21%) or disagree (6%).

Service Options A through D presented in this report are nearly identical to those presented for Round 2 engagement and had identical upper limit totals for each. However, the final versions of the Options presented in this document have had minor adjustments to the allocations between modes within each option to reflect feedback heard during engagement.

Likewise, the estimated cost per $100,000 assessed value presented during engagement was actually higher than in the final version in this report because the engagement figures were based on the previous 2021 assessed values for the SGI.





In additional comments respondents indicated reasons for why they were for or against moving the establishment of a SGI Transportation Service Establishment Bylaw to a referendum, and these are captured in the box below:

Round 2 Public Survey Results – Reasons Given For and Against Moving to Referendum

Why to support a Referendum

- Better safety for pedestrians and cyclists
- The need for alternatives to private vehicles, especially when considering environmental impacts and an aging population that is unabl to drive
- Better connections between communities
- Independence for youth and seniors
- Value in having a single coordinating body

Why not to support a Referendum

- Affordability and tax impacts
- Concerns about the transportation service function being process and staff heavy
- Concerns about CRD ability to implement the plan efficiently and effectively
- No need for change

From the results, the desire for change from the status quo seemed to be top of mind of most respondents, with a combined 78% choosing either “Option D - Fully Integrated Transportation Service” or “Option C - Semi-Integrated Transportation Service” as their first preference.

An integrated transportation system encompassing walking, cycling, public transportation, and water-based transportation would change the economic geography of the Southern Gulf Islands region and enable shared services and increased connections throughout the islands. Investment in active transportation and public transportation provides a means to improve safety, equity, and access among residents of all ages while also reducing greenhouse gas impacts from residents and visitors.

The benefits of an integrated transportation system start to be realized more holistically with Option D. In February 2022, the SGI Community Economic Sustainability Commission received the consultation results and passed a resolution recommending the CRD Board implement “Option D,” of the SGI Transportation Options. The Southern Gulf Islands Harbours Commission passed a resolution supporting the establishment of an SGI transportation service in March 2022.

5.0 RECOMMENDED NEXT STEPS

An integrated transportation system encompassing walking, cycling, public transportation, and water-based transportation would change the economic geography of the Southern Gulf Islands region and enable more shared services and increased connections throughout the islands.
Investment in active transportation and public transportation provides a means to improve safety, equity, and access among residents of all ages while also reducing greenhouse gas impacts from residents and visitors.

The prerequisite for the CRD to have a formal role in funding and supporting locally-led transportation initiatives in the Southern Gulf Islands is the creation of an SGI transportation service, which in turn can only be enabled through a Service Establishment Bylaw and voter assent process.

Should the CRD wish to pursue an SGI transportation service, recommended next steps would include:

- CRD Board consideration of a Service Establishment Bylaw and voter assent process.
- Preparing for a referendum in the 2022 General Election.
- Presentation of information on the service proposal in lead up to the referendum.

Community Benefits of an Integrated Transportation Service:

- Allowing the CRD to support local transportation groups to leverage grant funding for infrastructure and other assets such as electric buses.
- Enabling safe walking and cycling opportunities.
- Supporting community goals of livability and access to services.
- Rebuilding inter-island and community connections.
- Facilitating the movement of workers and goods.
- Taking climate action in SGI by supporting alternative transportation choices that reduce greenhouse gas emissions.
- Reducing congestion on SGI roads and BC Ferries.
- Supporting the local businesses and regional economy



5.1 Suggested Path to Implementation – Year 1

If the CRD Board moves a Southern Gulf Islands Transportation Service Establishment Bylaw to referendum in the October 2022 General Election, and if that referendum is successful, the initial ramp up to implementing the new SGI transportation service would likely take place in 2023 after the start of the new CRD Board term in January.

Since 2023 would be a transitional Year 1, the full suite of Transportation Service elements would not be in place for the whole calendar year (which is also the CRD's fiscal year). Therefore, for budgetary purposes, if Option D is the preferred requisition amount and approved through voter assent, the amount required for Year 1 will be a fraction of the full projection of $675,000.

This lower suggested Year 1 budget projection reflects the best practice of starting small and sustainable within the available requisition amount, and prudently growing from there. Further, given that a key aspect of the SGI Transportation Service is to have its annual budget priorities decided by a locally-represented Transportation Commission, the suggested amount reflects the fact that the Commission won't be in place until half way through the year.

The Year 1 suggested budget is based on this suggested timeline and assumptions:

- Potential provision for a partial year of staff support,
- Potential for limited grants to community bus societies to support service starting in summer of 2023 until the full grant program is established by the Commission for the following year,
- Contingency for emergency grant funding for trail societies until the full grant program is in place.

Potential Year 1 Timeline	
Nov – Dec 2022	• Newly elected CRD Board is sworn in and formally adopts the Service Establishment Bylaw. • CRD Board considers and adopts bylaw to establish the SGI Transportation Commission.
Jan – May 2023	• Advertise for SGI Transportation Commissioners representing the Islands and modes, and appoint Commission. • Consider Year 1 funding requests by community transportation providers. • Develop job description(s) for supporting staff; post job ads and hire new staff.
May – Oct 2023	• Develop strategic plan and prioritized work plan with Commission. • Start to implement short term priorities of work plan. • Develop Grant Program for 2024 based on transportation criteria; design application process. • Undertake Service and budget planning for 2024.
Oct - Dec 2023	• Progress with work plan. • Confirm 2024 annual budget and work plan priorities for Transportation Service.

6.0 CONCLUSIONS



Resourceful and deeply connected to their communities, the residents and organizations of the Southern Gulf Islands have already taken many positive steps towards providing sustainable transportation options. From the countless recreational trails that have been built, the community bus projects that were initiated, or the massive annual multimodal volunteer effort that happens for Tour des Iles, these efforts have shown that improving connection matters to the community and that there is a capacity and a desire to make it happen.

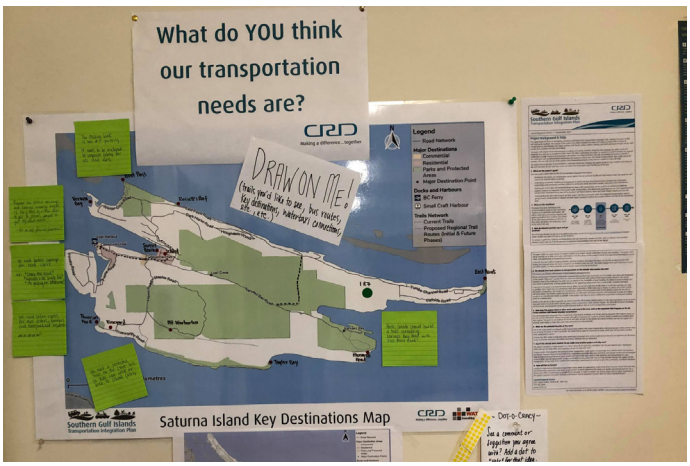
At the same time, this project has heard a strong desire from residents and stakeholders to do more. Parents want improved roadside conditions so their kids are safe cycling to school. Older residents want reliable and continued public transportation options so they can age in place when driving might no longer be the best option. Multiple residents and stakeholders have spoken to the importance of encouraging visitors to arrive without vehicles, and the desire to further water-based interisland connection and economies. And throughout the course of this study, the effects of climate change (heat domes, windstorms, unseasonable temperatures) have underscored the need to take action on transportation and energy use rapidly and decisively.

If islanders truly want to do more to achieve these transportation goals and level up on the pace of transportation improvements, it will require more effectively harnessing available senior government funding, increasing collaboration with agencies like MoTI, and reducing duplication of effort by different community groups across the islands and transportation modes. Formally creating a Southern Gulf Islands Electoral Area transportation service is not only a feasible way to reach those objectives, it is the required prerequisite.

Appendix A

Southern Gulf Islands
Public Engagement Summary





SOUTHERN GULF ISLANDS TRANSPORTATION INTEGRATION PLAN

Round 1 Engagement – What We Heard Report

Prepared For: Capital Regional District (CRD)

Date: December 17, 2021

Our File No: 3007.B01

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1.0 PROJECT OVERVIEW

The Capital Regional District is developing a Southern Gulf Islands (SGI) Transportation Integration Plan. Building on past studies and community feedback, the purpose of the project is to create a blueprint for the future to move from ideas to action when it comes to transportation on and between the largest Southern Gulf Islands: Galiano, Mayne, Saturna, and North and South Pender Islands, with possible links to Sidney and Salt Spring Island.

The objective of this project is to understand the demand in the SGI and propose future improvements to walking and cycling networks integrated with proposals for public transit and passenger ferry services to complement other travel. The CRD is undertaking this project in response to resident requests for regional coordination of public transit and transportation alternatives. As a Regional District, the CRD can facilitate outcomes on behalf of the community such as administrative coordination and access to funding from other levels of government. Also, unlike non-profit societies, CRD can hold Licences of Occupation in the Provincial Road Right of Way that are needed for road side trails, meaning that the CRD could support the local volunteer organizations with improvements on the SGI that are currently not possible.

Two of the three planned rounds of public engagement have been undertaken for this project:

- **Targeted Outreach** took place in Spring 2021 and involved virtual workshops with the Transit Advisory Groups (TAG), stakeholder outreach, and information provided to the community via the CRD website, posters, and a media release.
- **Round 1 engagement** took place in Fall 2021 and invited the public to provide feedback using the CRD's digital engagement platform which included interactive mapping, quick polls, a survey, and an ideas forum. A mailout FAQ was sent to every SGI mailbox to encourage people to fill out the survey.
- **Round 2 engagement is scheduled to begin in January 2022.**

1.1 Objectives of the SGI Transportation Integration Plan

The main project deliverables for the SGI Transportation Integration Plan include:

- Developing and costing out transportation service options that are practical, feasible and right-sized to meet the needs for each community and inter-island connection.



- Undertaking community mapping and engagement to capture existing and proposed trails envisioned by stakeholder organizations and community members, determining community needs and future priorities, and refining recommendations.



- Outlining the action steps and recommendations for how a CRD transportation service could be structured to enable the creation, phasing and integration of land-based public transportation, inter-island water passenger service, and supporting active transportation improvements on each of the Southern Gulf Islands (Galiano, North and South Pender, Mayne and Saturna).



- Understanding the CRD's role in supporting identified community needs and integrated transportation going forward.

2.0 WHAT WE DID

The second round of engagement took place from **October 13 to November 14, 2021**. It used a variety of engagement tools available via the CRD Get *Involved* website, including:

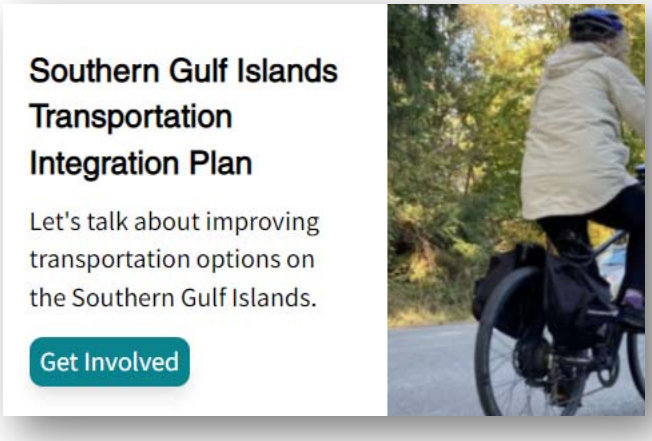
- An **Interactive Map** to gather suggestions for infrastructure improvements
- **Quick Polls** and a **Survey** to gather feedback on the system
- The **Ideas** tool to gather additional ideas
- Photos and background resources including past plans and studies

The survey and other online engagement tools were promoted using social media, posters, mail-out advertisements, and local advertising/paid media.

Engagement by the numbers:

- **2.5K** engagement site visitors
- **106** contributions to the interactive map
- **969** participants in quick polls
- **695** surveys completed

Related comments made via Facebook and email during the engagement period have also been reviewed and summarized here by the project team.



3.0 KEY TAKEAWAYS

The list below outlines the key takeaways from the Round 1 Engagement activities:

- The most common destinations (other than respondents' primary islands) are the Saanich Peninsula area, other areas within the Capital Regional District / Greater Victoria region, and Metro Vancouver / Lower Mainland region.
- Currently, the most common transportation modes are BC Ferries and private vehicle as a driver, followed by walking and private vehicle as a passenger.
- There is general dissatisfaction with active, public, and water transportation across the islands, as well as the ability to coordinate and connect travel.
- Improving infrastructure and connections for walking and cycling is a high priority, with safety being a main concern.
- There is a need for better public transportation, especially for seniors and people who are unable to walk or cycle. Car stops, ridesharing, and taxi service are preferable to traditional bus service.
- Water transportation services should connect with other modes and need to be affordable. They should also align with school schedules and allow for day trips.

4.0 WHO WE HEARD FROM

The online survey included several demographic questions to allow the project team to better understand who participated. The following results are specific to the online survey only and do not reflect the demographics of the participants who used the other tools.

4.1 Age

As shown in **Figure 1**, over half of respondents were between the age of 55-74 years. **The largest age groups were 65-74 years (29%), 55-64 years (26%), and 45-54 years (16%).** Youth representation was low, with the fewest responses coming from the 18-24 and Under 18 age categories at 1% and 3%, respectively.

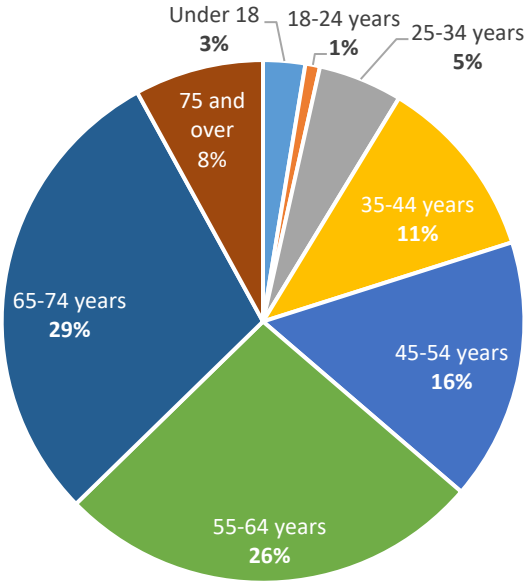


Figure 1. Survey Respondent Ages

4.2 Geographic Representation

Respondents were asked the following question: "What is your connection with the Southern Gulf Islands? Please select all that apply." **Figure 2** shows their responses. Most participants (80%) live on an island.

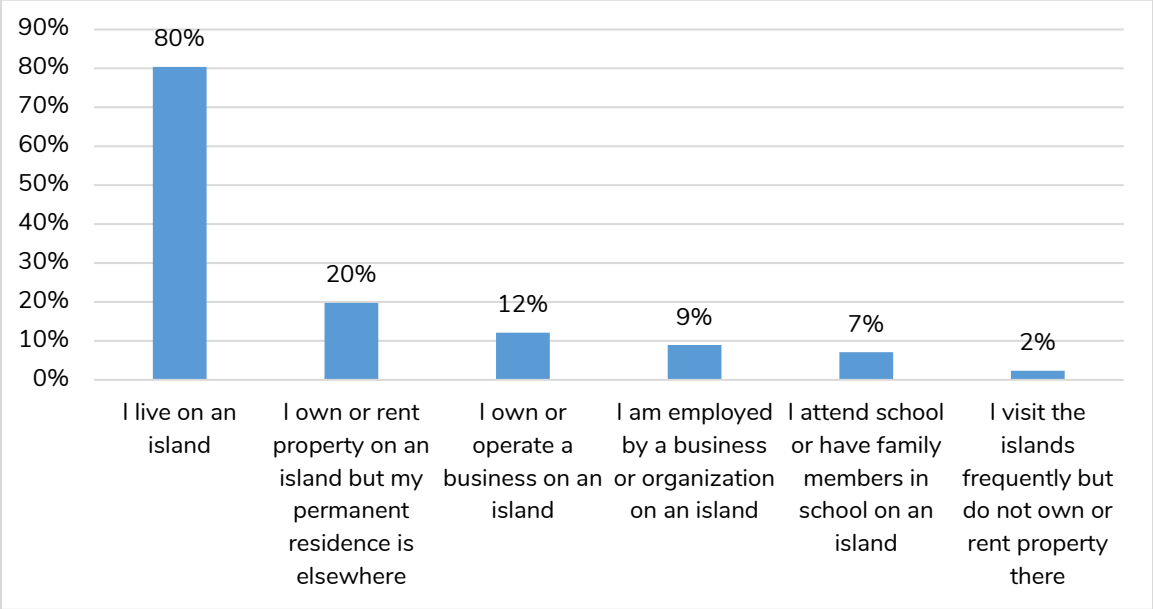


Figure 2. Survey Respondent Connection with Islands

Respondents who indicated that they live on an island were also asked how long they have lived in the Southern Gulf Islands community. **Figure 3** shows their responses. **70% of participants have lived in the community for at least six years, with the majority (57%) being residents for 10+ years. 16% of respondents have lived in the community for two years or less.**

Additionally, respondents were asked: "Within the Southern Gulf Islands area, on which island do you spend most of your time?". As shown in **Figure 4**, North Pender Island had the most responses (43%), followed by Galiano Island (21%), Mayne Island (18%), and Saturna Island (9%). Salt Spring Island and South Pender Island had the fewest responses at 4% and 5%, respectively. Comparing participation against the population of each island, participation ranges from 18% to 14% of island population, indicating a fairly equitable involvement across islands.

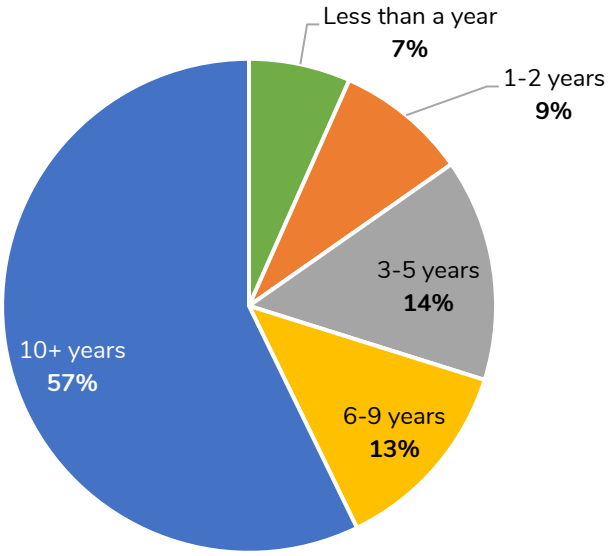


Figure 3. Survey Respondent Time Spent in Southern Gulf Islands Community

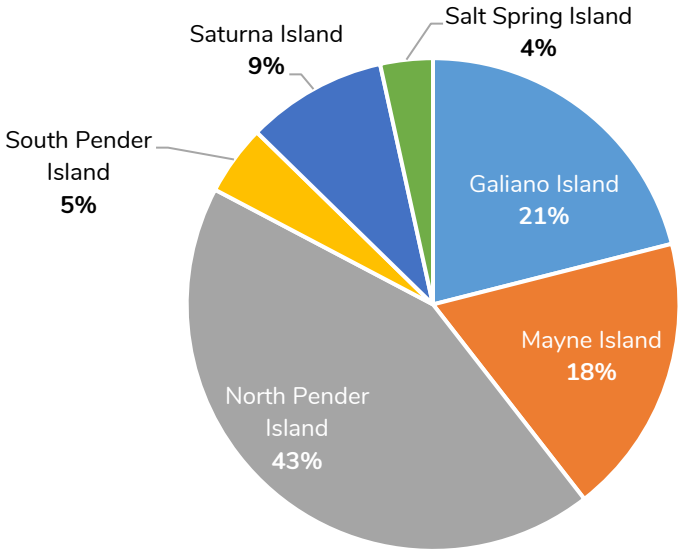


Figure 4. Survey Respondent Primary Island

Next, respondents were asked to select up to three other locations where they commonly travel (besides the primary island they chose in the previous question). This could be for purposes such as work, school, recreation or to access services, or their place of residence if they are a part-time resident or visitor to the Southern Gulf Islands. As shown in **Figure 5**, the **most common other destinations are the Saanich Peninsula area (61%), other areas within the Capital Regional District / Greater Victoria region (51%), and Metro Vancouver / Lower Mainland region (37%).** The results also suggest that travel between the islands is lower, except for North Pender Island and Salt Spring Island which were selected by 24% and 19% of respondents, respectively.

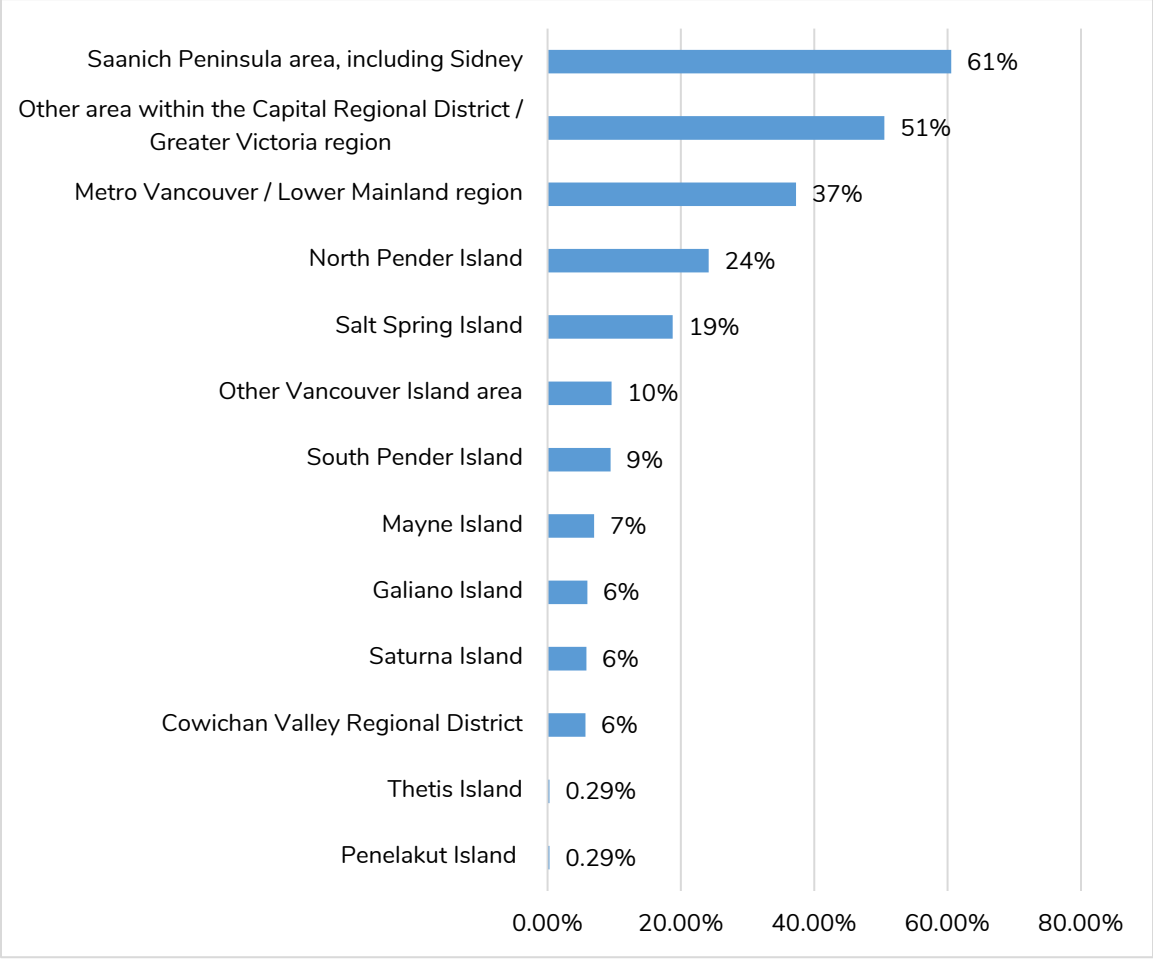


Figure 5. Survey Respondent Other Destinations

These results are consistent with those seen in the BC Ferries survey from 2016.

Respondents were also asked to indicate their main modes of transportation on and between the Southern Gulf Islands before and during the COVID-19 pandemic. They were able to select up to five modes and their responses are shown in **Figure 6**. **BC Ferries and private vehicle as a driver were the most common choices, followed by walking and private vehicle as a passenger.** The modes that saw the biggest decrease from before COVID-19 to during COVID-19 were community bus (-6%), car stop / hitchhiking (-6%), BC Ferries (-4%), and taxi (-3%).

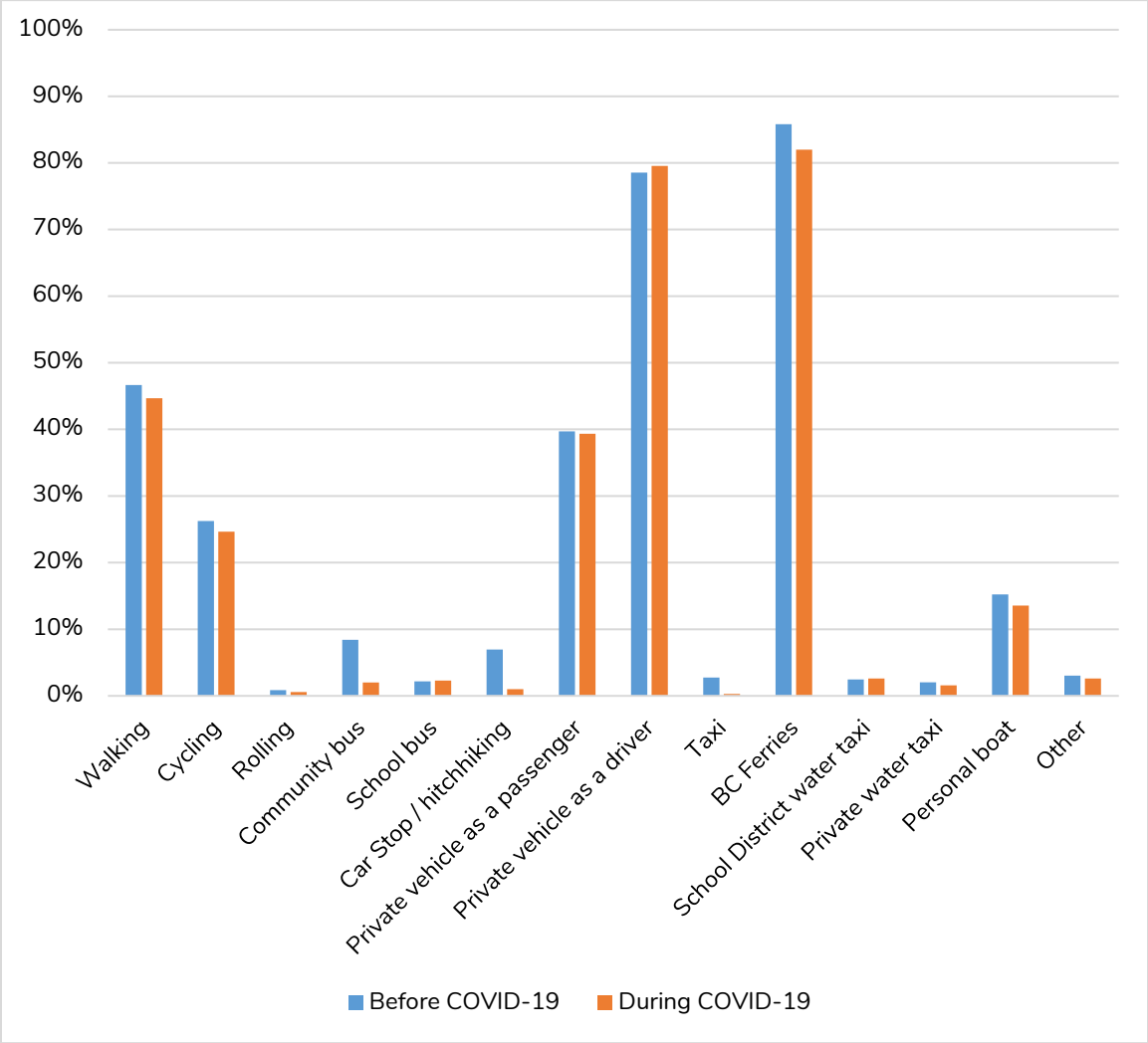


Figure 6. Survey Respondent Transportation Modes Before and During COVID-19

5.0 WHAT WE HEARD

5.1 Interactive Map

The Interactive Map on the engagement site gave people the opportunity to pinpoint locations across the Southern Gulf Islands where they frequently travel, as well as where they would like to see infrastructure improvements. They could also provide comments about why they think change is needed. A total of **106 pins** were added to the map. Participants could select from the following pin types:

- Key community destination to serve by public transit
- Key community destination to serve by an Active Transportation route
- Dock / water transportation improvement
- Inter-island connection
- Walking / rolling improvement (e.g., sidewalks, crosswalks, accessibility)
- Walking connection (e.g., trails, pathways)
- Cycling connections (e.g., bike lanes, shared paths)
- Road safety or vehicle speed concern / suggestion
- Bike parking / bike racks
- Public transportation stop improvement (bench, shelter)
- Other on-street amenities (e.g., lighting, bench, garbage)
- Directional or wayfinding signage on-street or on trails

Figure 7 shows how many pins were distributed throughout the islands. Specific pin locations are not shown at this level as the map is zoomed out to show all the islands.

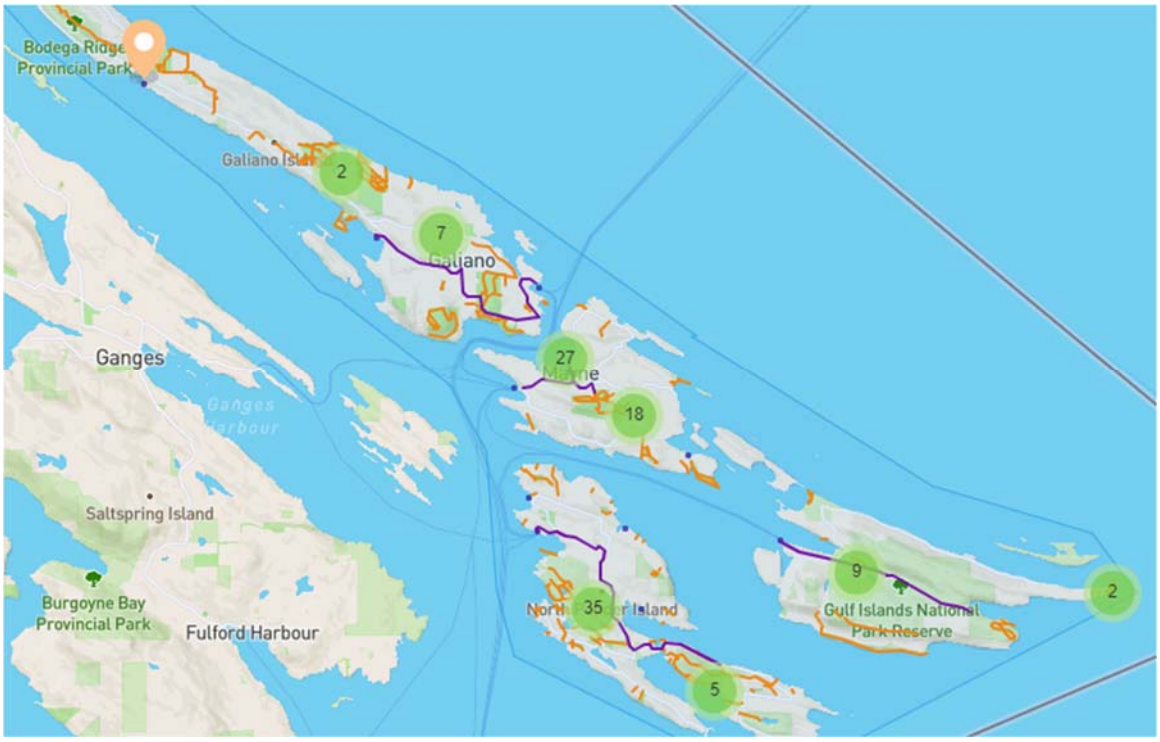


Figure 7. Pin Distribution on Interactive Map

From the comments provided, the following emerged as the top 10 community desires:

1.	Magic Lake Active Transportation Connections	North Pender
2.	Bedwell Harbour Road Walking/Rolling Improvements	North Pender
3.	Driftwood Centre Active Transportation Connections	North Pender
4.	Otter Bay Active Transportation Connection	North Pender
5.	Sturdies Bay Trail Extensions	Galiano
6.	Sturdies Bay Trail Safety	Galiano
7.	Mackinnon Road Active and Public Transportation Connections	North Pender
8.	Brooks Point Active Transportation Extension	South Pender
9.	Thieves Bay Active Transportation Connection	North Pender
10.	General Safety Concerns	All

5.2 Quick Polls

Community members were able to participate in a series of polls to indicate their support for various potential transportation improvements. They were also asked whether they would use different types of services and infrastructure including water taxis, community buses/public transit, bike lanes, and designated sidewalks/safe shoulders. There was an average of about **120 contributions** to each poll. Responses to these polls are shown in **Figure 8.**

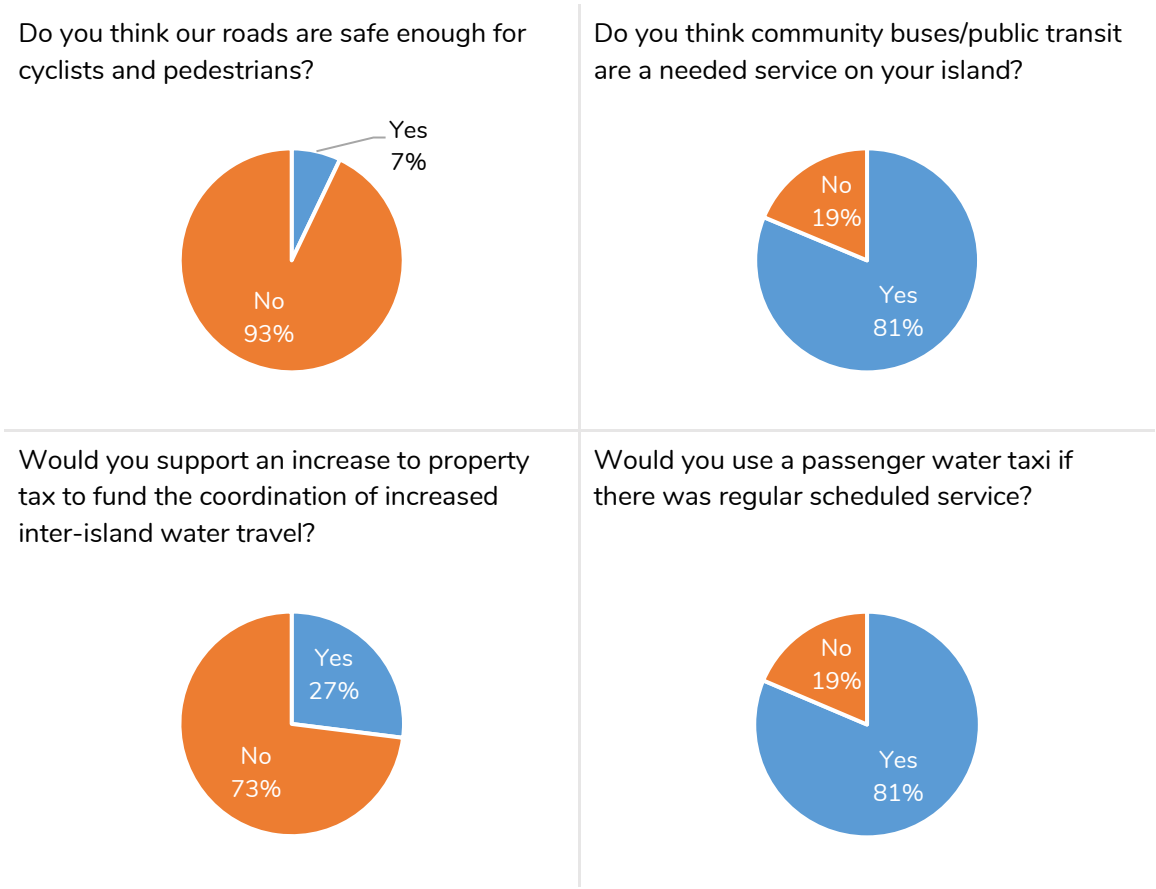
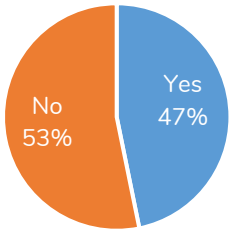
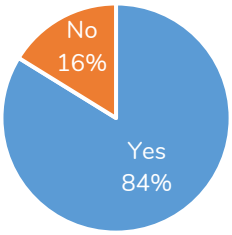


Figure 8. Quick Polls Results

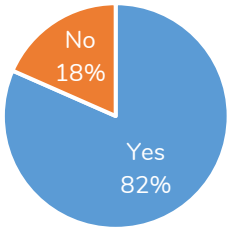
Would you support an increase to property tax to help build safe walking and cycling trails to key destinations?



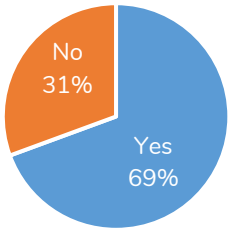
Would you use a community bus/public transit for some of your travel?



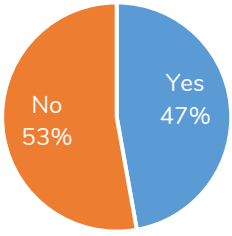
Would you cycle, walk or roll more if there were bike lanes or designated sidewalks/safe shoulders?



Do you think regular passenger water taxi service is needed for travel between the Southern Gulf Islands?



Would you support an increase to property tax to fund community buses/public transit?



Do you see integrated transportation options as an effective way to reduce our climate impact?

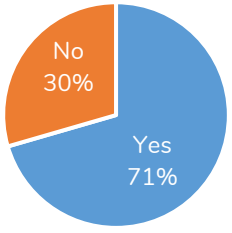


Figure 8. Quick Polls Results

5.3 Online Survey

The online survey received a total of **695 responses**. Respondents were asked about the following topics:

- Satisfaction with current transportation services and infrastructure
- Satisfaction with ability to coordinate travel
- Transportation planning priorities
- Priorities for improving active, public, and water-based transportation

See **Appendix A** for the full set of survey questions.

5.3.1 Satisfaction with Current Transportation

Respondents were asked: "Thinking of the Southern Gulf Island where you spend the most time, how satisfied / unsatisfied are you with the current transportation services and infrastructure available on your island?". **As shown in Figure 9, most respondents (about 50-60%) are unsatisfied or very unsatisfied with each mode of transportation, while about 10-25% are satisfied or very satisfied.** Respondents are the least satisfied with public transportation services and infrastructure.

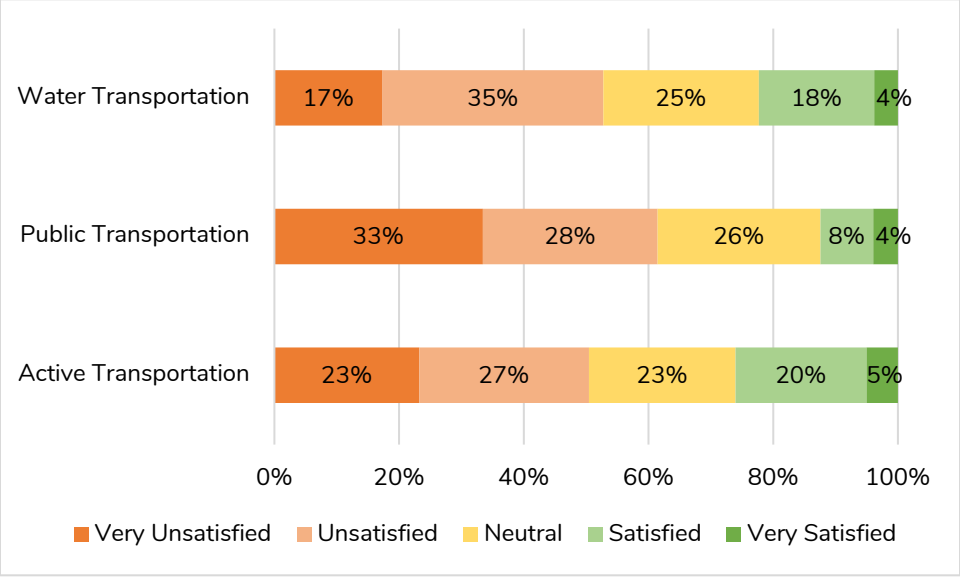


Figure 9. Satisfaction with Current Transportation Services and Infrastructure

Respondents were also asked: “Thinking of the Southern Gulf Islands area as a whole, how satisfied / unsatisfied are you with the ability to coordinate travel?”. Their responses are shown in **Figure 10**. Between 50-70% of respondents are unsatisfied or very unsatisfied with the ability to coordinate travel and connect between islands, while only 12% were satisfied or very satisfied.

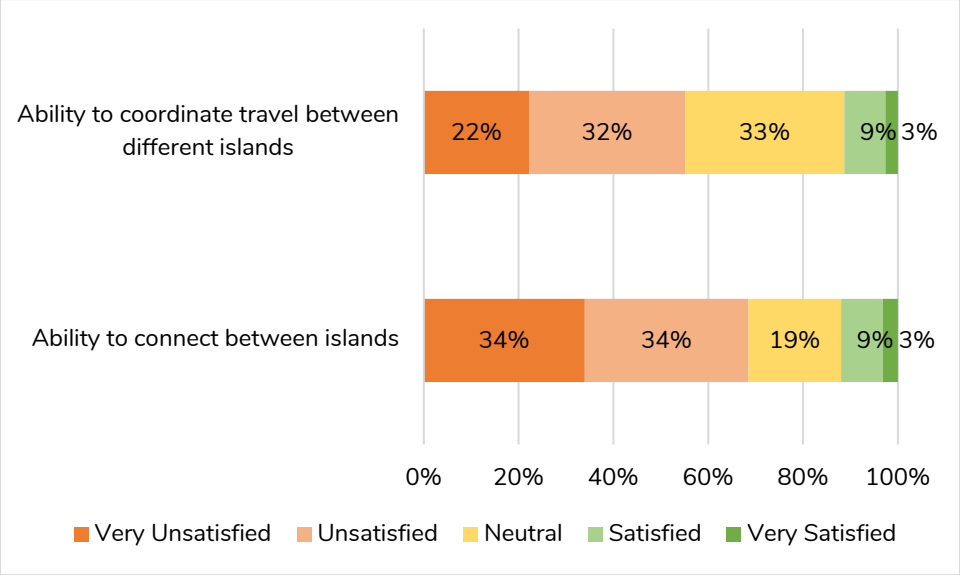


Figure 10. Satisfaction with Ability to Coordinate Travel

5.3.2 Transportation Planning Priorities

Respondents were asked: "Thinking across all forms of transportation beyond private vehicles, what are the top transportation planning priorities that you think should be considered for the Southern Gulf Islands? Rank in order of priority. (Most prioritized need first)." The order of priority for each option is shown in **Figure 11**.

Rank	Transportation Planning Priority
Priority #1	Improve public transportation options available on each island, such as community bus, shuttles, taxis or Car Stop programs to complement transit.
Priority #2	Improve pedestrian trails and walking routes connecting community destinations.
Priority #3	Improve water transportation between islands, such as small passenger ferry services to complement BC Ferries.
Priority #4	Improve cycling routes between community destinations.
Priority #5	Better coordinate transportation services and schedules between islands.
Priority #6	Improve signage and information to communicate transportation options.

Figure 11. Ranking of Transportation Planning Priorities

As illustrated in the table above, the highest priority was given to improving public transportation options on the SGI including a range of options on how to provide this service, including shuttles, taxis, Car Stops and ride share options. The lowest priority was "Improve signage and information to communicate transportation options".

Respondents were also able to provide comments on any other transportation planning priorities that they think should be considered for the Southern Gulf Islands. The following themes arose:

- **Roads are currently narrow, windy, and have cars travelling at high speeds, making them unsafe for walking / rolling and cycling**. This was especially noted by respondents from the Pender Islands and Galiano Island. Better active transportation infrastructure is required, including trails that connect neighbourhoods and key destinations.
- **Better connectivity is required between Galiano Island and Salt Spring Island for people attending Gulf Islands Secondary School**. Better / more frequent water transportation between the Southern Gulf Islands in general is also desired.
- **Ferries schedules need to better align with bus connections at Swartz Bay and Tsawwassen ferry terminals**. The need for a better ferry connection between Saturna Island and the mainland was also expressed.
- There is a desire for more **environmentally friendly transportation options**, including electric bike and car charging infrastructure.
- There is support for taxi and / or car share service.

"I would bicycle all over the island with my family if there were safe trails to do so."

"As a senior losing my mobility public transportation is important to me to be able to remain in my home in a place I love."

"I would like more pedestrian options for inter island travel between gulf islands so my teens can stay for after school event and still be able to get home."

Many people expressed that they are car-dependent because no other options exist but indicated that they would use active or public transportation if better infrastructure and services were available. However, there were also concerns about making the islands too urban and causing them to lose their rural character.

5.3.3 Active Transportation Improvement Priorities

When asked whether improvements are required to better support active transportation in the Southern Gulf Islands, 89% of respondents said “Yes” and 11% of respondents said “No”. See **Figure 12**.

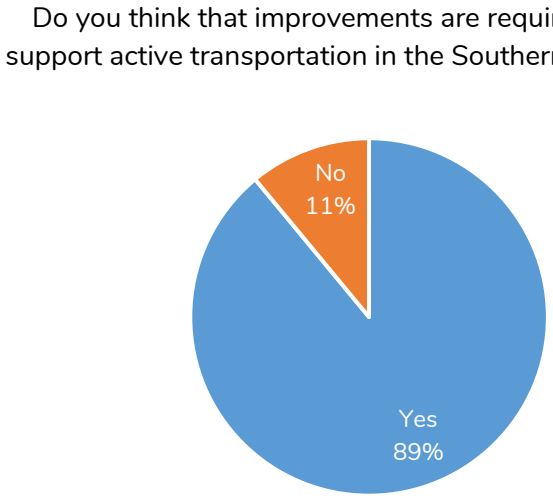


Figure 12. Support for Active Transportation Improvements

Respondents were also asked to choose up to three priorities for improving active transportation on their island and their responses are summarized in **Figure 13**. **Across the islands, creating more space and connections for walking and cycling was seen as the top priority.** Installing more bike racks / bike and scooter parking, including charging stations for electric bikes, was seen as the lowest priority.

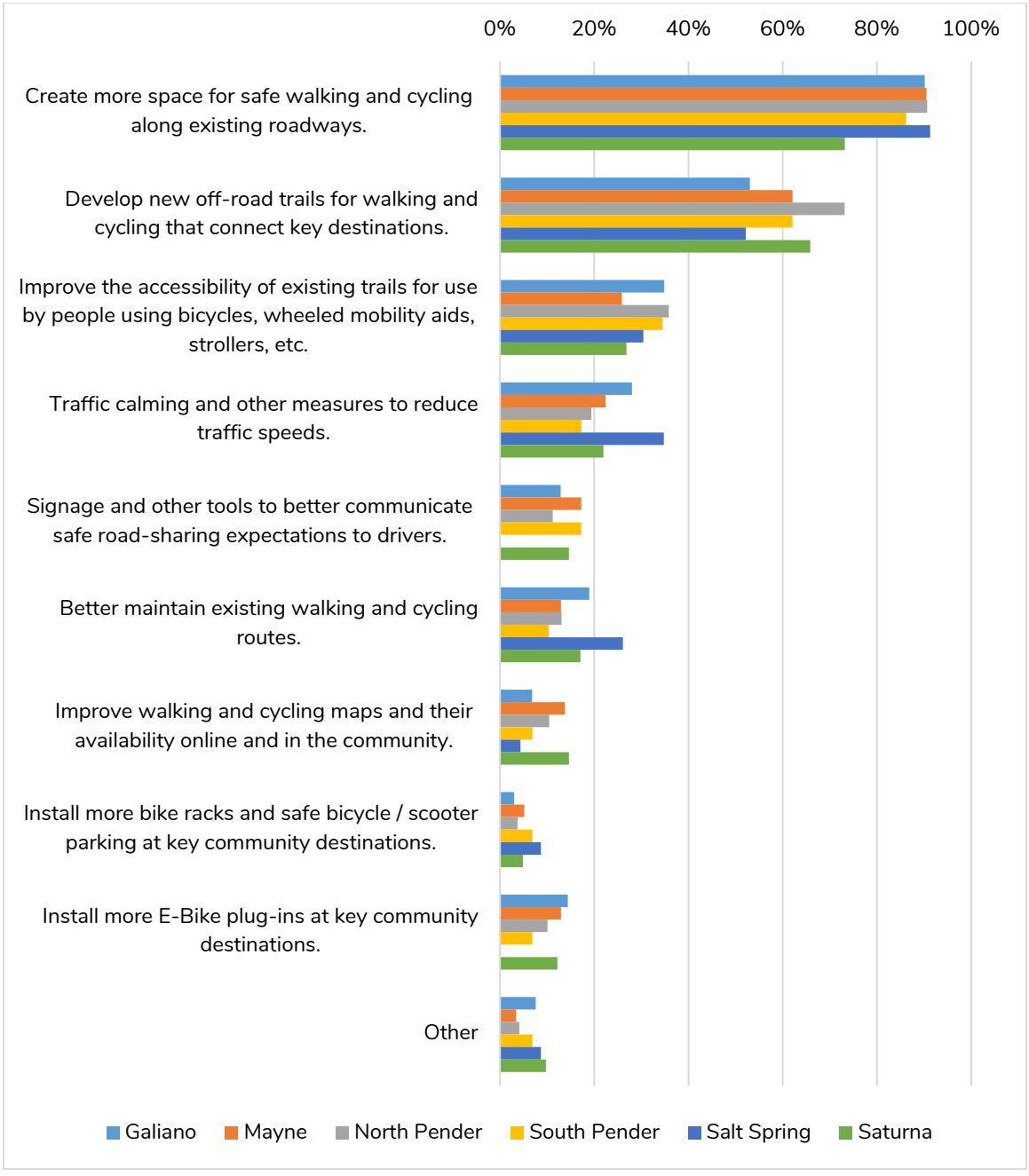


Figure 13. Active Transportation Priorities by Island

5.3.4 Public Transportation Improvement Priorities

When asked whether improvements are required to better support public transportation in the Southern Gulf Islands, 81% of respondents said “Yes” and 19% of respondents said “No”. See **Figure 14**.

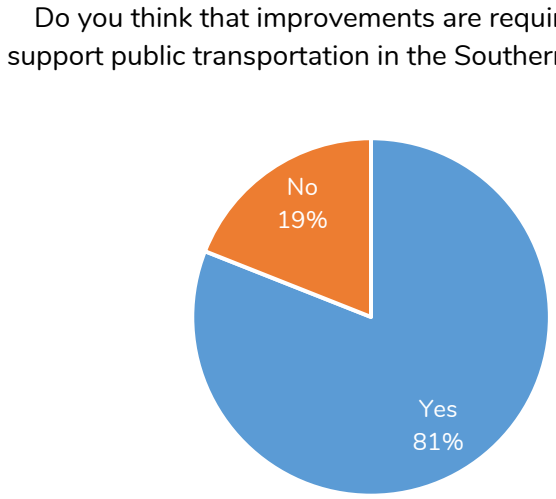


Figure 14. Support for Public Transportation Improvements

Respondents were also asked to choose up to three top priorities for improving public transportation options on their island and their responses are summarized in **Figure 15**. Responses varied across the islands, but overall there was **higher support for community bus service operating year-round, especially from respondents who primarily spend time on Salt Spring Island,** and lower support for community bus service operating during the summer season only**.** There was also significantly higher support from Saturna Island respondents for a special event shuttle service, as well as higher support from South Pender, North Pender, and Galiano Island respondents for taxi or ride-hailing options.

Additionally, respondents were asked to indicate how important they think different public transportation supports are and were given the opportunity to provide additional comments. Responses from each island are shown in on the following pages.

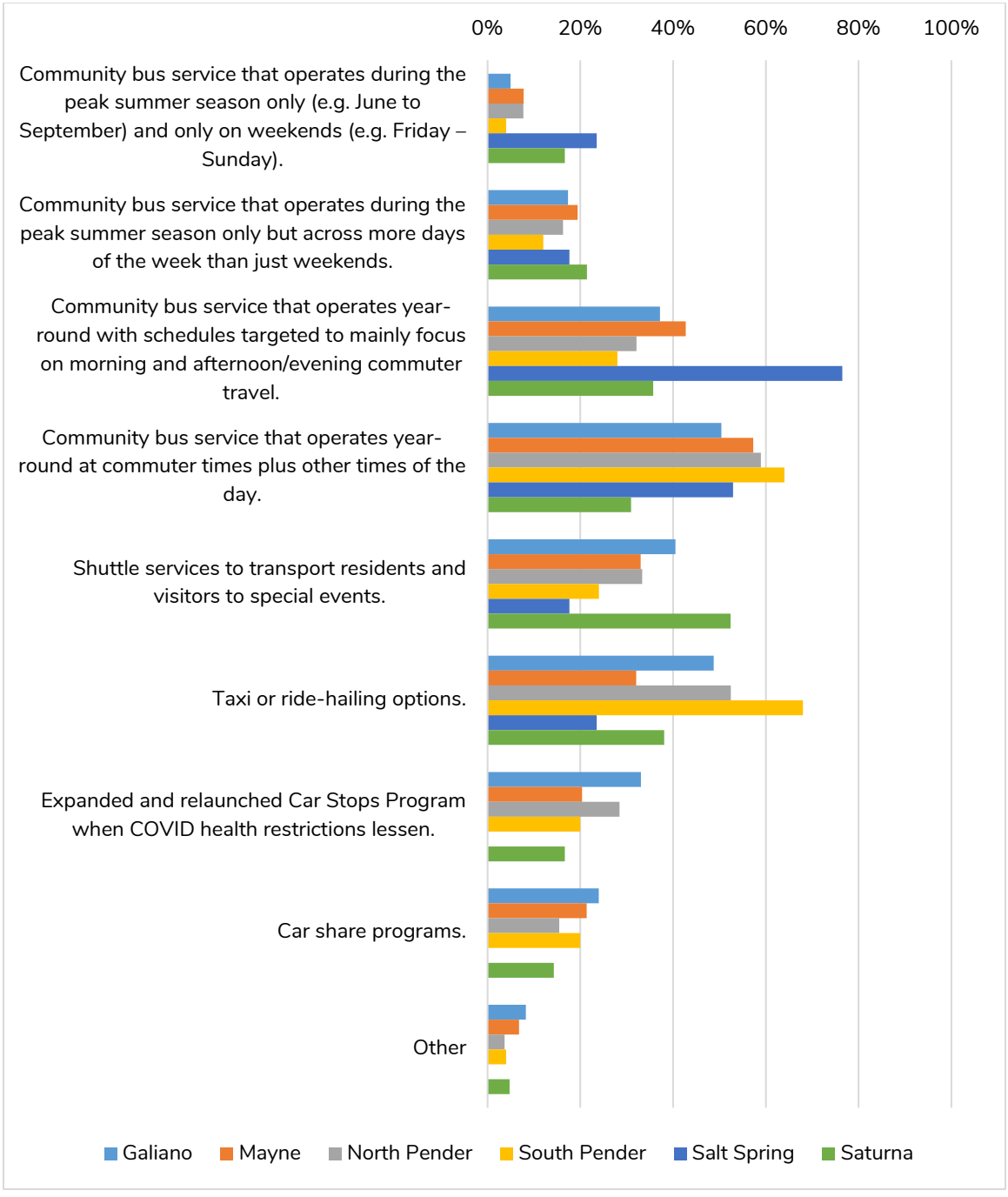


Figure 15. Public Transportation Priorities by Island

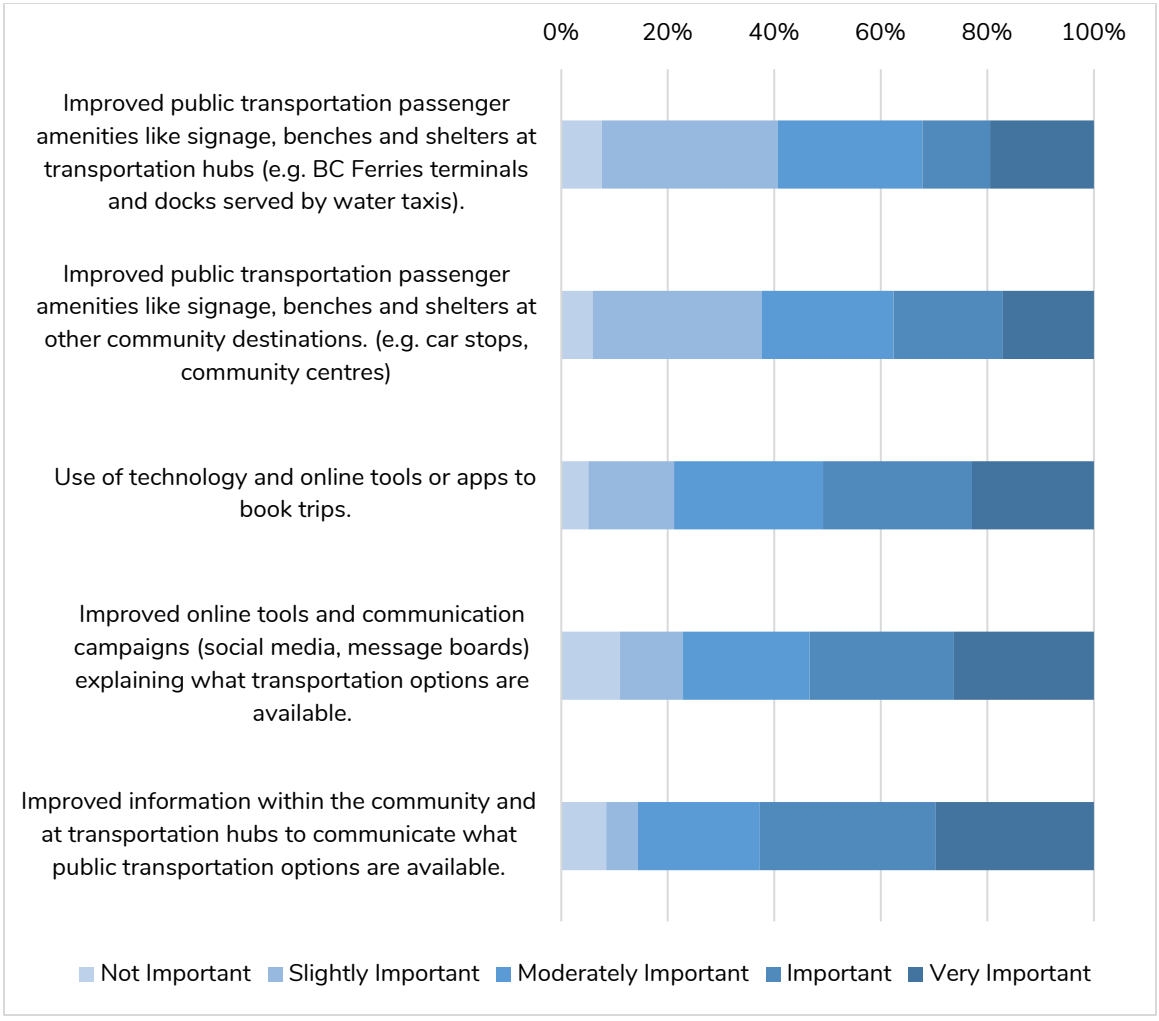


Figure 16. Importance of Public Transportation Supports - Galiano Island

Many of the comments were relating to the fact that Galiano Island does not currently have a public transit service; however, there is a desire for one. Respondents have indicated that due to the island's long and narrow shape and fewer residents at the north end, a car stop program may be a better option but a circular bus route at the south end could still be useful. Developing consistent and reliable schedules was also important to respondents.

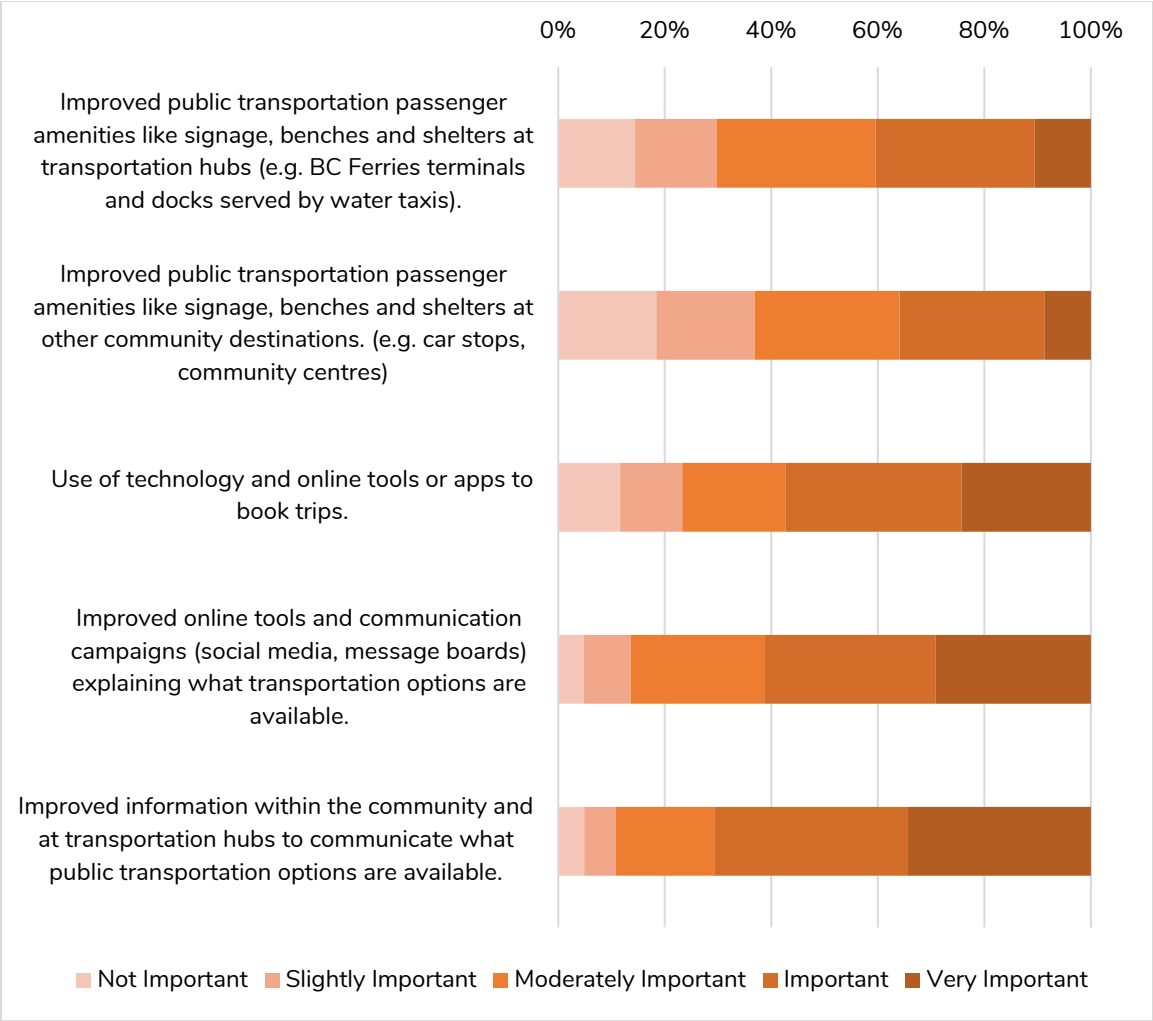


Figure 17. Importance of Public Transportation Supports - Mayne Island

Respondents from Mayne Island were supportive of a community bus service, as well as a taxi or ride share option. In particular, the comments indicated that public transportation services and supports need to be accessible for seniors and people who do not drive, and that printed schedules are important for those without internet or who have difficulties navigating the internet.

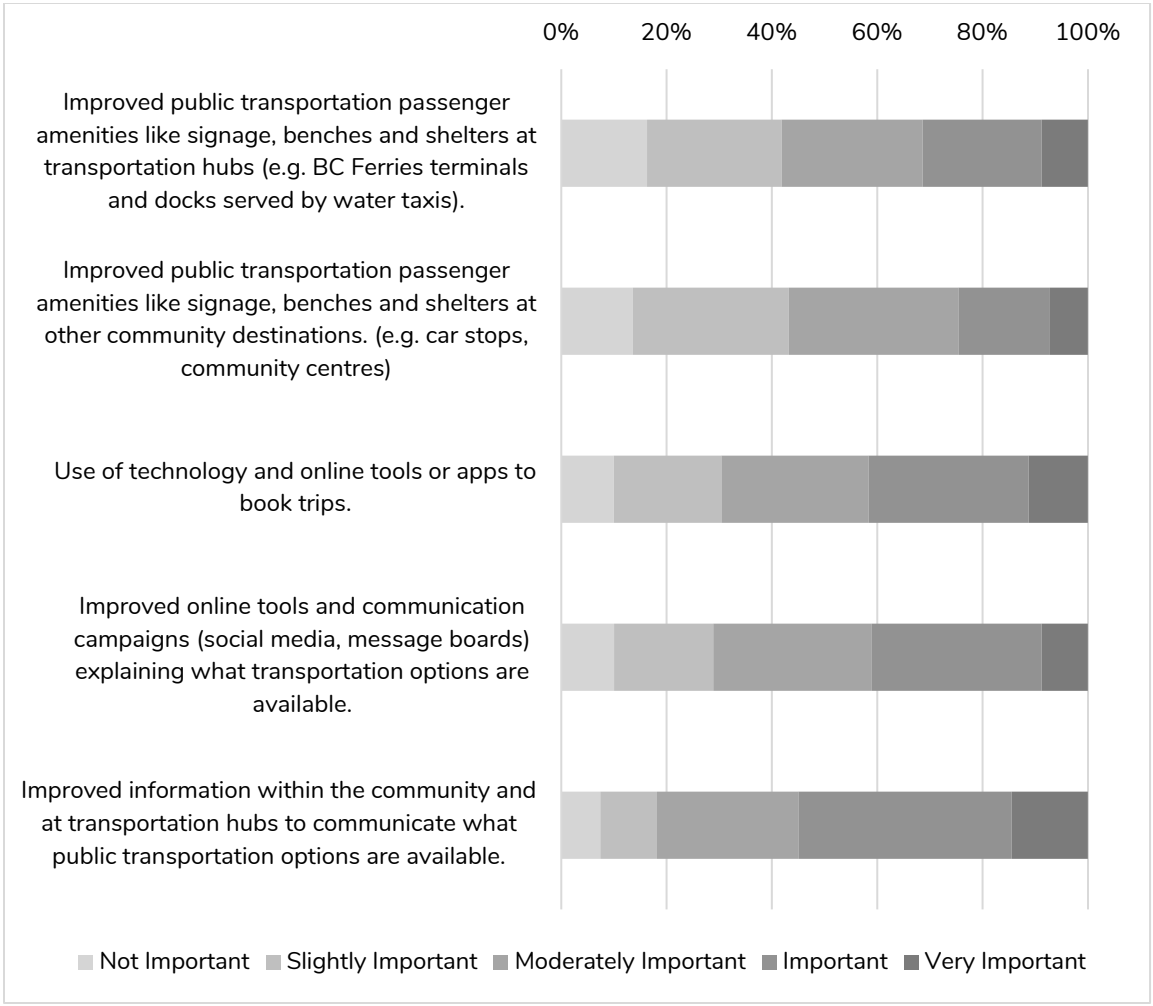


Figure 18. Importance of Public Transportation Supports - North Pender Island

Many of the comments from North Pender Island noted the lack of current public transportation on the island. Respondents indicated that flexible public transportation options such as car stops or passenger-directed bus service would work well as opposed to fixed-route bus service. Taxi and ridesharing services were also requested. Respondents also expressed the need to coordinate public transportation with ferry schedules, as well as to connect key locations such as Magic Lake and Driftwood Centre. Additionally, integrating bicycle infrastructure such as racks on buses and at bus stops is desired.

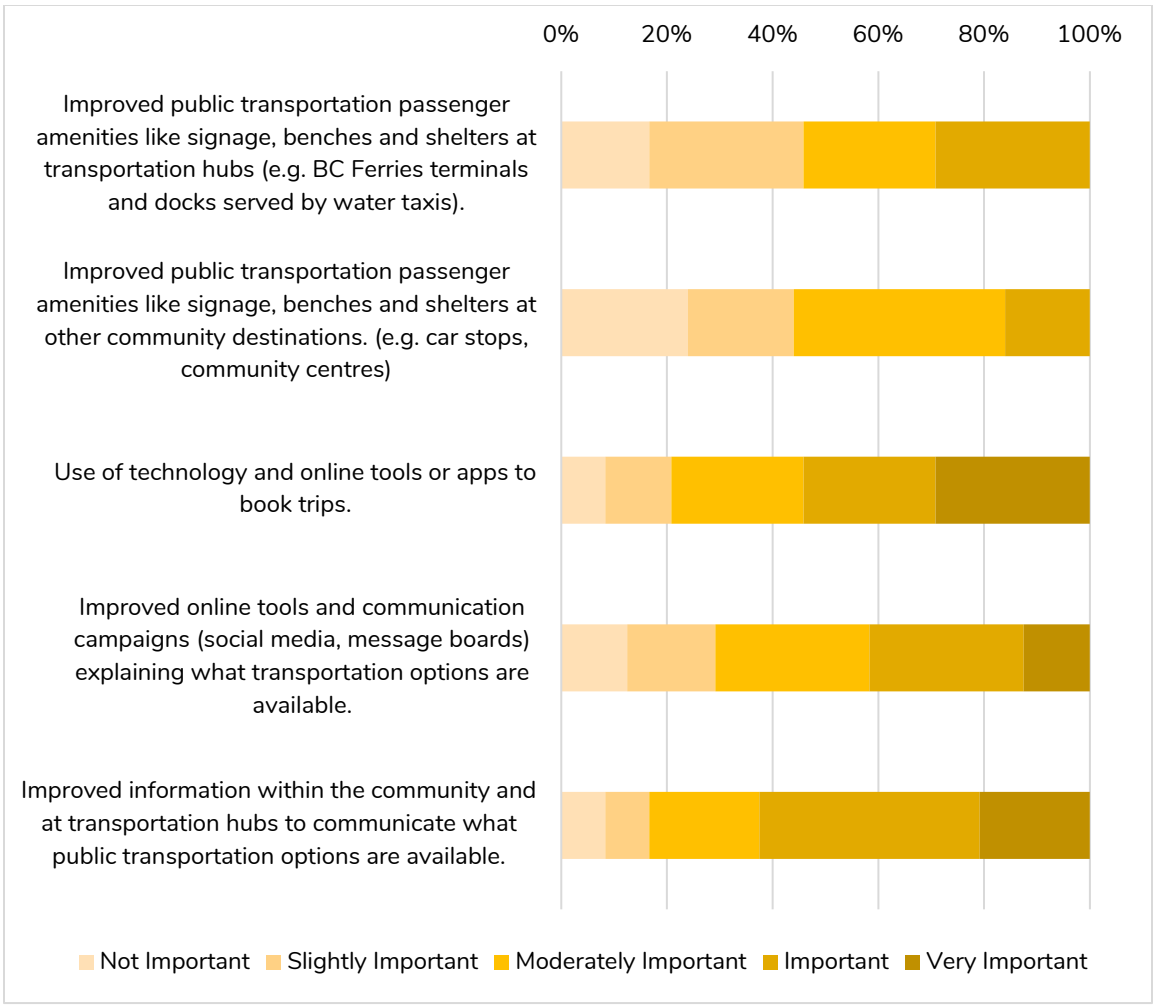


Figure 19. Importance of Public Transportation Supports - South Pender Island

There were limited comments about public transportation supports from respondents who selected South Pender Island as their primary island. Generally, people have indicated that a regular schedule is important, as well as reliable and user-friendly online tools and other information sources.

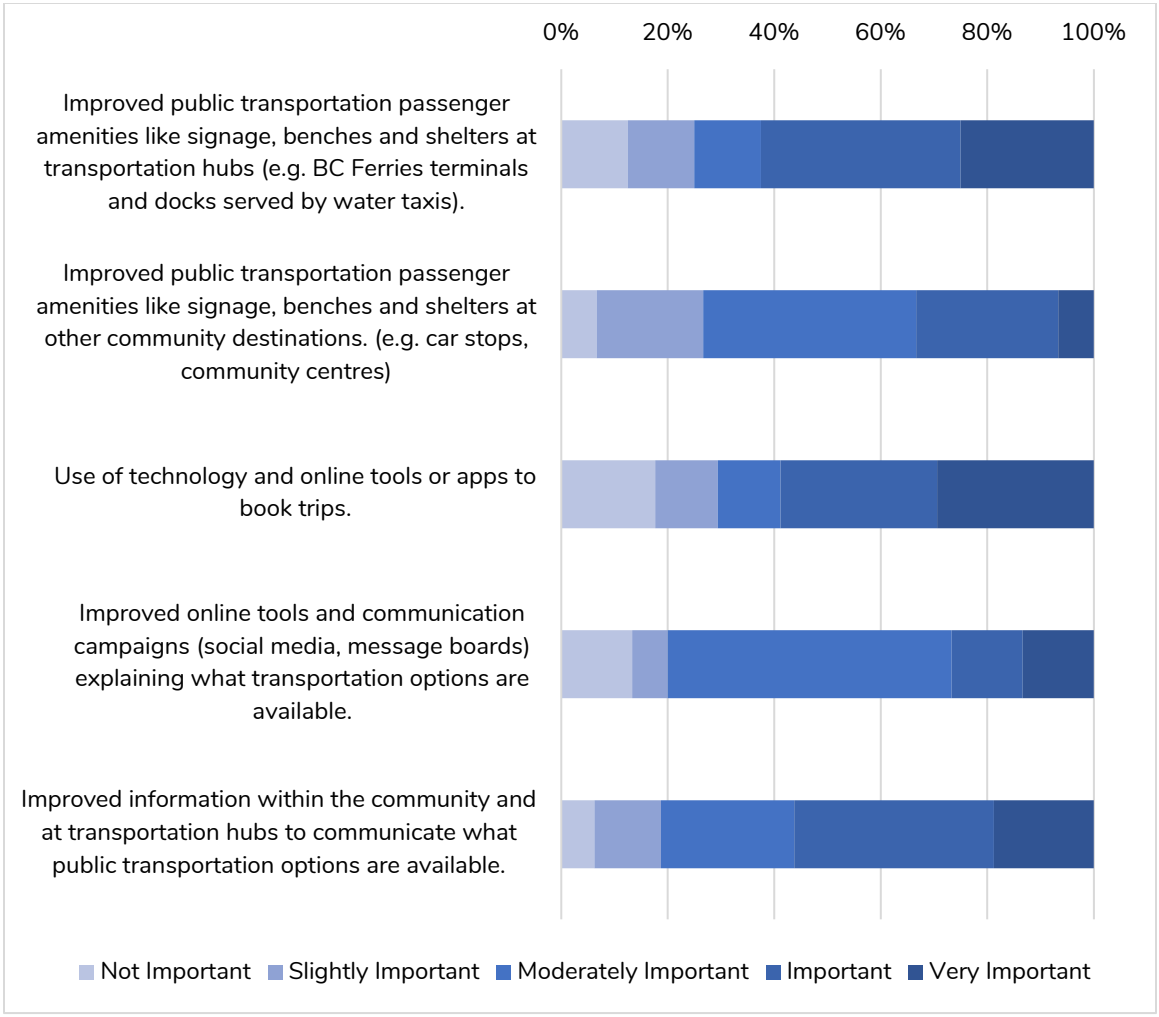


Figure 20. Importance of Public Transportation Supports - Salt Spring Island

Comments from respondents who chose Salt Spring Island as their primary island were also limited. Respondents indicated a need for upgraded, accessible public transportation infrastructure.

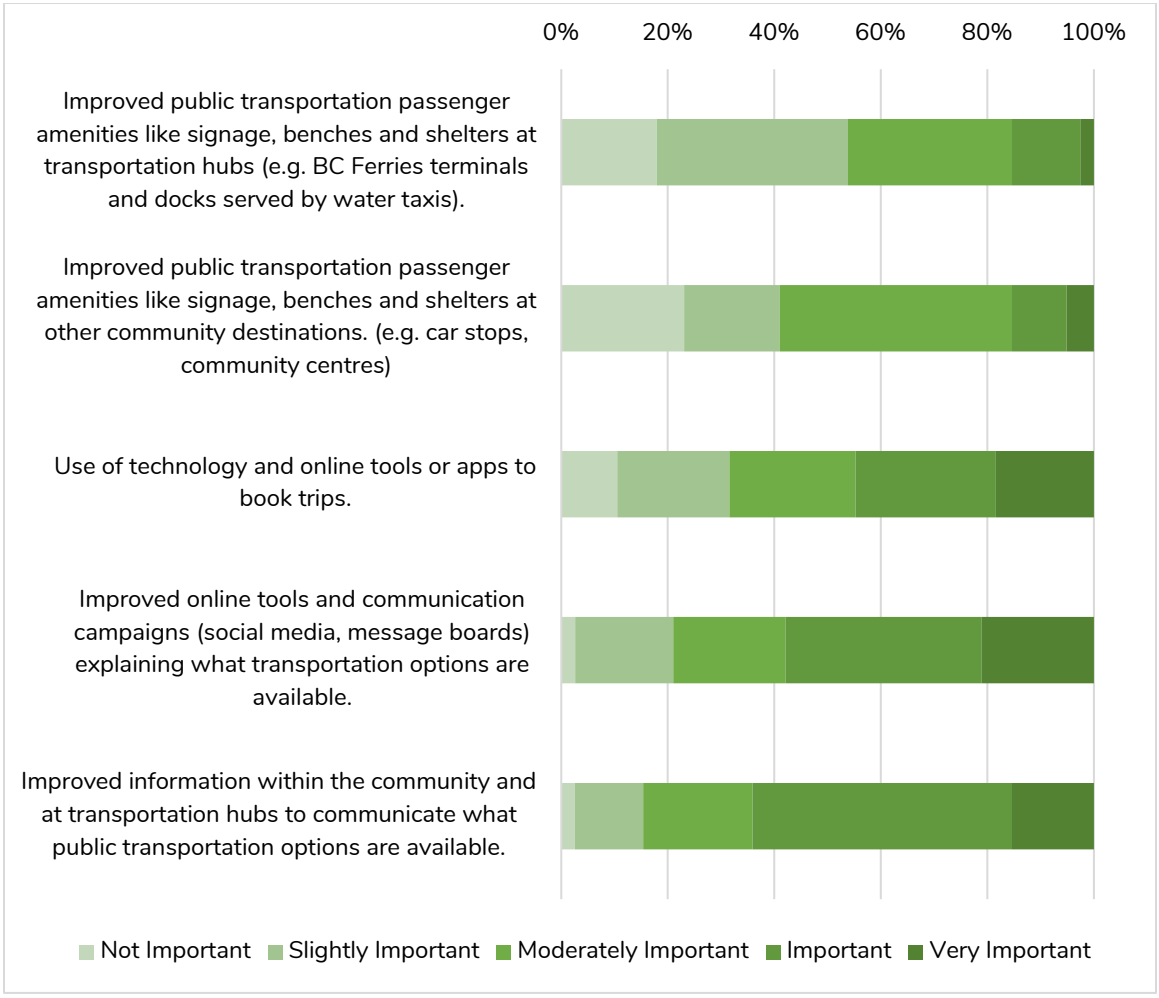


Figure 21. Importance of Public Transportation Supports - Saturna Island

Comments from Saturna Island respondents were primarily focused on a greater need for improved water transportation. However, the need for ride-hailing or community buses was also expressed, as well as bike racks on buses.

5.3.5 Water-Based Transportation Improvement Priorities

When asked whether improvements are required to better support public transportation in the Southern Gulf Islands, 77% of respondents said “Yes” and 23% of respondents said “No”. See **Figure 22**.

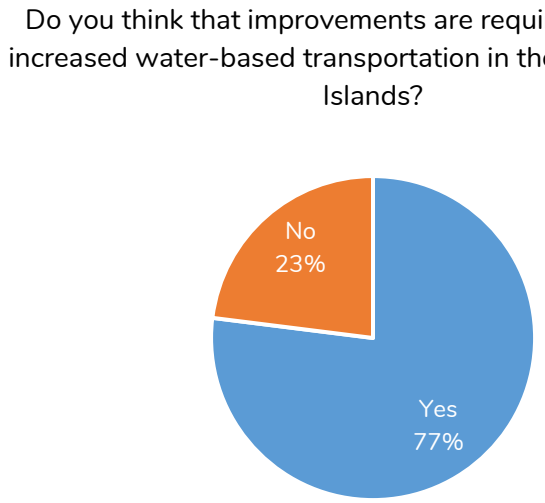


Figure 22. Support for Increased Water-Based Transportation

Respondents were also asked to indicate how important they think different amenities or service features are when considering whether to support a water-based transportation service. Their responses are summarized in **Figure 23**.

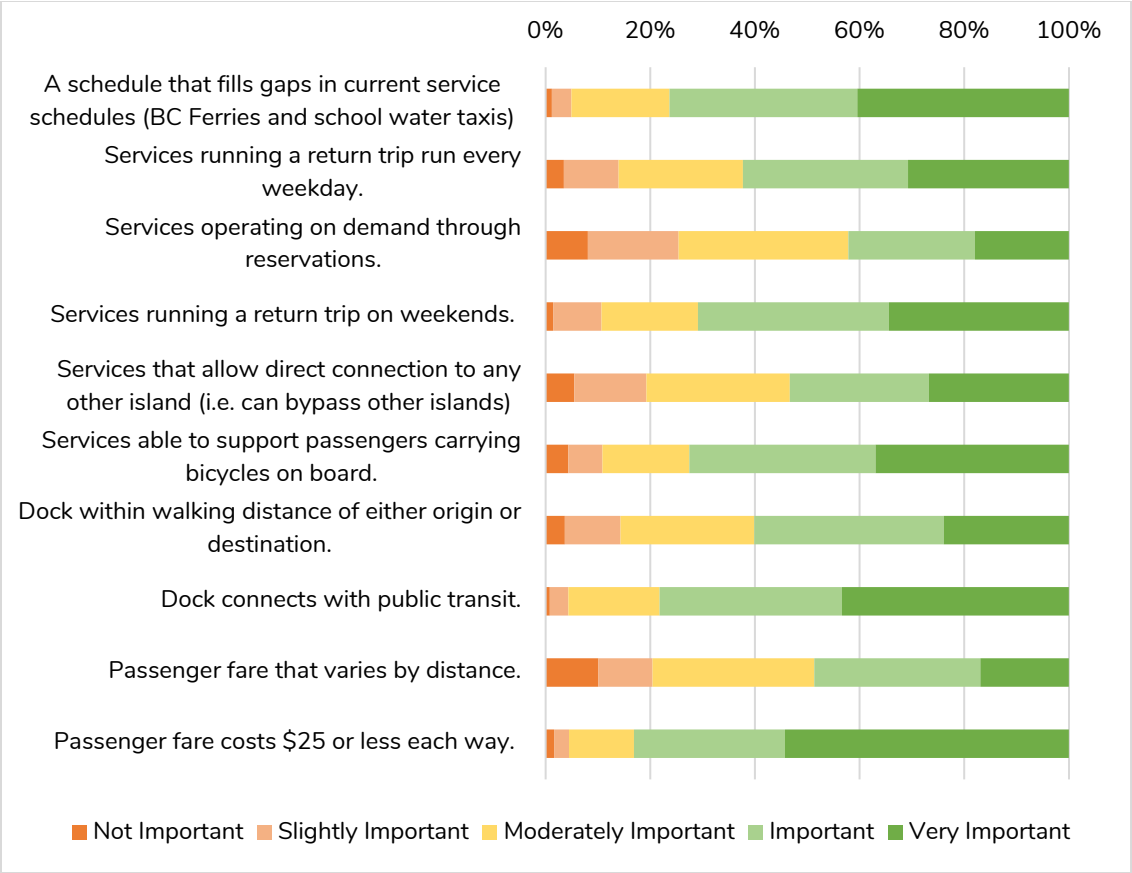


Figure 23. Importance of Water-Based Amenities or Service Features

Respondents were also asked whether there are any other water-based transportation amenities or service features that they think are important. The following themes arose from the comments:

- The need to allow for multi-modal connections when taking water transportation (e.g., connecting with bike routes or public transportation services).
- Services need to be aligned with school schedules and should also allow for day trips (i.e., people can travel to an island in the morning and return in the evening).
- $25 was seen as too high for passenger fare, especially when considering families. Suggestions for fare payment included frequent traveler cards and a rate that integrates with public transportation fares.
- Vessels need to be accessible for wheelchairs, walkers, and strollers, and should accommodate bikes. There were also requests to make them pet friendly.

5.3.6 Other Ideas and Comments

The survey also asked respondents if they have any other ideas or comments on how the CRD could improve transportation options within the Southern Gulf Islands. Many of the previous themes were echoed here, including the need to make roads safer for pedestrians and cyclists as one of the top priorities. Other ideas included:

- Assistance with trip planning to make for more seamless journeys
- Using low-emission or emission-free vessels for water transportation
- Offering an electric bike share program

There were also several comments that were not in favour of paying additional taxes for transportation improvements, as well as some expressing that there are no issues and the islands should be left as is.

5.4 Ideas Tool

Visitors to the engagement site were able to submit their ideas for improving active, public, and water transportation. **91 contributions** were made in total and are summarized below.

Active Transportation

Comments were largely focused on implementing bike lanes, including safe bike routes to school. There was also a suggestion to provide incentives for landowners to allow public pathways on their properties.

Public Transportation

Ideas included electric buses, car sharing, and integration with ferry service. There were also several ideas relating to active transportation. Using public transportation as a way to prevent impaired driving was mentioned in a few of the comments.

Water Transportation

Comments included an ask for travel between the islands at a reasonable cost, as well as providing kids with a way to get home after extra-curricular activities on Salt Spring Island. Ideas for water taxi routes were also provided.

5.5 Additional Comments

Community members also submitted feedback via Facebook and email. These included the following topics:

- Unsafe roads for pedestrians and cyclists
- Vehicle speeds
- Support for a water taxi service
- Road maintenance concerns
- Rationale for increased taxes
- Accessible transportation options for seniors
- Desire to keep rural nature of islands

6.0 NEXT STEPS

The next steps in developing the Transportation Integration Plan are:

- Develop/cost out options and make recommendations
- Community consultation on draft options / costing
- Deliver final report to the CRD Board; seek direction on implementation

APPENDIX A – ONLINE SURVEY QUESTIONS

Community Survey

We want to hear from you!

Complete this survey to help us better understand your transportation experiences, needs, and priorities on and between the Southern Gulf Islands, with a focus on **active transportation** (such as walking, cycling, and rolling), **public transportation** (community buses, taxis, and shuttles), and **water transportation** (passenger ferries and water taxis).

Your feedback will be used to build from and confirm what has been heard so far from past community projects and stakeholders, as well as to determine support for funding community transportation in the Southern Gulf Islands Electoral Area. The intention is to bring options back to the community later this fall for your feedback.

The survey should take approximately **10-15 minutes to complete**. All responses will be kept confidential and anonymous. Please do not provide your name, address or any other personal information that directly or indirectly identifies yourself and/or others. The survey will be open until November 14, 2021 at 11:55 pm.

Thank you for your time and participation! Let's get started.

Your Existing Travel Patterns

Please help us understand how you get around the Southern Gulf Islands right now.

What is your connection with the Southern Gulf Islands? Please select all that apply.

(Choose all that apply)

- [ ] I live on an island
- [ ] I own or rent property on an island but my permanent residence is elsewhere
- [ ] I own or operate a business on an island
- [ ] I am employed by a business or organization on an island
- [ ] I attend school or have family members in school on an island
- [ ] I visit the islands frequently but do not own or rent property there

Answer this question only if you have chosen I live on an island for What is your connection with the Southern Gulf Islands? Please select all that apply.

How long have you lived in the Southern Gulf Islands community?

(Choose any one option)

- [ ] Less than a year
- [ ] 1-2 years
- [ ] 3-5 years
- [ ] 6-9 years
- [ ] 10+ years

Within the Southern Gulf Islands area, on which island do you spend most of your time?

(Choose any one option)

- [ ] Galiano Island
- [ ] Mayne Island
- [ ] North Pender Island
- [ ] South Pender Island
- [ ] Saturna Island
- [ ] Piers Island
- [ ] Salt Spring Island
- [ ] Penelakut Island
- [ ] Thetis Island

Besides the primary island you chose in the question above, where else do you commonly travel? This could be for purposes such as work, school, recreation or to access services, or your place of residence if you are a part-time resident or visitor to the Southern Gulf Islands. (Choose up to 3)

(Choose any 3 options)

- [ ] Galiano Island
- [ ] Mayne Island
- [ ] North Pender Island
- [ ] South Pender Island
- [ ] Saturna Island
- [ ] Piers Island
- [ ] Salt Spring Island
- [ ] Penelakut Island
- [ ] Thetis Island
- [ ] Saanich Peninsula area, including Sidney
- [ ] Other area within the Capital Regional District / Greater Victoria region
- [ ] Cowichan Valley Regional District
- [ ] Other Vancouver Island area
- [ ] Metro Vancouver / Lower Mainland region

When thinking of your transportation on and between the Southern Gulf Islands **before** the COVID-19 pandemic, what were your main ways of getting around? (Select up to five)

(Choose any 5 options)

- [ ] Walking

- [ ] Cycling
- [ ] Rolling (e.g., using a wheelchair, other mobility aid, skateboard, scooter)
- [ ] Community bus
- [ ] School bus
- [ ] Car Stop / hitchhiking
- [ ] Private vehicle as a passenger (i.e. as a shared ride with family or friend)
- [ ] Private vehicle as a driver
- [ ] Taxi
- [ ] BC Ferries
- [ ] School District water taxi
- [ ] Private water taxi
- [ ] Personal boat
- [ ] Other (please specify)

When thinking of your transportation on and between the Southern Gulf Islands **during** the COVID-19 pandemic, what have been your main ways of getting around? (Select up to five)

(Choose any 5 options)

- [ ] Walking
- [ ] Cycling
- [ ] Rolling (e.g., using a wheelchair, other mobility aid, skateboard, scooter)
- [ ] Community bus
- [ ] School bus
- [ ] Car Stop / hitchhiking
- [ ] Private vehicle as a passenger (i.e. as a shared ride with family or friend)
- [ ] Private vehicle as a driver
- [ ] Taxi
- [ ] BC Ferries
- [ ] School District water taxi
- [ ] Private water taxi
- [ ] Personal boat
- [ ] Other (please specify)

Satisfaction with Existing Transportation Options

The Southern Gulf Islands Transportation Integration Plan is primarily focusing on forms of transportation other than private vehicles and BC Ferries services. These other forms include **active transportation** (such as walking, cycling, and rolling), **public transportation** (community buses, taxis, and shuttles), and **water transportation** (passenger ferries and water taxis).

Thinking of the Southern Gulf Island where you spend the most time, how satisfied / unsatisfied are you with the current transportation services and infrastructure available **on your island**?

Questions	Very unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
Active transportation					
Public transportation					
Water transportation					

Thinking of the Southern Gulf Islands area **as a whole**, how satisfied / unsatisfied are you with the ability to coordinate travel?

Questions	Very unsatisfied	Unsatisfied	Neutral	Satisfied	Very satisfied
Ability to connect between islands					
Ability to coordinate travel between different types of transportation					

Priorities for Improving Transportation Options

Please tell us what priorities you support to improve transportation options by **active transportation** (such as walking, cycling, and rolling), **public transportation** (community buses, taxis, and shuttles), and **water transportation** (passenger ferries and water taxis) on the Southern Gulf Islands.

Priorities Across All Modes of Travel - Thinking across all forms of transportation beyond private vehicles, what are the top transportation planning priorities that you think should be considered for the Southern Gulf Islands? Rank in order of priority. (Most prioritized need first)

(Rank each option)

_____ Improve pedestrian trails and walking routes connecting community destinations.

_____ Improve cycling routes between community destinations.

_____ Improve public transportation options available on each island, such as community bus, shuttles, taxis or Car Stop programs to complement transit.

_____ Improve water transportation between islands, such as small passenger ferry services to complement BC Ferries.

_____ Better coordinate transportation services and schedules between islands.

_____ Improve signage and information to communicate transportation options.

Are there any other transportation planning priorities that you think should be considered for the Southern Gulf Islands?

Active Transportation Priorities

What It Is: Any type of transportation that is human-powered. Most commonly referring to walking and cycling, it can also mean rolling using a wheelchair, scooter, skateboard, or inline skates.

Current State: Each of the Southern Gulf Islands has a diverse set of existing trails and road options that have been developed over time by many different organizations, including local trail societies, Parks and Recreation Commissions, BC Parks, Parks Canada, the BC Ministry of Transportation and Infrastructure (MoTI) and the CRD. However, some of the challenges that have been heard so far from stakeholders in this project include:

- Trails that do exist often have a recreational focus, and may not work as well for transportation purposes to connect key community destinations.
- Trail societies are an effective means to develop trails locally but often do not have access to secure funding sources, including those that are earmarked for governments
- Existing trails that do support transportation may not allow bicycles or support accessibility.
- There is often little space on road shoulders for pedestrians and cyclists. Developing pedestrian and cycling trails on or adjacent to road shoulders can be a more complex task as it requires coordinating with other agencies like MoTI, acquiring a License of Occupation to hold the trail, and undertaking a more technical engineering process to ensure drainage, maintenance and safety requirements are met.

Do you think that improvements are required to better support active transportation in the Southern Gulf Islands?

(Choose any one option)

- [ ] Yes
- [ ] No

Answer this question only if you have chosen Yes for Do you think that improvements are required to better support active transportation in the Southern Gulf Islands?

What do you think are the top three priorities to improve active transportation on your island? (choose up to 3)

(Choose any 3 options)

- [ ] Create more space for safe walking and cycling along existing roadways.
- [ ] Develop new off-road trails for walking and cycling that connect key destinations.
- [ ] Improve the accessibility of existing trails for use by people using bicycles, wheeled mobility aids, strollers, etc.
- [ ] Traffic calming and other measures to reduce traffic speeds.
- [ ] Signage and other tools to better communicate safe road-sharing expectations to drivers.
- [ ] Better maintain existing walking and cycling routes.
- [ ] Improve walking and cycling maps and their availability online and in the community.
- [ ] Install more bike racks and safe bicycle / scooter parking at key community destinations.
- [ ] Install more e-bike plug ins at key community destinations.
- [ ] Other (please specify)

Public Transportation Priorities

What It Is: Public transportation can take many forms in smaller and more rural communities and usually looks very different from the large buses seen operating transit in more urban communities.

Services appropriate for the Southern Gulf Islands typically use smaller vehicles, may be operated by non-profits and volunteers, and may also operate on demand rather than following a specific route and bus schedule.

Some types of services include:

- **Community bus services** connecting key destinations and neighbourhoods, either using a schedule or on demand
- **Shuttle services**, such as for larger groups travelling together or special events
- **Taxi** services and other forms like ride-hailing where transportation is provided by a driver in a private vehicle for payment.
- **Car Stop programs** (and other volunteer driver programs) where Car Stop signs are in key spots where people who need rides wait for willing drivers.

Current State: Prior to COVID-19, the four largest Southern Gulf Islands each had community bus and shuttle services operating, as well as Car Stop Programs on most islands and volunteer coordination between the islands for major events like Tour des Iles.

Due to financial insecurity, at this time only Mayne has a community bus and Saturna has an on-demand shuttle program still operating. There is currently no taxi service on any of the islands and COVID health considerations also impacted the use of Car Stop programs. Some islands have school bus service, but non-students are not allowed to ride.

Do you think that improvements are required to better support public transportation in the Southern Gulf Islands?

(Choose any one option)

- [ ] Yes
- [ ] No

Answer this question only if you have chosen Yes for Do you think that improvements are required to better support public transportation in the Southern Gulf Islands?

What are your top three priorities to improve public transportation options on your island? (choose up to 3)

(Choose any 3 options)

- [ ] Community bus service that operates during the peak summer season only (e.g. June to September) and only on weekends (e.g. Friday – Sunday).
- [ ] Community bus service that operates during the peak summer season only but across more days of the week than just weekends.
- [ ] Community bus service that operates year-round with schedules targeted to mainly focus on morning and afternoon/evening commuter travel.
- [ ] Community bus service that operates year-round at commuter times plus other times of the day.
- [ ] Shuttle services to transport residents and visitors to special events.
- [ ] Taxi or ride-hailing options.
- [ ] Expanded and relaunched Car Stops Program when COVID health restrictions lessen.
- [ ] Car share programs.
- [ ] Other (please specify)

Answer this question only if you have chosen Yes for Do you think that improvements are required to better support public transportation in the Southern Gulf Islands?

Please indicate how important you think the following public transportation supports are for your island. (on a scale of 1 to 5 where 1 is

Please indicate how important you think the following public transportation supports are for your island. (on a scale of 1 to 5 where 1 is not important and 5 is very important)

Questions	1 - Not important	2 - Slightly Important	3 - Moderately Important	4 - Important	5 - Very Important
Improved public transportation passenger amenities like signage, benches and shelters at transportation hubs (e.g. BC Ferries terminals and docks served by water taxis).					
Improved public transportation passenger amenities like signage, benches and shelters at other community destinations. (e.g. car stops, community centres)					
Use of technology and online tools or apps to book trips.					
Improved online tools and communication campaigns (social media, message boards) explaining what transportation options are available.					
Improved information within the community and at transportation hubs to communicate what public transportation options are available.					

Answer this question only if you have chosen Yes for Do you think that improvements are required to better support public transportation in the Southern Gulf Islands?

Are there any other public transit supports that you think are important for your island?

Water-Based Transportation Priorities

What It Is: Water-based transportation is intended to complement existing BC Ferries service. Helping to connect the individual Southern Gulf Islands as a region, water transportation serves smaller docks that may include those operated by the CRD Southern Gulf Islands Harbour Commission or private marinas. These services typically operate using water taxis or passenger ferries that may operate using routes and schedules or on demand.

Current State: There are currently a number of existing private water taxi operators within the Southern Gulf Islands and surrounding region, and School District 64 also contracts out water-based school transportation services between the islands. Events like Tour des Iles have showcased how coordinated water transportation between islands can potentially work. Most recently, the Southern Gulf Islands Tourism Partnership operated the AquaLink Pilot Project on weekends in early fall 2021 that connected Galiano, Mayne, Saturna, North Pender and Salt Spring.

Some of the considerations around water transportation include its cost, regulatory requirements and operating conditions:

- Smaller boats have fewer regulatory requirements and can be a viable option in fair weather and for year-round operation in more protected routes (such as between Galiano and Mayne).
- Larger vessels are required for year-round operation that can serve more open routes such as connection to Salt Spring Island and remain reliable during more severe weather. However, these boats also cost approximately more to operate than smaller boats due to certification and regulatory requirements.

Do you think that improvements are required to support increased water-based transportation in the Southern Gulf Islands?

(Choose any one option)

- ☐ Yes
- ☐ No

Answer this question only if you have chosen Yes for Do you think that improvements are required to support increased water-based transportation in the Southern Gulf Islands?

Please indicate how important the following amenities or service features are for you when considering whether to support a water-based transportation service. (on a scale of 1 to 5 where 1 is not important and 5 is very important)

Questions	1 - Not important	2 - Slightly important	3 - Moderately important	4 - Important	5 - Very important
A schedule that fills gaps in current service schedules (BC Ferries and school water taxis)					
Services running a return trip run every weekday.					
Services operating on demand through reservations.					
Services running a return trip on weekends.					
Services that allow direct connection to any other island (i.e. can bypass other islands)					
Services able to support passengers carrying bicycles on board.					
Dock within walking distance of either origin or destination.					
Dock connects with public transit.					
Passenger fare that varies by distance.					
Passenger fare costs $25 or less each way.					

Answer this question only if you have chosen Yes for Do you think that improvements are required to support increased water-based transportation in the Southern Gulf Islands?

Are there any other amenities or service features that you think are important when considering a water-based transportation service?

Other Thoughts on Transportation Needs and Priorities

Do you have any other ideas or comments on how best we could improve transportation options within the Southern Gulf Islands?

About You

To help us better understand responses, please tell us more about yourself.

Which age category do you belong to?

(Choose any one option)

- [ ] Under 18
- [ ] 18-24
- [ ] 25-34
- [ ] 35-44
- [ ] 45-54
- [ ] 55-64
- [ ] 65-74
- [ ] 75 and over

SOUTHERN GULF ISLANDS TRANSPORTATION INTEGRATION PLAN

Round 2 Engagement – What We Heard Report

Prepared For: Capital Regional District (CRD)

Date: March 28, 2022

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1.0 PROJECT OVERVIEW

The Capital Regional District is developing a Southern Gulf Islands (SGI) Transportation Integration Plan. Building on past studies and community feedback, the purpose of the project is to create a blueprint for the future to move from ideas to action when it comes to transportation on and between the largest Southern Gulf Islands: Galiano, Mayne, Saturna, and North and South Pender Islands, with possible links to Sidney and Salt Spring Island.

The objective of this project is to understand the demand and propose future improvements to walking and cycling networks integrated with proposals for public transit and passenger ferry services to complement other travel. The CRD is undertaking this project in response to resident requests for regional coordination of public transit and transportation alternatives. As a Regional District, the CRD can facilitate outcomes on behalf of the community such as administrative coordination and access to funding from other levels of government. Also, unlike non-profit societies, CRD can hold Licences of Occupation in the Provincial Road Right of Way that are needed for roadside trails, meaning that the CRD could support the local volunteer organizations with improvements on the SGI that are currently not possible.

A few rounds of public engagement have been undertaken for this project:

- **Targeted outreach** took place in Spring 2021 and involved virtual workshops with the Transit Advisory Groups (TAG), stakeholder outreach, and information provided to the community via the CRD website, posters, and a media release.
- **Community mapping events** were held at tables that were part of farmers markets and other community events during late August and early September to gather public feedback on gaps and opportunities
- **Round 1 engagement** took place in Fall 2021 and invited the public to provide feedback using the CRD's online engagement platform which included interactive mapping, quick polls, a survey, and an ideas forum. A mailout FAQ was sent to every SGI mailbox to encourage people to fill out the survey.

- **Round 2 engagement** took place in Winter 2022 and sought to understand the level of support for funding various potential transportation solutions. It involved an online survey and four virtual Q&A sessions. A mailout FAQ was sent to every SGI mailbox to encourage people to fill out the survey.

1.1 Objectives of the SGI Transportation Integration Plan

The main project deliverables for the SGI Transportation Integration Plan include:

- Developing and costing out transportation service options that are practical, feasible and right-sized to meet the needs for each community and inter-island connection.
- Undertaking community mapping and engagement to capture existing and proposed trails envisioned by stakeholder organizations and community members, determining community needs and future priorities, and refining recommendations.
- Outlining the action steps and recommendations for how a CRD transportation service could be structured to enable the creation, phasing and integration of land-based public transportation, inter-island water passenger service, and supporting active transportation improvements on each of the Southern Gulf Islands (Galiano, North and South Pender, Mayne and Saturna).







- Understanding the CRD's role in supporting identified community needs and integrated transportation going forward.

2.0 WHAT WE DID

The second round of engagement took place from **January 12 to February 7, 2022**. The following materials were available on the CRD's online engagement platform for the public to review:

- The "What We Heard" report from the first round of engagement
- A table of service options outlining the costs required to meet the range of transportation needs identified by the community
- Photos and background resources including past plans and studies

Engagement by the numbers:

1.5K engagement site visitors

365 surveys completed

43 Q&A session participants

Islanders could then provide feedback on the possible service options by:

- Filling out an online survey
- Participating in one of four online Q&A sessions

The survey and other online engagement tools were promoted using social media, posters, and mail-out advertisements.

In addition, four online Q&A sessions were held to provide information and answer any questions residents might have about the options, the need for a transportation function, and the funding models.



3.0 KEY TAKEAWAYS

The list below outlines the key takeaways from the Round 2 Engagement activities:

- Most survey participants either **strongly support** (45%) or **support** (22%) the concept of a formal transportation function.
- Reasons for supporting a formal transportation function include:
  - Better safety for pedestrians and cyclists
  - The need for alternatives to private vehicles, especially when considering environmental impacts and an aging population that is unable to drive
  - Better connections between communities
  - Independence for youth and seniors
  - Value in having a coordinating body that can organize priorities, access funding, and that has the authority to implement improvements
- A quarter of respondents **strongly oppose** (17%) or **oppose** (8%) the concept of a formal transportation function.
- Reasons for not supporting a formal transportation function include:
  - Affordability and tax impacts
  - Concerns about the transportation function being process and staff heavy
  - Concerns about CRD ability to implement the plan efficiently and effectively
  - No need for change
- Eighty-five percent of respondents to the survey indicated a desire for change from the current level of transportation service on the islands. A fully integrated (supports all three modes: Active, land- and water-based modes) transportation system was the first preference for most participants and a semi-integrated (supports Active and land-based modes primarily with minor support for water-based modes) transportation system was the second preference for most participants.

- From the results, it is clear that affordability and the desire for change from the status quo are both important factors for the respondents. Balancing the transportation needs of the community with affordability could mean starting smaller and building – i.e., starting with a baseline of a semi-integrated system and growing into fully integrated system.
- Most respondents either strongly agree (36%) or agree (25%) with bringing a proposed service establishment bylaw forward to a referendum. About a quarter of respondents strongly disagree (21%) or disagree (6%).

4.0 WHO WE HEARD FROM

The online survey included several demographic questions to allow the project team to better understand who participated. **The following results are specific to the online survey only and do not reflect the demographics of the participants who were engaged in other ways (e.g., the online Q&A sessions or on Facebook)**. Overall, the participant demographics from Round 2 engagement align closely with the demographics from Round 1.

4.1 Age

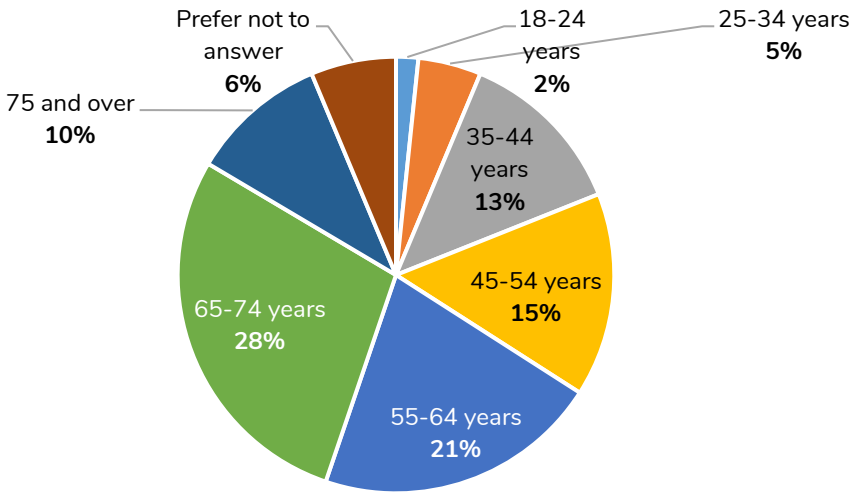


Figure 1. Survey Respondent Ages

As shown in Figure 1, half of respondents were between the age of 55-74 years. **The largest age groups were 65-74 years (28%), 55-64 years (21%), and 45-54 years (15%).** Youth representation was low, with the fewest responses coming from the 18-24 and 25-34 age categories at 2% and 5%, respectively. There were no responses from the Under 18 age category.

4.2 Geographic Representation

Respondents were asked the following question: "What is your connection with the Southern Gulf Islands? Please select all that apply." Figure 2 shows their responses. Most respondents (85%) live on one of the Southern Gulf Islands.

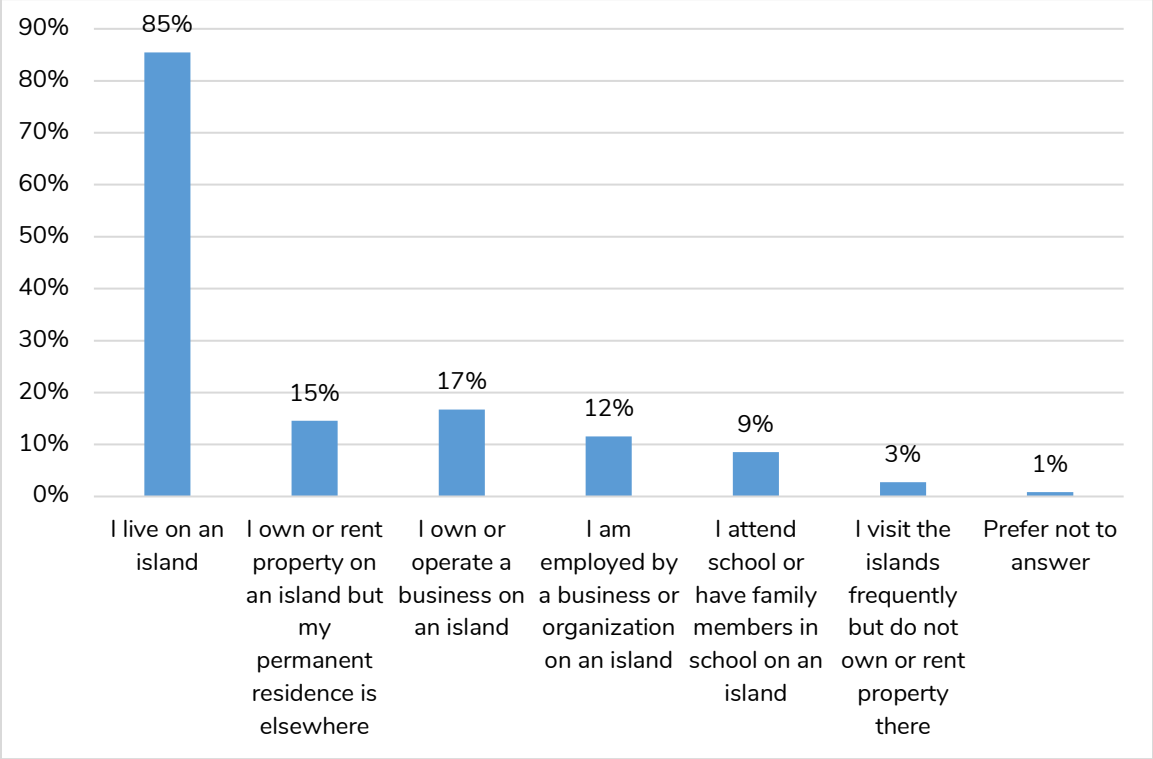


Figure 2. Survey Respondent Connection with Islands

Respondents who indicated that they live on an island were also asked how long they have lived in the Southern Gulf Islands community. Figure 3 shows their responses. **71% of participants have lived in the community for at least six years, with the majority (59%) being residents for 10+ years. 12% of respondents have lived in the community for two years or less.**

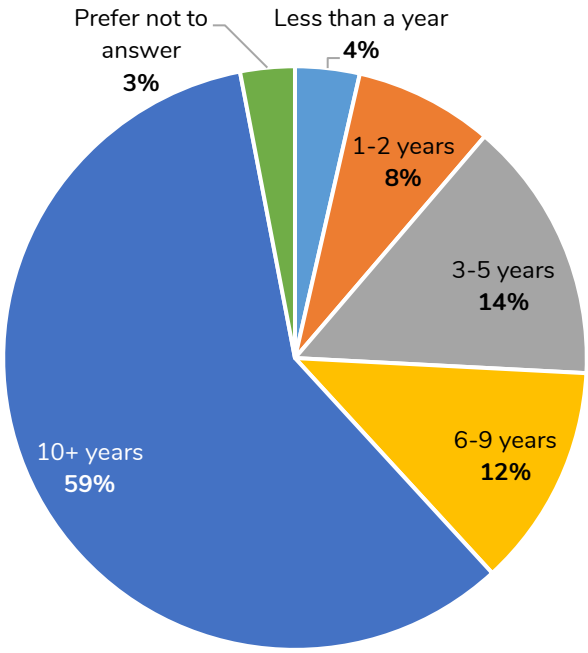


Figure 3. Survey Respondent Time Spent in Southern Gulf Islands Community

Additionally, respondents were asked: “Within the Southern Gulf Islands area, on which island do you spend most of your time?”. As shown in **Figure 4**, North Pender Island and Galiano Island had the most responses (34% each), followed by Saturna Island (14%) and Mayne Island (10%). Thetis Island, Salt Spring Island, and South Pender Island had the fewest responses at 0.28%, 3% and 4%, respectively.

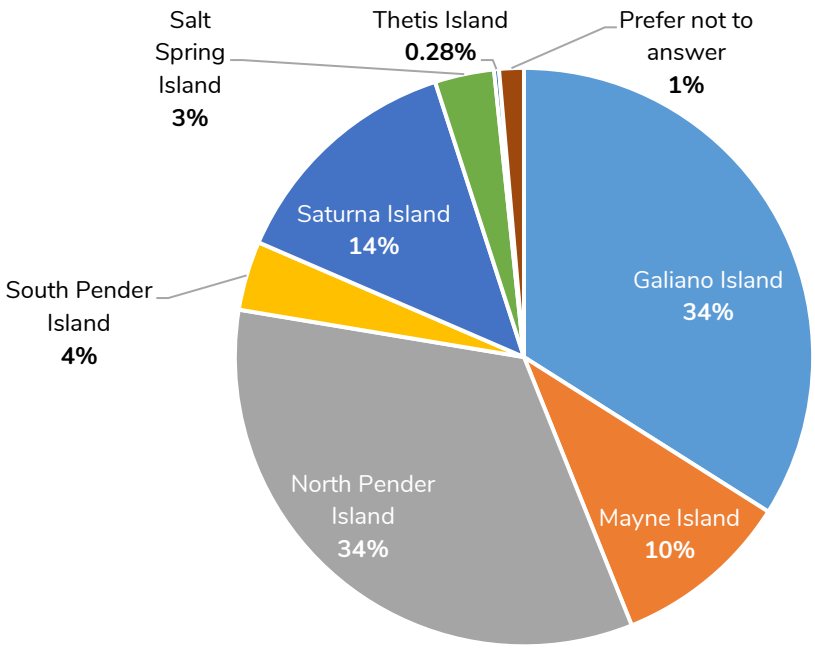


Figure 4. Survey Respondent Primary Island

5.0 WHAT WE HEARD

5.1 Online Survey

The online survey received a total of **365 responses**. This aligns with our observation that participation for a second round of engagement tends to be lower and is typically one third of total participation. Respondents were asked to indicate:

- Support for the concept of a formal transportation function for the Southern Gulf Islands Electoral Area
- Preference for the different transportation options presented, by ranking them, based on the table of service levels and costs
- Agreement with bringing a proposed service establishment bylaw forward to a referendum

See **Appendix A** – Online Survey Questions for the full set of survey questions.

5.1.1 Support for the Concept of a Formal Transportation Function

The survey was organized in a chronological manner with background information provided first and then questions after, to ensure that respondents were able to understand the options and related costs and benefits before indicating a preference.

The background information included details about:

1) What a CRD transportation function might look like and why it is being considered.
2) A list of potential activities that could be undertaken if a transportation function were established (such as **providing funding to local trail and island community bus societies, applying for grant funding on behalf of the SGI, creating coordinating tools that support multiple types of travel, and CRD sponsorship and staff support to access even more funding**).

Today, the CRD does not have a transportation function for SGI and therefore does not have the authority to provide transportation funding to local operators or secure grants from other sources to support local transportation projects. As a regional district, the CRD cannot use funding from other service or budget areas to do so.

3) The creation of a bylaw: It was noted that a formal transportation function must be created through a service establishment bylaw that is approved by electors, typically through referendum.

After reading this background section, participants could then proceed to the survey questions described below.

Participants were asked: "Based on the description provided and ahead of considering costs, do you support the concept of a formal transportation function for the SGI EA?" Options ranged from "Strongly Oppose" to "Strongly Support", as well as "Don't Know". Figure 5 summarizes the responses to this question. **Most participants either strongly support (45%) or support (22%) the concept of a formal transportation function.** A quarter of respondents oppose (8%) or strongly oppose (17%) the concept.

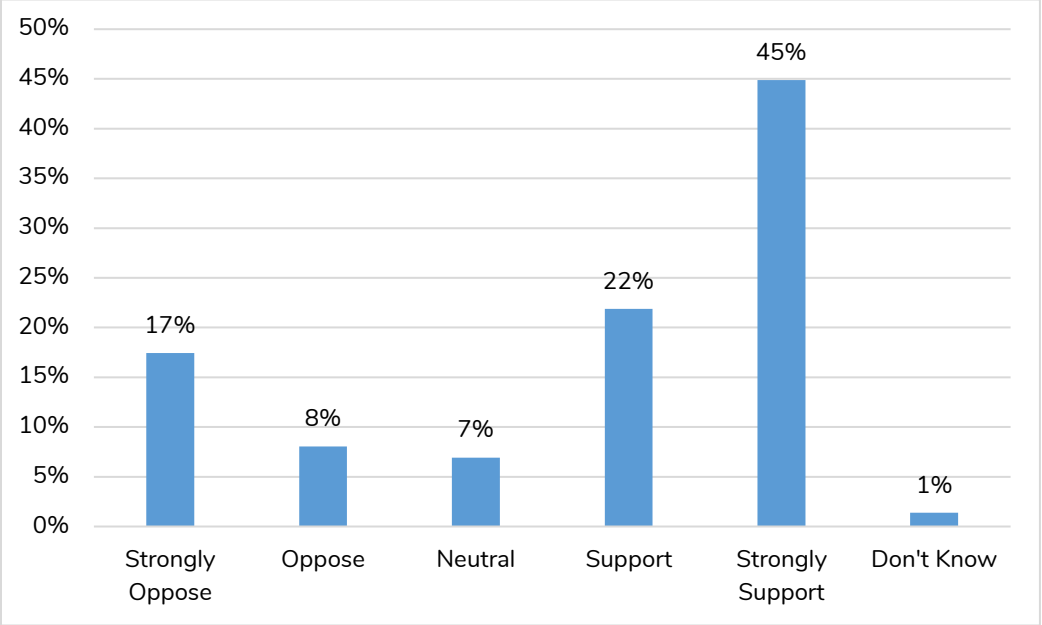


Figure 5. Level of Support for the Concept of a Formal Transportation Function for the SGI Electoral Area

Respondents were also asked to provide the reasoning behind their answers to this question. Those in support of the concept of a formal transportation function provided reasons such as:

- Better safety for pedestrians and cyclists
- The need for alternatives to private vehicles, especially when considering environmental impacts and an aging population that is unable to drive
- Better connections between communities
- Independence for youth and seniors
- Value in having a coordinating body that can organize priorities, access funding, and that has the authority to implement improvements

The primary reason participants gave for not being in support of a formal transportation function were:

- Affordability and tax impacts
- Concerns about the transportation function being process and staff heavy
- Concerns about CRD ability to implement the plan efficiently and effectively
- No need for change

5.1.2 Support for Various Service Options

A table of service options was available on the CRD's online engagement platform outlining the approximate costs required to meet the range of transportation needs identified by the community. This included examples of service levels that could be supported for local governance, public transit, active transportation, water transportation, infrastructure, and coordination with different levels of funding. It also estimated the approximate tax impact for the average household for each option, while also noting that a portion of funding may come from user fares, partnerships, and other revenue sources. Tax impacts were based on 2021 property assessments. See **Appendix B** – Table of Service Levels & Costs for the detailed table. The following options were presented:

- **Option A:** Status Quo (assumes $0 in additional costs)
- **Option B:** Basic Level Grants (Estimated Annual Budget: **$270,000**)

- **Option C:** Semi-Integrated Transportation System (Estimated Annual Budget: **$450,000**)
- **Option D:** Fully Integrated Transportation System (Estimated Annual Budget: **$675,000**)

Participants were asked to rank each option in order of preference, with "1" being their most preferred option and "4" indicating their least preferred option. As shown in Figure 6, 85% of respondents selected Option B, C, or D as their first choice. This indicates that **85% of respondents desire a change to the current level of transportation service on the islands.**

- The **#1 preference** for most respondents was **Option D** (45%), followed by Option A (33%).
- The #**2 preference for** most respondents was **Option C** (50%), followed by Option B (33%).
- The #**3 preference for** most respondents was **Option B** (50%), followed by Option C (26%).
- The **#4 preference** for most respondents was **Option A** (56%), followed by Option D (31%).

Twenty percent of the respondents to this question provided a preference for only one of the four options presented, and no others. Of those respondents, thirteen percent only selected Option A, indicating a lack of interest in any change.

When asked to provide comments about the reasoning behind their choices, participants generally responded in one of two ways: (1) that they do not support any changes or additional taxation, or (2) that if a system is implemented then it should be all-encompassing. Those who were not in support of change expressed concerns about affordability, especially for residents with low or fixed incomes. Some respondents were supportive of a more balanced approach that starts with smaller improvements and increases over time.

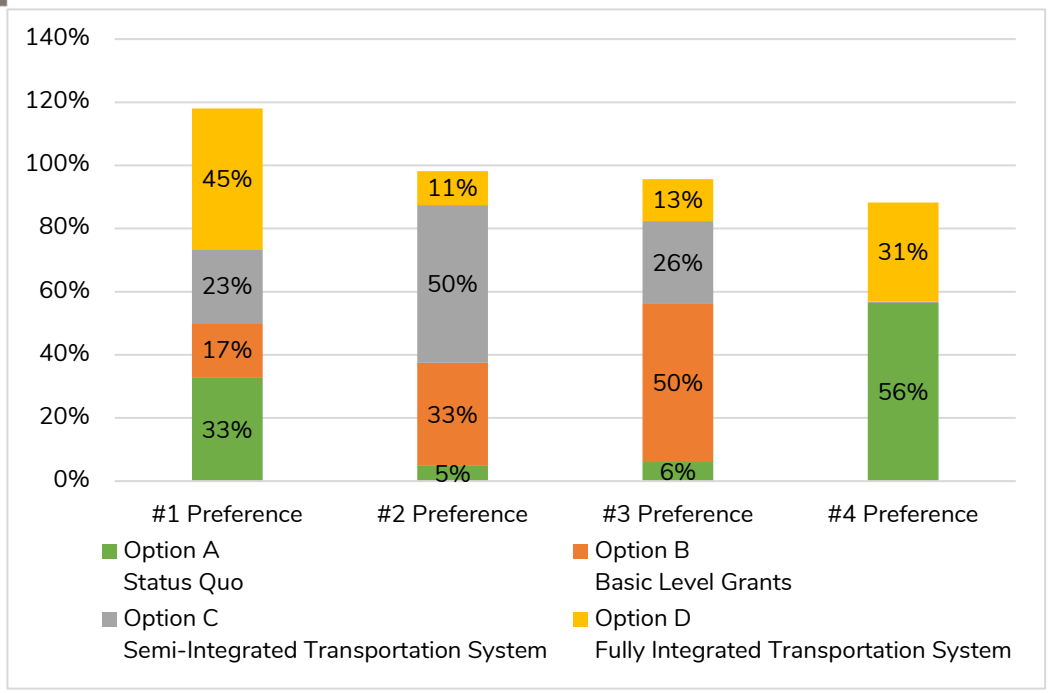


Figure 6. Percent of Participants Who Selected Each Service Option, by Preference Ranking

The results suggest that most of the community recognizes a need for a comprehensive transportation service, but there is hesitation about the money required to implement a fully integrated system right away. Therefore, to balance the transportation needs of the community with affordability, an approach to consider would be to start with a baseline of Option C and grow into Option D.

Figure 7 shows the proportion of each age category that selected each option as their first preference. Option C and D were more popular across most of the age categories, and about half of respondents from the 55-64 age category chose Option A or B. Interestingly, Option A and B were also popular in the 18-24 age bracket, perhaps also from an affordability standpoint.

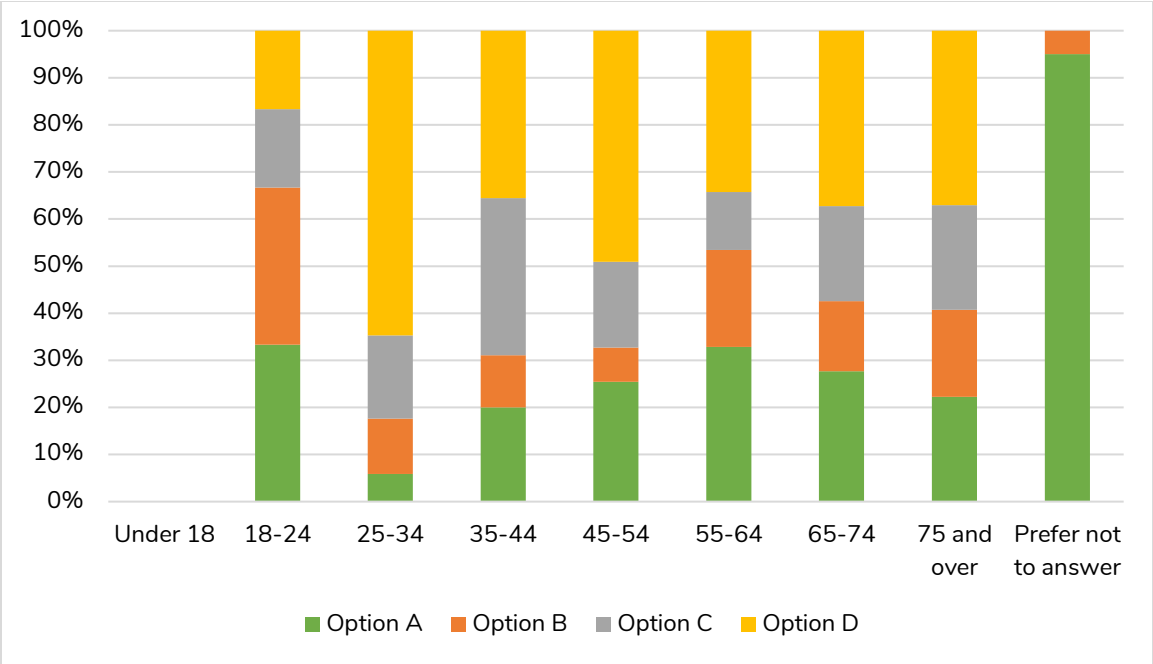


Figure 7. First Choice Options by Age Category

It should be noted here that while comparing the response of individual islands with respect to the options, the following was observed:

Respondent Primary Island	% of respondents who chose option D as first preference	% of respondents who chose option A as first preference	% of respondents to the question
Galiano	49%	25%	42%
Mayne	40%	19%	12%
North Pender	46%	36%	41%
South Pender	25%	64%	5%
Saturna	33%	45%	17%

Of the South Pender and Saturna Island residents that responded to the question, a majority chose option A, compared to residents from Galiano, Mayne, and North Pender Islands, a majority of whom support Option D. However, there were fewer overall responses from both South Pender and Saturna.

5.1.3 Agreement with Referendum

Respondents were also asked whether they agree or disagree with bringing a proposed service establishment bylaw forward to a referendum. As shown in **Figure 8**, most respondents either strongly agree (36%) or agree (25%). About a quarter of respondents strongly disagree (21%) or disagree (6%). Based on the additional comments provided, reasons for not supporting a referendum were generally associated with a lack of support for changes to the transportation system. Additionally, some respondents indicated support for change but expressed concerns about the effectiveness of a referendum.

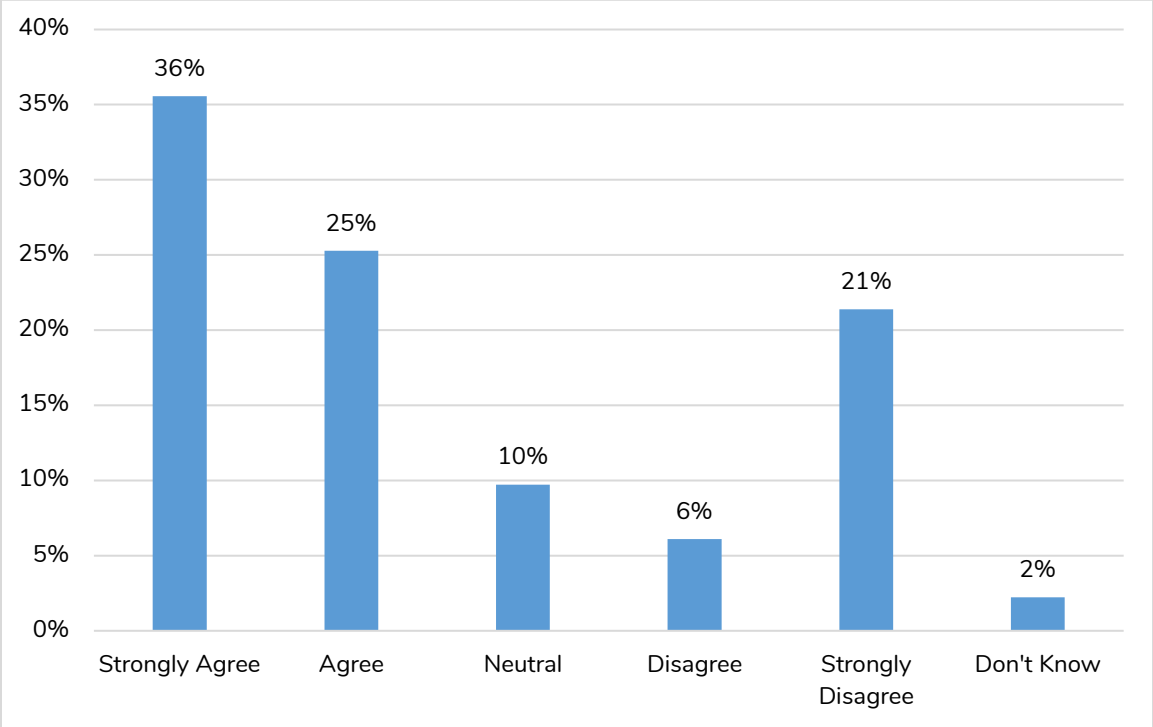


Figure 8. Level of Agreement with Bringing a Proposed Service Establishment Bylaw Forward to a Referendum

5.2 Online Q&A Sessions

Four online Q&A sessions were held to provide information and answer any questions residents might have about the options, the need for a transportation function, and the funding models.

Key areas of feedback centred around:

- Support for the concept of a transportation function, with some participants questioning whether the example option budgets shown were too low.
- Concerns with the increase in taxes that would be necessary to create a transportation service, indicating that it would be harder for residents with lower or fixed incomes to pay for.

Other key areas of questions and feedback were:

- Trying to understand the need (why this step is needed) for establishing and funding a new transportation service. (Regional District services are authorized through establishment bylaws that define the scope and authority of the service. Funds raised through taxation for one service can't be shifted for a purpose that is not addressed in the scope of the bylaw. In other words, the CRD cannot reallocate funding from other areas.)
- Clarification that the CRD has received grants for trails from other levels of government through other functions (such as Regional Parks), but that these programs are Regional Services and advance regional recreational objectives, where a local transportation service is needed to advance local priorities, while complementing other projects. CRD cannot currently apply for third party grants for public transit or inter-island travel as there is not a transportation service established with the authority to do so.
- Clarification that the service establishment bylaw would state a maximum requisition amount that could be collected for the service. A Transportation Commission comprised of local representatives would be convened and tasked with recommending annual budgets to allocate funding for each travel mode on each island.

- Consideration of increasing the proportion of funding available for active transportation within the example funding options and being very clear that larger cycling and walking improvement projects would require third party funding from other levels of government. If an SGI transportation service is established, it would be supported by staff and enable grants to be applied to meet local needs.

6.0 NEXT STEPS

The next steps in developing the Transportation Integration Plan are:

- Completing draft Active Transportation Plan
- Updating and completing draft Transportation Integration Plan report based on Phase 2 results

When these documents are finalized, then it is anticipated that CRD staff will bring a recommendation forward to the CRD Board on the next steps with respect to a referendum.

APPENDIX A – ONLINE SURVEY QUESTIONS

SGI Transportation Survey 2: Services Options and Costs

Thank you for your participation in our second round of community engagement. We are now compiling the feedback we received.

For more information you can email TransportationSGI@crd.bc.ca.

Part 1 – What Might a CRD Transportation Function Look Like and Why?

A key barrier to improving transportation in the Southern Gulf Islands is the lack of sustainable and predictable funding for the local transportation organizations who help make it happen.

Establishing a formal transportation service through the CRD for the SGI could help fund and support community transportation organizations and initiatives, similar to what already exists for the Salt Spring Island Electoral Area.

Today, the CRD does not have a transportation function for SGI and therefore does not have the authority to provide transportation funding to local operators or secure grants from other sources to support local transportation projects. As a regional district, the CRD cannot use funding from other service or budget areas to do so.

If a formal transportation function was established for SGI, it would be guided by a Southern Gulf Islands Transportation Commission made up of island representatives to guide local priorities.

A transportation service bylaw would focus on means of travel other than the private vehicle, including walking, cycling, public transportation, car sharing, Car Stops, and inter-island connection via passenger-only water taxis, where feasible.

If approved, potential activities include:

- **Fund grants to local trail societies** to help them more easily plan for and build walking and cycling routes connecting key community destinations.
- **Provide stable funding to island community bus societies** to help them continue operations, provide service across more times of the year, and be able to financially support a larger share of their drivers.
- **Create coordinating tools that support multiple types of travel,** such as a website showing travel options across the SGI, as well as online trip booking software to support on-demand community bus services and available private water taxi trips.
- **CRD sponsorship and staff support to access even more funding for projects in the SGI through provincial and federal programs,** such as funding for walking and cycling routes and to offset the cost of transit vans, for example.
- **Other CRD support as needed** to help local organizations make transportation happen, such as developing partnerships, holding the Licences of Occupation required to develop roadside trails, maintaining insurance, and leasing or owning land and vehicles if required and a local organization is not able to do so.

A formal Southern Gulf Islands transportation function as described above must be created through a service establishment bylaw that is approved by electors, typically through referendum.

Based on the description provided and ahead of considering costs, do you support the concept of a formal transportation function for the SGI EA?

(Choose all that apply)

- ☐ Strongly oppose
- ☐ Oppose
- ☐ Neutral
- ☐ Support
- ☐ Strongly support
- ☐ Don't know

☐ Don't Know

Please tell us more about the reasons for your answer.

Other than cost considerations for such a function (which is discussed in the next section), do you have any other questions about what a CRD transportation function might do?

Part 2 - Potential Transportation Function Scope and Funding Levels

A portion of funding for a Southern Gulf Islands transportation function may come from user fares, partnerships, and other funding sources it can leverage. Ongoing funding would also come from property taxes up to a maximum requisition amount outlined in a service bylaw.

The maximum requisition determines the level of service and the potential scope of what a transportation function could offer. We would like to understand the level of service and funding that is needed and supported by the community.

- The Table of Service Levels & Costs (linked below) provides examples of what levels of service could be supported with different levels of funding.
- The service options have been developed based on past community feedback and plans, stakeholder involvement to-date, costing analysis of existing services such as community bus operations, and best practices.
- Ultimately if a SGI transportation service was established, the funding priorities would be determined by its locally represented Commission within its annual budget.

Link to Table of Service Levels & Costs. (Use this link for mobile devices.)

Based on the Table of Service Levels & Costs, please rank the options in order of preference, with one being your most preferred option.

(Rank each option)

_____ Option A – Status Quo

_____ Option B – Basic Level Grants Annual Budget: $270,000

_____ Option C – Semi-Integrated Transportation System Annual Budget: $450,000

_____ Option D – Fully Integrated Transportation System Annual Budget: $675,000

Please tell us more about the reasons for your answers.

Do you have any questions or comments about a potential CRD Southern Gulf Islands transportation function, the funding models or the scope of services provided?

Part 3 –Whether to Move Forward to a Referendum

Establishing a formal transportation function for the Southern Gulf Islands Electoral Area would require developing a service establishment bylaw and bringing it forward for referendum, which could be timed to take place as part of the October 2022 general local government elections.

The CRD Board will decide whether to move forward with a proposed transportation function and service establishment bylaw as well as whether to bring forward to residents to approve through referendum. Your feedback will help us understand the level of community support for a referendum ahead of bringing options forward to the Board.

We would like to gauge the level of community support for moving a transportation function concept forward to referendum.

Do you agree or disagree with bringing a proposed service establishment bylaw forward to a referendum?

(Choose all that apply)

- ☐ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree
- ☐ Don't know

Please tell us more about the reasons for your answer.

About You

To help us better understand responses, please tell us more about yourself.

What is your connection with the Southern Gulf Islands? Please select all that apply.

(Choose all that apply)

- [ ] I live on an island.
- [ ] I own or rent property on an island but my permanent residence is elsewhere.
- [ ] I own or operate a business on an island.
- [ ] I am employed by a business or organization on an island.
- [ ] I attend school or have family members in school on an island.
- [ ] I visit the islands frequently but do not own or rent property there.
- [ ] Prefer not to answer.

Within the Southern Gulf Islands area, on which island do you spend most of your time?

(Choose any one option)

- [ ] Galiano Island
- [ ] Mayne Island
- [ ] North Pender Island
- [ ] South Pender Island
- [ ] Saturna Island
- [ ] Piers Island
- [ ] Salt Spring Island
- [ ] Penalukut Island
- [ ] Thetis Island
- [ ] Prefer not to answer.

How long have you lived in the Southern Gulf Islands community?

(Choose any one option)

- [ ] Less than a year
- [ ] 1-2 years
- [ ] 3-5 years
- [ ] 6-9 years
- [ ] 10+ years
- [ ] Prefer not to answer.

Which age category do you belong to?

(Choose any one option)

- [ ] Under 18
- [ ] 18-24
- [ ] 25-34
- [ ] 35-44
- [ ] 45-54
- [ ] 55-64
- [ ] 65-74
- [ ] 75 and over
- [ ] Prefer not to answer.

APPENDIX B – TABLE OF SERVICE LEVELS & COSTS

Integrated transportation in the Southern Gulf Islands
Examples of service levels and costs



The following examples of service options and funding levels show the costs required to meet the range of transportation needs identified by the community.

- The examples are based on information provided by SGI community organizations including trail and bus societies; costing analysis and best practices from other communities; broad SGI stakeholder involvement; community feedback; and information from previous transportation plans.
- Options A-D are grounded in actual costs, but in the case of options B, C and D, the establishment of a Transportation Commission for SGI would provide the ability to "mix and match" through the annual budget process (in other words, these are only examples of the level of service that could be supported with various amounts of funding).
- If a local Transportation Commission was established, it would be involved in the annual budget process. The authority to provide service and the range of transportation options would be defined by a "service establishment bylaw," adopted by the CRD Board (subject to a successful referendum in 2022).

Option	Approximate Tax Impact for the Average Household [1]	Transportation Function Service Level
Option A Status Quo	$0	CRD provides $0 for SGI transportation services. • **Local Governance:** No change. No ability for CRD to fund or support transportation in the SGI. No coordination for integrated transportation options. No ability for CRD to apply for transportation grant funding from other levels of government. No staff support. • **Public Transit:** No funding available. Each community bus society raises funds to provide service that is volunteer based, seasonal, and not always viable on some islands. • **Active Transportation:** No funding available. Volunteer trail societies raise own funds for trail infrastructure. No incentive to connect transportation hubs (i.e. trails continue to be mostly recreational). • **Water Transportation:** No funding available. Marine connection between islands is BC Ferries and unsubsidized, uncoordinated water taxi services.

[1] **Note:** While a portion of funding for a Southern Gulf Islands transportation function may come from user fares, partnerships, and other revenue sources, if it is approved by Southern Gulf Islands voters in a referendum, the function's ongoing funding would also come from property taxes up to a maximum limit. The level of property tax limit approved determines the level of service that could be offered and the potential scope of what the transportation function could offer, the tax amounts are based on the average residential assessed value of a house in the SGI in 2021 of $525,581. In reality, the actual amount would vary depending on the property's value. For this reason, a cost per $100,000 of assessed value has also been provided.

Option B Basic Level Grants	• **$28 up to maximum of $39 per year** for the average property owner • $5.32 to $7.40 per $100,000 of assessed property value	Provides **$270,000** annual funding to support basic transportation service across the SGI: • **Local governance:** Funding available. Could establish a SGI Transportation Commission with SGI volunteer commissioners to guide planning and decision making, and to make recommendations for an annual budget. Part time CRD staff person to support the Commission, to administer the grant program, to manage permits and tenures, and to go after larger provincial and federal funding programs. • **Public Transit:** Funding available. Could support annual CRD grants of approx. $30,000-$45,000/year to local community bus societies towards operations costs such as maintenance and insurance. The community buses would own and maintain their own vehicles and likely would rely on volunteer drivers to run seasonal services. CRD could apply for grants to purchase and own vehicles, then lease them to service providers (but CRD would not operate the bus services). • **Active Transportation:** Funding available. Could support annual CRD grants of approx. $4,000-$5,000/island to local trail societies for active transportation trails. If requested, CRD could hold tenure (such as Licences of Occupation in the public road Right of Way) but would not operate or maintain trails. Trails societies would continue this function as now. Would not fund construction of roadside trails (this would need infrastructure funding from external sources as above). • **Water Transportation:** No funding available. Marine connection between islands would still depend on 3rd parties - BC Ferries or unsupported private water taxi operators. No CRD funding or staff capacity to pursue partnerships. • **Infrastructure:** No Funding available. • **Coordination:** Funding available. Could provide base level coordination for integrated transportation (e.g. fund a website hub with links to 3rd party schedules).
Option C – Semi-Integrated Transportation System	• **$48 up to maximum of $65 per year** for the average homeowner • $9.05 to $12.34 per $100,000 of assessed property value	Would provide up to **$450,000** annually for: • **Local Governance:** Funding available. Establishes SGI Transportation Commission with locals to guide decision making. Full time staff support for the commission and for strategic integrated transportation planning, as well as internal and external grant programs. • **Public Transit:** Funding available for operations costs. Could support larger grants to local community bus societies of roughly $50,000-65,000 per island (amounts may vary by island depending on service levels). This could enable more regular service by community buses and hiring some paid staff/drivers. Funding at a level to enable the option to pursue BC Transit service (if desired). • **Active Transportation:** Funding available. Could support annual CRD grants to local trail societies for active transportation trails (up to $8,000/island), as well as more CRD support to apply for larger provincial and federal funding programs. If requested CRD could hold tenure, but would not operate or maintain trails. Trails societies would continue this function as now. Would not fund construction of roadside trails (this would need infrastructure funding from external sources as above). • **Water transportation** - Funding available to convene partnerships aimed at regular scheduled water taxi services, but likely cannot actually fund service improvements without other budget trade-offs. • **Infrastructure:** Small-scale funding available for bike racks, benches and signage. • **Coordination:** Funding available. Full time CRD staff support across all modes. Coordination tools would include promoting car shares, eBike programs, trip booking systems.

Option D – Fully Integrated Transportation System	• **$85 up to maximum of $95 per year** for the average homeowner • $15.49 to $18.51 per $100,000 of assessed property value	Would provide up to **$675,000** annually for: • **Local Governance:** Funding available. SGI Transportation Commission with locals to guide decision making. Full time staff support for the commission and for strategic integrated transportation planning, as well as internal and external grant programs, as well as capacity for technical expertise (e.g. engineering). • **Public Transit:** Funding available for operations costs. Could support larger grants to local community bus societies of roughly $70,000-85,000 per island (amounts may vary by island depending on service levels). This could enable year-round community bus service with paid staff. • Funding at a level to enable the option to **pursue year round BC Transit service (**if desired). • **Active Transportation:** Funding available. Supports larger annual grants of approx. $6,000-10,000/island for local trail societies to operate and maintain certain active transportation trails, as well as more CRD support to apply for larger provincial and federal funding programs. If requested CRD could hold tenure. CRD could own and fund maintenance of some trails. • **Water Transportation:** Funding available. Convenes and supports a financial contribution towards partnerships for seasonal and potentially year-round water taxi services. • **Infrastructure:** Funding available for bike racks, benches, signage and dockside improvements. Access to engineering expertise to undertake more complex infrastructure projects like roadside pathways. • **Coordination:** Funding available. Reliable and effective coordinating tools, multi-modal trip booking system, infrastructure and full time staff support across all types of travel.

For more information: Visit http://getinvolved.crd.bc.ca; Email transportationsgi@crd.bc.ca; Call 1-250-360-3275

Making a difference...together

www.crd.bc.ca
Twitter: @crd_bc
Facebook: Capital Regional District

Making a difference...together

ERM 22-18

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT **Curbside Blue Box Recycling – 2024 and Beyond**

ISSUE SUMMARY

To seek direction with respect to the Capital Regional District's (CRD) continued involvement with the provision of residential curbside blue box recycling service after December 31, 2023.

BACKGROUND

Recycle BC (RBC) has been responsible for the management of residential packaging and printed products throughout the province of BC, including providing funding to the CRD for the curbside blue box program since May 2014.

At its meeting of July 9, 2014, the CRD Board passed a motion directing staff to enter into an agreement with RBC to provide residential curbside recycling services on its behalf for the capital region beginning May 1, 2015 and ending April 30, 2019. This agreement was renewed on February 14, 2018 when the CRD Board passed a motion directing staff to enter into an agreement with RBC to again provide residential curbside recycling services on its behalf beginning May 1, 2019 and ending December 31, 2023. With the successful execution of the contract with RBC, staff issued a tender to provide curbside blue box collection, and the contract was awarded to Emterra Environmental, which also ends on December 31, 2023.

With both the RBC agreement and the contract with Emterra expiring in approximately 20 months, a decision needs to be made regarding whether the CRD wishes to continue to be involved with the provision of the residential curbside blue box service. Staff wrote to RBC in January seeking confirmation of its plans for the service beyond 2023 and requested a new long-term agreement for the CRD Board's consideration to continue providing the service. RBC responded with a letter to staff on March 8, 2022 instead confirming its intention to extend the term of the contract with the CRD by one year, to December 31, 2024. RBC's rationale for the one-year extension is to allow them time to conduct a province-wide cost study that will be used to establish curbside collection payment rates for 2025 and beyond. The letter also states that RBC considers the CRD a valued partner and that, following the one-year extension to the current agreement, it intends to provide the CRD with a new five-year agreement to continue to provide residential curbside recycling services for the years 2025 through 2029. A copy the RBC letter is provided in Appendix A.

The CRD's contract with Emterra does not contain an option for an extension, and Emterra management has indicated it is not interested in an extension under the current terms. Therefore, the CRD has four options with respect to residential curbside blue box recycling service beyond December 31, 2023:

- discontinue its involvement with the service and turn over responsibility for provision of the service by RBC directly
- negotiate a one-year extension of the Emterra Environmental contract to December 31, 2024
- issue a Request for Proposals (RFP) for a one-year collection contract for 2024 only
- issue an RFP for a new six-year collection contract

Should the CRD elect to discontinue its involvement with RBC and the provision of residential curbside recycling services, it would need to advise RBC in writing of its intentions no less than six months prior to the expiration of the current agreement with RBC. Under the BC Recycling Regulation (BCRR), RBC would be required to instead directly implement its own residential curbside recycling service for all homes that currently receive such service. RBC has requested that it be notified by July 1, 2022 by local governments wanting to turn over curbside recycling services to it, and that it would then look to implement its own direct service beginning January 1, 2025. RBC has indicated that this two-and-a-half year timeline is needed to allow it sufficient time to establish its own program and ensure there is no break in the provision of service resulting from the transition from a CRD-provided service to an RBC-provided service. RBC staff have indicated a shorter timeline could potentially result in a period of time where there is no service being provided.

The issuance of an RFP for a one-year contract to provide curbside blue box collection for 2024 would almost certainly produce an unacceptably expensive contract, as all of the capital costs for collection trucks would be amortized over just one year. Staff believe that this is not a viable option, and do not recommend seeking a new one-year contract.

The CRD could continue to provide curbside recycling services on behalf of RBC beyond December 31, 2023 and issue an RFP for a new six-year collection contract for curbside recycling services. The CRD would need to award a new collection contract approximately 18 months in advance of the start of the work to allow sufficient time for collection trucks to be ordered, manufactured and delivered for use beginning January 1, 2024. The procurement for collection services will include enhanced contract enforcement language to ensure better curbside recycling services during challenging conditions, such as those encountered in 2020-2021.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That staff be directed to issue a Request for Proposals for a six-year contract for Board approval to provide residential curbside blue box collection, from January 1, 2024 to December 31, 2029;
2. That staff be directed to return to the Environmental Services Committee and the Capital Regional District Board for direction prior to awarding the Request for Proposals; and
3. That staff accept the Recycle BC one-year extension to their current agreement with the CRD to provide service to the end of 2024, and then enter into a new five-year agreement with Recycle BC to provide residential curbside recycling services for the capital region on its behalf for January 1, 2025 to December 31, 2029.

Alternative 2

That staff be directed to negotiate a one-year extension of the Emterra Environmental contract to December 31, 2024.

Alternative 3

That staff be directed to serve written notice to Recycle BC that the CRD does not wish to continue to provide residential curbside recycling services on its behalf for the capital region beyond December 31, 2023 when the current agreement expires.

IMPLICATIONS

Environmental & Climate Implications

Alternatives 1 and 2 would see the current residential curbside recycling services maintained in the region. Returning direct responsibility for curbside recycling to RBC under Alternative 3 has the potential to cause a disruption in service while RBC establishes its own direct service in the region. It may also result in a reduction in service levels, such as the discontinuation of curbside glass collection. This may result in some recyclable materials being landfilled, as some residents may choose to dispose of their materials as they become less convenient to recycle.

Social Implications

Alternatives 1 and 2 would see curbside recycling continue, with the CRD being involved in the delivery of this valued community service. It would also allow for delivery of a service designed for local needs to be maintained, such as door pick-up for elderly and/or disabled residents, and would also allow for continued cross promotion with other waste diversion initiatives and environmental programs. Lastly, it would also allow for continued program promotion and messaging that is developed specifically for the region's demographics and delivered to best meet the needs of the local community.

Under Alternative 3, the provision of curbside recycling services would become the responsibility of RBC. RBC would be obligated under the BCRR to continue providing this service, and it would contract private industry to do so. However, since RBC has indicated it would like a two-and-a-half year timeline to transition to its own direct service program, there is the potential that service in the region could be disrupted if the CRD-delivered collection service were to end on December 31, 2023. Returning responsibility for this service to RBC may also result in a reduction in service levels, including the discontinuation of curbside glass collection. Without CRD involvement, residents will need to rely on RBC generic, province-wide communication and education services, rather than those currently provided by the CRD to serve this community specifically. It is also likely to result in confusion amongst residents while service is transitioned from the CRD to RBC.

Financial Implications

The recommended alternative puts the CRD at risk of being 100% responsible for funding of curbside blue box collection, at an estimated cost in excess of $5 million per year, for up to five years, if Recycle BC does not enter into a new agreement with the CRD starting January 1, 2025. Although this is a very low probability event, it is recommended that the CRD proceed with caution and continue to seek a firm financial commitment from Recycle BC prior to bringing to the proposed curbside blue box RFP to the CRD Board for approval and award.

With the implementation of a scheduled increase beginning July 1 of this year, the fees paid to the CRD under the current agreement with RBC are sufficient to cover 100% of Emterra's collection contract costs. This includes the provision of curbside glass collection, which RBC had sought to discontinue in 2014 in favour of glass collection at depots (to reduce cross contamination with other recyclables), but which the CRD Board directed that curbside glass collection be maintained as a public convenience at an additional cost paid by the CRD.

A six-year collection contract would align with RBC's timing for a one-year extension for 2024, followed by a new five-year agreement for 2025 to 2029. The competitive RFP process

contemplated under Alternative 1 would be expected to attract highly competitive fee rates from prospective bidders, as a six-year contract represents a long-term stable source of work. Despite this, costs under such a contract can be expected to be significantly higher than what is currently in place due to inflationary pressures and significantly increased costs for fuel, labour and collection trucks. Given that fees paid by RBC will remain static for 2024, any increased costs would have to be borne by the CRD in 2024. The 2024 solid waste budget would need to reflect these costs; the solid waste sustainability reserve has sufficient funds to pay these anticipated cost increases. Between 2025 and 2029, the net cost to the CRD, if any, would be conditional upon the compensation rate provided by RBC for the provision of the service. However, RBC has previously demonstrated good faith in increasing rates and has stated its intention to further adjust rates in accordance with service delivery costs following its 2024 cost study.

Under Alternative 2, negotiating a one-year extension to the Emterra contract would likely incur significant additional costs; the existing fleet of collection trucks would be beyond their end-of-life, and attempting to extend their use would likely result in significant challenges with maintaining their serviceability. Moreover, Emterra ownership has indicated it would only be interested in an extension if the CRD significantly increases the fees it is paid to conduct the work.

Alternative 3 avoids any potential financial costs to the CRD, as the provision of curbside recycling services would become the direct responsibility of RBC. The net costs to the CRD for 2024 under Alternative 1 are believed to be comparable to those anticipated under Alternative 2.

CONCLUSION

Recycle BC and the CRD have worked together successfully to provide residential curbside recycling services in the capital region since May 2014. Recycle BC is proposing to extend this mutually beneficial relationship through a one-year extension of the current agreement, followed by a new service agreement that would be in effect from January 1, 2025 to December 31, 2029 that would see current service and support programs maintained for the region's residents. Collection contract costs would be subject to a competitive Request for Proposals process but would be expected to result in some net cost to the CRD for 2024. Any net costs to the CRD for 2025 through 2029 are subject to the as yet undetermined compensation rates paid by Recycle BC, though Recycle BC has demonstrated good faith in aligning its payments to the CRD with actual service delivery costs.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That staff be directed to issue a Request for Proposals for a six-year contract for Board approval to provide residential curbside blue box collection, from January 1, 2024 to December 31, 2029;
2. That staff be directed to return to the Environmental Services Committee and the Capital Regional District Board for direction prior to awarding the Request for Proposals; and
3. That staff accept the Recycle BC one-year extension to their current agreement with the CRD to provide service to the end of 2024, and then enter into a new five-year agreement with Recycle BC to provide residential curbside recycling services for the capital region on its behalf for January 1, 2025 to December 31, 2029.

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

ATTACHMENT

Appendix A: Correspondence from Recycle BC – March 8, 2022

APPENDIX A

March 8, 2022

Attn: Tom Watkins
Manager, Policy & Planning, Environmental Resource Management
Capital Regional District
625 Fisgard Street
Victoria, BC
V8W 2S6
Via: Email

Re: Curbside Collection Services

Tom,

Thank you for your letter dated January 27, 2022, and for the follow up conversation.

As you noted, the Capital Regional District (CRD) and Recycle BC have partnered for the operation of curbside recycling service in the CRD since the Recycle BC program launched in 2014. The current Curbside Statement of Work (SOW) between the CRD and Recycle BC indicates that the current term of that agreement ends on December 31, 2023, and that Recycle BC may extend that term by up to two further periods of one year each. While we will provide formal documentation in the future, on February 8, 2022, we provided advance notice via email that we will be extending the term by one year (one year only) to December 31, 2024.

This change is being made, in part, to better align the timeline of new agreements with Recycle BC collectors and our next cost study. Recycle BC regularly conducts comprehensive financial payment reviews, including cost studies, using an independent financial firm. The findings of those studies are one of the major inputs that are used to establish the incentive rates provided to curbside and multi-family collectors. While the next cost study was scheduled for 2025, we will instead be conducting this cost study one year early in 2024. This will allow us to establish the new incentive rates in time to be built into the new SOWs, which would be signed in 2024 by local governments wishing to continue participating in the Recycle BC program, with an effective date of January 1, 2025. Any new agreement terms would therefore be reflected in the incentive rates outlined in these new SOWs.

The CRD has been a valued partner in the Recycle BC program. It is Recycle BC's intent to provide a new 5-year Curbside SOW to the CRD for signature in 2024 to provide the option to the CRD to continue as a curbside collector in the Recycle BC program for the years 2025 to 2029. The exact terms of that agreement will be determined in the coming years (in addition to the applicable incentive rates, as outlined above), and although the agreement terms are not expected to be substantively different from those in the current agreement between Recycle BC and the CRD, we can't speak to any new Ministry requirements or future Regulation changes

that may impact our program and services agreements. I understand the CRD is planning to engage in a competitive procurement process for curbside collection services, and I hope this provides the necessary certainty to proceed with that process.

If you have any questions or wish to discuss this issue further, please do not hesitate to let me know.

Thank you.

Sincerely,

Jordan Best
Western Canada Director, Collection
Recycle BC
604 314 4084
jbest@recyclebc.ca

Cc:
Brendan McShane – Director, Collection – Recycle BC

Making a difference...together

ERM 22-19

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT **Disposal of International Cruise Ship Waste at Hartland Landfill**

ISSUE SUMMARY

To provide the Environmental Services Committee (ESC) with information regarding the disposal of international cruise ship waste at Hartland Landfill.

BACKGROUND

At its April 20, 2022 meeting, the ESC, while considering the 2021 Solid Waste Annual Report, discussed the matter of the disposal of international cruise ship waste at Hartland Landfill and directed staff to provide information with respect to the quantity of cruise ship waste being received at Hartland.

Due to the COVID-19 pandemic, no cruise ships called into the port of Victoria in 2020 and 2021, so no cruise ship waste was received in those two years. In 2019, Hartland Landfill received approximately 2,100 tonnes of cruise ship waste, representing about 1.3% of all solid waste landfilled for that year. Between 2016 and 2018, cruise ship waste represented less than one half of 1% of all solid waste landfilled annually. In 2022, a total of 10 loads of cruise ship waste, totaling 20 tonnes, have been received at Hartland up to the end of April.

In Canada, solid waste from cruise ships is managed according to the International Waste Directive under the authority of the Canada Border Services Agency and the Canadian Food Inspection Agency. Solid waste is designated as either high risk or low risk, and is managed according to that designation. High-risk waste must be treated as controlled waste and requires immediate deep burial in trenches at Hartland Landfill. Low-risk waste can be managed as general refuse and disposed of along with other regular garbage being received at the landfill. Of the 2,100 tonnes of cruise ship waste received at Hartland in 2019, approximately 1,500 tonnes, or 71%, was classified as low risk and about 600 tonnes, or 29%, was classified as high risk. All ten loads of cruise ship waste received so far in 2022 have been classified as high risk.

The International Waste Directive does not require cruise ships to offload their waste upon docking at the first or any port of call in Canada, and the decision whether to offload is at the discretion of the ship. However, given the limited storage space on cruise ships, regular offloading of waste is a logistical necessity, including in Victoria. This is particularly true when considering that Victoria is often the only Canadian port of call for Alaska cruises.

The company contracted to receive and manage waste from cruise ships docking in Victoria is Tymac Launch Service Limited. Tymac maintains a comprehensive set of waste handling guidelines for cruise ship staff to use to manage waste when they are in the port of Victoria. These guidelines include procedures for diverting recyclable materials, managing hazardous waste and segregating banned items. Tymac prepared a Cruise Ship Waste Overview presentation for the May 6 Solid Waste Advisory Committee meeting (see Appendix A).

IMPLICATIONS

Financial Implications

At Hartland Landfill, international waste is currently charged at the controlled waste fee of $157 per tonne, not the general refuse fee of $110 per tonne.

CONCLUSION

At its meeting of April 20, 2022, the Environmental Services Committee directed staff to provide information with respect to the quantity of cruise ship waste being received at Hartland Landfill. Cruise ship waste typically represents less than 1% of all solid waste annually landfilled in the region. The firm managing cruise ship waste reports that approximately 85% of all cruise ship waste being received in Victoria is recycled, with only residuals being sent to the landfill. Offloading of waste is typically a logistical necessity for most cruise ships, particularly when Victoria is the only Canadian port of call for Alaska cruises.

RECOMMENDATION

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

Submitted by:	Russ Smith, Senior Manager, Environmental Resource Management
Concurrence:	Glenn Harris, Ph.D., RP.Bio., Acting GM, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Tymac Presentation to CRD Solid Waste Advisory Committee: Cruise Ship Waste Overview (May 6, 2022)

APPENDIX A

CRD Solid Waste Advisory Committee

Cruise Ship Waste Overview

Tymac Launch Service Ltd.

May 6, 2022

Acknowledgement of Traditional Lekwungen Territory

Songhees Nation



Esquimalt Nation





1929



1986

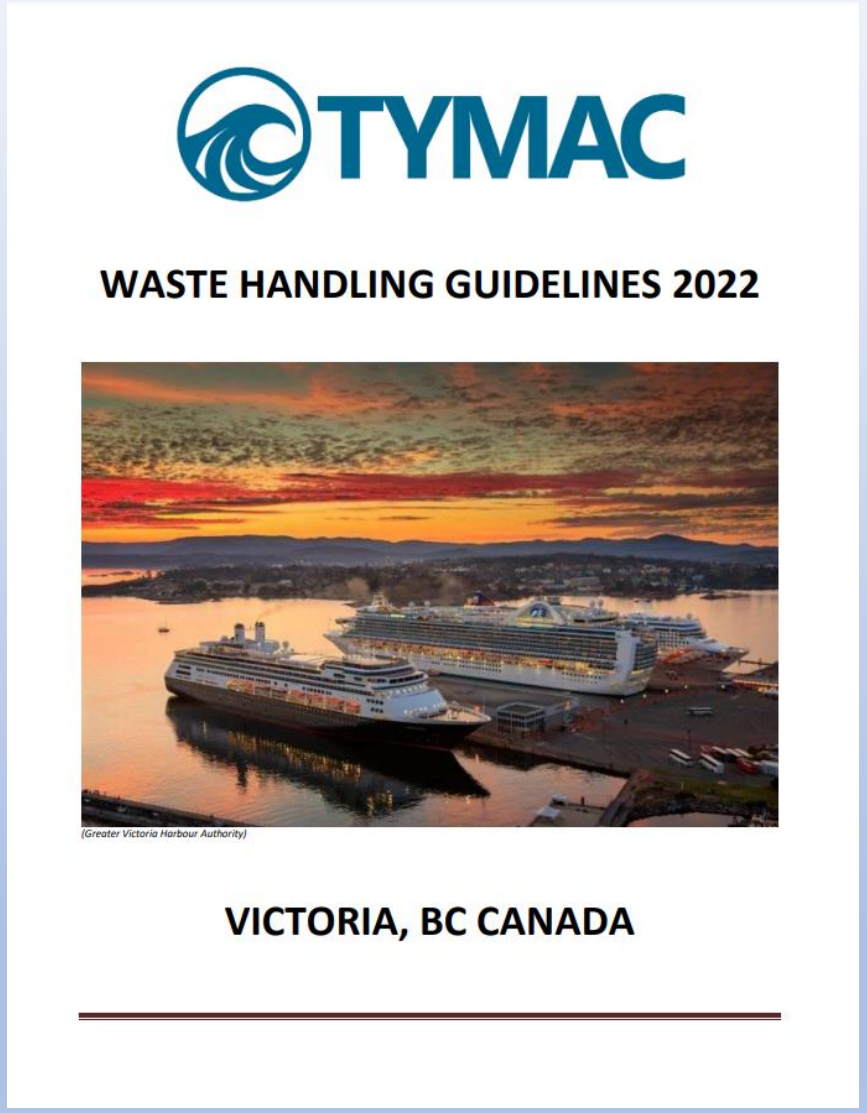
ABOUT TYMAC

Established in 1929, Tymac is a privately held **Canadian Company** that has specialized in servicing the BC Cruise Industry since 1986.

Proudly certified with the **International Longshore & Warehouse Union** (ILWU Canada, Local 400), **Council of Marine Carriers, BC Trucking Association and WorkSafeBC**.

Green Marine Certified, a voluntary environmental certification program whose members commit to continuously reduce their environmental footprint and carry out its operational activities in an environmentally sustainable and responsible manner.

Two-time recipient of the **Recycling Council of British Columbia (RCBC) Private Sector Award – Excellence in Leadership & Environmental Stewardship (2014 & 2018).** An award that is granted annually to one private company based off nominations across all peers within the Recycling Industry in British Columbia.



Waste Handling Guidelines



Vancouver



Victoria



Cardboard



Paper



Crushed Glass



PET Plastic



Rigid Plastic



Styrofoam



Food



Mattresses



E-Waste



Donations



Donations



Mooring Lines

Skill Testing Question:

What is the Number 1 recycling commodity by weight that comes off of a cruise ship?

Glass = 2038 tonnes

RECYCLING PRODUCT EXAMPLES

- **Batteries** (Alkaline, NiCad, Lead Acid, Lithium)
- **Broken China & Crockery**
- **Cardboard, Paper & Other Fiber Products**
- **Cigarette Butts**
- **Compact Fridges**
- **Compressors**
- **Cooking Oil**
- **E-Waste** (Computers, Printers, Monitors, Entertainment Devices, Controls)
- **Food Compost & Grease Trap**
- **Glass** (all types)
- **Lights** (Fluorescent Tubes, Halogens, HID, Incandescent, LED, U-Tubes, Compacts, UV, Germicidal, Mercury Vapor, Mercury Halide)
- **Mattresses & Carpet**
- **Metal & Mooring Lines**
- **Printer / Toner Cartridges**
- **Plastic** (PET & Mixed)
- **Styrofoam**
- **Used Oil, Filters & Grease**
- **Wood & Wooden Pallets**

+ Furniture & Other Items for Donation

Total recycled for 2019 = <u>5,204 tonnes</u>

2019 CRD Annual Solid Waste Report

TOTAL REFUSE BY TYPE (tonnes)

TYPE OF WASTE	2018	2019	% CHANGE
General refuse	146,431	145,402	-1%
Controlled waste	10,417	11,512	11%
Asbestos containing material	3,094	3,813	23%
TOTAL	159,942	160,727	0%

2019 CRD General Refuse + Controlled Waste = 156,914 t [1]

CRUISE SHIP WASTE

YEAR	SHIPS	LOW RISK (tonnes)	HIGH RISK (tonnes)	TOTAL (tonnes)
2016	224	255	22	278
2017	239	279	84	763
2018	243	295	9	304
2019	256	1,468	613	2,082

[1] https://www.crd.bc.ca/docs/default-source/crd-document-library/plans-reports/landfill-recycling/2019-reports/2019-solid-waste-annual-report.pdf?sfvrsn=107d30cc_4

Conclusion:

2019	Victoria Cruise Ships	CRD
Population	1,003,998[2]	418,511[1]
Garbage Sent to Hartland	2,081 t	156,914 t

Annual % of Garbage Received at Hartland from Cruise Ships = 1.3%, from more than double the population.

[2] https://vancouverisland.ctvnews.ca/victoria-saw-more-than-1m-cruise-ship-passengers-and-crew-in-2019-1.4661532

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT **Clean BC Communities Fund Grant Application – Clean Energy Transportation – Public Electric Vehicle Infrastructure Project**

ISSUE SUMMARY

A Capital Regional District (CRD) Board resolution is required for a grant application to the Investing in Canada Infrastructure Program (ICIP) – Green Infrastructure – CleanBC Communities Fund for a regional public electric vehicle charging network project.

BACKGROUND

Electric Vehicle Infrastructure

In October 2021, the CRD approved the Climate Action Strategy. The strategy committed the CRD to implementing the Electric Vehicle (EV) Infrastructure Roadmap (Roadmap), which identifies that approximately $31 million of investment is needed for public EV infrastructure to enable the region to achieve 25% of EV ownership relative to the total vehicle fleet by 2030. Access to public charging is required to support EV adoption for inter-regional travel, for users who do not have access to at-home charging and for fleet vehicles, such as taxis and car-share services. Both municipal and private chargers will make up the resulting network, with municipalities supporting community charging needs where private investment is not expected in the short term.

The Roadmap identified that most of the investment would go to direct-current fast chargers (Fast Chargers), which typically support "on-the-go" or top-up charging. Being energy and capital intensive, these chargers are currently being installed in corridors by BC Hydro and private sector entities. The City of Victoria intends to extend these to support charging in densely-populated neighborhoods.

A number of public level 2 chargers currently exist in the region (i.e., malls, recreation centres and municipal halls). The Roadmap envisions these to be installed in greater numbers in long-term (i.e., multi-hour) parking areas that are close to homes, community hubs, recreation sites, and workplaces to support charging for employees and local residents who do not have access to home charging.

CleanBC Communities Fund

The CleanBC Communities Fund (CCF) supports infrastructure projects that contribute toward greenhouse gas reductions and climate change mitigation in BC communities and funds projects that increase access to clean energy transportation, among others. The CCF is a component of the ICIP and is supported by both federal and provincial funding. This third and final intake will pay up to 73.33% of project costs for local governments, which provides a higher potential leverage value than other granting streams for public EV charging stations. The initial phase of the grant is due May 25, 2022, and requires Board resolution articulating general grant support, site availability and financial commitments.

Collaboration and Siting

Staff conducted an EV charging station siting initiative with local governments and electoral areas, and the Malahat Nation. Utilizing a prioritization framework, the initiative resulted in almost 600 priority ports at more than 70 locations across the region, some of which are located on CRD-owned properties (Appendix A). The priority stations are level 2 charging sites, with the exception of the City of Victoria and the Malahat Nation, which are seeking to install Fast Charger stations. The sites are spread across the region based on the needs described in the Roadmap.

As the technical siting evaluation continues, the final number of ports at a specific location, or the location itself, may change; or the location may be removed from the final installation plan.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That staff be authorized to submit the Regional Public Electric Vehicle Charging Network project to the Investing in Canada Infrastructure Program's CleanBC Communities Fund grant program on behalf of the participating local governments and First Nations;
2. That the Capital Regional District participate in the regional charging network by supplying sites found in Appendix A; and
3. That up to $725,000 be assigned from the previously approved 2022-2026 climate action service financial plan for up to 175 public level 2 EV charging ports across the region, as well as a commitment to any associated ineligible costs and cost overruns.

Alternative 2

That the CleanBC Communities Fund grant application not be endorsed.

IMPLICATIONS

Environmental & Climate Implications

On-road transportation accounts for the largest portion of emissions in our region and the transition to EV is a major component of all regional, federal and provincial emission reduction strategies. Accelerating EV uptake in the region is the largest single contributor to modelled emissions reduction in the CRD Climate Action Strategy. Supporting public charging is integral to EV transition strategies.

Intergovernmental Implications

Staff are working closely with local governments, electoral area staff and First Nations to identify priority locations for inclusion in this grant. The grant administration will require interaction and approvals from all government bodies involved.

Financial Implications

The total final grant application will be for up to $7 million. The total cost of the project is expected to be up to **$**9 million. Up to $725,000 will be dedicated to this project from the 2022-2026 CRD climate action service financial plan to support the 26.67% contribution for the level 2 stations across the region. Anticipating this grant opportunity, this was included in 2022 service planning approved by the Board on March 16, 2022. CRD funding will be combined with additional

investments committed to by the City of Victoria for both level 2 and fast charger installations. The Malahat Nation will similarly supply its contribution toward its station installations. If successful, the CRD is not expected to receive approval until late 2023.

The District of Central Saanich will no longer be part of the Climate Action Service when the CRD is expected to be notified of the grant outcome. As such, the municipal contribution, including administration of the grant, of any stations identified in that jurisdiction are the sole responsibility of the District of Central Saanich.

Service Delivery Implications

This grant requires recipients to own and operate the stations for at least a five-year period. The CRD Climate Action Service would take on the operations and maintenance responsibilities for the stations in the capital region, including the collection of revenue, but would enable any local authority to take on the ownership and operations, if they elect to do so. For example, the District of Saanich and City of Victoria have indicated their intention to continue managing and operating publicly-owned charging stations within their jurisdictions.

All stations installed through this initiative will be networked and charge a fee for use. Data associated with the station use will be shared with the CRD for analysis, and ongoing costs for operation and maintenance will likely be covered by the revenue from the stations.

Fast chargers will be owned and operated by the local authority sponsoring their installation (i.e., City of Victoria, Malahat Nation).

CONCLUSION

The CRD Climate Action Strategy committed the CRD to implementing the Electric Vehicle Infrastructure Roadmap, including supporting the installation of public EV charging stations. CRD staff are seeking approval to pursue a CleanBC Communities Fund grant to support the installation of almost 600 new charging ports in the region.

RECOMMENDATION

The Environmental Services Committee recommends to the Capital Regional District Board:

1. That staff be authorized to submit the Regional Public Electric Vehicle Charging Network project to the Investing in Canada Infrastructure Program's CleanBC Communities Fund grant program on behalf of the participating local governments and First Nations;
2. That the Capital Regional District participate in the regional charging network by supplying sites found in Appendix A; and
3. That up to $725,000 be assigned from the previously approved 2022-2026 climate action service financial plan for up to 175 public level 2 EV charging ports across the region, as well as a commitment to any associated ineligible costs and cost overruns.

Submitted by:	Nikki Elliott, Manager, Climate Action Programs
Concurrence:	Glenn Harris, Ph.D., R.P.Bio., Acting General Manager, Parks & Environmental Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Capital Regional District Owned Properties

CAPITAL REGIONAL DISTRICT OWNED PROPERTIES

May 2022

- Mayne Island Community Library – 411 Naylor, Mayne Island
- ArtSpring – 100 Jackson Avenue, Ganges, Salt Spring Island
- Centennial Park – 139 Fulford – Gangies Road, Salt Spring Island
- Mouat Park – 160 Seaview Road, Salt Spring Island
- Rainbow Road Recreation Centre – 262 Rainbow Road, Salt Spring Island
- SEAPARC Recreation Facility – 2168 Phillips Road, Sooke

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REPORT TO GOVERNANCE COMMITTEE
MEETING OF WEDNESDAY, JUNE 01, 2022

SUBJECT **Regional Grants-in-Aid Board Policy**

ISSUE SUMMARY

To update the Regional Grants-in-Aid Board Policy.

BACKGROUND

The CRD has a long established policy of not awarding Regional Grants-in-Aid (GIA). The current policy is derived from a February 23, 1994, Board policy resolution, which directs staff to "establish a no grants policy regarding regional grant-in-aid, other than those regional grants-in-aid from a single jurisdiction". At the February 2, 2022, Governance meeting, staff were directed to remove provisions in GIA levied against taxpayers of an individual municipality and maintain the "No Regional GIA" position. Additionally, staff were directed to ensure GIA for Electoral Areas remain status quo. Staff have confirmed Electoral Area authority is accounted for in separate services through Supplementary Letters Patent and will not be impacted by a Regional GIA policy.

The CRD continues to receive requests for Regional GIA, most recently in support for the Ukrainian Canadian Cultural Society of Vancouver Island. Appendix A is an updated Regional GIA Board Policy in alignment with current language and corporate standards to support the long standing practice and direction from committee this past winter.

ALTERNATIVES

Alternative 1
The Governance Committee recommends to the Capital Regional District Board:
That the Regional Grants-in-Aid Policy be adopted.

Alternative 2
The Governance Committee recommends to the Capital Regional District Board:
That the Board rescind the "No Regional GIA" Board Resolution Policy, and direct staff to develop a coordinating program with guidelines including an evaluation process and budget which does not exceed 10¢ per $1,000 on the net taxable value of land and improvements in the regional district, and where the Board remains the decision-maker in granting funds to eligible projects.

IMPLICATIONS

Service Delivery and Financial Implications

Alternative 1
The policy attached in Appendix A executes Board direction from February 2022 and brings the previous 1994 Board Policy Resolution into alignment with current corporate standards and templates of the CRD. There are no financial implications with this alternative.

Alternative 2
The Board could consider raising funds for Regional GIA as part of the annual service review and budget process where staff would prepare defined service mandates and develop a coordinating program with guidelines similar to Electoral Area GIA services. Resources and capacity would be needed to administer a Regional GIA program. The Board would remain the decision-maker over which eligible projects are awarded funding.

Section 374(9) of the *Local Government Act* limits expenditures for Regional GIA to 10¢ per $1,000 on the net taxable value of land and improvements in the regional district. Cost apportionment would include all municipalities, electoral areas, and First Nations. Based on the 2022 assessment base, the maximum requisition for a Regional GIA service would be approximately $16.5 million or $87.50 per average household. Actual requisition would be determined through the annual budgeting process.

The aforementioned process mirrors the electoral area model and provides a structured and transparent program to consider all Regional GIA applications. There could be concern that by providing a Regional GIA program, the CRD will consider requests that are outside its service authority or mandate.

CONCLUSION

The CRD has a long established policy of not awarding Regional Grants-in-Aid (GIA). At the February 2, 2022, Governance Committee meeting, staff were directed to remove provisions in GIA policy levied against taxpayers of an individual municipality and maintain the "No Regional GIA" position which is included in the updated Regional Grants-in-Aid policy found in appendix A.

RECOMMENDATION

The Governance Committee recommends to the Capital Regional District Board:
That the Regional Grants-in-Aid Policy be adopted.

Submitted by:	Rianna Lachance, BCom, CPA, CA, Senior Manager, Financial Services
Concurrence:	Nelson Chan, MBA, FCPA, FCMA, Chief Financial Officer
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Regional Grants-in-Aid Policy

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CAPITAL REGIONAL DISTRICT
CORPORATE POLICY

Policy Type	Board [Corporate]		
Title	REGIONAL GRANTS-IN-AID POLICY		
Adopted Date		Policy Number	BRD13
Last Amended			
Policy Owner	Financial Services		

1. POLICY:

The Capital Regional District shall not issue regional Grants-in-Aid.

2. PURPOSE:

While the CRD has authority under its *Local Government Act* authority to issue regional Grants-in-Aid (GIA), including using this power to issue a grant from a single jurisdiction, the CRD Board believes it is up to individual municipalities and electoral areas to determine which organizations shall receive a GIA, rather than the CRD Board making those decisions.

3. SCOPE:

This policy applies to all regional GIA requests received but does not apply to other grant or contribution programs, such as the Electoral Area Grant-in-Aid program.

4. AMENDMENT(S):

Adoption Date	**Description:**
June 8, 2022	Board adoption

5. REVIEW(S):

Review Date	**Description:**
June 2025	Three year default review period.

6. RELATED POLICY, PROCEDURE, OR GUIDELINE:

2012 Grants-in-Aid Policy (Electoral Areas) Applications

2010 Grants-in-Aid Policy (Electoral Areas) Guidelines

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REPORT TO GOVERNANCE COMMITTEE
MEETING OF WEDNESDAY, JUNE 01, 2022

SUBJECT **Timelines for the Notice of Motion Procedure**

ISSUE SUMMARY

The CRD Board directed staff to report back on reducing the time period for notices of motion.

BACKGROUND

At its April 13, 2022 meeting, the Capital Regional District (CRD) Board approved the following Motion with Notice from the Governance Committee:

> *"Staff be directed to report back with options for amending the procedures bylaw to reduce the time delay present within the current notice of motion process, with options for a notice period that does not exceed 14 days."*

Near the beginning of its term in June 2019, the CRD Board passed amendments on the procedures related to notices of motion in the *Board Procedures Bylaw* (Bylaw No. 3828). The updated process involved notices to be read into the record at one meeting in order to be considered at the next meeting. To ensure equal notice for all Directors, motions filed with the Corporate Officer are uploaded to the Board Correspondence Portal. For urgent matters with limited organizational impact, or to support the position of a member local government, the notice of motion provision may be waived if a two-thirds majority vote are obtained for same day consideration.

Attached as Appendix A is an excerpt of Section 22 of the *Board Procedures Bylaw* on notices of motion. Attached as Appendix B is a flowchart of the current notice of motion process.

The prior practice for notices of motion required that the motion be submitted to the Corporate Officer a minimum of seven business days prior to the meeting. Directors would not see the motion until it was published on the agenda the Friday before the meeting the following Wednesday. Some Directors felt this was not sufficient time to consider the matter when the motion was a final "take action" recommendation, rather than a request for staff to report back on an issue. Another challenge was that motions were being circulated to the media and the public prior to the filing with the Corporate Officer or publication on the agenda.

ALTERNATIVES

Alternative 1
The Governance Committee recommends to the Capital Regional District Board:
That the CRD Board support the current notice of motion process and timelines as set out in the *CRD Board Procedures Bylaw* and defer consideration of possible amendment to the notice of motion timelines to the incoming Board in early 2023.

Alternative 2
The Governance Committee recommends to the Capital Regional District Board:

That staff report back with amendments to the *CRD Procedure Bylaw* to allow introduction of a Notice of Motion by written notice to the Corporate Officer 14 days prior to a meeting.

IMPLICATIONS

Current Process and Timelines
The current notice of motion procedure results in an equitable notice provision for the public, staff and Directors. It ensures there is adequate time for delegations to make requests to address the issue, for staff to prepare to answer questions that may arise during debate, and for other Directors to have the opportunity to look into the issue in advance. Furthermore, with the upcoming General Local Elections it is a precarious time to amend the notice of motion process to accelerate discussion of matters outside of the Board's established strategic priorities and the CRD's approved financial plan. In the absence of a code of conduct, the Procedure Bylaw is the primary tool for upholding the rights of Directors to ensure equal access to information within the bounds of an open meeting.

The current process is slower, as intended by the 2019 bylaw amendment, however, for committees that meet less frequently, Directors may introduce a notice of motion at a Board meeting with a referral to the next applicable committee meeting for debate, thereby reducing the time between introduction and debate and voting. The current process has been effectively implemented at Board and Committee meetings and does provide Directors and the public more notice of proposed new initiatives prior to debate and vote on the motion.

Implementation of a notice period outside the regular meeting schedule, 14 days prior to debate and voting would not in itself rule out the possibility of urgent motions for same day consideration. Regardless of the time period, most notices of motion direct staff to report back with more information on an item. For some issues, it can take several months for staff to report back as timing will depend on operational capacity. CRD staff must balance making progress on their established annual work plans with the ad hoc requests for information or action on new items raised through notice of motion.

Implications of a Shorter Timeline
A 14 day notice period would provide staff and Directors advance notice of a motion prior to voting but is somewhat less transparent to the public. Currently, any member of the public can watch a meeting webcast and hear the notice of motion being read into the record. The videos are posted online within 24 hours following a meeting. In most circumstances, the public will then have a month to plan a delegation or provide correspondence if they are interested in expressing their views on the matter. Under a 14 day notice period only the Directors would be notified that a notice of motion was served through the Corporate Correspondence portal, until the agenda was published on the Friday afternoon prior to the Wednesday meeting.

Any changes to the notice of motion timeline would need to be adopted through an amendment to the *CRD Procedures Bylaw*. With an election on the horizon, Legislative Service staff have limited capacity to draft and implement procedural changes, particularly with the more than 70 sub-regional and local area committees and commission that rely on the *Procedures Bylaw*. With the requirement for the incoming Board to consider adoption of a code of conduct, staff recommend deferring implementation of any procedural changes until the new Board is in place.

CONCLUSION

The current notice of motion process has been in place since 2019. Prior to 2019, notices of motion could be introduced by providing written notice to the Corporate Officer 7 days prior to a meeting. The changes made in 2019 were designed to ensure maximum transparency for the public, Directors, and staff by having the motion read into the record at an open meeting. A delay between introduction and voting allows time for directors, staff and the public to consider a new initiative before debate and voting occur.

CRD has more than 70 committees and commissions that rely on the *Procedures Bylaw*. Any amendments to the bylaw will require staff to engage in change management with all staff that support local and sub-regional committees and commissions, in addition to implementing the change with the Board and Standing Committees. With an upcoming election, staff have limited capacity to advance procedural changes and recommend consideration be deferred until after the election.

RECOMMENDATION

The Governance Committee recommends to the Capital Regional District Board:
That the CRD Board support the current notice of motion process and timelines as set out in the *CRD Board Procedures Bylaw* and defer consideration of possible amendment to the notice of motion timelines to the incoming Board in early 2023.

Submitted by:	Marlene Lagoa, MPA, Manager, Legislative Services & Deputy Corporate Officer
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Notice of Motion Excerpt from Bylaw No. 3828
Appendix B: Notice of Motion Process Flowchart

APPENDIX A: Notice of Motion Excerpt from Bylaw No. 3828

"Capital Regional District Board Procedures Bylaw, 2012"

Section 22 - Motions

(5) Any Member desiring to bring before the Board any new matter, other than a point of order or privilege, shall do so by way of motion; provided, however, that any new matter of major import, which may require further information than could or would normally be available to the Board at such meeting, may be referred to a Board Standing Committee agenda by the Chair, or may be ruled by the Chair as a notice of motion and shall be dealt with as provided by section 22(6).

(6) Any Member may give notice of a motion to the Board by providing the Corporate Officer with a written copy of much motion before or during a meeting, and the Corporate Officer shall, upon the Member being acknowledged by the Chair and the notice of motion being read to the meeting, include it in the minutes of that meeting as a notice of motion and shall add the motion the agenda of the next regular Board meeting, or to the agenda of a special Board meeting scheduled for that purpose.

(7) Notwithstanding section 12(2), a motion under section 22(6) shall only be decided at its meeting of introduction if all of the following are met:

(a) the motion's subject matter falls into one or more of the following classes:

(i) those items with an urgent deadline;

(ii) those items of minor organization impact (e.g. simple advocacy or letters of support); or

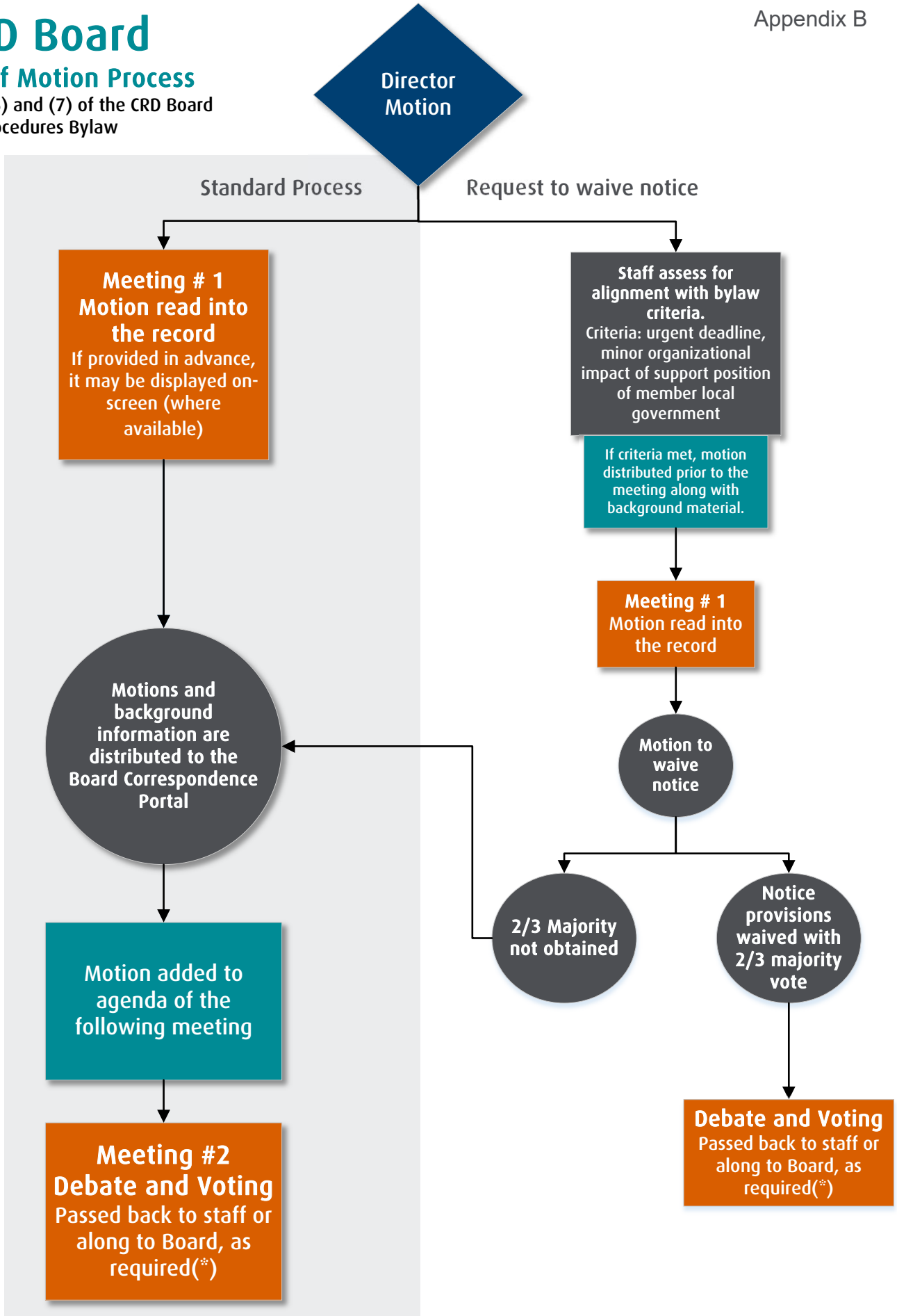
(iii) those items supporting the position of member local governments;

(b) the Members present vote with a two-thirds majority to consider it.

CRD Board

Notion of Motion Process

As per s. 22 (6) and (7) of the CRD Board Procedures Bylaw



(*) Guidelines on when items should stay at committee/go to Board: Motions that request more information from staff but do not take a position, require significant revision of staff work plans or commit the Board to a political position can stay at the committee level. Items that do require significant work, take advocacy or political positions, or those that commit the organization to a position should go to the Board prior to reports back or implementation.

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REPORT TO GOVERNANCE COMMITTEE
MEETING OF WEDNESDAY, JUNE 01, 2022

SUBJECT **Correspondence on Agenda Items**

ISSUE SUMMARY

The CRD Board directed staff to report back on correspondence received on agenda items.

BACKGROUND

At its December 8, 2021 meeting, the Capital Regional District (CRD) Board received a staff report on the review of delegation speaking times in the *CRD Board Procedures Bylaw*. The Board directed staff to reduce the delegation speaking time down from 4 minutes to 3 minutes, and asked that staff review the impact of the procedural change in the first quarter of 2024. The Board also passed the following motion arising from the Governance Committee:

> *"To refer the question of correspondence relating to agenda items back to staff to report back through the Governance Committee."*

All correspondence directed to a CRD Board or Standing Committee is uploaded to the Board Correspondence Portal including written submissions concerning agenda items. During the COVID-19 pandemic, the frequency of uploading to the Board Correspondence Portal went from once a week to being updated daily. Directors can access and view the last six months of correspondence received through the CRD Board Portal webpage or app installed on iPads.

ALTERNATIVES

Alternative 1
There is no recommendation. This report is for information only.

Alternative 2
The Governance Committee recommends to the Capital Regional District Board:
That staff report back on the potential costs and service level adjustments required to publish correspondence related to agenda items on the meeting agenda.

IMPLICATIONS

Legal and Privacy Implications
Local governments can only collect personal information in accordance with the *Freedom of Information and Protection of Privacy Act* (FOIPPA), which includes any personal information received through correspondence submissions.

Before the CRD can publish correspondence received from the public on an agenda, staff would need to thoroughly review and redact each submission for personal information and libelous statements. The review and redactions that would be required before publishing correspondence on an open agenda could require a significant amount of staff time, within a short timeframe.

Under *FOIPPA,* public bodies must refuse to disclose any personal information which could be harmful to personal privacy, unless:

- the disclosure is otherwise permitted under FOIPPA (which is very limited in its application);
- the disclosure is authorized by the person(s) the personal information is about (which is not necessarily limited to the person submitting the correspondence, depending on the content of the correspondence); or
- the disclosure is authorized by another act.

Correspondence published on an agenda would require redacting personal contact information, including name, residential address, email address, and telephone number (unless the information is explicitly for business contact purposes related to the correspondence matter.) Furthermore, personal opinions, preferences and beliefs are also considered personal information under FOIPPA and would require redacting prior to publishing. Publishing unredacted correspondence on an agenda containing any personal information would require express written consent from each identifiable individual the correspondence is about, in accordance with FOIPPA and the *Freedom of Information and Protection of Privacy Regulations* (FOIPPR), which sets out prescribed requirements for consent.

Any information, which if disclosed could be harmful to a third-party business interests or the interests of Indigenous peoples, also requires protection under FOIPPA and must be redacted. If the Board wished to publish correspondence on agenda items, the CRD Board contact form on the website would need to be re-designed to ensure the CRD is following the prescribed requirements for obtaining consent under FOIPPR. It is important to note that consent can be withdrawn at any time, which has further implications for published information.

Currently, the FOIPPA provisions for the disclosure of personal information outside of Canada is being updated and may impact the publishing of correspondence on agendas.

A libelous statement is any false and malicious statement made about a third party that damages their reputation. As CRD staff do not have the ability to fact check claims, there is always some level of risk present when publishing correspondence on an agenda. The CRD currently has an inactive but outstanding legal action against it regarding a defamation claim arising from a piece of correspondence that was published on an agenda in 2014. Correspondence that may give rise to such a claim is infrequent, but the risk does highlight the need to review correspondence with diligence prior to publishing.

Correspondence Processing Time
If the Board passes Alternative 2, the most significant challenge staff will need to consider is the short time period available to staff to upload documents and process redactions, the volume of which may vary considerably from week to week. Currently, there is no capacity in the Legislative Services work plan to absorb the time-intensive task of reviewing and redacting correspondence on agenda items.

Staff are already working with a short timeline to process and respond to applications to appear as a delegation with a deadline of 4:30 pm on Monday. Given that supplementary agenda items must be published 24 hours before the meeting in accordance with the *Board Procedures Bylaw*, staff would be required to work overtime to meet the supplementary agenda deadline when there is a high volume of correspondence.

There is also the issue of correspondence received after the deadline, assuming the deadline for receiving correspondence is kept consistent with delegations at 4:30 pm on Monday. Late submissions on a committee agenda item would be uploaded when the report goes to Board. Submissions received too late for the Board agenda would be posted only to the Board Portal. Regardless of whether correspondence is published on an agenda with the express consent of the writer, all correspondence on agenda items will still be uploaded to the Board Portal.

If the Board wishes to pursue Alternative 2, staff would recommend developing a fillable online form that would assist in separating the submitter's personal and contact information from the content of the correspondence. A fillable form could standardize the form of submission and potentially include a maximum character limit to encourage submitters to be concise.

A couple of times a year the CRD Board receives a strong response on agenda items as a result of organized letter writing campaigns. It would be very challenging for staff to prepare redacted correspondence in time for the agenda deadline, particularly when the topic is politically sensitive in nature or has resulted in a strong emotional response from letter writers. For example, in 2021 the CRD received more than 1200 items of correspondence and over 110 calls about the protection of old growth forest at Fairy Creek. It's estimated that it would require more than 40 hours of staff time, based on 2 minutes per record, to redact 1200 pieces of correspondence and prepare it for publishing on an agenda.

CONCLUSION

All correspondence received on CRD Board and Standing Committee agenda items is uploaded to the Board Correspondence Portal. Before the CRD could publish correspondence on an agenda, staff would need to thoroughly review and redact each submission for personal or identifiable information and potentially libelous or inflammatory statements. Express consent obtained from the submitter before publishing their correspondence on a meeting agenda could help reduce the redactions required, but would not eliminate the need for staff review.
Currently, there is no capacity for staff in the current work plan to absorb the time-intensive task of reviewing and redacting correspondence prior to publishing on an agenda. Further analysis would be required to determine the resources needed to create a technical solution that would streamline redactions and help mitigate the staff impact of processing unpredictable volumes of correspondence in a short timeframe.

RECOMMENDATION

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

Submitted by:	Marlene Lagoa, MPA, Manager, Legislative Services & Deputy Corporate Officer
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

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REPORT TO THE JUAN DE FUCA LAND USE COMMITTEE
MEETING OF TUESDAY, MAY 17, 2022

SUBJECT **Radiocommunication and Broadcasting Antenna Systems Application for Lot A, Section 23, Highland District, Plan VIP83970 – 6933 Willis Point Road**

ISSUE SUMMARY

An application has been received by Rogers Communications for a 41 m radio communication antenna system, for the purpose of replacing the existing monopole and improving telecommunication services in the Willis Point area.

BACKGROUND

Rogers Communications has requested a statement of concurrence from the CRD to construct a 41 m radio communication antenna system on the subject property (Appendix A). The new tower would expand telecommunication services by replacing the existing tower, which is nearing the end of its service life.

The approximately 1.20 hectare (ha) property at 6933 Willis Point Road is designated as Community Hall under the Willis Point Comprehensive Community Plan, Bylaw No. 3027, and is zoned Community Facility (P-2). Facilities on the property include the Willis Point Community Hall, Willis Point Fire Hall, and recreation infrastructure that presently include a tennis court and playpark. Portions of the property are designated as steep slope, sensitive ecosystems, and wetlands development permit areas by Bylaw No. 3027.

The proposal includes a fenced compound enclosing the self-supported tower structure and associated infrastructure (Appendix B).

In accordance with the Juan de Fuca Radiocommunication and Broadcasting Antenna Systems Application policy, staff initiated a 30-day public consultation period for the application from March 10 to April 8, 2022. Six submissions were received from members of public and forwarded to the applicant to provide a response. Responses are included in Appendix C. The Willis Point Fire and Recreation Commission responded to the referral sent to CRD departments (Appendix D). As the land use authority for the application, the CRD Board is requested to provide a statement of concurrence or non-concurrence to the applicant and Industry Canada.

ALTERNATIVES

Alternative 1
The Juan de Fuca Land Use Committee recommends to the Capital Regional District Board:
That a statement of concurrence be provided to Rogers Communications for the proposed 41 m radio communication and broadcasting antenna system on Lot A, Section 23, Highland District, Plan VIP83970.

Alternative 2
The Juan de Fuca Land Use Committee recommends to the CRD Board:
That a statement of non-concurrence be provided to Rogers Communications for the proposed 41 m radio communication and broadcasting antenna system on Lot A, Section 23, Highland District, Plan VIP83970.

IMPLICATIONS

Legislative
Section 5 of the *Radiocommunication Act* states that the Minister may, taking into account all matters that the Minister considers relevant for ensuring the orderly development and efficient operation of radio communication in Canada, issue radio authorizations and approve each site on which radio apparatus, including antenna systems, may be located. Further, the Minister may approve the erection of all masts, towers and other antenna-supporting structures. Accordingly, proponents must follow the process outlined in Innovation, Science and Economic Development Canada's (ISED) *Spectrum Management and Telecommunications Client Procedures Circular* when installing or modifying an antenna system.

Part of the process includes contacting the land use authority and following the required consultation process. The CRD is the land use authority for the Juan de Fuca Electoral Area where the subject property is located.

The CRD Board approved Bylaw No. 3885, the Juan de Fuca Development Fees and Procedures Bylaw No. 3, 2018, and the Juan de Fuca Radiocommunication and Broadcasting Antenna Systems Application Policy (the "Policy") in 2019. The Policy establishes a public consultation process and procedures.

Public Consultation
In accordance with the Policy, a notice was published in the local newspaper and a notice was delivered to property owners and occupants within 500 m of the subject property to advise of the application and the opportunity to provide written comments and questions. The notice was published on March 10, 2022, and submissions were to be received by 9:00 am on April 8, 2022. Six submission regarding LP000032 were received during the notification period. The submissions were forwarded to the applicant who then provided a response to the concerns and questions raised (Appendix C).

In advance of the May 17, 2022, Land Use Committee meeting, notices were sent to property owners and occupants within 500 m of the subject property advising of the second opportunity to be heard and provide additional comment at the meeting.

A recommendation from the Land Use Committee along with any additional public comments received will be considered by the CRD Board and forwarded to the applicant and Industry Canada.

Referral Comments
In accordance with the JdF radiocommunication system policy, staff referred the application to applicable CRD departments. Responses were received from the Willis Point Fire and Recreation Commission in support of the application, noting that replacement of the existing tower has been under discussion for approximately five years. The Commission further advised that the Willis Point Community Association has been updated by the Commission at the Association's annual general meetings.

Land Use
The Willis Point Comprehensive Community Plan, Bylaw No. 3027, designates the subject property as Community Hall, which supports community use services including community safety or emergency response activities. The OCP policies include consideration for seeking means to provide financial assistance to the volunteer fire department to enable the purchase of fire-fighting apparatus, and equipment, when required.

The subject property is zoned Community Facility (P-2) under Bylaw No 3027, which permits community use services, including community safety or emergency response activities such as fire, police, ambulance and first responder services. The Bylaw exempts public communication towers and antennas from any maximum height restrictions; however, the tower structure would be required to meet the setbacks specified by the P-2 zone.

Portions of the property are designated as steep slope, sensitive ecosystems, and wetlands development permit areas by Bylaw No. 3027; however, the proposed tower and compound are located outside these DP areas. CRD Building Inspection has indicated that a building permit is not required for the tower.

Evaluation criteria to be considered by the CRD when reviewing an application for a radio communication and broadcasting antenna system is outlined in the Policy and included in Appendix E.

Rationale for the proposed location: Rogers Communications states that the existing 36 m tower at this location has reached its end of service life. The proposed replacement tower will be 5 m taller, operate with a similar radiofrequency (RF) emission output, and accommodate two cellular service carriers (Rogers and Freedom Mobile) and the local fire department radios. Rogers further states that the subject location is necessary to meet the needs of customers, visitors to the area and residents relying on Rogers and Freedom Mobile networks, and that relocation of the tower away from this location was not considered since demand for services are within this locale and there are other installations in the network to the south and west. The increase in height is necessary to ensure that the quality of services for customers in the area is provided.

Proximity to residential uses, institutions, and public lands: The proposed tower site for LP000032 is adjacent to three large Rural Conservation (RC) zoned properties to the north, east, west and south. Two of the three properties are undeveloped. The closest dwelling is located approximately 120 m from the proposed tower location. The subject property is used for a fire hall, community hall, and outdoor recreation facilities including a playground and tennis court. The applicant has stated that there will be no impact on the safety of the fire department and of those that train on site, noting that the industry is closely regulated

by the Innovation, Science and Economic Development Canada. Carriers are required to operate in accordance with Health Canada's Safety Code 6, which sets out recommended safety limits for human exposure to radiofrequency electromagnetic fields (EMF). Concerns related to EMF health risks fall under Health Canada's jurisdiction and are beyond the scope of local government public consultation.

Visibility and measures to integrate the tower in to local surroundings: The proposed antenna system would be located behind the Willis Point Community Hall on Willis Point Road. The fenced tower compound is not anticipated to be visible to those travelling along Willis Point Road and existing vegetation should screen the tower and compound from the tennis court and playground area. The applicant has stated that the new tower, antennas and mounts would be painted forest green to blend in with surrounding environment.

Security measures: The applicant proposes to install perimeter fencing at the base of the tower to restrict public access.

Alternatives/mitigation measures: The proposed location for the tower meets the applicant's required siting conditions, including proximity to Willis Point Road, ease of access, electricity, cleared land and willing property owners. Other locations in the vicinity were not considered as demand for services are within this locale and there are other installations in the network to the south and west.

Hazardous areas: There are no known hazardous conditions in proximity to the proposed tower location.

Environmentally sensitive areas: The proposed tower and compound are located outside the steep slope, sensitive ecosystem and wetlands development permit areas; therefore, there is no requirement for a professional report or permit. The applicant has stated that no tree removal or cutting of mature trees in the immediate area would be required.

Aeronautical safety requirements: The applicant will be required to abide by any Transport Canada specifications for installing lights on the proposed antenna system.

Impact on community: The proposed tower would replace the existing tower, which is nearing the end of its service life, and will provide cellular coverage to residents on Rogers and Freedom Mobile networks, as well as the local fire department radios. A member of the public questioned whether residents would be notified of changes to antenna emission strength and locations of additional antennas. The applicant responded by advising that there is no requirement for carriers to notify residents of antenna changes. A member of the public questioned whether the tower would affect property values in the area. The applicant responded by commenting that the proposed location is considered the most suitable site since it is adjacent to the location of the existing 36 m tower, and that research has suggested that there would be no measurable impact on property values. The applicant responded to a further question from a member of the public advising that the applicant cannot disclose the financial aspects of the agreement with the property owner.

Designs that address the guidelines: The distance between the proposed tower and adjacent residences is approximately three times the tower height, as recommended by the CRD policy. The proposed tower site is located directly behind the community hall and existing vegetation would screen the tower from the tennis court, playground area and nearby dwellings.

In response to a request from the Commission, Rogers confirmed its commitment to painting the tower green to blend in with the surrounding trees. Rogers also revised and resubmitted its plans to re-route the power conduit around the west side of the fire hall rather than the east side of the building to avoid buried infrastructure (Drawing E4). Rogers has also indicated that it would work with the Capital Regional Emergency Service Telecommunications (CREST), should CREST wish to co-locate on the tower.

The applicant stated that the number of transmitting devices on the tower is limited by structural capacity and the cumulative emissions level. The number of antennas is also based on demand for services in the community. Rogers will offer similar services on the existing tower and may add or remove frequencies if additional licences are acquired. Further devices that may be installed include emergency responder services, community radio and weather monitoring systems.

Based on a review of the application, the proposed tower location and design satisfy the evaluation criteria outlined in the CRD's policy. The applicant has presented rationale for the proposed location, demonstrated consideration of alternatives and mitigation measures, and provided information that address comments and questions received from members of the public. Therefore, staff recommend that statements of concurrence be provided for the proposed 41 m telecommunications tower (LP000032).

CONCLUSION

An application has been received from Rogers Communications to construct a 41 m telecommunications antenna system at 6933 Willis Point Road for the purpose of replacing an existing tower and improving telecommunication services. The proposal addresses the evaluation criteria in the CRD's Juan de Fuca Radiocommunication and Broadcasting Antenna Systems Application Policy. Through the public consultation process, owners and occupants of land in proximity to the subject properties were provided opportunity to comment or ask questions. Six submissions were received from the members of public and the applicant has submitted responses. Staff recommend that a statement of concurrence be provided.

RECOMMENDATION

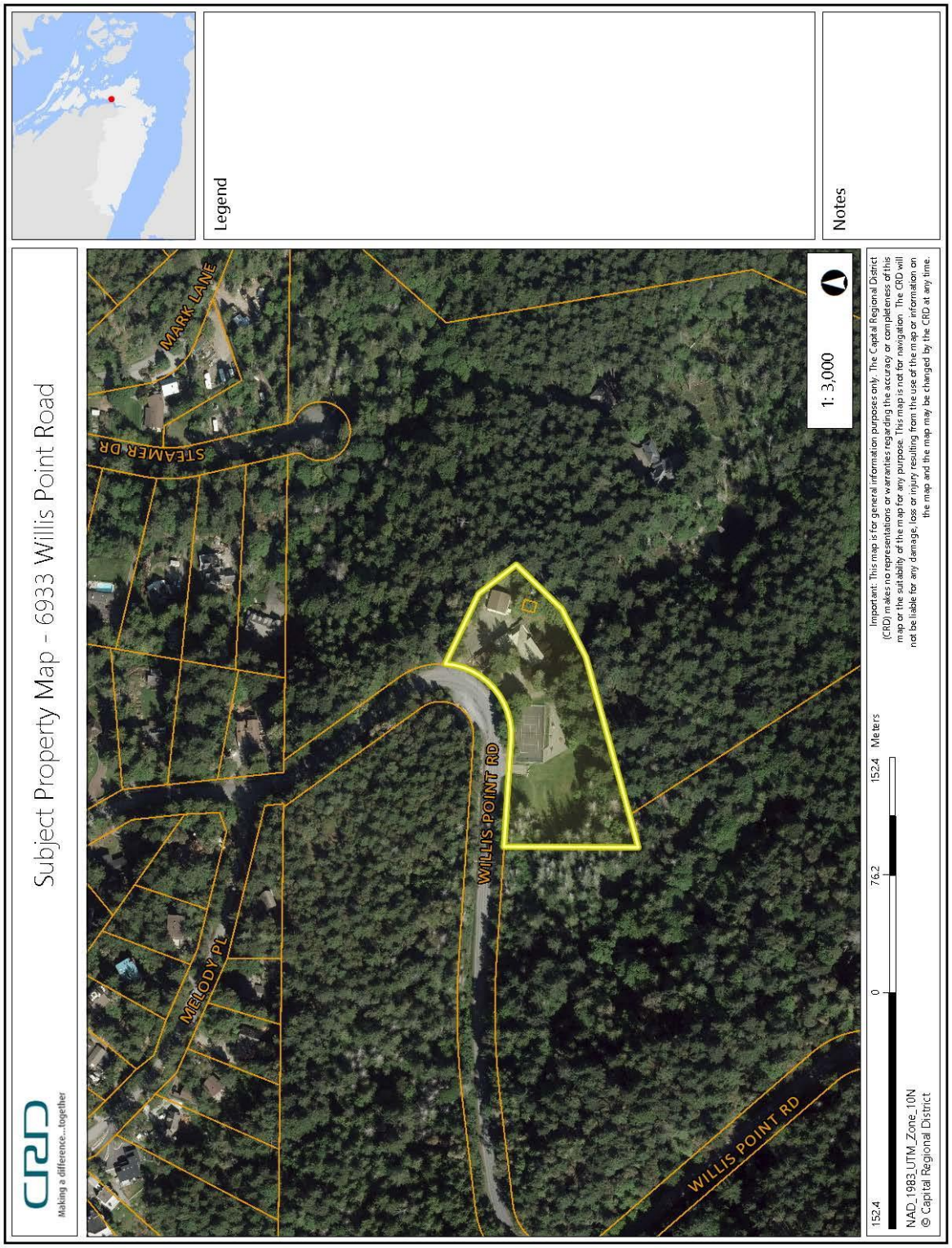
The Juan de Fuca Land Use Committee recommends to the Capital Regional District Board:
That a statement of concurrence be provided to Rogers Communications for the proposed 41 m radio communication and broadcasting antenna system on Lot A, Section 23, Highland District, Plan VIP83970 (LP000032).

Submitted by:	Iain Lawrence, MCIP, RPP, Senior Manager, JdF Local Area Services
Concurrence:	Kevin Lorette, P.Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

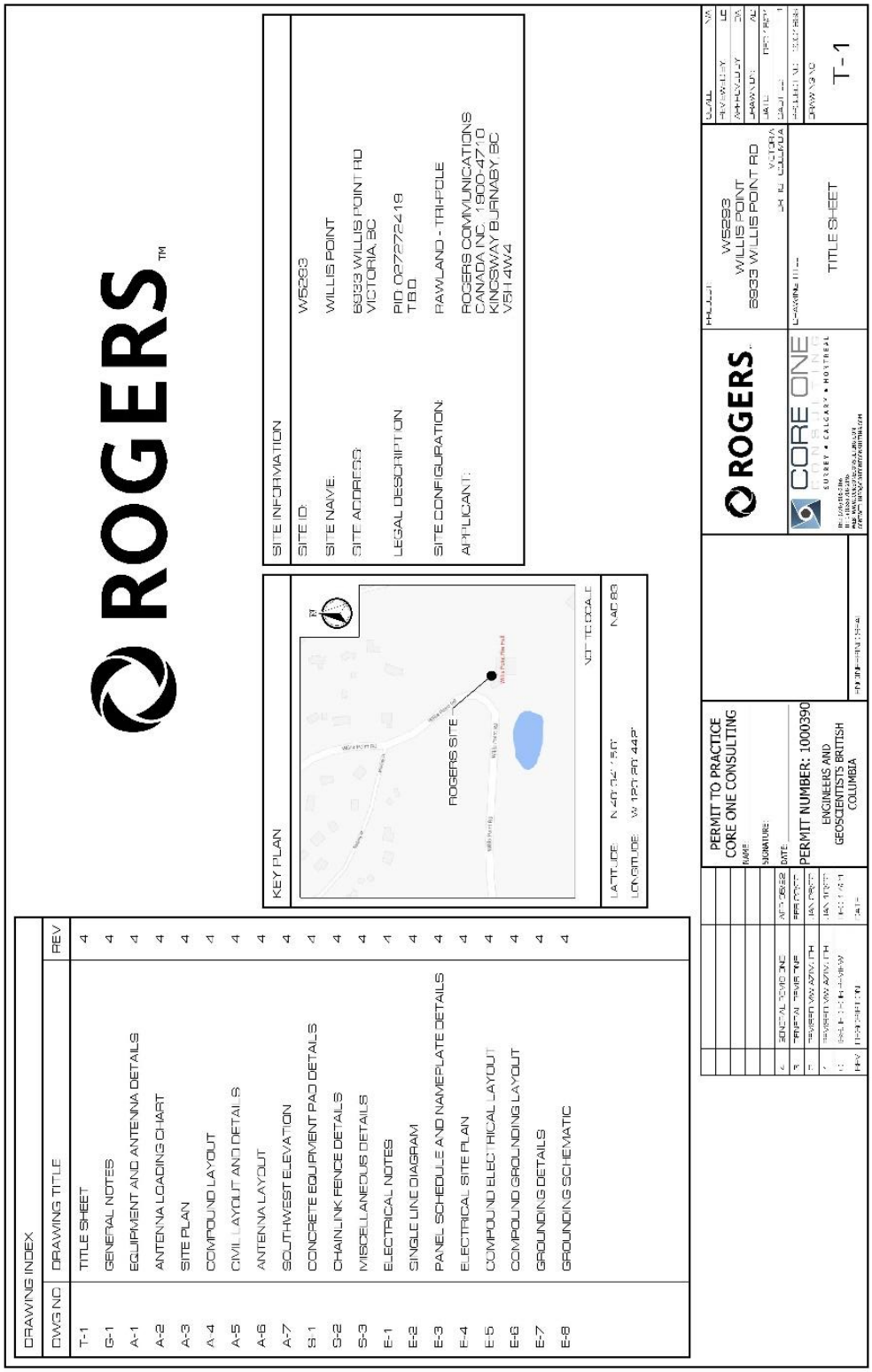
ATTACHMENTS

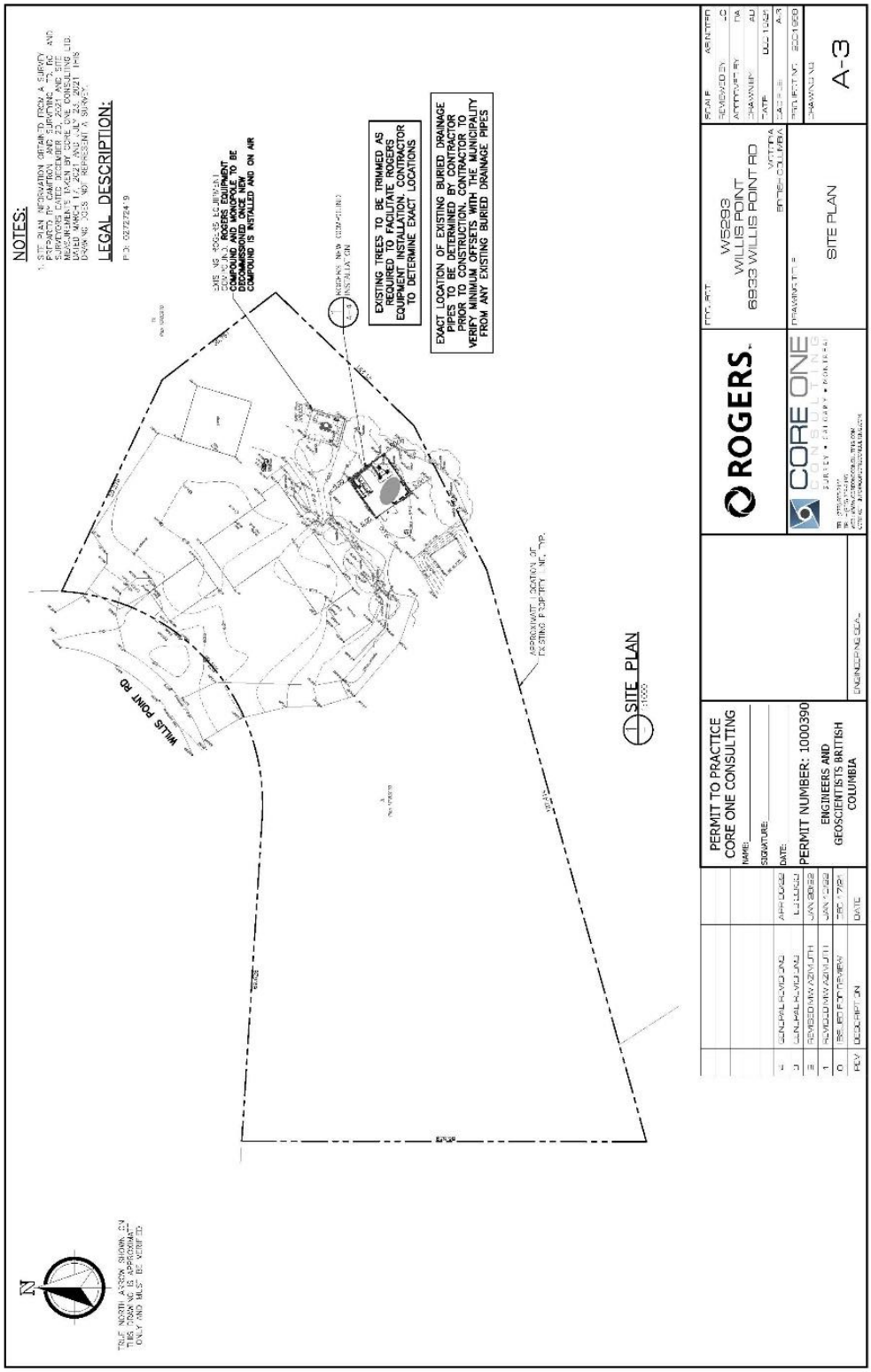
Appendix A: Subject Property Map
Appendix B: Revised Development Proposal
Appendix C: Public Submissions and Applicant Responses
Appendix D: Referral Comments
Appendix E: Evaluation Criteria

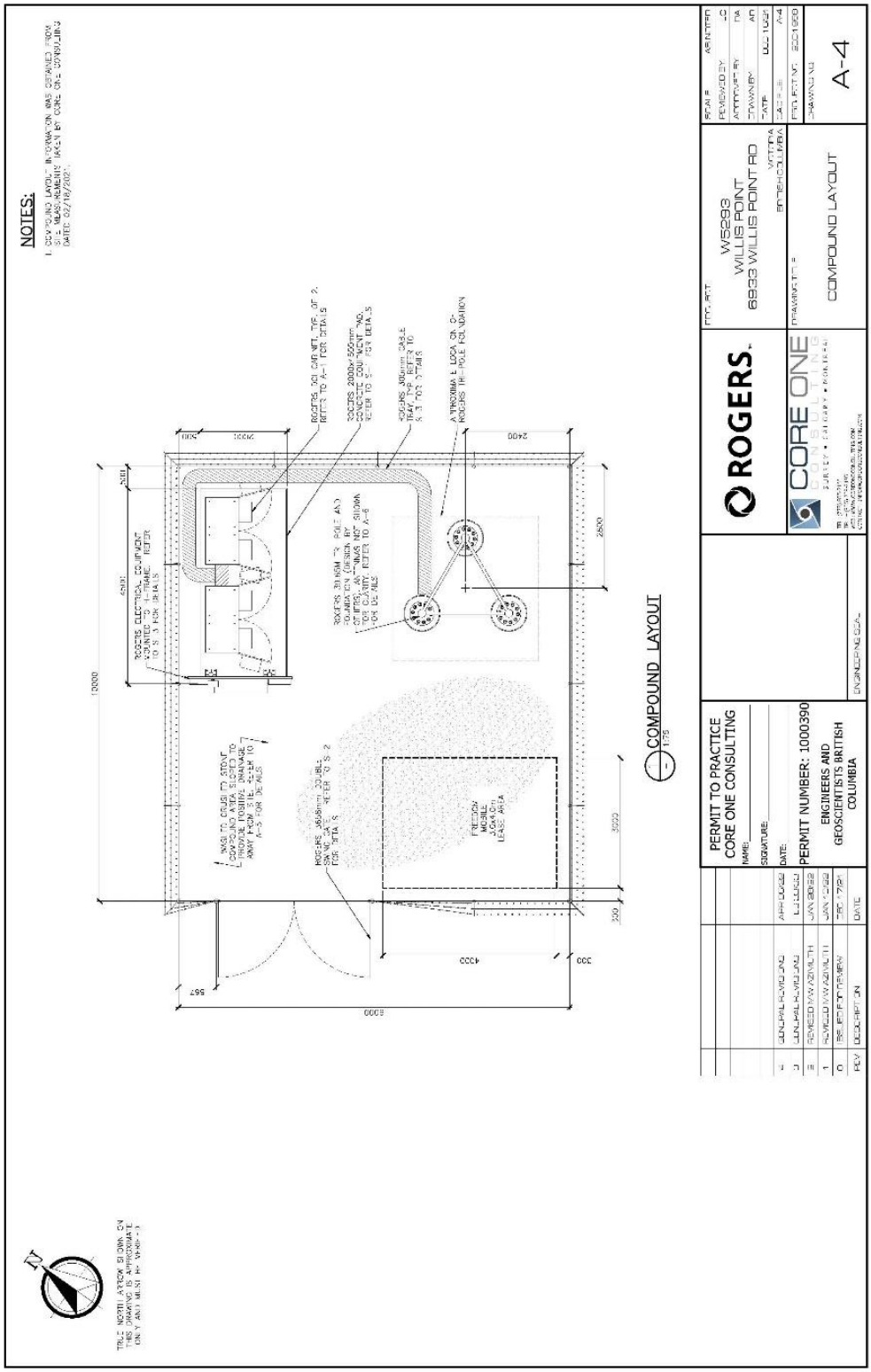
Appendix A: Subject Property Map

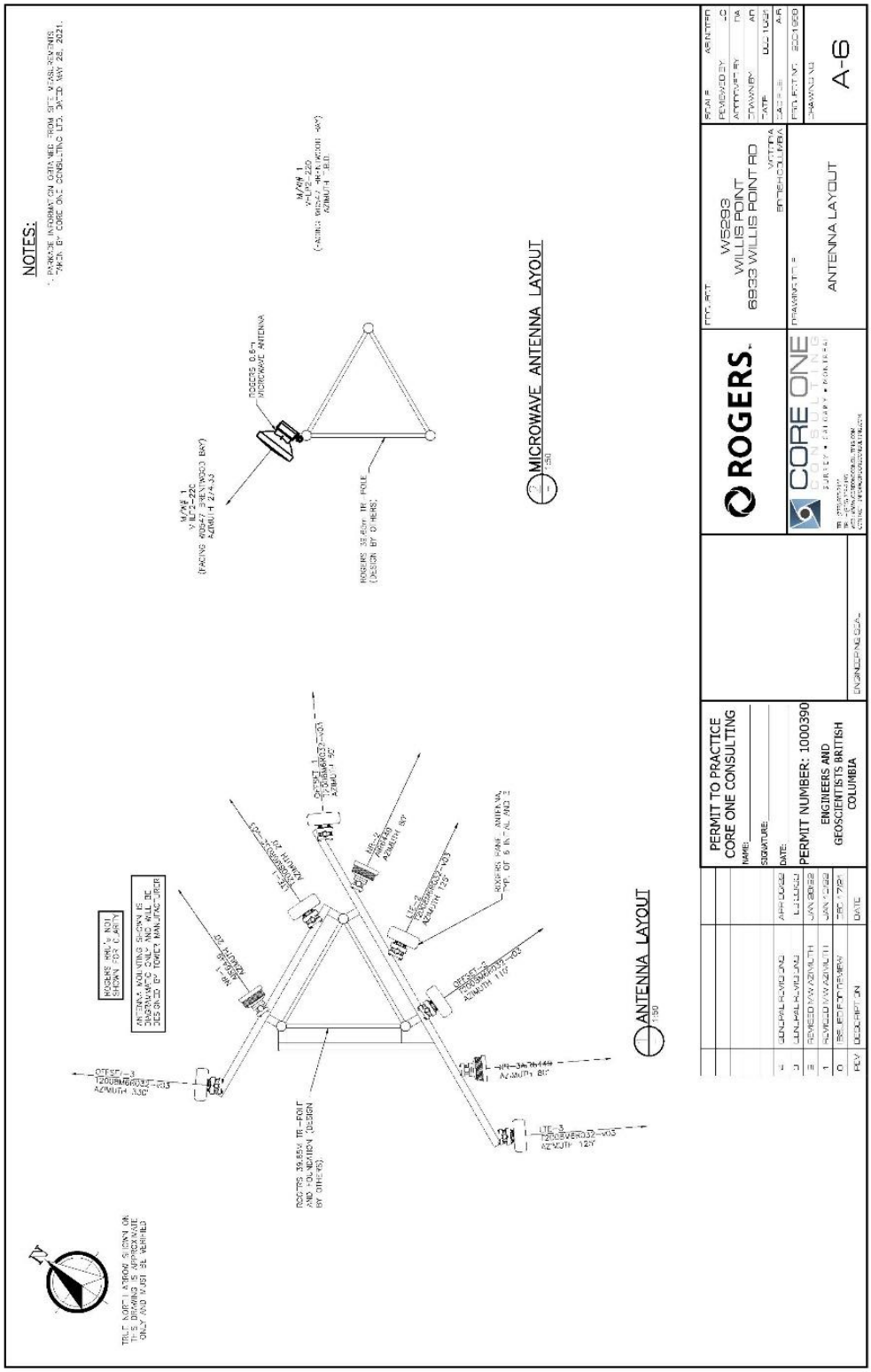


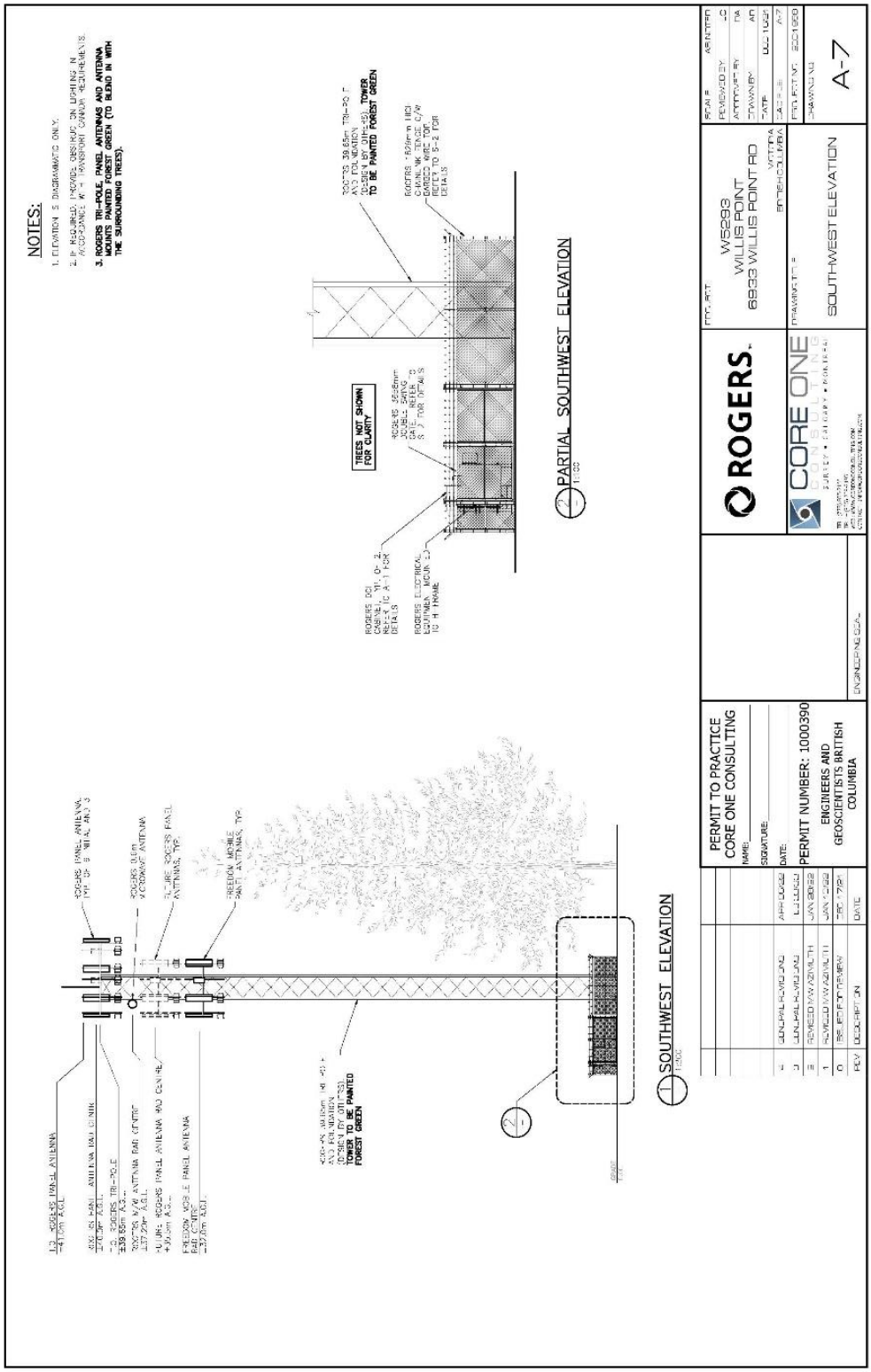
Appendix B: Revised Development Proposal

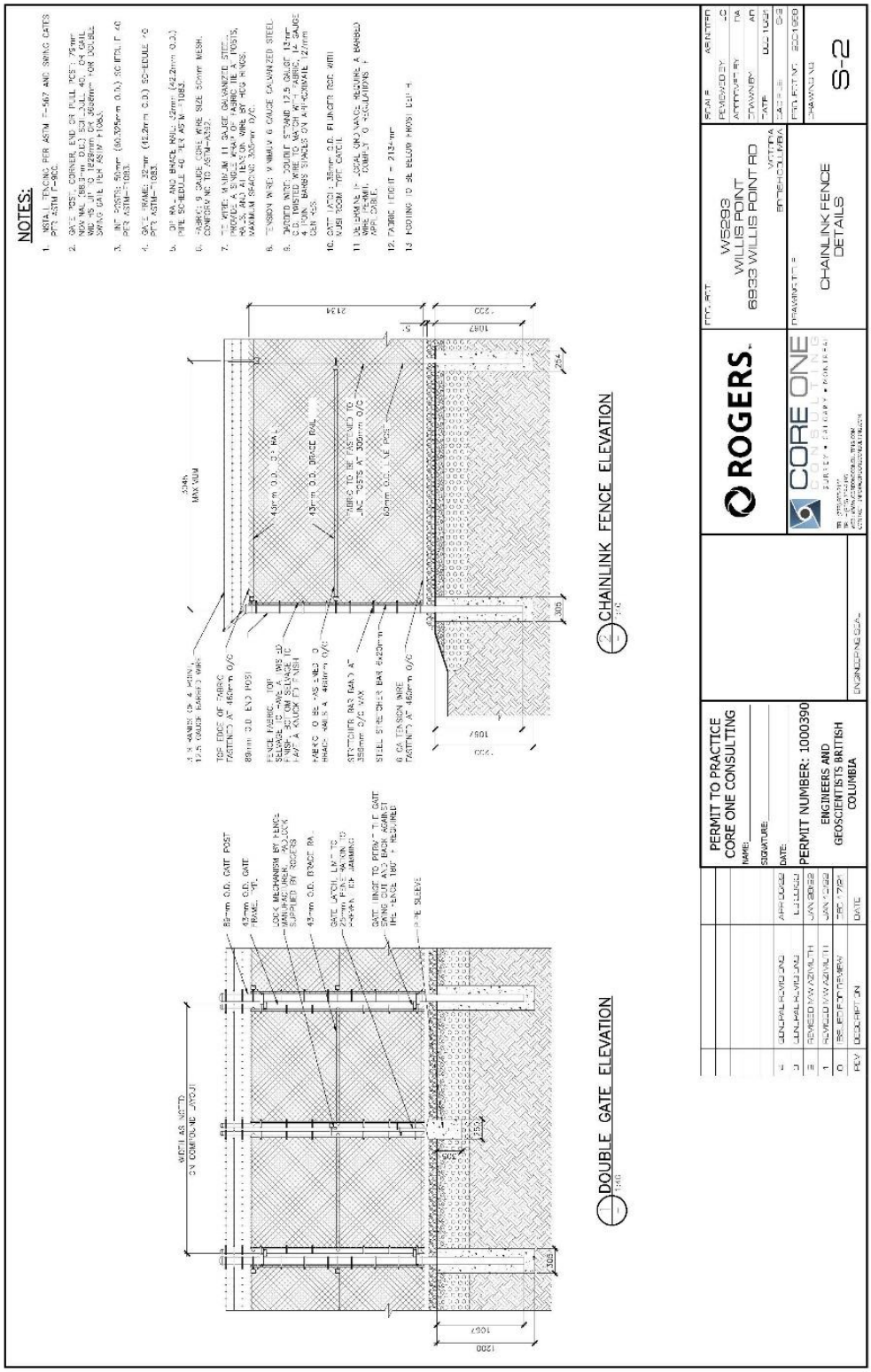



NOTES:
LEGAL DESCRIPTION:
EXISTING TREES TO BE TRIMMED AS REQUIRED TO FACILITATE ROGERS EQUIPMENT INSTALLATION. CONTRACTOR TO DETERMINE EXACT LOCATIONS
EXACT LOCATION OF EXISTING BURIED DRAINAGE PIPES TO BE DETERMINED BY CONTRACTOR PRIOR TO CONSTRUCTION. CONTRACTOR TO VERIFY MINIMUM OFFSETS WITH THE MUNICIPALITY FROM ANY EXISTING BURIED DRAINAGE PIPES
WILLS POINT RD
SITE PLAN
ROGERS
CORE ONE
W5293
WILLIS POINT
6933 WILLIS POINT RD
SITE PLAN
A-3
PERMIT TO PRACTICE
CORE ONE CONSULTING
PERMIT NUMBER: 1000390
ENGINEERS AND
GEOSCIENTISTS BRITISH
COLUMBIA


NOTES:
COMPOUND LAYOUT
PERMIT TO PRACTICE
CORE ONE CONSULTING
PERMIT NUMBER: 1000390
ENGINEERS AND
GEOSCIENTISTS BRITISH
COLUMBIA
ROGERS
CORE ONE
W5293
WILLIS POINT
6933 WILLIS POINT RD
COMPOUND LAYOUT
A-4


NOTES:
ANTENNA LAYOUT
MICROWAVE ANTENNA LAYOUT
ROGERS
CORE ONE WIRELESS
W5293
WILLIS POINT
6933 WILLIS POINT RD
ANTENNA LAYOUT
A-6
PERMIT TO PRACTICE
CORE ONE CONSULTING
PERMIT NUMBER: 1000390
ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA


NOTES:
1. ELEVATION IS DIAGRAMMATIC ONLY.
2. ALL REQUIRED LIGHTING, OBSTRUCTION MARKING AND ASSOCIATED WORK TO BE IN ACCORDANCE WITH TRANSPORT CANADA REQUIREMENTS.
3. ROGERS TRI-POLE PANEL ANTENNAS AND ANTENNA MOUNTS PAINTED FOREST GREEN (TO BLEND IN WITH THE SURROUNDING TREES).
TREES NOT SHOWN FOR CLARITY
TOWER TO BE PAINTED FOREST GREEN
PARTIAL SOUTHWEST ELEVATION
SOUTHWEST ELEVATION
PERMIT TO PRACTICE
CORE ONE CONSULTING
PERMIT NUMBER: 1000390
ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA
ROGERS
CORE ONE
W5293
WILLIS POINT
6933 WILLIS POINT RD
SOUTHWEST ELEVATION
A-7


NOTES:
1. INSTALL FENCING PER ASTM F-567 AND SWING GATES PER ASTM F-900.
2. GATE POST: CORNER END OR PULL POST: 75mm NOM MIN. 388.37mm O.D. SCH.40, GA GAUL WHO 45 LB TO 1828mm OR 365.80mm +FOR DOUBLE SWING GATE PER ASTM F1083.
3. LINE POSTS: 60mm (60.325mm O.D.) SCHEDULE 40 PER ASTM F1083.
4. GATE FRAME: 32mm (42.2mm O.D.) SCHEDULE 40 PER ASTM F1083.
5. TOP RAIL AND BRACE RAIL: 42mm (42.2mm O.D.) PIPE SCHEDULE 40 PER ASTM F1083.
6. FABRIC 9 GAUGE CORE MORE SIZE 50mm MESH. CONFORM TO ASTM A392.
7. TENSION WIRE: 6 MM/6 GAUGE GALVANIZED STEEL WIRE, ASTM A817 OR ASTM A824 OR ASTM A1011, 45-55 KSI. ALL TENSION WIRE BY MFG'S INSTR. MAXIMUM SPACING 305mm O/C.
8. TENSION WIRE: 6 MM/6 GAUGE GALVANIZED STEEL
9. INSTALL 1" LOCAL UNCLASSIFIED ROADWAY A BARRIER WHERE REQUIRED BY CITY OF LANGLEY TO PROTECT APPL CABLE.
10. GATE LATCH: 38mm O.D. PLUNGER ROD WITH WIRE LOOP FOR CATCH.
11. FABRIC TO BE 1.8m - 2.13m
12. FENCING TO BE BELOW HYDRO LOT 4
TOP RAIL
TOP EDGE OF FABRIC FASTENED AT 460mm O/C
89mm O.D. END POST
FENCE FABRIC - TOP SELVAGE 12 GAUGE A 1WS 2D KNUCKLE BOTTOM SELVAGE TO BE TWISTED TO FORM A KNUCK TO KNUCK
FABRIC TO BE FASTENED TO INCLINED RAILS AT 460mm O/C
STRETCHER BAR FIXED AT 305mm O/C MAX
STEEL STRETCHER BAR 6x20mm
6 GA TENSION WIRE FASTENED AT 460mm O/C
1067
1200
2134
1067
254
305
1524
305
DOUBLE GATE ELEVATION
CHAINLINK FENCE ELEVATION
PERMIT TO PRACTICE
CORE ONE CONSULTING
NAME:
SIGNATURE:
DATE:
PERMIT NUMBER: 1000390
ENGINEERS AND GEOSCIENTISTS BRITISH COLUMBIA
ENGINEERING SEAL
ROGERS
CORE ONE
PROJECT
W5293
WILLIS POINT
6833 WILLIS POINT RD
DRAWING TITLE
CHAINLINK FENCE DETAILS
SCALE AS NOTED
DESIGNED DY
APPROVED BY
DRAWN BY
DATE
CAD FILE
PROJECT NO.
DRAWING NO.
S-2
REVISION
DESCRIPTION
DATE
ISSUED FOR REVIEW
RESUBMITTED FOR REVIEW
RESUBMITTED FOR REVIEW
GENERAL REVISIONS
GENERAL REVISIONS

Appendix C: Public Submissions and Applicant Responses

Submission #1: Bob and Sue Ryan

From: [redacted]
To: idf info
Subject: Proposed new cell tower
Date: Thursday, April 07, 2022 11:50:25 AM

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

I think the proposed tower is A LOT taller than the existing one. Why is that? It is also very close to the community playground and I don't think our little ones should have that exposure. It will be an eyesore.
Bob and Sue Ryan
[redacted]

Applicant's Response #1: Bob and Sue Ryan

From: kemparprojects@gmail.com [mailto:kemparprojects@gmail.com]
Sent: Friday, April 08, 2022 8:19 AM
To: Wendy Miller <wmiller@crd.bc.ca>
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy, please see our reply to the submission here as follows:

"The existing tower is 36 meters high and after many years it has reached its end of useful life. The new tower is just 4 meters taller at a total of 40 meters and it will safely accommodate two carriers (Rogers and Freedom Mobile) and local Fire Department radios as well. The new tower and antennas and mounts will be painted forest green to blend in with the surrounding trees. The carriers must follow the strictest of safety guidelines (Safety Code 6) written by Health Canada and this ensures a safe environment around the tower."

Thanks very much, Rob

Rob Kemp
Kempar Projects
Agent for Rogers Communications
604-506-4788
kemparprojects@gmail.com

ROGERS

Submission #2: Linda Parker

From: [redacted]
To: jdf info
Subject: 6933 Willis Point Rd. Radio Communications Tower
Date: Thursday, April 07, 2022 11:43:22 PM

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

>
> Juan de Fuca Community Planning Dept.
>
> Attention: Iain Lawrence, Senior Manager
>
> Dear Mr. Lawrence:
>
> Thank you for hearing my comments regarding the radio communications tower for Willis Point.
>
> I object to this application because I have serious misgivings regarding the proposed location of this new 41 m. tower, which will be in the heart of our residential area. It is also to be placed directly above our recreation hall, tennis courts and our children's playground (which is also in the process of being renovated and expanded) I believe community discussion is imperative. Due to past COVID guidelines, no meetings have been allowed. I and others I have spoken with, have many questions such as:
> What is the maximum number of transmitting devices for this tower? Will they monitor (and how often) the RF levels in the area and will they make these readings public? What frequencies will be emitted now and in the future? Are there other devices that could potentially be installed on this tower? What are the emergency protocols if the level of emissions are above Safety Code 6 levels? Are there any insurance policies in place in the event of any injuries that are linked to cell tower emissions?
>
> It is not my desire to impede progress, though I believe due diligence is needed to ensure the health and safety of our community. The potential negative impact such a tower poses, especially to our most vulnerable, makes this letter necessary.
>
> Thank you for this opportunity to voice my concerns.
>
> Sincerely
>
> Linda Parker
> [redacted]
> [redacted]
[redacted]
>

Applicant's Response #2: Linda Parker

From: kemparprojects@gmail.com
To: Wendy Miller
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"
Date: Thursday, April 14, 2022 12:05:23 PM
Attachments: image001.png

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy, please find below our reply to Linda Parker as follows:

"Thank you for taking the time to share your concerns about the proposed rebuild of the Willis Point Tower. The existing tower will be removed upon installation of the new tower.

Q: What is the maximum number of transmitting devices for this tower?
A: The number of transmitting devices on the tower are limited by two factors: the structural capacity of the tower and the cumulative emissions level. The number of antennas cannot put the structural integrity of the tower at risk. Furthermore, the operations of the tower must fall within the Health Canada's Safety Code 6 restrictions. It is worth noting that an additional determining factor for the number antennas is the demand for services in the community. Any antennas providing commercial services will only be provided if there is a demand for those services. Furthermore, emergency responder services, community radio, or weather monitoring systems may be interested in utilizing the new tower to provide additional services to the Willis Point community.

Q: Will they monitor (and how often) the RF levels in the area and will they make these readings public?
A: Radio engineers design our Wireless installations to ensure that they are operating at a fraction of the allowable limits. For a tower, a Safety Code 6 analysis is completed when equipment is added and there is a nearby community. This is out of an abundance of caution as emissions from towers are normally insignificant by the time they reach ground level.
A: No, readings are not made public. Licenced carriers must operate within Health Canada's strict regulations. Field audits are periodically carried out by the Federal government to ensure compliance.

Q: What frequencies will be emitted now and in the future?
A: Rogers can only use the frequencies it has licenced. For this location, Rogers would offer similar services to the existing tower – 750-650 Mhz; 1900/2100/2600 Mhz. Rogers may add or remove additional frequencies depending on if we acquire new licences.

Q: Are there other devices that could potentially be installed on this tower?
A: Yes, there may be other devices that might be installed on the tower. These might included emergency responder services, community radio, weathering monitoring systems.

Q: What are the emergency protocols if the level of emissions are above Safety Code 6 levels?
A: The propagation of radio emissions are primarily a concern when directly in front of the emitting antennas. Radio emissions fall exponentially with distance which means there is no risk to the public in the unlikely event of emissions exceeding SC6 at ground level. In the unlikely event that RF emissions from the tower were to exceed Safety Code 6 at any time, Rogers would be obligated to reduce the equipment and output such that the emissions were well within the safe limits.

Q: Are there any insurance policies in place in the event of any injuries that are linked to cell tower emissions?
A: No, I'm not aware of any insurance policies.

Regards, Rob

Rob Kemp
Kempar Projects
Agent for Rogers Communications
604-506-4788

Submission #3: Jason Hillis

From: kemparprojects@gmail.com
To: Wendy Miller
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"
Date: Thursday, April 14, 2022 9:54:28 AM
Attachments: image001.png

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy,

Please find our response to the submission below:

Thank you for taking the time to provide feedback about the proposed rebuild of the Willis Point tower. Currently, the tower on the property is nearing its end of life utility. Rogers is seeking to replace the existing tower with a new structure that will continue to provide Wireless services to the Willis Point Community and surrounding area. We cannot relocate the tower further away because demand for services are within this locale and there are other installations in the Network to the South and West. Please find a response back to your other questions below:

Q: Will there be an attempt to camouflage the tower?
A: Yes, after consulting with the CRD, LL and feedback from other community members, Rogers will be painting the tower forest green. This shall help it blend into the trees of the area.

Q: How will this impact the safety of the Volunteer fire department, and their members regularly meet and train in this area?
A: There will be no impact to the safety of the fire department and those that train there from time to time. Wireless installations are located at universities, hospitals, and public buildings across Canada. The industry is closely regulated by the Ministry of Innovation, Science and Economic Development, as well as Health Canada. Carriers must stay within the safety limits in order to maintain their licence.

Q: What are the financial benefits to the community? The Chair of the Fire and Recreation Commission states this is a private matter.
A: No, we cannot comment on this aspect of any agreement with a property owner.

Q: Will the whole community get the opportunity to comment on this or only those invited to comment who are within the 500m?
A: Rogers is currently completing its public engagement by following the CRD's Wireless Antenna Policy. As per the policy, Rogers is notifying properties within 500m and also posting a notice in the newspaper. All community members are invited to provide their feedback on the proposal however we only formally notify within a 500m radius.

How does the proposed tower compare to the existing one? Height? Output? EM Levels?
A: The proposed tower will be 41 meters to the top of the lightning rod as compared to the existing tower of 36 meters. The new tower would be operating with a similar RF emission output as the existing one.

How will this effect property value in the area?

Applicant's Response #3: Jason Hillis

From: kemparprojects@gmail.com
To: Wendy Miller
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"
Date: Thursday, April 14, 2022 9:54:28 AM
Attachments: image001.png

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy,

Please find our response to the submission below:

Thank you for taking the time to provide feedback about the proposed rebuild of the Willis Point tower. Currently, the tower on the property is nearing its end of life utility. Rogers is seeking to replace the existing tower with a new structure that will continue to provide Wireless services to the Willis Point Community and surrounding area. We cannot relocate the tower further away because demand for services are within this locale and there are other installations in the Network to the South and West. Please find a response back to your other questions below:

Q: Will there be an attempt to camouflage the tower?
A: Yes, after consulting with the CRD, LL and feedback from other community members, Rogers will be painting the tower forest green. This shall help it blend into the trees of the area.

Q: How will this impact the safety of the Volunteer fire department, and their members regularly meet and train in this area?
A: There will be no impact to the safety of the fire department and those that train there from time to time. Wireless installations are located at universities, hospitals, and public buildings across Canada. The industry is closely regulated by the Ministry of Innovation, Science and Economic Development, as well as Health Canada. Carriers must stay within the safety limits in order to maintain their licence.

Q: What are the financial benefits to the community? The Chair of the Fire and Recreation Commission states this is a private matter.
A: No, we cannot comment on this aspect of any agreement with a property owner.

Q: Will the whole community get the opportunity to comment on this or only those invited to comment who are within the 500m?
A: Rogers is currently completing its public engagement by following the CRD's Wireless Antenna Policy. As per the policy, Rogers is notifying properties within 500m and also posting a notice in the newspaper. All community members are invited to provide their feedback on the proposal however we only formally notify within a 500m radius.

How does the proposed tower compare to the existing one? Height? Output? EM Levels?
A: The proposed tower will be 41 meters to the top of the lightning rod as compared to the existing tower of 36 meters. The new tower would be operating with a similar RF emission output as the existing one.

How will this effect property value in the area?

A: The proposed location is most suitable as it is adjacent to the existing tower that it will be replacing. Research has suggested there is no measurable impact on property values.

Regards, Rob

Rob Kemp
Kempar Projects
Agent for Rogers Communications
604-506-4788
kemparprojects@gmail.com

ROGERS.

Submission #4: T.K. Ammann

From: [redacted]
To: jdf.info
Subject: Cell phone tower @ Willis Point
Date: Friday, April 08, 2022 8:33:27 AM

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Mr. Lawrance,
As a resident of Willis Point I'm strongly opposed to the 41m cell phone tower being proposed for installation at the community hall. My address is [redacted] below the proposed tower on the Brentwood Bay side. Please note my opposition.
Thank-you.
Ms. T. K. Ammann

Applicant's Response #4: T.K. Ammann

From: kemparprojects@gmail.com
To: Wendy Miller
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"
Date: Sunday, April 10, 2022 5:13:38 PM
Attachments: image003.png

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy, thank you for sending this submission. Kindly see our reply as follows:

"There is an existing 36 meter tower at this location that has reached its end of life and the new proposed tower of 41 meters is needed to replace it. The old tower will be removed upon installation of the new tower. The new tower will be painted forest green to blend in with the surrounding trees. The improved quality of wireless services from this location is necessary to meet the needs of customers, visitors to the area and residents relying on Rogers and Freedom Mobile networks. "

Thank you, Rob

Rob Kemp
Kempar Projects
Agent for Rogers Communications
604-506-4788
kemparprojects@gmail.com

ROGERS

Submission #5: Midori Hillis

From: [redacted]
To: jdf info
Subject: Re: Willis Point Cell Tower
Date: Friday, April 08, 2022 8:41:13 AM

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

On Fri, Apr 8, 2022 at 8:36 AM Midori Hillis [redacted] wrote:

> Hello CRD,
>
> I agree with my husband, there has been no community consultation and there should be some before anything proceeds. Living within the 500 meter zone of the tower, I too am opposed.
>
> Sincerely,
>
> Midori Hillis
>
> [redacted]

Applicant's Response #5: Midori Hillis

From: kemparprojects@gmail.com
To: Wendy Miller
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"
Date: Sunday, April 10, 2022 5:20:16 PM
Attachments: image002.png

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Thanks Wendy, further to your note below:

"Please be assured that Rogers is following the CRD's Juan de Fuca Radiocommunication and Broadcasting Antenna Systems Application Policy including full public consultation as required in the CRD's Policy. We wil continue to work with CRD throughout the entirety of the process as required. Thank you."

Regards, Rob

Rob Kemp
Kempar Projects
Agent for Rogers Communications
604-506-4788
kemparprojects@gmail.com

ROGERS.

Submission #6: Dave Connor and Ida von Schuckmann

From: [redacted]
To: idf info
Subject: Response for the proposed 41 m RADIOCOMMUNICATIONS FACILITY
Date: Friday, April 08, 2022 8:55:20 AM

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Response for the proposed 41 m RADIOCOMMUNICATIONS FACILITY
Lot A, Section 23, Highland District, Plan VIP83970- 6933 Willis Point Road

To Whom It May Concern,
Thank you for the notification to respond to the application by Rogers.

While we appreciate the benefits to the Willis Point Community in terms of income, we still have some concerns. They are as follows:
1. The height seems much higher than the current tower. What are the benefits to making it so high? Is the height strictly for communications reasons or also to gain distance from ground level with the wave emissions..
2. We are wondering what monitoring there will be for potential health risks to surrounding residents and particularly because it is so close to a children's playground.
3. As residents living close to the tower, will we be notified of changes to antenna emission strengths and locations. Also, if antenna are added.
Thank you,
Ida von Schuckmann
Dave Connor
[redacted]

Applicant's Response #6: Dave Connor and Ida von Schuckmann

From: kemparprojects@gmail.com
To: Wendy Miller
Subject: RE: Submission Received - CRD File LP000032/Rogers W5293 "Willis Point"
Date: Sunday, April 10, 2022 5:40:34 PM
Attachments: image001.png

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy, the submission below is acknowledged and kindly see our reply as follows:

"Please see Rogers reply to your concerns below:

1. The existing tower is 36 meters high and after many years it has reached its end of useful life. The new tower is just 5 meters taller at a total of 41 meters and it will safely accommodate two carriers (Rogers and Freedom Mobile) and local Fire Department radios as well. The increase in height is necessary to ensure that the quality of services for customers in the area is provided. Also, this will not require any tree removal or cutting of mature trees in the immediate area surrounding the tower.
2. The new tower and antennas and mounts will be painted forest green to blend in with the surrounding trees. The carriers must follow the strictest of safety guidelines (Safety Code 6) written by Health Canada and this ensures a safe environment around the tower."
3. There is no requirement for the carriers to notify residents of antenna changes."

Thank you, Rob

Rob Kemp
Kempar Projects
Agent for Rogers Communications
604-506-4788
kemparprojects@gmail.com

ROGERS.

Appendix D: Referral Comments

Referral Responses - Willis Point Fire and Recreation Commission

From: Iain Lawrence
To: Iain Lawrence
Subject: RE: Wills Point Rogers Cell Tower
Date: Thursday, April 21, 2022 3:18:49 PM

From: Brent [redacted]
Sent: Friday, April 08, 2022 12:13 PM
To: Iain Lawrence <ilawrence@crd.bc.ca>; Aran Puritch [redacted]; Brent Kornelson [redacted]; Brian McCandless [redacted]; Gary Howell [redacted]; Joel Cotter [redacted]; directorjdf [redacted]; Paul Williams [redacted]; Vern McConnell [redacted]; Stephen Henderson [redacted]
Subject: Re: Willis Point Rogers Cell Tower

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Iain: Further to your question of community notification and involvement regarding the replacement of the Willis Point Roger Cell tower.

The Willis Point Commission meets monthly and posts our meeting minutes on the CRD website where they are publicly accessible. The replacement tower has been on our agenda and referenced in the minutes for nearly 5 years.

As part of its responsibility to manage the local fire and recreation properties in Willis Point, the Commission has been working with the CRD, Rogers and Freedom Mobile regarding the replacement of the existing cell tower. These numerous interactions have been noted in the commission minutes and the Commission Chair has kept the community apprised on the cell tower project in his regular report printed in our local paper called the Pointer. The Commission Chair has also provided verbal presentations at the yearly local Community Association general meetings regarding the activities of the commission which included updates on the replacement cell tower project.

When the CRD sent out the recent community notification the subject was posted on the local Facebook page. Several of the commission members posted answers to many of the inquiries as well as a link to the CRD minutes page for Willis Point Commission.

Rogers has addressed all the questions and concerns raised by the Willis Point Fire Protection and Recreation Facilities Commission and the commission supports the Rogers application for the replacement cell tower.

Brent Kornelson
Liaison Cell Tower Replacement Project Per:
Willis Point Fire Protection and Recreation Facilities Commission

From: [redacted]
To: Wendy Miller
Cc: [redacted]
Subject: Re: Referral: Rogers Radiocommunications Tower Application at 6933 Willis Point Road/Willis Point Fire Hall Site (LP000032)
Date: Monday, March 07, 2022 9:48:55 AM

CAUTION: This Email is from an EXTERNAL source. Ensure you trust this sender before clicking on any links or attachments.

Hi Wendy: I am responding to your request for feedback on the Rogers Tower replacement application on behalf of the Willis Point Fire and Recreation Commission.

Our members have sent me comments/concerns they have regarding the submitted plans and I have listed them as follows:

1. We would prefer that the power conduit from the Hydro pole to the tower be routed around the west side of the building rather than the east side of the building as shown on drawing E4. We have just had the east side of the Fire Hall area paved and there are a number of existing buried drainage lines, power lines and sewer lines that the proposed existing route would intersect. If it was routed around the west side of the building there is just a gravel surface and no buried infrastructure.
2. It was noted there is no reference to a Crest emergency antenna on the drawings.
3. We would request that the tower be painted forest green to blend into the surrounding trees as much as possible

If you have any questions or require further clarification please let me know, thank you.
Brent Kornelson
[redacted]

From: [redacted]
To: Wendy Miller
Subject: Re: Referral: Rogers Radiocommunications Tower Application at 6933 Willis Point Road/Willis Point Fire Hall Site (LP000032)
Date: Wednesday, April 06, 2022 8:08:22 PM
Attachments: image003.png

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Hi Wendy, at our last commission meeting it was requested that Rogers confirm that the existing Fire department radio antennas on the old tower would be transferred to the new tower , thanks

Brent Kornelson

Appendix E: Evaluation Criteria

Evaluation Criteria:
The CRD Board may consider the following when reviewing an application for an antenna system:

1. Rationale for proposed location;
2. Proximity to residential uses, institutions and public lands;
3. Visibility and measures to integrate the antenna system into the local surroundings;
4. Security measures;
5. Alternatives and/or mitigation measures;
6. Hazardous areas;
7. Environmentally sensitive areas;
8. Transport Canada's aeronautical safety requirements;
9. Referral responses including compliance with BC Building Code, if applicable;
10. Comments received through public notification;
11. Potential impact on the community if the application is approved.
12. Designs that address the following guidelines:

    i) antenna systems are as unobtrusive and inconspicuous as possible;

    ii) the visual aesthetic impacts on the community is minimized;

    iii) landscaping or screening is incorporated;

    iv) displays of any type of lighting are avoided except where required by Transport Canada. Where lighting is proposed for security reasons, it shall be shielded from adjacent properties and kept to a minimum intensity by being of capped, downward facing and motion-sensory designs;

    v) antenna systems are set back at least three times the height of the antenna system from adjacent dwellings. The CRD may request a different setback due to factors such as buffering topography and vegetation, transportation and utility corridors, watercourses, or public comments.

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REPORT TO PLANNING AND PROTECTIVE SERVICES COMMITTEE
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT **Sooke Regional Context Statement**

ISSUE SUMMARY

To review the District of Sooke regional context statement (RCS) in relation to the Capital Regional District's (CRD) Regional Growth Strategy (RGS) Bylaw (Bylaw No. 4017).

BACKGROUND

On March 14, 2018 the CRD Board adopted the RGS, Bylaw No. 4017.

A RCS, adopted within a municipality's Official Community Plan (OCP), relates OCP provisions to the RGS. Per section 446 of the *Local Government Act* (the *Act*), an OCP in a municipality to which an RGS applies must include an accepted RCS. The *Act* stipulates that upon receipt of a proposed RCS, the CRD Board must respond by resolution within 120 days to the municipal council to indicate whether or not it accepts the RCS. The Board is deemed to have accepted the RCS if it does not respond within the 120 day period.

On April 11, 2018, the CRD Board approved a framework to guide the evaluation of regional context statements.

On April 13, 2022, the District of Sooke submitted a RCS for Board acceptance (see Appendix A). The RCS was prepared to reflect the content of a new 2022 Sooke OCP in relation to the 2018 RGS. The CRD Board has until August 10, 2022, to review and respond to the Sooke RCS. The CRD approved Sooke's previous RCS on March 11, 2020.

Regional and Strategic Planning staff have evaluated the Sooke RCS in accordance with the Board-approved "Regional Context Statement Framework". This framework identifies three criteria against which staff should evaluate an RCS:

1) **All relevant content is included:** The RCS addresses all RGS content relevant to the OCP. Content that is not applicable in the context of the OCP should be identified as "not applicable".
2) **Clearly articulates relevant content:** The RCS provides a sufficient level of detail to convey how the specific OCP content relates to the RGS.
3) **Plan to be consistent over time:** The RCS identifies how the OCP will become consistent with the RGS over time, if content is not immediately consistent.

Appendix B presents a summary of the evaluation.

ALTERNATIVES

Alternative 1
The Planning and Protective Services Committee recommends to the Capital Regional District Board:
That the District of Sooke regional context statement be considered in relation to the 2018 Regional Growth Strategy (Bylaw No. 4017) and be accepted in accordance with the requirements of section 448 of the *Local Government Act*.

Alternative 2
The Planning and Protective Services Committee recommends to the Capital Regional District Board:
That the District of Sooke regional context statement be considered in relation to the 2018 Regional Growth Strategy (Bylaw No. 4017) and not be accepted in accordance with the requirements of section 448 of the *Local Government Act*.

Alternative 3
That the Sooke Regional Context Statement report be referred back to staff for additional information based on Planning and Protective Services Committee direction.

IMPLICATIONS

Intergovernmental Implications
Board acceptance of the RCS is a key RGS implementation tool as the context statement relates a municipality's OCP to the RGS. The OCP provides policies that guide decisions related to land use, infrastructure, mobility, housing, parks and other content under the authority of a local government. Sooke has submitted a proposed RCS to fulfill its statutory obligation to have an accepted RCS that demonstrates the relationship of its new OCP to the RGS. An accepted RCS is necessary in order for Sooke to adopt its new OCP.

Regional Growth Strategy Implications
Sooke's proposed RCS demonstrates a strong relationship to the RGS that will work toward achieving the RGS vision and objectives, based on staff's analysis against the RCS evaluation criteria.

The RCS fully captures all relevant OCP content (*criteria #1*) and clearly identifies how the OCP relates to the RGS (*criteria #2*). As outlined in Appendix B, the RCS addresses population projections and the vision and objectives for growth management, environment and infrastructure, housing and community, transportation, economic development, food systems and climate action. Sooke will direct the majority of future growth into its Community Growth Area, which is consistent with the RGS Urban Containment Policy Area. Further, the RCS provides clear targets to accommodate anticipated growth and create safe and complete communities. The RCS identifies that these RGS policy objectives will be achieved by focusing commercial and residential growth within the Town Centre-Core and Town Centre-Waterfront, which are part of a sub-regional node in the RGS Settlement Concept.

Sooke elected to pursue a narrative approach that does not include specific policy citations/references in the RCS, which is noted in Appendix B. The Regional Context Statement Framework recommends that an RCS be as specific as possible in terms of clearly articulating all relevant content. Without such policy references, the RCS is less specific than recommended.

With the new OCP, the Sooke RCS now includes content for a number of RGS policy areas which were previously identified as needing to become consistent over time (*criteria #3*). RGS policy areas that are now addressed in the Sooke RCS are economic development, food and agricultural systems and climate action.

Environmental & Climate Implications
The CRD Climate Action Strategy identifies sustainable land use, planning and preparedness as an important goal area to reduce greenhouse gas (GHG) emissions. RGS implementation, including the approval of RCSs that will help reduce community-based GHG emissions, is a key action. As shown in Appendix B, the Sooke RCS demonstrates a strong relationship to the RGS by setting GHG reduction targets and providing for policies related to growth management and transportation to help achieve its goals.

Alignment with Board & Corporate Priorities
Planning and Development Community Need 11a-2 is to review municipal RCSs for RGS consistency. This review process is an ongoing initiative, which is part of Regional and Strategic Planning core service delivery.

CONCLUSION

Provincial legislation requires that a municipal OCP contain an accepted RCS. Board acceptance of the RCS is a key tool for RGS implementation. Staff have reviewed Sooke's proposed RCS in accordance with the Board-approved evaluation framework. Sooke's RCS demonstrates a strong relationship to the RGS and will work toward achieving RGS vision and objectives.

RECOMMENDATION

The Planning and Protective Services Committee recommends to the Capital Regional District Board:
That the District of Sooke regional context statement be considered in relation to the 2018 Regional Growth Strategy (Bylaw No. 4017) and be accepted in accordance with the requirements of section 448 of the *Local Government Act*.

Submitted by:	Emily Sinclair, MCIP, RPP, Senior Manager, Regional & Strategic Planning
Concurrence:	Kevin Lorette, P. Eng., MBA, General Manager, Planning & Protective Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Sooke Regional Context Statement Referral
Appendix B: Regional Context Statement Evaluation

District of Sooke
Incorporated December 7, 1999

2205 Otter Point Road, Sooke, British Columbia, Canada V9Z 1J2

Phone: 250-642-1634 • Fax: 250-642-0541 • Email:info@sooke.ca • Website: www.sooke.ca

April 12, 2022

File No. 6480-20

Emily Sinclair, Senior Manager
Regional and Strategic Planning
Capital Regional District
325 Fisgard Street, PO Box 1000
Victoria, B.C. V8W 2S6

Dear Ms. Sinclair,

Re: Referral of District of Sooke *Official Community Plan Bylaw No. 800. 2022 -*

Enclosed please find a certified copy of *Official Community Plan Bylaw No.800, 2022* which received first reading from District of Sooke Council at its April 11, 2022 Regular Council Meeting. The bylaw is being submitted to the Capital Regional District Board for consideration pursuant to s.446(2) of the *Local Government Act*.

The District's proposed Regional Context Statement is located in Section 1.4 of the Draft Official Community Plan.

If there are any comments regarding bylaw content, please direct them to Katherine Lesyshen, Senior Planner, at 250-642-1626 or by email to klesyshen@sooke.ca

Yours sincerely,

CMushata

Carolyn Mushata
Corporate Officer

Encl: *Official Community Plan Bylaw No.800, 2022*

1.4 REGIONAL CONTEXT STATEMENT

Alignment with the CRD Regional Growth Strategy

The CRD's Regional Growth Strategy (2018) provides a framework for future decision-making, and sets basic direction for regional planning, policies, and action.

The vision for the CRD is as follows:

> In 2038, Capital Regional District residents enjoy a healthy and rewarding quality of life. We have a vital economy, livable communities, and steward our environment and natural resources with care. Our choices reflect our commitment to collective action on climate change.
>
> The Regional Growth Strategy (RGS) is intended to realize the region's vision, through the commitment of the CRD, the Juan de Fuca Electoral Area, and local governments to guide growth and change toward common objectives.

This OCP helps meet this vision and is in accordance with the RGS' growth management policies and regional objectives as described in Table 4: Alignment with the CRD Regional Growth Strategy.

Table 4. Alignment with the CRD Regional Growth Strategy

CRD REGIONAL OBJECTIVES	OCP OBJECTIVES AND KEY POLICY DIRECTIONS
Significantly reduce community-based greenhouse gas emissions.	This OCP includes the following targets: a 40% reduction in greenhouse gas emissions (GHGs) by 2030, 60% reduction in GHGs by 2040, and net-zero GHGs by 2050. Policies for transportation, infrastructure, green buildings, land use, and other realms provide the means to achieve those targets in addition to guidelines established within Development Permit Areas.
Keep urban settlement compact.	This OCP focuses all residential and commercial growth within the Community Growth Area, which falls entirely inside the CRD's Urban Containment Boundary (UCB) which contains 38% of the land base for targeted growth. The primary focus of major commercial and residential growth – including the District's highest density residential development – will be in the Town Centre-Core and Town Centre-Waterfront, which are classified as part of a CRD Subregional Node. Overall, a higher proportion of multi-unit homes including apartments, townhouses, and duplexes will be supported by this OCP, reducing pressures on outlying areas and improving housing choice within Sooke. This OCP's policies contribute to supporting the RGS target of locating a minimum of 95% of the region's new dwelling units within the Urban Containment Policy Area by 2038 and it is projected that Sooke will contribute approximately 18% of growth in the Westshore-Sooke growth projections by 2038, as outlined in the RGS.
Protect the integrity of rural communities.	To preserve Sooke's rural community, around 62% of the District's land base is located outside of the CGA boundary in the form of park, farmland and rural residential properties. The Town Centre-Core and Town Centre-Waterfront has been planned as a hub for a large regional population, and aspires to provide more services, employment and amenities to the community. The rural and agricultural character of lands outside the CGA is protected by a specific OCP policy requiring a 4-hectare minimum lot size for rural residential density. Strengthening the character, quality, and economic viability of rural lands and agricultural lands is further supported by general policies in this OCP and in Sooke's 2012 Agricultural Plan. These policies are consistent with the Rural/ Residential Policy Area policies of the RGS. Employment Lands outside of the OCP Community Growth Area will be rural in nature, will not require sewer servicing and will act as a local community node, and align with the RGS rural/rural residential land use designation.

CRD REGIONAL OBJECTIVES	OCP OBJECTIVES AND KEY POLICY DIRECTIONS
Protect, conserve, and manage ecosystem health.	Regionally significant parks identified in this OCP include the Sea to Sea, Ayum Creek, Sooke Potholes, Roche Cove and the Galloping Goose. To ensure protection, the OCP designates Capital Green Lands and the CRD Sea to Sea green/blue belt as 'Park'. Specific actions and general objectives in the OCP support the District working with the CRD to discuss regional park land acquisition and regional/local trail network construction. For improved human health and healthy ecosystems, Sooke's Parks & Trails Master Plan and general policies in the OCP support park space, bicycle, and trail network connections. This OCP has multiple Development Permit Areas through which natural environmental features and their associated lands are protected. Minimizing the impact on the natural environment and designing development to prevent pollutants from entering into any water system is supported by specific policies in this OCP. Sooke's Liquid Waste Management Plan is an integral part of the environmental remediation and protection of Sooke Harbour and Basin, terrestrial, fresh water, and marine environments. These land use planning mechanisms are used to contribute towards meeting the RGS targets to complete the Regional Trail Network and reduce contaminants to fresh and marine waterbodies. Land use and growth management policies direct compact growth in existing urban areas, protecting "Renewable Resource Lands" and other natural areas from development.

CRD REGIONAL OBJECTIVES	OCP OBJECTIVES AND KEY POLICY DIRECTIONS
Manage Regional Infrastructure Services Sustainably	Access to clean, safe drinking water to all residents within the District of Sooke is a long-term intention of the OCP to address environmental issues, fire suppression, agricultural sustainability, and public health. The extension of sewers throughout the CGA to protect the environment is encouraged. Sooke's primary population growth will be within the CGA. To help utilize infrastructure more efficiently to support the promotion of settlement patterns that are cost-effective, efficient to service, and minimize negative financial impacts to those currently serviced, this OCP includes specific policies that direct new residential development to existing areas and within the boundaries of the CGA, keep urban areas compact, and support mixed-use development. A holistic decision-making approach will be taken when making infrastructure investments, accounting for full lifecycle costs and impacts related to public health and safety, energy and emissions, climate change resilience, environmental responsibility, and economic and asset management efficiencies, and more. New service systems will be considered as part of managed growth to new undeveloped areas. The bulk of population growth will be accommodated within the Town Centre where services currently exist and the focus will be on capacity to accommodate that growth.
Create safe and complete communities.	Diverse housing options – including types and tenures – for diverse needs and demographics are enabled and encouraged through growth management land use policies. Land use designations within Sooke's CGA are consistent with the RGS "Complete Communities Criteria" with policies that project an estimated 50% of new residential and commercial growth in the Town Centre-Core and Town Centre-Waterfront, and specific policies that support small scale commercial nodes served well by transit, major roads, and trails. Transportation policies support this OCP's goal of "creating a safe and resilient community for all" through an enhanced pedestrian network, all ages and abilities cycling facilities, and overall improvements to multi-modal traffic safety. This OCP's Development Permit Areas, Zoning Bylaw No. 600 and Sooke's Floodplain Regulation Bylaw support the protection of development from steep slopes and areas prone to flooding.

CRD REGIONAL OBJECTIVES	OCP OBJECTIVES AND KEY POLICY DIRECTIONS
Improve housing affordability.	Housing affordability will be enhanced through District incentives, initiatives, and partnerships. This OCP includes a key policy direction to set targets for affordable housing units based on the current rates of owners and tenants paying 30 percent or more of their household income on shelter. Direction is also provided for supporting choices across the housing spectrum, including non-market housing, market-rate housing, rental housing, supportive housing, seniors housing, accessible housing, and family-friendly housing.
Increase transportation choice.	Transportation decisions related to investment, space allocation, and improvements will be based on the following priority mode hierarchy: walking/rolling, cycling, public transit, goods movement, multi-occupant vehicles, and single-occupant vehicles. Policies for compact growth management and complete streets support transportation demand management and enable transportation choices – namely active modes and transit use – and safe, comfortable, operation conditions for all travel modes. Growth management and land use policies support greater densities and mixes of uses in the Town Centre-Core and Town Centre-Waterfront, thereby supporting more employment opportunities within Sooke to reduce the high number of residents that commute out of the community. The climate impacts of the transportation sector will be further minimized through expansion of the public EV charging network, and through support and encouragement of electric vehicle uptake.
Strengthen the regional economy.	A diverse, thriving local economy that respects ecological limits will be encouraged. Improvements to civic infrastructure and services will aim to attract, support, and maintain jobs and local economic activity, while economic development will be aligned with climate and equity goals. This OCP includes general and specific policies to support a diversified local economy through encouraging low impact tourism, industrial, renewable energy opportunities, businesses supportive of climate action, value added forestry, fishing and agriculture, and home-based businesses. Economic development relationships and networks will be prioritized, including with T'Sou-ke Nation and other Indigenous peoples. Economic development direction will be sought from a diversity of perspectives, including private, non-profit, government, Indigenous, and equity-seeking groups.

CRD REGIONAL OBJECTIVES	OCP OBJECTIVES AND KEY POLICY DIRECTIONS
Foster a resilient food and agriculture system.	A goal of this OCP is to foster a sustainable food culture that is rooted in historical and T'Sou-ke Nation knowledge, viable local production, and environmental stewardship. A key objective in the OCP is to preserve and use agricultural lands. With 531.3 hectares in the ALR, Sooke has roughly 3.1 % of the region's ALR lands. Specific policies included in this OCP, Sooke's 2012 Agricultural Plan and Sooke's 2008 Sustainable Development Strategy support protection of food production land, buffering of agricultural uses from non-agricultural properties, and linking food security with economic development. OCP objectives backing the OCP goal of supporting and enjoying local food include: protecting food production and agricultural lands; working with Indigenous community members to support food sovereignty, and to protect and restore access to traditional foods and food harvesting; providing opportunities for people to experience the growing, preparing, sharing, and celebration of food; and supporting agri-food businesses to contribute significantly to the local economy.

Table 1. Regional Context Statement (RCS) Evaluation Framework

LGA	RCS Content	**Relationship to Legislative Requirement** For CRD Board consideration		
		All relevant content is included	Clearly articulates relevant content	Plan to be consistent over time
		✅	✅	N/A
429(2)(a)	Identify how the Official Community Plan (OCP) relates to the Regional Growth Strategy (RGS) vision on p. 1 of the RGS.	The RCS articulates specific topic areas from the RGS.	Identifies how the strategic directions are implemented.	
		✅	✅	N/A
429(2)(b)	Identify how the OCP relates to the projections provided in Table 1 of the RGS.	RCS identifies a general alignment between the projections and RGS projections.	The RCS identifies that Sooke anticipates it will contribute 18% of growth in the Westshore-Sooke sub-region.	
		Managing and Balancing Growth (Objectives 1.1 & 1.2)		
		☑	✅	N/A
429(2)(c) and (d); 429(3)	Identify how the OCP relates to the RGS.	Content reflects RGS policies, but does not include policy citations.	Sooke has a Community Growth Area (CGA) which aligns with the RGS Urban Containment Boundary, which provides for 38% of the land base targeted for growth. Policies and land use designations direct the highest density development to areas within the RGS Subregional Node. Lower densities are supported in community residential areas. Lands within the RGS Rural Residential Policy Area have specific policies to prevent them from becoming urbanized, including employment lands outside the CGA.	

Relationship to Legislative Requirement
For CRD Board consideration

LGA	RCS Content	All relevant content is included	Clearly articulates relevant content	Plan to be consistent over time
	Environment and Infrastructure (Objective 2.1 & 2.2)			
		☑	✅	N/A
		Content reflects RGS policies, but does not include policy citations.	The RCS identifies policies that emphasize preservation, protection and management of the natural environment and ecosystems in alignment with the Capital Green Lands Policy Area identified on RGS Map 3a. Policies support the Sea to Sea Green/Blue Belt. Policies support park acquisition, low impact development and preventing pollutants from entering fresh and marine water bodies. The RCS identifies Sooke's goal to provide safe drinking water to municipal residents, and limits sewer infrastructure plans to the CGA. Future growth will be directed to the CGA and focus will be on providing infrastructure capacity to accommodate that growth. This will be done by accounting for full life-cycle costing and impact analysis.	
	Housing and Community (Objectives 3.1 & 3.2)			
		☑	✅	N/A
		Content reflects RGS policies, but does not include policy citations.	A diverse range of housing within complete communities is a major goal of the OCP. Growth management policies will help achieve a projected target to accommodate 50% of new residential growth within the Town Centre-Core and Town Centre-Waterfront designations.	

Relationship to Legislative Requirement
For CRD Board consideration

LGA	RCS Content	All relevant content is included	Clearly articulates relevant content	Plan to be consistent over time
	Transportation (Objective 4.1)			
		☑ Content reflects RGS policies, but does not include policy citations.	✅ Policies support increased housing and employment opportunities within Sooke and multi-modal transportation using a mix of transit and active transportation modes.	N/A
	Economic Development (Objective 5.1)			
		☑ Content reflects RGS policies, but does not include policy citations.	✅ Policies support diverse economic opportunities, both encouraging commercial development in higher density areas and strengthening the economic viability of rural lands.	
	Food and Agricultural Systems (Objective 6.1)			
		☑ Content reflects RGS policies, but does not include policy citations.	✅ Policies support strengthening the character, quality and economic viability of agricultural lands in alignment with Sooke's 2012 Agricultural Plan.	

LGA	RCS Content	**Relationship to Legislative Requirement** For CRD Board consideration All relevant content is included	Clearly articulates relevant content	Plan to be consistent over time
	Climate Action (Objective 7.1)			
		☑	✅	
		Content reflects RGS policies, but does not include policy citations.	The RCS identifies the following OCP targets: a 40% greenhouse gas (GHG) emissions reduction by 2030, 60% GHG reduction by 2040 and net-zero GHGs by 2050. OCP policies for transportation, infrastructure, green buildings and land use will help achieve these targets.	

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EEP 22-16

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT **Greater Victoria Drinking Water Quality – 2021 Annual Report**

ISSUE SUMMARY

To present the 2021 annual report to the Regional Water Supply Commission prior to submission to the provincial regulator.

BACKGROUND

The Capital Regional District (CRD) undertakes a comprehensive water quality monitoring program as part of its multi-barrier approach to provide a safe drinking water supply to the region. The Water Quality Monitoring program reports water trends on a regular basis to the Commission, along with a comprehensive annual report for each calendar year. The Greater Victoria Drinking Water Quality 2021 Annual Report is attached as Appendix A. Water suppliers in BC are responsible for monitoring and providing an annual report to the provincial regulator (i.e., Island Health Authority). To assist in meeting these responsibilities, the CRD has prepared this report, which will be distributed to Island Health and all municipal water purveyors, and posted on the CRD website.

ALTERNATIVES

Alternative 1

The Regional Water Supply Commission recommends to the Capital Regional District Board:
That the Greater Victoria Drinking Water Quality 2021 Annual Report be approved.

Alternative 2

That the Regional Water Supply Commission direct staff to provide further information.

IMPLICATIONS

Environmental & Climate Implications

The report indicates that our source water remains in good condition and there is excellent drinking water quality in all system components of the Greater Victoria Drinking Water System. The system is monitored for physical, chemical and biological water quality parameters. All trends are stable and indicate good conditions overall. During the beginning of January, the operation of the ammonia injection system had to be temporarily discontinued to facilitate the repair of a small leak in the feed line. However, the resulting switch from chloramines to free chlorine for secondary disinfection had no effect on the efficacy of the disinfection process and the safety of the drinking water was never compromised. The CRD did issue a taste and odour related public advisory for the duration of this event.

Monitoring results indicate the CRD continues to meet guidelines for maintaining an unfiltered source water supply. Further monitoring within the distribution systems also indicates a good balance between managing bacterial growth and ensuring good water quality with low concentrations of disinfection byproducts.

Extreme weather events in the region in 2021 had no adverse effect on the drinking water quality. The heatwave in early summer resulted in a sharper rise in water temperatures in Sooke Lake and may have caused higher bacteria concentrations during the summer in the reservoir. But these raw water conditions were well within the capacity of both treatment plants and therefore had no consequence for the drinking water quality. The extreme rainfall and runoff during the atmospheric river event on November 14-15 had no measurable effect on the raw water quality extracted from Sooke Lake Reservoir. This has demonstrated the resilience of a water source that is integrated in a healthy and stable ecosystem, such as the Sooke Lake watershed.

Financial and Regulatory Implications

The reporting function is included within the overall budget for the Water Quality Monitoring Program. This task is essential for ensuring there is adequate information to inform and work with Island Health officials, meet provincial regulatory requirements and federal guidelines, and ensure CRD staff have sufficient information to maintain proper oversight of the water supply system.

The CRD continues to provide compliance monitoring of the municipal systems within the region to deliver effective and efficient oversight for both monitoring and reporting of water quality within the overall distribution system. Responsibility for any issues that may arise remains the responsibility of the municipalities.

Social Implications

The full disclosure of water quality monitoring data maintains public confidence that the CRD is effectively managing the regional drinking water supply. The data and reports are available online through the CRD public website. Staff respond to direct customer concerns and questions, and work with CRD operational staff, municipal staff, small system operators and Island Health officials to ensure good communication and support for the overall system.

CONCLUSION

The water quality monitoring program remains an essential component in the delivery of a safe drinking water supply to the region. Monitoring results summarized in the Greater Victoria Drinking Water Quality – 2021 Annual Report indicate good water quality overall, with the low risks associated with the unfiltered source water being well managed by the CRD multi-barrier approach. Once the report is approved by the Board, it will be submitted to the Island Health Authority, as per the requirement under the BC Drinking Water Protection Act.

RECOMMENDATION

The Regional Water Supply Commission recommends to the Capital Regional District Board:
That the Greater Victoria Drinking Water Quality 2021 Annual Report be approved.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT

Appendix A: Greater Victoria Drinking Water Quality – 2021 Annual Report

Making a difference...together

Greater Victoria Drinking Water Quality
2021 Annual Report

Parks & Environmental Services Department | Environmental Protection



Prepared By
Water Quality Program
Capital Regional District
479 Island Highway, Victoria, BC, V9B 1H7
T: 250.474.9680 F: 250.474.9691 www.crd.bc.ca

May 2022

Greater Victoria Drinking Water Quality
2021 Annual Report

EXECUTIVE SUMMARY

This report provides the annual overview of Capital Regional District (CRD) Water Quality Monitoring program and its results on water quality in 2021 within the Greater Victoria Drinking Water System (GVDWS) and its individual system components (Map 1). The results indicate that Greater Victoria's drinking water continues to be of good quality and is safe to drink.

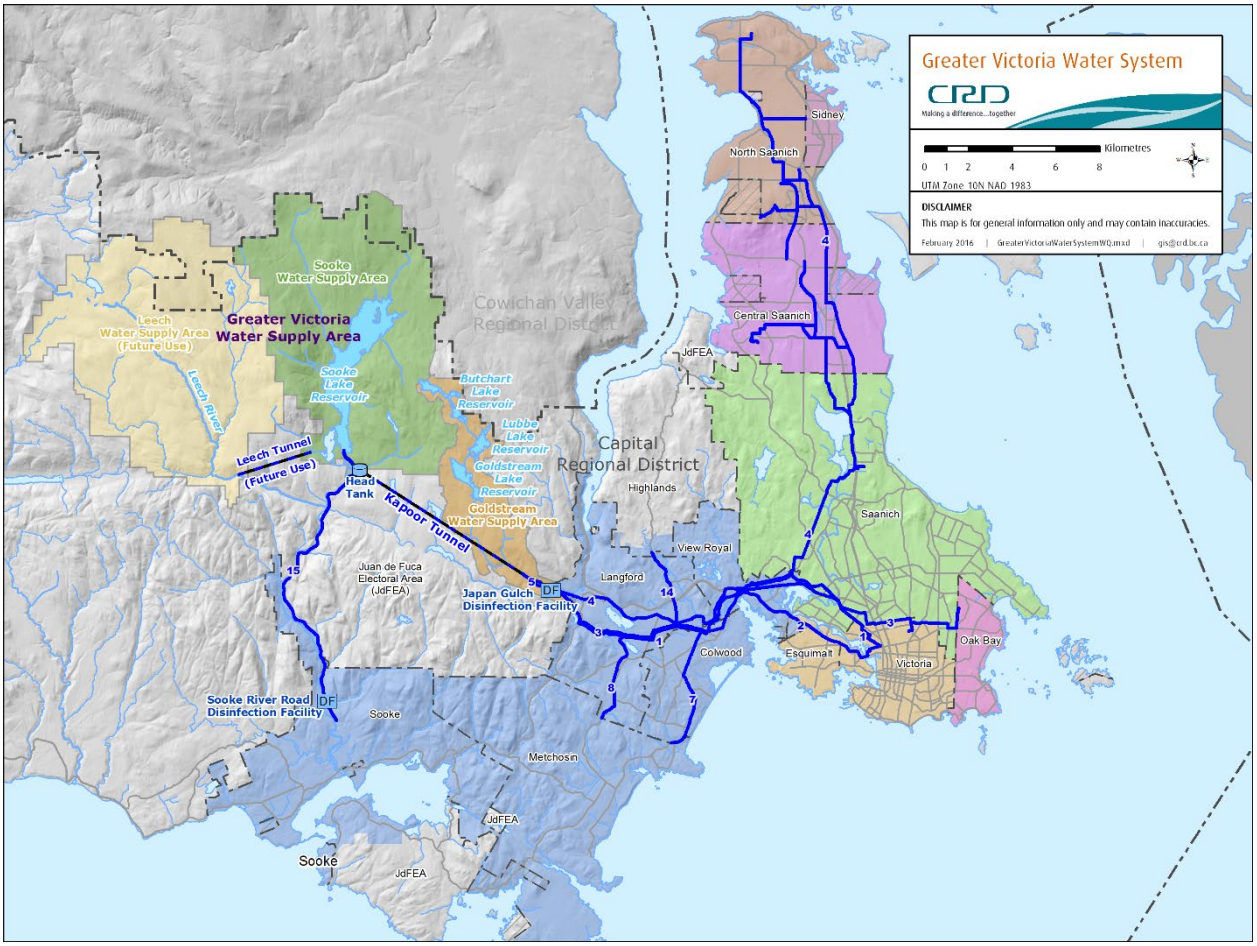
The monitoring program is designed to meet the requirements of the provincial regulatory framework, which is defined by the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*, and follow the federal guidelines for drinking water quality.

The approximately 11,000 hectares of the Sooke and Goldstream watersheds comprise the source of our regional drinking water supply area. Water flows from the reservoirs to the Sooke and Goldstream (formerly called Japan Gulch) water treatment plants and then through large-diameter transmission mains and a number of storage reservoirs into eight different distribution systems, which in turn deliver the drinking water to the consumers. The monitoring program covers the entire system to anticipate any issues (i.e., source water monitoring), ensure treatment is effective (i.e., monitoring at the treatment facilities), and confirm a safe conveyance of the treated water to customers (i.e., transmission and distribution system monitoring). It also enables CRD staff to address any concerns or questions by the general public. The program adopts a multiple-lines-of-evidence approach (biological, chemical and physical) to ensure all aspects of water quality are considered. The program is comprehensive, collecting approximately 10,000 samples and conducting approximately 75,000 individual analyses annually. The results are discussed with the Island Health Authority, which oversees compliance with drinking water standards, and with CRD operations and municipal staff, who rely on the information to properly operate and maintain the system components.

The five source water reservoirs, with established and intact ecosystems, provide raw water of excellent and stable water quality that can be utilized unfiltered for the preparation of potable water. Water quality monitoring in the watersheds serves several purposes: 1) to verify that the CRD continues to comply with the criteria for an unfiltered surface water source; 2) to understand the quality of the water flowing into the reservoirs; 3) to ensure that staff are aware of the presence and absence of water quality-relevant organisms, including specific pathogens in the lakes, prior to any treatment; 4) to confirm that the water quality parameters remain within the effectivity range of the disinfection treatment; and 5) to detect any taste and odour or other aesthetic concerns that could then pass through the system.

This annual water quality report separates the water system components that are the CRD's responsibility from system components that are the responsibility of the municipalities. The CRD provides water quality sampling and testing services for compliance purposes to all municipal water systems. Each water distribution system was assessed for compliance with the regulatory requirements. This annual report contains the compliance summary for CRD and municipal water distribution systems in the GVDWS.

MAP 1. Greater Victoria Drinking Water System



Greater Victoria Drinking Water Quality
2021 Annual Report

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Greater Victoria Drinking Water Quality

2021 Annual Report

1.0 INTRODUCTION

This report is the annual overview of the results from water quality samples collected in 2021 from the Greater Victoria Drinking Water System (GVDWS) (Map 1). The report summarizes data from the Capital Regional District (CRD) owned and operated water infrastructure that includes the source reservoirs, the Regional Transmission System and the Juan De Fuca Water Distribution System, as well as data from the municipal distribution systems. Monthly and weekly summary reports on water quality data are posted on the CRD's website at: https://www.crd.bc.ca/about/data/drinking-water-quality-reports.

2.0 WATER SYSTEM DESCRIPTION

In 2021, the GVDWS supplied drinking water to approximately 392,000 people and is the third-largest drinking water system operating in British Columbia. It comprises two separate service areas:

1. The **Goldstream (Japan Gulch) Service Area** that supplies water to approximately 376,500 people in Victoria, Saanich, Oak Bay, Esquimalt, Central Saanich, North Saanich, Sidney, Highlands, Colwood, Langford and Metchosin via the Goldstream Water Treatment Plant (formerly called Japan Gulch).

2. The **Sooke Service Area** that supplies water to approximately 15,500 people in Sooke and East Sooke via the Sooke River Road Water Treatment Plant.

2.1 Source Water Systems

Drinking water for the GVDWS comes from protected watersheds called the Greater Victoria Water Supply Area (see Map 1). This CRD-owned and managed area, which is approximately 20,500 hectares in size, is located about 30 km northwest of Victoria and encompasses about 98% of the Sooke Lake, 98% of the Goldstream Lake and 92% of the Leech River catchment areas. The Goldstream and Sooke watersheds, with 11,000 ha area, comprise the active water supply area, whereas 9,500 ha of the Leech watershed are currently inactive and designated for future water supply.

Goldstream (Japan Gulch) Service Area

The five reservoirs in the supply area have been used as a source of drinking water since the early 1900s. The Sooke Lake Reservoir, the largest of the reservoirs, is the primary water source for this system, supplying typically between 98% and 100% of Greater Victoria's drinking water. In 2021, Sooke Lake Reservoir supplied 100% of the source water. The four reservoirs in the Goldstream system (Butchart, Lubbe, Goldstream and Japan Gulch) are typically off-line and are used only as a backup water supply. Controlled releases from the Goldstream watershed provide water for salmon enhancement in the lower Goldstream River. The Leech River watershed does not yet contribute to the water supply for the GVDWS.

Water at the southern end of Sooke Lake Reservoir enters two of the variable depth gates in the intake tower and is screened through a stainless steel travelling screen (openings of 0.5 mm). From the intake tower, the water passes through two 1,200 mm-diameter pipelines to the head tank and then through the 8.8 km-long, 2.3 m-diameter Kapoor Tunnel and then into 1,525 mm- and 1,220 mm-diameter pipes connecting the Kapoor Tunnel to the Goldstream Water Treatment Plant, where it is disinfected.

During occasional brief periods of use (typically used only when the Kapoor Tunnel is out of service for inspection by CRD staff), water in the Goldstream Watershed is released from Goldstream Reservoir and flows down the upper reaches of Goldstream River into Japan Gulch Reservoir. Water from Japan Gulch Reservoir enters the Japan Gulch intake tower through a low-level and a high-level intake, passing through a 14-mesh, stainless steel screen and is then carried in a 1,320 mm-diameter pipe into the Goldstream Water Treatment Plant.

Sooke Service Area

Drinking water for the Sooke Service Area is only supplied from Sooke Lake Reservoir, but travels a different route. This water is passed through a 14.5 km-long (9 miles), 600 mm-diameter PVC and ductile iron pipe from a point just above the head tank to the Sooke River Road Water Treatment Plant. The Sooke Service Area has no backup water source.

2.2 Water Disinfection

The disinfection process in the GVDWS is both simple and effective and uses two water treatment plants to provide disinfected drinking water to the two service areas.

Both water treatment plants utilize the same disinfection concepts and process methods. The Goldstream Water Treatment Plant uses delivered liquid sodium hypochlorite and liquid ammonia for the disinfection process and still has the old chlorine gas injection plant as a backup system. The Sooke River Road Water Treatment Plant generates sodium hypochlorite on site and injects delivered liquid ammonia to achieve the disinfection effect.

At both water treatment plants, the water passes through a three-part disinfection process in sequential order—two primary disinfection steps that provide disinfection of the water entering the system, followed by a secondary disinfection step that provides continuing disinfection throughout the transmission system and the distribution systems:

1. **UV Disinfection**. Ultraviolet (UV) disinfection provides the first step in the primary disinfection process (disinfection of the raw source water entering the plants) and inactivates parasites, such as *Giardia* and *Cryptosporidium* [3-log (99.9%) inactivation], as well as reducing the level of bacteria in the water. Based on the consistently applied high UV dosage at the Goldstream plant (50-90 mJ/cm^2), it can be assumed that it is also effective in inactivating certain viruses (66-99% rotavirus inactivation).

2. **Free Chlorine Disinfection**. Free chlorine disinfection provides the second step in the primary disinfection process, using a free chlorine dosage of approximately 1.5-2.5 mg/L and a minimum of 10-minute (depending upon flow) contact time between the free chlorine and the water. The free chlorine disinfection step inactivates bacteria and provides a 4-log (99.99%) reduction of viruses.

3. **Ammonia Addition**. The secondary disinfection process consists of the addition of ammonia to form chloramines at a point downstream where the water has been in contact with the free chlorine for approximately 10 minutes or more. The ammonia is added at a ratio of approximately one part ammonia to four-five parts chlorine. In the water, these chemicals combine to produce a chloramine residual (measured as total chlorine). Monochloramine is the desired residual product, which typically represents 90% of the total chlorine when leaving the plants. This residual remains in the water and continues to protect the water from bacterial contamination (secondary disinfection), as it travels throughout the pipelines of the distribution system.

In East Sooke, at the Iron Mine Reservoir, the CRD re-chloraminates the water to boost the chlorine residual provided to the extremities of that system. In Metchosin, at Rocky Point Reservoir, the CRD maintains another re-chloramination station, which has not been in service for approximately five years. It has been deemed unnecessary for maintaining adequate residuals. Currently, there are no provisions to re-chloraminate the water at the far reaches of the distribution system on the Saanich Peninsula; however, emergency re-chlorination stations are provided at the Upper Dawson Reservoir, Upper Dean Park Reservoir and Deep Cove pump station, supplying Cloake Hill Reservoir. These re-chlorination stations are able to add free chlorine to the system if the total chlorine residuals were to drop to inadequate levels or during water quality emergencies.

2.3 CRD Transmission System

The CRD Transmission System comprises a number of large-diameter transmission mains and several connected supply storage reservoirs. Almost all of the supply storage reservoirs are on the Saanich

Peninsula, leaving the Core Area municipalities without any supply storage. Using a series of large-diameter transmission mains, the CRD supplies treated water to its downstream customers. These large-diameter transmission mains are sorted into three sections:

1. Regional Transmission System, that supplies the Westshore and the Core Area municipalities, and up to the Saanich Peninsula boundary;

2. The Saanich Peninsula Trunk Water Distribution System that receives water at two points on the Saanich Peninsula from the Regional Transmission System and supplies it to the three municipalities and other customers on the Saanich Peninsula; and

3. The Sooke Supply Main.

2.3.1 Regional Transmission System

The CRD currently uses seven large-diameter transmission mains to supply drinking water to the municipal distribution systems in the Japan Gulch Service Area. These transmission mains range in diameter from 1,525 mm (60") down to 460 mm (18") and transfer water from the Goldstream Water Treatment Plant to the distribution systems listed in Section 2.4.

- Main #1 is a 1,067 mm-diameter (42"), cement mortar-lined, welded steel pipe that starts at the Humpback pressure regulating valve (PRV) below the Humpback Reservoir Dam and ends at the David Street vault. This transmission main provides water primarily to the City of Victoria, but also services portions of Saanich and the Westshore communities.

- Main #2 is a 780 mm-diameter (31") steel and ductile iron pipe, which starts at the Colwood overpass and runs primarily through View Royal, Esquimalt and Vic West along the Old Island Highway and Craigflower Road. Main #2 joins Main #1 at the David Street vault after crossing the Bay Street Bridge. This supply main is 7.6 km in length and provides water to View Royal, Victoria and Esquimalt.

- Main #3 is primarily a 990 mm-diameter (39") steel pipe that supplies water from the Humpback PRV and terminates at the CRD's Mt. Tolmie Reservoir. There are several sections in this line that include 1,220 mm-diameter (48") and 810 mm-diameter (32") pipes. The 810 mm-diameter pipe terminates at the Oak Bay meter vault. This supply main is 21.3 km in length and provides water to the Westshore communities, Saanich, Victoria and Oak Bay.

- Main #4, a high-pressure transmission main, is primarily a 1,220 mm-diameter (48") welded steel pipe that supplies water from the Goldstream Water Treatment Plant primarily to Saanich and the Saanich Peninsula. There are two small sections of 1,320 mm (52") and 1,372 mm (54") reinforced concrete pipe. This transmission main is 26.2 km in length and terminates near the Saanich-Central Saanich boundary, where it transfers water to the 762 mm (30") trunk main, which extends to McTavish Reservoir. It supplies the municipalities on the Saanich Peninsula and to Bear Hill Reservoir and Hamsterly pump station, near Elk Lake.

- Main #5 is a 1,524 mm-diameter (60") pipe that connects the Kapoor Tunnel via the Goldstream Water Treatment Plant to the Humpback PRV just below the old Humpback Reservoir dam. It is approximately 1.6 km in length and provides water to mains #1 and #3.

- Main #7 is a 610 mm-diameter (24") steel pipe that runs from Goldstream and Whitehead Road to Metchosin and Duke Road. It is 4 km in length and provides water to portions of Colwood, Langford and Metchosin.

- Main #8 is a 457 mm-diameter (18") steel and asbestos cement pipe that runs from Glen Lake School, primarily along Happy Valley Road to Happy Valley and Glenforest. It is 3.6 km in length and provides water to Langford, Colwood and Metchosin.

There are three active inter-connections between the high pressure Main #4 and the low pressure mains #1 and #3, where water can be transferred from Main #4 to the other two mains via PRV stations. These stations are located at Watkiss Way, Millstream at Atkins, at Goldstream/Veteran's Memorial Parkway, and Burnside at Wilkinson Road. There is also a series of inter-connections between mains #1 and #3, with the major inter-connections being at Price, Station, Tillicum and Dupplin roads.

2.3.2 Saanich Peninsula Trunk Water Distribution System

The Saanich Peninsula Trunk Water Distribution System receives water at two points on the Saanich Peninsula from the Regional Transmission System and supplies it to four customers on the Saanich Peninsula: the municipalities of Central Saanich, North Saanich, Sidney and the Agricultural Research Station.

The Saanich Peninsula Trunk Water Distribution System is comprised of 46 km of transmission mains, including the 750 mm (30") Bear Hill Main, the 400 mm (16") Keating Main, the 400 mm (16") Dean Park Main and the 250-500 mm (10-20") Saanich Peninsula mains.

At McTavish Reservoir (the terminus of the Regional Transmission System), the Saanich Peninsula Trunk Water Distribution System continues further along the peninsula via a 610 mm-diameter (24") concrete cylinder pipe. In the vicinity of the airport, this main reduces to a 406 mm-diameter (16") asbestos cement pipe that terminates at the Deep Cove pump house. A dedicated 250 mm-diameter (10") perm/PVC pipe connects Deep Cove pump station with Cloake Hill Reservoir. A 457 mm-diameter (18") pipe along Mills Road connects the trunk main to the northwest end of the Sidney Distribution System.

The CRD also operates six major pumping stations located at Hamsterly, Martindale, Lowe Road, Dean Park Lower, Dean Park Middle and Deep Cove, along with two minor pumping stations located at Mt. Newton and Dawson Upper Reservoir that are all considered part of the transmission system.

2.3.3 Sooke Supply Main

The Sooke Drinking Water Service Area is supplied by Main #15, a 600 mm pipe (upper section, PVC; lower high-pressure section, ductile iron) that conveys raw water from Sooke Lake Reservoir to the Sooke River Road Water Treatment Plant. Main #15 feeds directly into the Sooke Distribution System downstream of the water treatment plant.

2.3.4 Supply Storage Reservoirs

A number of supply storage reservoirs are considered part of the transmission system, even though most of them technically operate as a distribution reservoir with all of its typical functions: balancing, fire and emergency storage.

The only CRD-owned and operated transmission system storage reservoir in the Regional Transmission System is:

- Mt. Tolmie Reservoir, a two-cell concrete in-ground reservoir, 27,300 m^3 (6 M gallon), located on Mt. Tolmie, at the terminus of Main #3 near the Oak Bay-Saanich boundary.

Haliburton Reservoir, a one-cell concrete in-ground reservoir, 22,700 m^3 (5M gallon), located off Haliburton Road in Saanich, has been disconnected from the system (off Main #4) and is empty. It is anticipated that this reservoir will not be used for drinking water purposes again.

The CRD-owned and operated transmission system storage reservoirs in the Saanich Peninsula Trunk Water Distribution System are:

- Bear Hill Reservoir, a two-cell concrete above-ground reservoir, 4,546 m^3 (1M gallon), located on Bear Hill in Saanich.

- Cloake Hill Reservoir, a one-cell, 4,546 m^3 (1M gallon) reservoir located on Cloake Hill in North Saanich.

- Dawson Upper Reservoir, a one-cell, 455 m^3 (100,000 gallon) reservoir located off Benvenuto Avenue in Central Saanich.

- Dean Park Lower Reservoir, a two-cell concrete above-ground reservoir, 4,546 m^3 (1M gallon), located beside Dean Park Road in North Saanich.

- Dean Park Middle Reservoir, two cylindrical concrete above-ground tanks, 2,730 m^3 (600,000 gallon), located near the bottom of Dean Park in North Saanich.

- Dean Park Upper Reservoir, a two-cell concrete partly in-ground reservoir, 4,546 m^3 (1M gallon), located near the top end of Dean Park in North Saanich.

- McTavish Reservoir, a two-cell concrete in-ground reservoir, 6,820 m^3 (1.5M gallon), located on the south side of McTavish Road in North Saanich.

2.4 Distribution Systems

The GVDWS contains eight individual distribution systems. Six distribution systems are separately owned and operated by the municipalities of Central Saanich, North Saanich, Oak Bay, Saanich, Sidney and Victoria. Victoria owns and operates the distribution system in Esquimalt. Two distribution systems are owned by the CRD and operated by the CRD Integrated Water Services Department. These latter two systems include the combined distribution system in the Westshore communities of Langford, Colwood, Metchosin, View Royal and a small portion of Highlands, and a separate system supplying water to Sooke and parts of East Sooke. Each distribution system owner/operator is defined as a water supplier and is responsible for providing safe water to their individual customers and meeting all the requirements under the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

2.4.1 Juan de Fuca Water Distribution System – CRD

In 2021, water was supplied to the Juan de Fuca Water Distribution System (in this report, not including Sooke – see Sooke/East Sooke Distribution System below) primarily from mains #1 and #3. Parts of Langford and View Royal were supplied from Main #4. The development at Bear Mountain in Langford was supplied by Main #4. The Westhills development, serviced by its own privately-operated distribution system, was supplied via mains #1 and #3. In the Juan de Fuca Water Distribution System, water flowed generally in a northerly and southerly direction away from the supply mains. The federal William Head Institution and the Beecher Bay meter vault are located at the southern extremities of this system.

The Juan de Fuca Water Distribution System includes the following distribution reservoirs:

- Bear Mountain Reservoir #1, a two-cell, 1,250 m^3 (275,000 gallon) reservoir located on the lower slopes of the Bear Mountain development in Langford.

- Deer Park Reservoir, a one-cell, 182 m^3 (40,000 gallon) reservoir located downstream of Rocky Point Reservoir re-chloramination station near the extremity of the water system off of Deer Park Trail in Metchosin.

- Fulton Reservoir, a two-cell, 4,580 m^3 (1,007,459 gallon) reservoir located at the end of Fulton Road in Colwood.

- Peacock Reservoir, a two-cell, 583.8 m^3 (128,420 gallon) reservoir located north of the Trans-Canada Highway off of Peacock Place in Langford.

- Rocky Point Reservoir, a three-cell, 546 m^3 (120,000 gallon) reservoir located near the end of Rocky Point Road in Metchosin.

- Skirt Mountain Reservoir, a three-cell, 6,525 m^3 (1,435,300 gallon) reservoir located near the top of Skirt Mountain in the Bear Mountain development in Langford.

- Stirrup Place Reservoir, a two-cell, 242 m^3 (53,300 gallon) reservoir located off of Stirrup Place Road in Metchosin.

- Walfred Reservoir, a three-cell, 560 m^3 (123,180 gallon) reservoir located on Triangle Mountain in Colwood.

2.4.2 Sooke/East Sooke Distribution System – CRD

The Sooke/East Sooke Distribution System begins downstream of the Sooke River Road Water Treatment Plant, at the end of Main #15 on Sooke River Road, where the ammonia storage and metering building is located. The primary water supply main to the community follows Sooke River Road downstream and splits at Milne's Landing going east toward Sassenos and west toward the central area of Sooke. Two underwater pipelines across Sooke Basin supply East Sooke. Sunriver Estates came on-line in 2006 and is serviced by a 300 mm (12") pipeline on Phillips Road and the two-cell concrete Sunriver Reservoir. In 2020, the water main along West Coast Road was extended to connect the formerly self-sufficient Kemp Lake Waterworks District to the Sooke/East Sooke Distribution System. At this most western extremity of the Sooke/East Sooke Distribution system, the CRD now supplies bulk water to the Kemp Lake District. The CRD infrastructure ends with a meter station on West Coast Road before a Kemp Lake District-owned and operated pump station supplies their distribution system.

The Sooke/East Sooke Distribution System includes the following distribution reservoirs:

- Coppermine Reservoir, a one-cell concrete partly in-ground reservoir, 455 m^3 (100,000 gallon), located off of Coppermine Road in East Sooke.

- Helgesen Reservoir, a four-cell concrete partly in-ground reservoir, 6,973 m^3 (1,533,850 gallon), located at the west end of Helgesen Road in Sooke.

- Henlyn Reservoir, a one-cell steel tank tower, 224 m^3 (49,270 gallon), located off of Henlyn Drive in Sooke

- Silver Spray Reservoir, a two-cell cylindrical concrete tank, 841 m^3 (185,000 gallon), located off of Silver Spray Drive in East Sooke.

- Sunriver Reservoir, a two-cell concrete above-ground reservoir, 1,800 m^3 (395,944 gallon), located off of Sunriver Way in Sooke.

2.4.3 Central Saanich Distribution System – District of Central Saanich

In 2021, drinking water was supplied to the Central Saanich Distribution System via 10 pressure zones (seven off the Bear Hill main and three off the Martindale Valley main). The Bear Hill main supplied the Tanner Ridge area by direct feed, the central area in one pressure zone through three PRVs, the Saanichton area in two pressure zones through two PRVs, the Brentwood Bay area, and the Tsartlip First Nation through a PRV. Five smaller pressure zones served the rest of Central Saanich. Dawson Upper Reservoir (CRD-owned and operated) supplied a small area of higher elevation residences in Brentwood Bay. Martindale pump station supplied an agricultural area in the southeast corner of the municipality. The Island View Road area was supplied by the Stelly's pump station. The Mount Newton pump station provided water to the northeast corner and to the Tsawout First Nation lands. A municipally-owned pump station on Oldfield Road serviced a small area in the southwest corner.

Bear Hill Reservoir (CRD-owned and operated) has the largest service population in Central Saanich, providing approximately 80% of the Central Saanich's water. It is the primary supply to most of Central Saanich (south of Haldon Road), including Brentwood Bay.

The Central Saanich Distribution System has technically no balancing, fire or emergency storage, but relies on CRD transmission system infrastructure to provide this. Several CRD-owned reservoirs in Central Saanich, that are considered part of the transmission system, function as distribution reservoirs for the Central Saanich Distribution System.

2.4.4 North Saanich Distribution System – District of North Saanich

In 2021, drinking water was supplied to the North Saanich Distribution System from a number of points along the Saanich Peninsula Trunk Water Distribution System. This included Dean Park via the Lowe Road pump station, Dean Park pump stations and Dean Park Reservoirs (all CRD-owned and operated), Deep Cove/Lands End area via connections upstream of the Deep Cove pump station, Cloake Hill Reservoir via Deep Cove pump station (all CRD-owned and operated), and Swartz Bay. In the North Saanich Distribution System, Cloake Hill Reservoir (CRD-owned and operated) was the largest pressure zone. Water flowed generally in an easterly direction through the Dean Park pressure zone, northwest into the Deep Cove/Lands End area and northeast to the Swartz Bay area. Dean Park Upper Reservoir (CRD-owned and operated) supplied a small portion of the Dean Park Estates.

The North Saanich Distribution System has technically no balancing, fire or emergency storage, but relies on CRD transmission system infrastructure to provide this. Several CRD-owned reservoirs in North Saanich, that are considered part of the transmission system, function as distribution reservoirs for the North Saanich Distribution System.

North Saanich provides water to the Greater Victoria Airport Authority via the water main on the south side and the east side of the airport. As water quality in the airport distribution system falls under federal jurisdiction, it was not monitored by the CRD in 2021 and is, therefore, not included in this report.

2.4.5 Oak Bay Distribution System – District of Oak Bay

In 2021, drinking water was supplied to the Oak Bay Distribution System at Lansdowne and Foul Bay roads from Main #3. The water flowed in a west to east direction across Lansdowne with north and south branches. Oak Bay conveys water via a 406 mm main, which crosses Oak Bay diagonally from northwest to southeast. Water was distributed from the north end to the south end via the 406 mm main. Oak Bay has an outer loop flow on Beach Drive to the Victoria boundary. The Oak Bay Distribution System has no balancing, fire or emergency storage and the CRD transmission system infrastructure has limited provisions for this.

Oak Bay used four local pressure zones supplied by booster pumps. Sylvan Lane pump station supplied the Barkley-Sylvan area; Plymouth supplied the north Henderson area; Foul Bay supplied the south Henderson area; and Uplands pump station (seasonal) supplied the Uplands area. There are two inter-connections with the Victoria/Esquimalt Distribution System, which are normally closed, but can be used in emergencies.

2.4.6 Saanich Distribution System – District of Saanich

In 2021, drinking water was supplied to the Saanich Distribution System at a number of points from the CRD's transmission mains. Water was supplied from Main #1 at Dupplin, Wilkinson and Marigold, Holland/Burnside, and Admirals/Burnside; from Main #3 at Douglas, Tillicum, Admirals, Shelbourne, Richmond, Foul Bay, Mt. Tolmie and Maplewood pump house; and from Main #4 at Burnside, Blue Ridge, Roy Road, Markham, Layritz, Cherry Tree Bend and Sayward. In the Saanich Distribution System, water flowed generally in a northerly direction from mains #1 and #3 and both east and west from Main #4.

There are four major pumping systems in the Saanich Distribution System. Maplewood pumps water north from Main #3, ending in the Gordon Head area. Cherry Tree Bend pumps from Main #4 to Wesley Reservoir and the west central high elevation area. The Mt. Tolmie/Plymouth pump station pumps water from Main #3 and the CRD Mt. Tolmie Reservoir to Saanich's Mt. Tolmie Reservoir and the Gordon Head area via a 610 mm-diameter (24") main.

Water from Sayward supplies the north end of the Saanich Distribution System via Main #4 with a southerly flow through Cordova Bay. Saanich also has a number of other small pressure zones controlled by pump stations.

The Saanich Distribution System includes some storage for balancing, fire and emergency purposes. The following distribution reservoirs are owned and operated by Saanich:

- Hartland Reservoir, a one-cell, 769 m^3 (170,000 gallon) reservoir located on Hartland Road in Saanich. This new one-cell steel tank reservoir was constructed in 2020 to replace the smaller old reservoir.

- Mt. Tolmie Reservoir (Saanich), a one-cell, 4,545 m^3 (1M gallon) reservoir located on the east side of the summit of Mt. Tolmie near Cromwell Reservoir in Saanich,

- Rithet Reservoir, a one-cell, 16,807 m^3 (3.7M gallon) reservoir located at the end of Perez Drive in Broadmead in Saanich.

- Wesley Reservoir, a two-cell, 3,182 m^3 (700,000 gallon) reservoir located at the end of Wesley Road on Haliburton Ridge in Saanich.

2.4.7 Sidney Distribution System – Township of Sidney

In 2021, drinking water was supplied to the northern portion of the Sidney Distribution System from the 300 mm-diameter water main on Mills Road via the 460 mm CRD transmission main on Mills Road from upstream of the Deep Cove pump station. The southern portion of the distribution system is supplied from a 300 mm main that is connected to the CRD transmission system and McTavish Reservoir. Within the Sidney Distribution System, water flowed generally from the west via Mills Road and from the south via McTavish Reservoir and met in the middle of the distribution system, with approximately 60% of the water coming from the Mills Road supply.

The Sidney Distribution System has no balancing, fire or emergency storage, but rather relies on the CRD transmission system infrastructure to provide this.

2.4.8 Victoria/Esquimalt Distribution System – City of Victoria/Township of Esquimalt

Note: The City of Victoria also owns and operates the Water Distribution System in the Township of Esquimalt.

In 2021, drinking water was supplied to the Victoria/Esquimalt Distribution System from mains #1 and #2 at David Street/Gorge Street and David Street/Rock Bay Avenue. From these supply points, the system divides into several smaller looped water mains within the distribution system. Water was also supplied to Victoria from Main #3 at Cook Street/Mallek Crescent, Sommerset Street/Tolmie Avenue, Douglas Street/Tolmie Avenue and Shelbourne/North Dairy. In general, water flows from a north to south direction.

Water was supplied at multiple locations to Vic West and Esquimalt from Main #2. These locations include Tyee Road/Bay Street, Burleith Crescent/Craigflower Road, Garthland Road/Craigflower Road and Admirals Road/Maple Bank Road.

The Victoria/Esquimalt Distribution System has no balancing, fire or emergency storage and the CRD transmission system infrastructure has limited provisions for this.

3.0 MULTIPLE BARRIER APPROACH TO WATER QUALITY

The CRD and the municipalities that operate their distribution systems use a multiple barrier approach to prevent the drinking water in the GVDWS from becoming contaminated. Multiple barriers can include procedures, operations, processes and physical components. In a drinking water system, any individual contamination barrier used in isolation has an inherent risk of failure and may result in contamination of the drinking water. However, if a number of individual barriers are used together in combination with each other and, especially if they are arranged so that they complement each other, these multiple barriers are a very powerful means of preventing drinking water contamination. All CRD-owned and operated, and most other large drinking water utilities, use the multiple barrier approach to prevent drinking water contamination. The exact types and applications of barriers are unique for each system, to address the system-specific risks.

The following barriers are used in the GVDWS to prevent the drinking water from becoming contaminated:

1. **Good Water System Design**. Good water system design is one of the preeminent barriers to drinking water contamination, as it allows all of the other components within the water system to operate in an optimal fashion and does not contribute to the deterioration of the quality of the drinking water contained within the system. Good water system design includes such aspects as: drinking water treatment plants that are easy to operate; piping appropriately sized to the number of users being supplied; and the use of appropriate pipe materials. All new designs are designed by qualified professionals registered in BC, reviewed and approved by qualified CRD or municipal staff, and approved and permitted by a Public Health Engineer from the Island Health Authority. This acts as a multiple check on good system design.

2. **Source Water Protection**. The CRD uses what is considered the ultimate source water protection: ownership of the catchment (watershed) lands surrounding the source reservoirs. This land area is called the Greater Victoria Drinking Water Supply Area. Within this area, no public access, commercial logging, farming, mining, or recreation is permitted and no use of herbicides, pesticides, or fertilizers is allowed. This source water protection barrier eliminates many of the organic and inorganic chemicals that can contaminate the source water and virtually eliminates the potential for human disease agents being present. Very few drinking water utilities in Canada and United States can claim this type of protection. In addition, the CRD Watershed Protection Division operates a complete and comprehensive watershed management program that provides additional protection to the quality of Greater Victoria's source water.

3. **Water Disinfection**. The GVDWS is an unfiltered drinking water system that continues to meet the provincial as well as the stringent United States Environmental Protection Agency (USEPA) criteria to remain an unfiltered surface water supply. The treatment process consists of primary disinfection (ultraviolet light and free chlorine) of the raw source water entering the treatment plant, and secondary disinfection (chloramination) that provides a disinfectant residual throughout the transmission and distribution systems. Although the water treatment barrier used in Greater Victoria is not as rigorous as that provided by most drinking water utilities using a surface water supply, the microbiological quality of the source water is exceptionally good and the chief medical health officer for Island Health has approved this treatment process as providing safe drinking water for the public.

4. **Distribution System Maintenance**. All water suppliers in the GVDWS provide good distribution system maintenance, including activities such as annual water main flushing, hydrant maintenance, valve exercising, leak detection, and reservoir cleaning and disinfection. This barrier helps to promote good water quality within the distribution systems.

5. **Infrastructure Replacement**. The timely replacement of aging water system infrastructure is an important mechanism to prevent the deterioration of water quality in the pipes and provides a continual renewal of the water system.

6. **Well Trained and Experienced Staff**. All water system operators must receive regular training and be certified to operate water system components. In addition, the laboratory staff cannot analyze drinking water samples in accordance with the *BC Drinking Water Protection Regulation* unless the laboratory has been inspected by representatives of the BC Ministry of Health and issued an operating certificate.

CRD and municipal staff meet these requirements.

7. **Cross Connection Control**. Cross connection control provides a barrier to contamination by assisting in the detection of conditions that have the potential to introduce contaminants into the drinking water from another type of system. Therefore, in cooperation with the other water suppliers, in 2005, the CRD implemented a regional Cross Connection Control Program throughout the GVDWS. 2008 saw the implementation of CRD Bylaw 3516, the Cross Connection Control Bylaw for the GVDWS. This bylaw was reviewed and updated last in 2019.

8. **Water Quality Monitoring**. Rigorous water quality monitoring can be considered a barrier not only because it verifies the satisfactory operation of other barriers and detects contaminations quickly, but comprehensive monitoring data may also allow water suppliers to see trends and react proactively, before a contamination occurs. The CRD has designed and executes a comprehensive water quality monitoring program for the GVDWS that collects daily bacteriological samples across the entire region for compliance purpose (on CRD water infrastructure and in the municipal water distribution systems). This CRD monitoring program tests for water quality parameters beyond the legislated requirements to verify good drinking water quality in the GVDWS.

4.0 WATER QUALITY REGULATIONS

The CRD and the municipal water suppliers in the GVDWS must comply with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*. The regulation stipulates the following water quality and sampling criteria for water supply systems:

- No detectable *Escherichia coli (E.coli)* per 100 mL
- At least 90% of samples have no detectable total coliform bacteria per 100 mL and no sample has more than 10 total coliform bacteria per 100 mL
- 5,000-90,000 population served: one sample per month per 1,000 population served
- >90,000 population served: 90 + 1 samples per month per 10,000 in excess of 90,000 population served

In addition to the aforementioned water quality monitoring criteria by the *Drinking Water Protection Regulation*, as due diligence to ensure public safety and maintain public trust, the CRD Water Quality Monitoring Program also uses the much larger group of water quality parameters listed in the current version of the *Guidelines for Canadian Drinking Water Quality* (the Canadian guidelines) for compliance purposes. These limits are provided in Appendix A, tables 1 to 5, under the column titled 'Canadian Guidelines'. The water quality limits in the Canadian guidelines[1] fall into one of the following five categories:

1. **Maximum Acceptable Concentration**. This is a health-related limit and lists the maximum acceptable concentration (MAC) of a substance that is known or suspected to cause adverse effects on health. Thus, an exceedance of a MAC can be quite serious and requires immediate action by the water supplier.

2. **Aesthetic Objectives**. These limits apply to certain substances or characteristics of drinking water that can affect its acceptance by consumers or interfere with treatment practices for supplying good quality drinking water. These limits are generally not health related, unless the substance is well above the aesthetic objectives (AO).

3. **Parameters without Guidelines**. Some chemical and physical substances have been identified as not requiring a numerical guideline because data currently available indicate that it poses no health risk or aesthetic problem at the levels currently found in drinking water in Canada. These substances are listed as 'No Guideline Required' in Appendix A, tables 1 to 5.

4. **Archived Parameters**. Guidelines are archived for parameters that are no longer found in Canadian drinking water supplies at levels that could pose a risk to human health, including pesticides that are no longer registered for use in Canada, and for mixtures of contaminants that are addressed individually. Some of these parameters are still being included in the current water quality monitoring program because the analytical laboratory includes them in their scans. These parameters are listed as 'Guideline Archived' in Appendix A, tables 1 to 5.

5. **Operational Guidance**. The limit was established based on operational considerations and listed as an operational guidance value. For example, the limit for aluminum is designed to apply only to drinking water treatment plants using aluminum-based coagulants.

It should be noted that not all of the water quality parameters analyzed by the CRD Water Quality Monitoring Program have the Canadian guidelines' limits, since some of these parameters are used for operational purposes. Where the Canadian guidelines are silent for a particular parameter, the limit for that parameter is left blank in Appendix A, tables 1 to 5.

[1] (see: https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html)

In addition to the Canadian provincial regulations and federal guidelines, on a voluntary basis, the CRD also complies with most of the USEPA rules and regulations. Some of the limits in the USEPA rules are used as the basis for the CRD's water treatment goals.

The GVDWS, as an unfiltered surface water system, must meet the provincial Drinking Water Treatment Objectives for Surface Water Supplies in BC, which includes similar criteria as the conditions for filtration exemption in the Canadian guidelines. In summary, the applicable criteria are:

- 4-log inactivation of viruses (met with chlorination)
- 3-log removal or inactivation of parasites (*Giardia* and *Cryptosporidium*) (met with UV disinfection)
- Two forms of disinfection (UV and chlorination)
- Water entering disinfection facilities has average daily turbidity <1 nephelometric turbidity unit (NTU) and not more than two days/year with an average daily turbidity of >5 NTU
- No *E. coli* or total coliform in treated water
- A watershed control program to minimize fecal, parasite and viral contamination of source water (in place)
- Detectable disinfectant residual in distribution system
- *E. coli* in source water ≤20 CFU/100 mL

5.0 OPERATIONAL CHANGES AND EVENTS – CRD SYSTEMS

5.1 Use of Goldstream Water

In 2021, the Goldstream Supply System was not used at all. A Kapoor Tunnel inspection project, necessitating a switch to the Goldstream Supply System, was scheduled for early December but had to be cancelled due to adverse weather conditions that could have resulted in increased turbidity in the raw water supply. It is anticipated that the Kapoor Tunnel inspection project will be delayed until the fall of 2022 and the Goldstream System will only be used for emergency purposes until then.

5.2 Sooke Lake Reservoir

Figure 1 shows the Sooke Lake Reservoir water levels in 2021 compared to previous years. As has been typical for most years prior to 2021, the reservoir was at full capacity at the beginning of January and remained 100% full until the middle of April. With drier and warmer weather after that, the reservoir levels continuously receded throughout the summer and into the fall. The onset of an extreme heat wave at the end of June and through early July saw the reservoir levels dip below elevations seen in previous years. Only 2004, 2006 and 2009 saw lower summer water levels in Sooke Lake Reservoir post dam upgrade. Some productive rain events in September and October slowed and halted the reservoir level decrease until the lowest level was finally reached on October 15, with 64.8% of full capacity. Due to extreme rainfall in November (in particular on Nov 14 and 15) the reservoir experienced an unprecedented recharge and reached the full service level already on November 27, historically the earliest fill date since the dam upgrade in 2003.

Both extreme weather events in 2021, first the extreme summer heat wave and then the atmospheric river rainfall in November did not have any measurable adverse water quality impacts on Sooke Lake Reservoir. Effects such as lower water levels and higher water temperatures during and following the heat wave had no major consequences for the water supply to the GVDWS. While the extreme precipitation in November brought operational challenges through localized flooding and material/equipment supply chain disruptions in the region, the source water quality in Sooke Lake Reservoir was not measurably affected.

The Sooke Lake intake screen was replaced and recommissioned in early April 2021. Until that time, the intake remained unscreened for several months. Aside from requiring minor additional operational efforts, the system has performed well without the screen and no water quality issues arose from this.

5.3 Switch to Free Chlorine

At the end of 2020, the ammonia dosing system at the Goldstream Water Treatment Plant required repair work. The ammonia system was turned off at the end of December 2020 and the secondary disinfection was switched from chloramination to free chlorine. In early January 2021, as the entire GVDWS transitioned from chloramines to free chlorine, the residuals in many parts of the system recorded low residuals. To counter a potential loss of secondary disinfection, re-chlorination stations in Metchosin and North Saanich were activated to boost residuals in the far ends of the system. Simultaneously, the CRD issued a public advisory on January 13, in anticipation of chlorine-related customer complaints and concerns. In total, the CRD and the municipalities received about 30 customer calls, emails or social media messages, as a result of this event. On January 20, 2021, the ammonia system was reinstated and it took approximately one week for the system to transition back to chloramines. On February 17, 2021, the public advisory was removed. CRD staff gained valuable information from this event on how the system reacts to such a sudden and prolonged discontinuation of the ammoniation process. It also gave CRD staff an understanding of the aesthetic water quality impacts but also effects on health-related parameters such as disinfection byproducts.

5.4 Chlorine Dosage

In 2021, CRD Integrated Water Services Department did make some minor adjustments to the chlorine dosage rate at both plants, based on daily or weekly monitoring results. The objective for the chlorine dosage has been to dose sufficiently for adequate primary and secondary disinfection, while minimizing the

amount of chemicals added. Critical for proper primary disinfection is achieving the required CT (Concentration x Contact Time), which was consistently achieved in 2021 at both plants. Critical for adequate secondary disinfection is achieving a high ratio of Total Chlorine/Monochloramine. The new hypochlorite plant at the Goldstream Water Treatment Plant achieved consistently ratios of 90%. The Sooke River Road Water Treatment Plant generally achieved ratios of 85-95%.

5.5 CRD Reservoir Maintenance

CRD water system operators have followed the reservoir cleaning schedule developed through the reservoir review project led by the CRD Water Quality Operations Section. This schedule is based on a thorough water quality data review in each CRD-owned and operated transmission or distribution reservoir, and is regularly updated based on new data and information. Following this cleaning schedule has resulted in improved water quality conditions and operational efficiencies in a number of reservoirs.

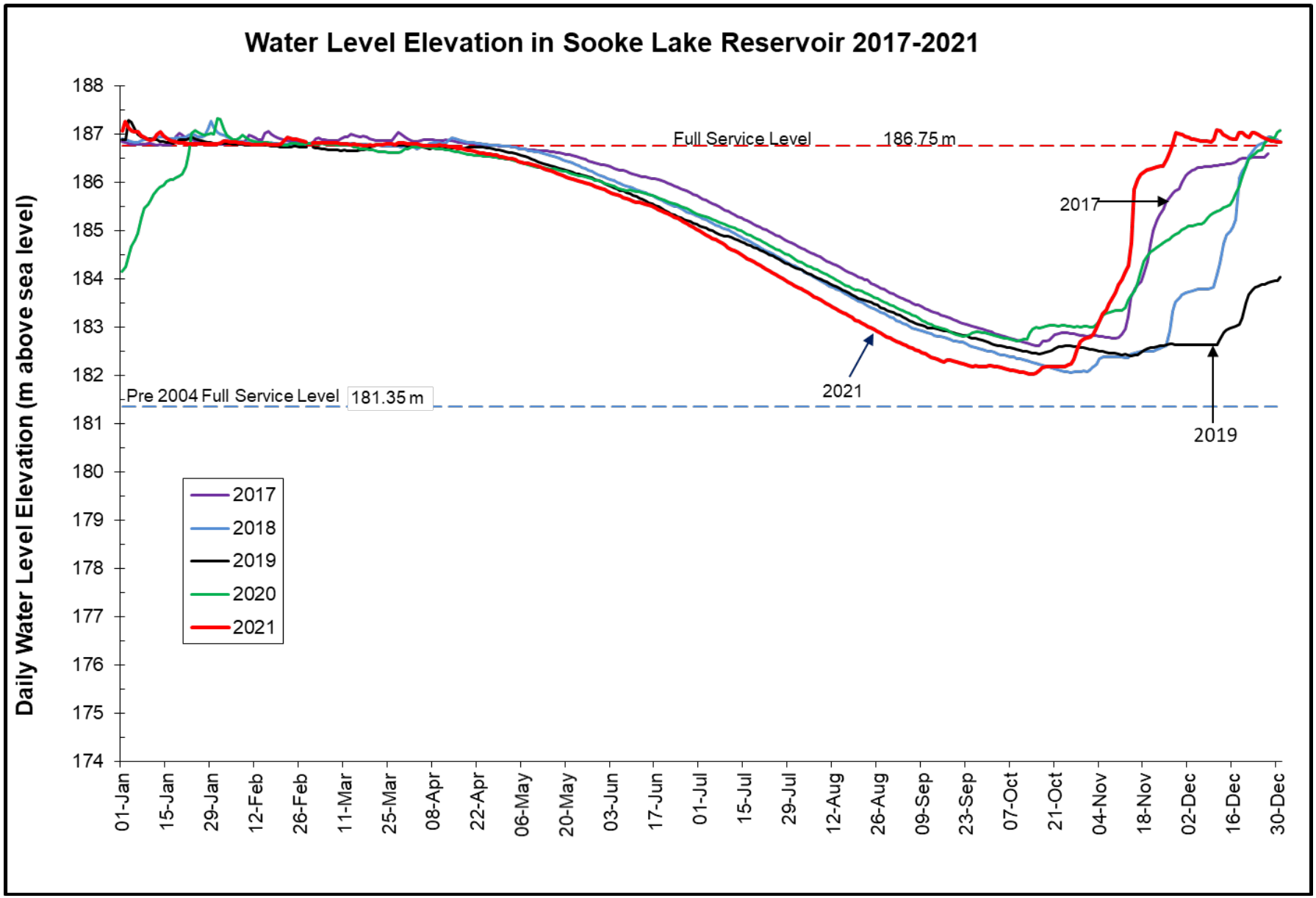


Figure 1 Water Level Elevation in Sooke Lake Reservoir, 2017-2021

6.0 WATER QUALITY MONITORING

The Water Quality Program, as delivered by the Water Quality Operations, the Cross Connection Control, and the Laboratory Services sections (all within the CRD Parks & Environmental Services Department), is responsible for the collection, analysis and reporting of water quality information in all CRD-owned and operated portions of the GVDWS from the source reservoirs to the point of delivery (typically the water meter) to each consumer. While the municipal water suppliers are responsible for water quality and any potential corrective measures within their particular distribution system, CRD staff provide water sampling and testing for regulatory compliance monitoring to these municipalities.

The CRD Water Quality Program has dedicated professional staff who are trained to collect water samples from source water and treated water sampling locations across the region, as well as technical staff trained to analyze and interpret water quality data in support of operational decisions. The CRD Water Quality Laboratory is certified for a number of water quality test methods and is staffed with highly-trained laboratory technicians. The CRD Aquatic Ecology Laboratory has professional staff specialized to analyze phyto- and zooplankton in lake water, periphyton communities in lakes and streams, to test for cyanotoxins and understand the source water limnology. The Cross Connection Control Section includes certified plumbing and cross connection control inspectors, as well as staff trained to process data in order to administer the requirements of the BC Building Code and the CRD Cross Connection Bylaw 3516.

6.1 CRD Water Quality Monitoring Program

The CRD Water Quality Monitoring Program consists of the following three components that provide direction for the collection and analysis of water quality samples from the water systems:

- **Compliance Monitoring:** The goal of the compliance monitoring is to ensure that water quality from source to consumer meets the relevant drinking water regulations and guidelines. The Island Health Authority, as the provincial regulator, has issued the CRD two operating permits [for CRD water infrastructure in the Goldstream (Japan Gulch) Service Area and in the Sooke Drinking Water Service Area]. These operating permits require, in addition to the water quality and sampling criteria, as per *Drinking Water Protection Regulation*, continuous monitoring of turbidity. The CRD Water Quality Operations Section, therefore, conducts bacteriological monitoring on the raw water entering the treatment plants, treated water after leaving the plants and at the first customer sampling locations, sampling locations on the large transmission mains and sampling locations in the CRD-owned distribution systems, including distribution reservoirs. Bacteriological samples are collected at a frequency that meets the regulatory requirements and provides a consistent and day-to-day system-wide water quality oversight. Continuous turbidity monitoring, as per operating permits, is accomplished by on-line turbidity meters (monitored via Supervisory Control and Data Acquisition) at each water treatment plant (at each plant: 2 analyzers in line to provide redundancy). Part of the compliance monitoring program are the services provided by the CRD to the municipal water suppliers where CRD staff collect and analyze bacteriological samples from inside the municipal water distribution systems, report monthly results on the CRD website and include the results and findings in this annual report.

  The Island Health Authority has granted the GVDWS an exemption from filtration treatment, the conventional water treatment requirement for surface water source users in BC, based on the evidence of year-round high source water quality. However, it expected that the CRD closely monitors a number of water quality parameters, in addition to the criteria listed in the regulations and in the operating permits. As a result, the CRD has included in its compliance monitoring program a number of water quality parameters that are regularly tested on the raw, as well as on the treated water to verify compliance with the Canadian guidelines and USEPA rules and regulations. Such parameters in the raw water include parasites, organic and inorganic compounds, including metals and various water chemistry and physical parameters. On the treated water, these include disinfection byproducts, metals and water chemistry and physical parameters that are used to verify good drinking water quality.

- **Aquatic Ecology Monitoring:** The goal of the aquatic ecology monitoring is to understand and document the components that affect or may affect the natural cycles of the source streams and reservoirs. The source reservoirs and streams in the Greater Victoria Water Supply Area (Map 1) are monitored according to the recommendations by the CRD Aquatic Ecology Section, as there are no legislated requirements for either sampling frequency or parameter selection for these water bodies. It is, however, important for the CRD, as the supplier of unfiltered surface water, to have a comprehensive understanding of the natural processes taking place in the source waters and potential implications for the drinking water quality in the GVDWS. Depending on the season, the source lakes and their tributaries are sampled at a frequency ranging from quarterly to weekly for parameters, such as algal species, distribution and concentrations, zooplankton species and concentrations, chlorophyll-a concentrations and nutrient concentrations. Additional samples may be collected based on risk management decisions, for instance, as a response to severe weather conditions or unusual observations.

- **Operational Water Quality Monitoring:** The CRD Water Quality Monitoring Program provides an audit function on all water quality-related aspects of the GVDWS, including performance monitoring of the treatment plants and distribution system. Specific sampling and testing occurs to support operational decisions by the CRD and municipal system operators. Daily field tests of chloramine residual concentrations are conducted to verify the efficiency of the secondary disinfection region-wide. A number of qualitative (taste and odour) and quantitative tests [e.g., heterotrophic plate count (HPC), turbidity] are regularly performed on samples across the region to verify the need for specific system maintenance. The customer inquiry program is also part of this monitoring program component, as a water quality complaint or observation by the public can give clues to ongoing system issues or identify water quality risks in the system. Water samples are occasionally collected from taps within individual houses or facilities, in response to inquiries from customers about the quality of water being received at their address.

- **Drinking Water Safety Plan:** In 2018, the CRD Water Quality Operations Section developed a Drinking Water Safety Plan, following the principle of a method developed by the Alberta Ministry of Environment for all drinking water systems in Alberta. This plan is a comprehensive water quality risk assessment and registry in the GVDWS. Identified risks have been documented and are being tracked as the CRD Integrated Water Services Department addresses them. At the end of 2021, the Drinking Water Safety Plan included 23 High Risks and 177 Moderate Risks to water quality (24 and 200 respectively in 2020) for comparison.

6.2 Sampling Plans

The efforts to collect the required number of samples for the CRD Water Quality Monitoring Program are organized in three distinct sampling plans:

1. The **Watershed Sampling Plan** manages the sampling frequency, schedule and parameter list for the source water lakes and tributaries and is based on an up-to-date risk to water quality assessment. Sooke Lake Reservoir is sampled from a boat at three dedicated lake sampling stations from weekly in the summer to bi-weekly in the winter (see Figure 2). Goldstream Reservoir is sampled monthly from a boat at two dedicated lake sampling stations. Tributary creeks to Sooke Lake Reservoir are sampled monthly near their mouths. Significant tributary lakes in the Sooke Lake watershed, as well as Butchart Lake and Japan Gulch Reservoir in the Goldstream System, are sampled quarterly by boat. The Leech watershed is currently sampled monthly in 4 different locations following a more comprehensive sampling/testing project in 2019/2020.

2. The **Treatment Plant Sampling Plan** includes the daily samples collected at the Goldstream Water Treatment Plant and the two first customer locations (for mains #4 and #5) and the weekly samples collected at the Sooke River Road Water Treatment Plant and the Sooke first customer location. This plan is designed to verify adequate treatment at both treatment plants and to detect unusual water quality conditions, before they spread across the systems.

4. The **Transmission and Distribution System Sampling Plan** is a designed sampling plan that manages sampling at approximately 220 permanent sampling stations across the GVDWS, including all municipal systems. These permanent sampling stations are installed on transmission mains, storage reservoirs, distribution mains, booster pump stations and meter or valve stations. The plan is designed to achieve an evenly-distributed two-week rotation for most sampling stations, while providing a representative snapshot of the entire Goldstream Service Area on each business day. The Sooke Drinking Water Service Area is sampled once per week. Samples collected on the daily runs, as part of this plan, are primarily used for compliance monitoring, but also for operational purposes.

   When total coliform-positive bacteriological results are found in a CRD-owned system, CRD sampling staff resample those locations and, depending upon the situation, may direct CRD operators to flush the affected mains and/or drain and clean affected storage reservoirs. When total coliform-positive bacteriological results are found in a municipal system, the CRD sampling staff resample those locations and notify the municipal operators of the results. If a sample tests positive for *E.coli*, the Island Health Authority is notified immediately and emergency response procedures are followed.

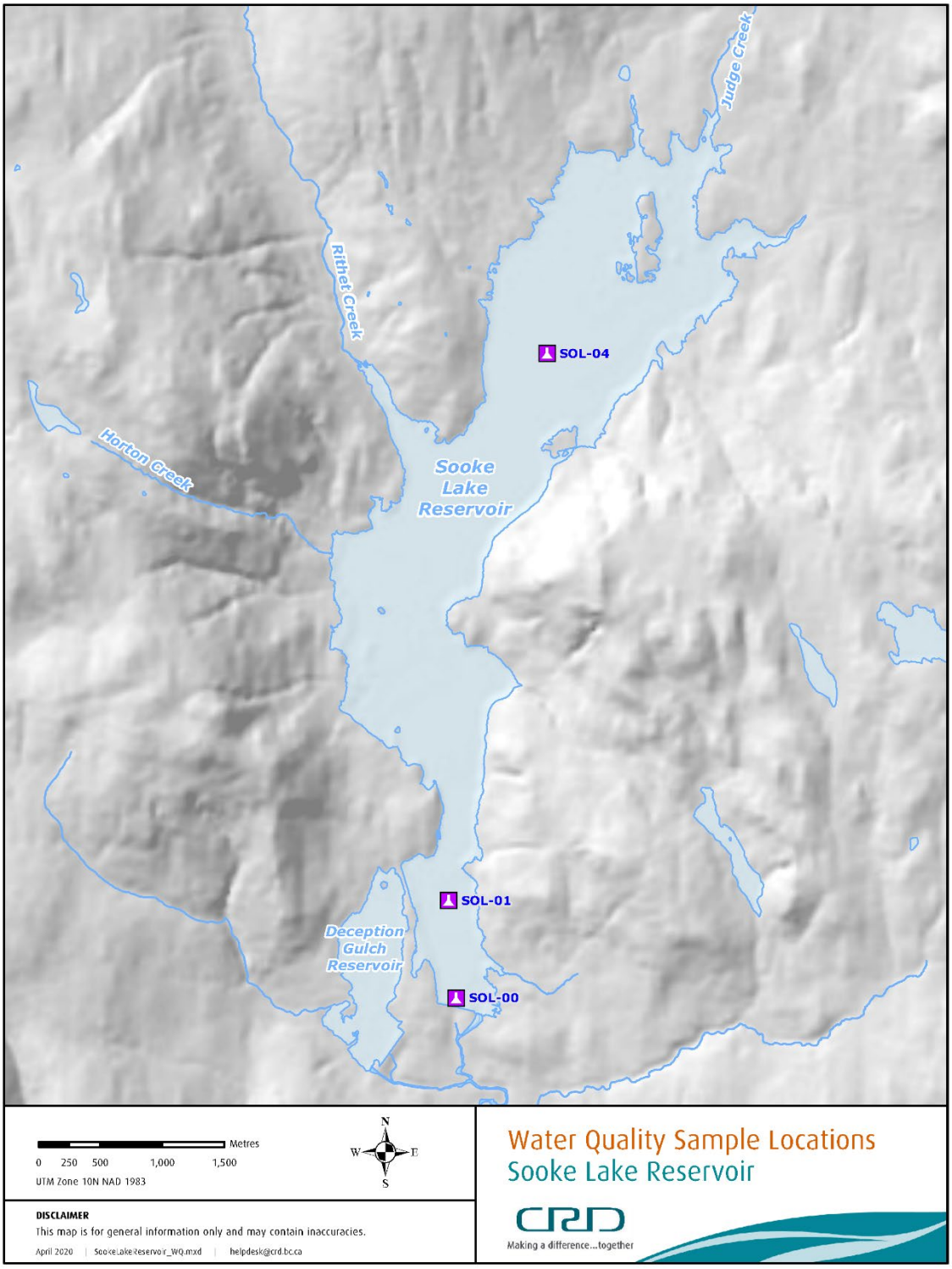


Figure 2 Sooke Lake Reservoir Water Sampling Stations

6.3 Bacteriological Analyses

A description of the bacteriological parameters used in the CRD Water Quality Monitoring Program, and the regulatory limits that were in place in 2021 for those parameters, are outlined below.

Total Coliform Bacteria

Total coliforms. Total coliforms are a group of bacteria found in high numbers in both human and animal intestinal (fecal) wastes and are found in water that has been contaminated with fecal material. Total coliform bacteria are also ubiquitous in the environment (water, soil, vegetation). Thus, in the absence of *E. coli*, the presence of total coliforms may indicate surface water infiltration or the presence of decaying organic matter. The total coliform bacteria group is used as an indicator for treatment adequacy and microbial conditions in drinking water systems because of its superior survival characteristics.

Test Method. In 2021, total coliform bacteria were analyzed at the CRD Water Quality Laboratory using the membrane filtration method and Chromocult Coliform Agar incubated at 36-38ºC for 21-24 hours. Test results were reported as colony-forming units (CFU) per 100 millilitres (mL) of water. Methods employing defined substrate technology rely on the fact that coliforms possess the enzyme β-galactosidase, which cleaves a chromogenic substrate, thus releasing a chromogen (coloured compound) that can be measured. In compliance with regulations, the CRD Water Quality Monitoring Program tests for total coliforms to ensure treatment efficacy and to monitor intrusion of organisms into the system post-treatment.

Regulatory Limits. Based on the requirements in the *Drinking Water Protection Regulation* and the *Guidelines for Canadian Drinking Water Quality*, the maximum acceptable concentration for the GVDWS is summarized as follows:

- *No sample should contain more than 10 total coliform organisms per 100 mL.*
- *No consecutive sample from the same site should show the presence of coliform organisms.*
- *Not more than 10% of the samples based on a minimum of 10 samples should show the presence of coliform organisms.*

Escherichia coli

***Escherichia coli* (*E. coli*)**. *E. coli* is the only member of the total coliform group found exclusively in the feces of human beings and warm-blooded animals. Although most members of this species are considered harmless, some strains of *E. coli* can be pathogenic. The presence of *E. coli* in water indicates recent fecal contamination and the possible presence of intestinal disease-causing bacteria, viruses and protozoa. The absence of *E. coli* in drinking water generally indicates that the water is free of intestinal disease-causing bacteria.

Test Method. In 2021, *E. coli* were analyzed by the CRD Water Quality Laboratory using the membrane filtration method and Chromocult Coliform Agar incubated at 36-38ºC for 21-24 hours. Test results were reported as CFU per 100 mL of water The *E. coli* test measures bacteria possessing the enzymes β-galactosidase and β-glucuronidase.

Regulatory Limits. In disinfected drinking water, the maximum acceptable concentration of *E. coli* (both federal and provincial limits) is zero *E. coli* per 100 mL.

Heterotrophic Plate Count Bacteria

Heterotrophic Plate Count Bacteria. Heterotrophic plate count bacteria (HPC7D) are used as a general measure of the bacterial population present in a drinking water system and in the raw source water. Under increasing nutrient conditions and/or a reduction in the concentration of chlorine residual, the heterotrophic bacteria are usually the first group to increase and provide an early warning of the potential growth of coliforms. In the CRD Water Quality Monitoring Program, heterotrophic plate count bacteria are used to monitor the disinfection of the water at the disinfection plants and to track the decline in chlorine residuals in the distribution system and storage reservoirs.

Test Method. In 2021, heterotrophic plate count bacteria were analyzed by the CRD Water Quality Laboratory using membrane filtration (R2A media, 21-28ºC, seven-day incubation). As heterotrophic bacteria can be measured in several different ways, this method provides the quantity of heterotrophic bacteria capable of growing on R2A medium within seven days at room temperature. Raw water samples and water leaving the treatment plant were analyzed for HPC7D bacteria. In addition, samples with low chlorine residual levels (below 0.2 mg/L) were also analyzed for HPC7D.

Regulatory Limits. There is no federal or provincial regulatory limit on the quantity of heterotrophic bacteria allowed in drinking water. However, the US EPA Surface Water Treatment Rule considers a 500 CFU/mL HPC7D as an indicator for a "detectable chlorine residual". Therefore, in the absence of a Canadian regulatory limit, the CRD Water Quality Monitoring Program uses the US EPA rule as a monitoring criteria to trigger site-specific operational measures for assessing and mitigating the drinking water quality.

6.4 Certification and Audits

To ensure that the analytical testing is performed to the highest possible standard, the Water Quality Laboratory participates in several types of external quality assurance and quality control (QA/QC) programs, in addition to rigorous internal QA/QC procedures that are included as part of the methodology and are a normal component of good laboratory practice.

6.4.1 Certification

The Province of BC requires that all laboratories analyzing drinking water samples be approved in writing by the provincial health officer. Laboratory approval requires both an approval certificate and a proficiency testing certificate, as noted below:

- **Water Bacteriology Testing Laboratory Approval Certificate**. This certificate is issued by the BC provincial health officer for bacteriological testing of drinking water in the Province of BC. This certificate is renewed every three years via an on-site inspection (audit) of the analytical laboratory.

- **Clinical Microbiology Proficiency Testing Program Certificate of Participation**. This certificate is issued by the Advisory Committee for Water Bacteriology Laboratories, which is operated by the Department of Pathology and Laboratory Medicine at the University of British Columbia. Satisfactory performance is required to maintain laboratory certification.

6.4.2 Accreditation

The CRD Water Quality Laboratory received in 2017 the accreditation to the International Standards Organization 17025 standard used by testing and calibration laboratories. The accreditation has management, quality and technical requirements. Accreditation is maintained by successful reassessment every two years by an accrediting body (The Canadian Association for Laboratory Accreditation) and satisfactory participation in an external proficiency testing program. The last reassessment of the CRD Water Quality Lab occurred in 2021.

7.0 WATER QUALITY RESULTS

The overview results of the 2021 CRD Water Quality Monitoring Program for the GVDWS are provided below. Water quality data are listed in Appendix A (tables 1, 2 and 3). Note that the median (middle value between the high and low) is used in these tables rather than the average value, as the median eliminates the effect of extreme values (very high or very low) on the average value and provides a more realistic representation of typical conditions.

7.1 Source Water Quality Results

Total Coliform Bacteria (TC). Similar to previous years, the raw (untreated) source water entering both plants exhibited generally very low concentration of total coliform bacteria, with some increased concentrations between July and October when the Sooke Lake south basin was destratified and, therefore, fully mixed with warm water. Compared to previous years, Sooke Lake Reservoir experienced on average higher total coliform concentrations during the summer months. No seiche-related total coliform spikes were recorded in 2021 (Figure 3).

With 244 samples analyzed in 2021, the total coliform concentration ranged from 0-260 CFU/100 mL, with a median value of 8 CFU/100 mL (Appendix A, Table 1). The types of total coliforms present were not indicative of any particular type of contamination.

The United States Environmental Protection Agency (USEPA) *Surface Water Treatment Rule* for avoiding filtration has a non-critical total coliform criteria of maximum 100 CFU/100 mL at the 90th percentile of a six-month sample set. The 90th percentile of total coliform concentrations in the raw water between January and June 2021 was 11 CFU/100mL, and between July and December 2021, it was 150 CFU/100 mL. Therefore the source water was compliant with this non-critical USEPA filtration exemption criteria in the first half of 2021 but not in the second half. It is possible that the increased total coliform concentrations during the summer of 2021 were a result of the extreme heat wave and higher water temperatures.

***E. coli* Bacteria**. During three decades of monitoring bacteria within the GVDWS, it has been found that virtually 100% of the fecal coliform bacteria detected in the source water and the distribution system are *E. coli*. In 2021, as in previous years, the low detection of *E. coli* bacteria indicated that the raw water entering the Goldstream Water Treatment Plant from Sooke Lake Reservoir was good quality source water and complied with the primary criteria in the USEPA *Surface Water Treatment Rule* to remain an unfiltered drinking water supply (Figure 4).

In 2021, about 7.4% of the 244 samples collected from the raw source water contained *E. coli* and those that were positive for *E. coli* had levels well below 20 CFU/100 mL. The concentration ranged from 0-7 CFU/100 mL, with a median value of 0 CFU/100 mL. The low occurrence, as well as the low concentrations of *E.coli* bacteria in Sooke Lake, are in line with long-term historical bacteria concentrations. These results do not indicate a particular source of *E.coli* bacteria, but rather point to low levels of naturally occurring fecal matter in a healthy and unproductive aquatic ecosystem. The few sporadic *E. coli* hits are typically the result of the rainfall and runoff into Sooke Lake, which transported organic matter accumulated in the watershed to the lake. The extreme rainfall and runoff during the atmospheric river on November 14/15, 2021 caused a stronger than normal *E.coli* signal in water samples collected during and immediately following this event (Figure 4). However, the *E.coli* concentrations registered during this extreme event were still well below the critical threshold and of no concern to the drinking water quality. In years with a Kapoor Tunnel Inspection Project, a slight *E. coli* concentration increase in mid-December can be attributed to the supply from the Goldstream System. In 2021, the Goldstream System was not used as a drinking water source.

***Giardia and Cryptosporidium* Parasites**. In 2021, parasite samples were collected eight times per year, as part of the CRD's routine monitoring program. This sampling frequency was set after an evaluation of long-term data showed extremely low detection of these organisms. The eight parasite samples were collected from the raw water sampling location at the Goldstream Water Treatment Plant and shipped for analysis to an external laboratory. It should be noted that the efficiency of the analysis for detecting *Giardia*, and especially *Cryptosporidium*, is quite low (typically in the 15-25% range).

In 2021, no *Giardia* cysts and no *Cryptosporidium* oocyst were detected in all samples on the raw water entering the Goldstream Water Treatment Plant. The 10-year median value for total *Giardia* cyst and total *Cryptosporidium* oocyst concentrations is 0/100L; however, historical data shows that occasionally very low concentrations of parasites can be found in the raw water from Sooke Lake. While these are extremely low values for a surface water supply, the addition of UV disinfection provides assurance that no infective parasites can enter the GVDWS.

The treatment target specified by the Canadian federal and provincial regulations, as well as the USEPA *Surface Water Treatment Rule*, require 3-log (99.9%) parasite inactivation to meet the filtration exemption criteria for surface water systems. Both CRD disinfection facilities provide UV treatment that, in conjunction with the CRD's drinking watershed management concept, is able to meet these targets and, therefore, adequately protects the public from waterborne parasitic illnesses.

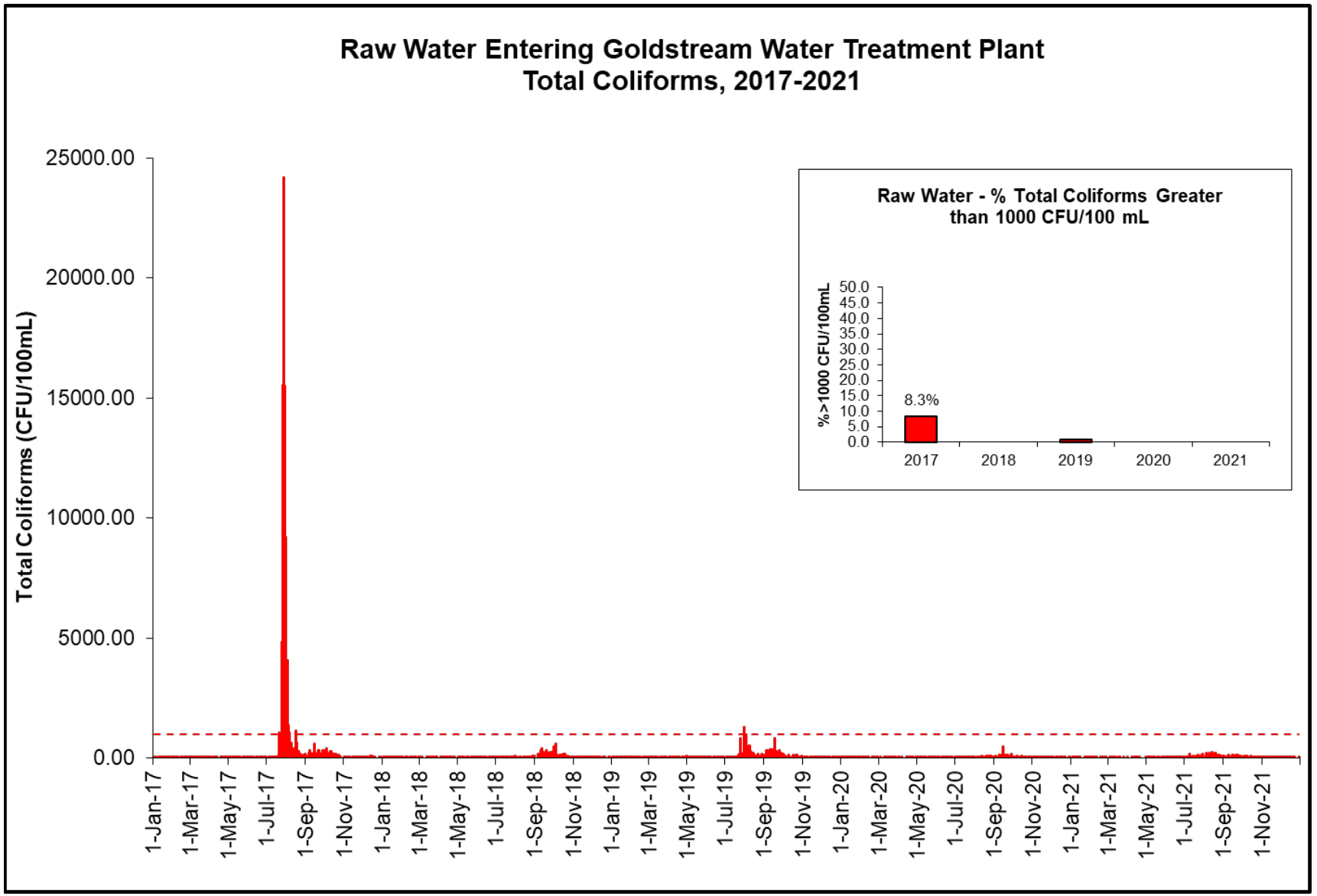


Figure 3 Raw Water Entering Goldstream Water Treatment Plant Total Coliforms 2017-2021

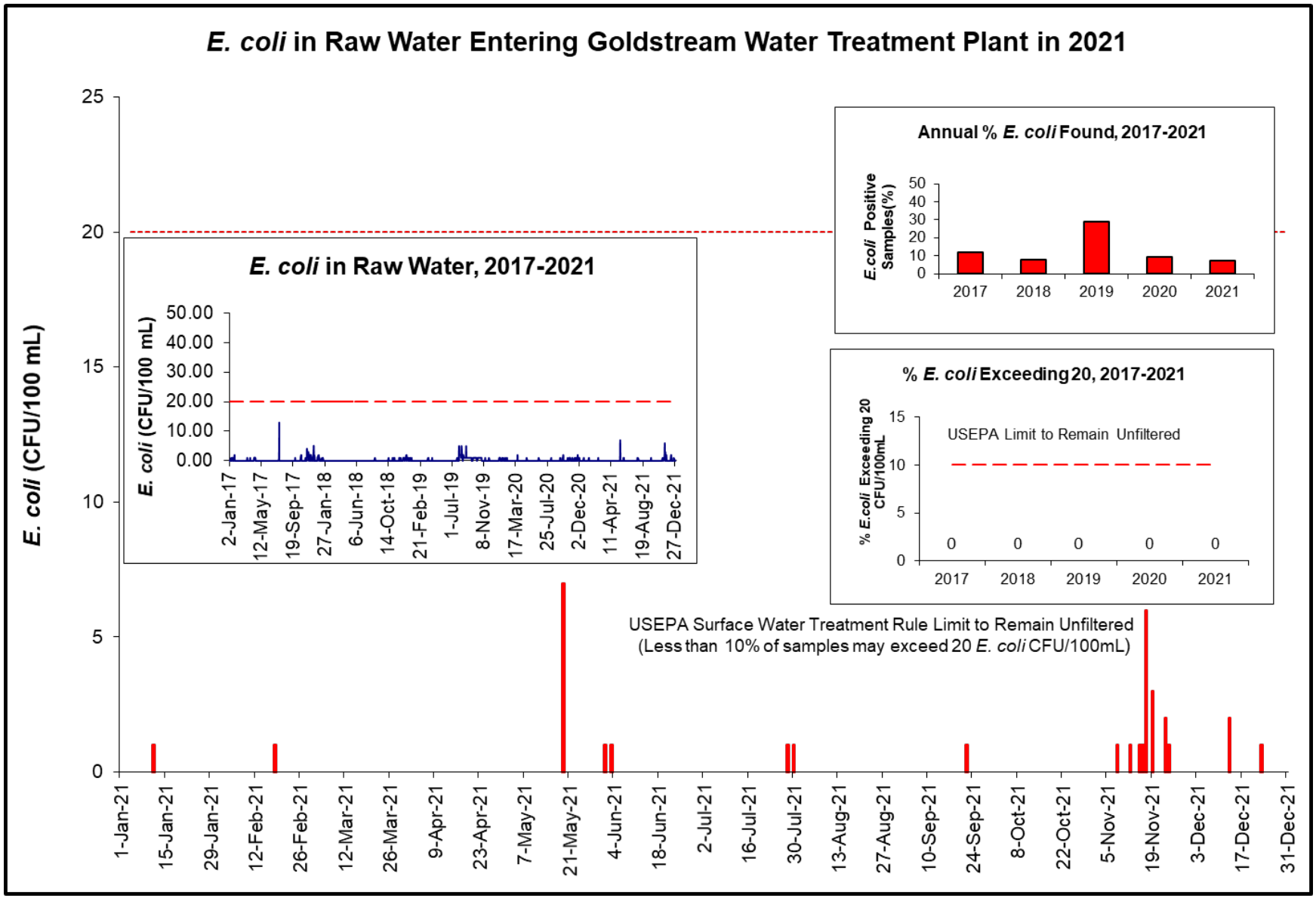


Figure 4 ***E.coli*** **in Raw Water Entering Goldstream Water Treatment Plant in 2021**

Algae – *Sooke Lake Reservoir (SOL)*. In 2021, the algal dynamics were generally in line with the long-term trend. During the spring and early summer, the algal counts were slightly above the average, with the typical spring peak occurring slightly earlier (Figures 5 to 7). Algae have a remarkable ability to quickly adapt to environmental factors such as temperature, nutrient availability and light intensity. The Greater Victoria region experienced favourable conditions for algae growth in the spring and summer of 2021 with warmer than usual temperatures, including the extreme heatwave at the end of June and early July. However, no actual bloom of a specific algae species occurred in Sooke Lake Reservoir in 2021, which demonstrates the robustness of an intact ecosystem with a healthy and diverse algae population.

In the spring and fall, abundant populations of small sized flagellates (~ 5 microns, possibly the green flagellates *Pedinomonas* spp.) were recorded. Due to their small size, they only contribute insignificantly to the total algal biomass in the reservoir and for consistency with historical data, they were excluded in the analysis and the presented composition graphs below.

During certain times of the year (typically August-November), cyanobacteria can comprise a significant portion of the algae spectrum (Figures 8 to 10). While this may seem like a major water quality risk, the risk of potential toxin production comes with blooms of certain cyanobacteria species and not with an overall abundance of a variety of species. For instance, in Sooke Lake Reservoir in 2021, the most abundant cyanobacteria species was a small size picocyanobacteria *Cyanodictyon* spp. (~2 microns), which has been described in previous annual reports. They are common in lacustrine environments and are not known to produce toxins. Other cyanobacteria species recorded in Sooke Lake are potential toxin producers when in bloom conditions, such as *Dolichospermum/Anabaena* spp., *Pseudanabaena* sp., *Planktothrix* sp. (or *Phormidium* sp.). However, the densities of these species were well below the critical threshold recommended by Health Canada (2017), i.e., 2000 cells/mL. For example, the maximum count of *Dolichospermum/Anabaena* spp. was 29.1 cells/mL reported on July 19, 2021, and the highest count for *Phormidium* sp. was 84.3 cells/mL on May 03, 2021. Based on those low specific concentrations, the water quality risk from cyanobacteria was low again in 2021.

There were no algae-related water quality concerns in 2021.

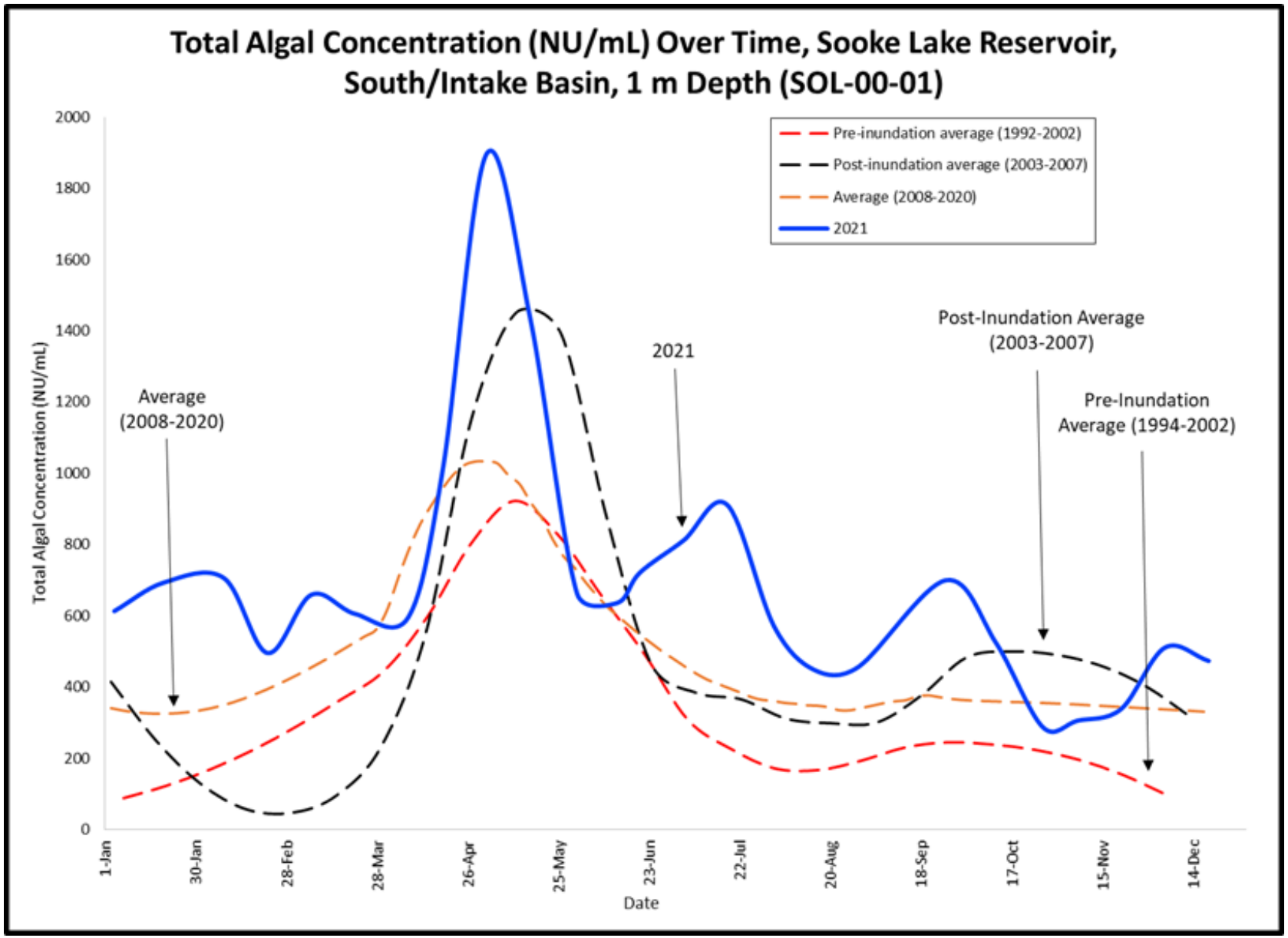


Figure 5 Total Algal Concentration (natural units/mL) Over Time, Sooke Lake Reservoir, South/Intake Basin, 1 m depth (SOL-00-01)

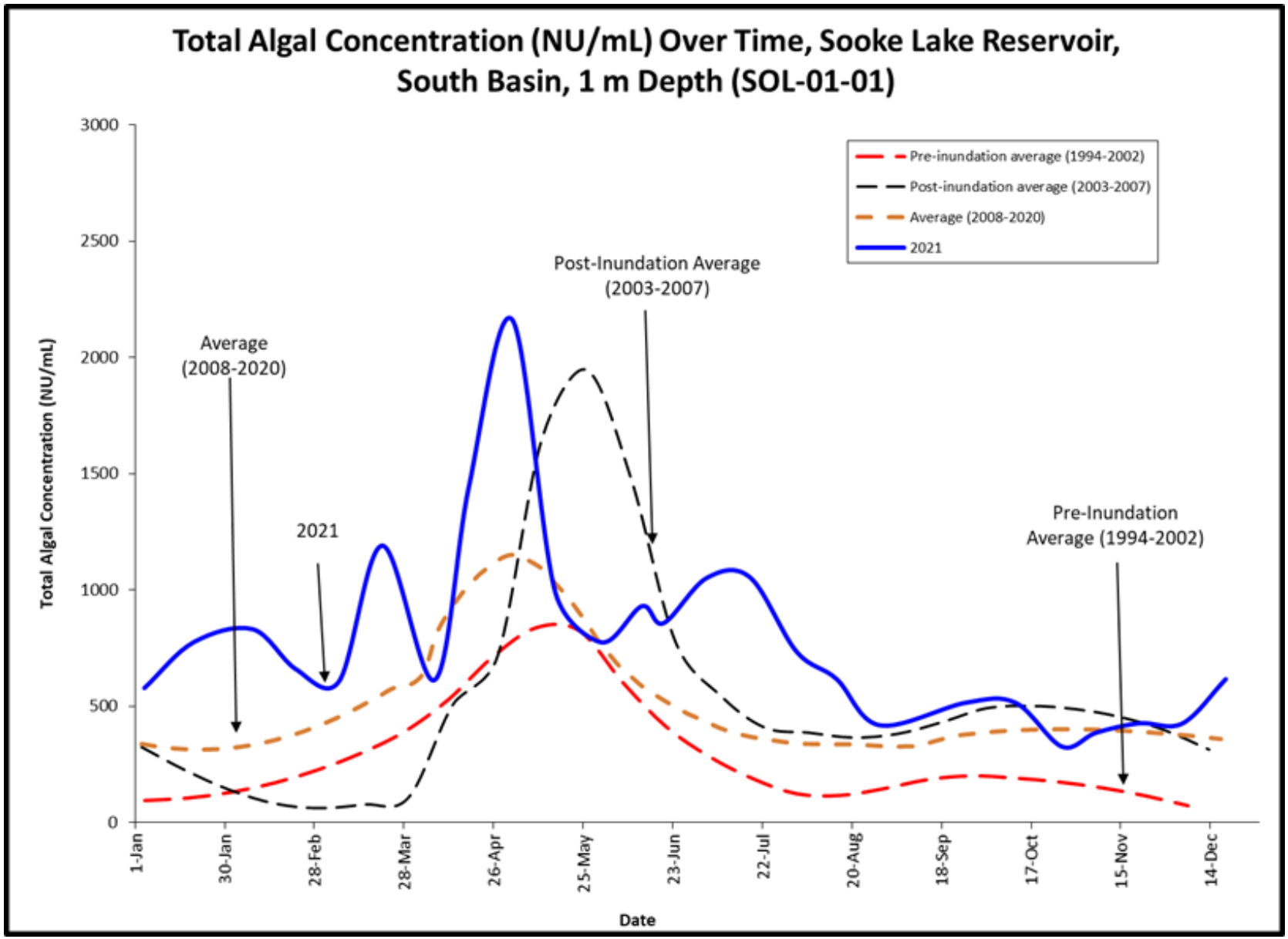


Figure 6 Total Algal Concentration (natural units/mL) Over Time, Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

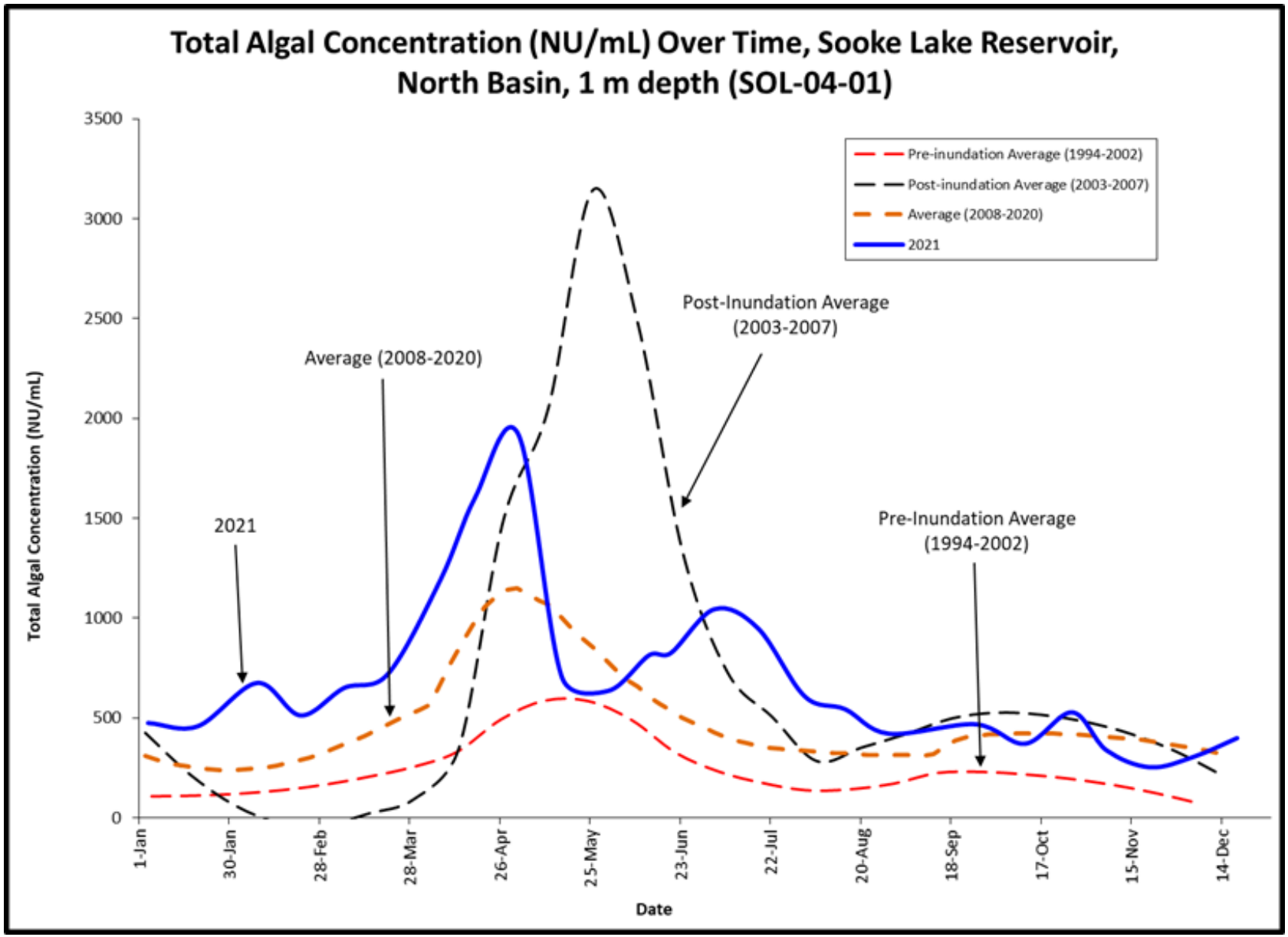


Figure 7 Total Algal Concentration (natural units/mL) Over Time, Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

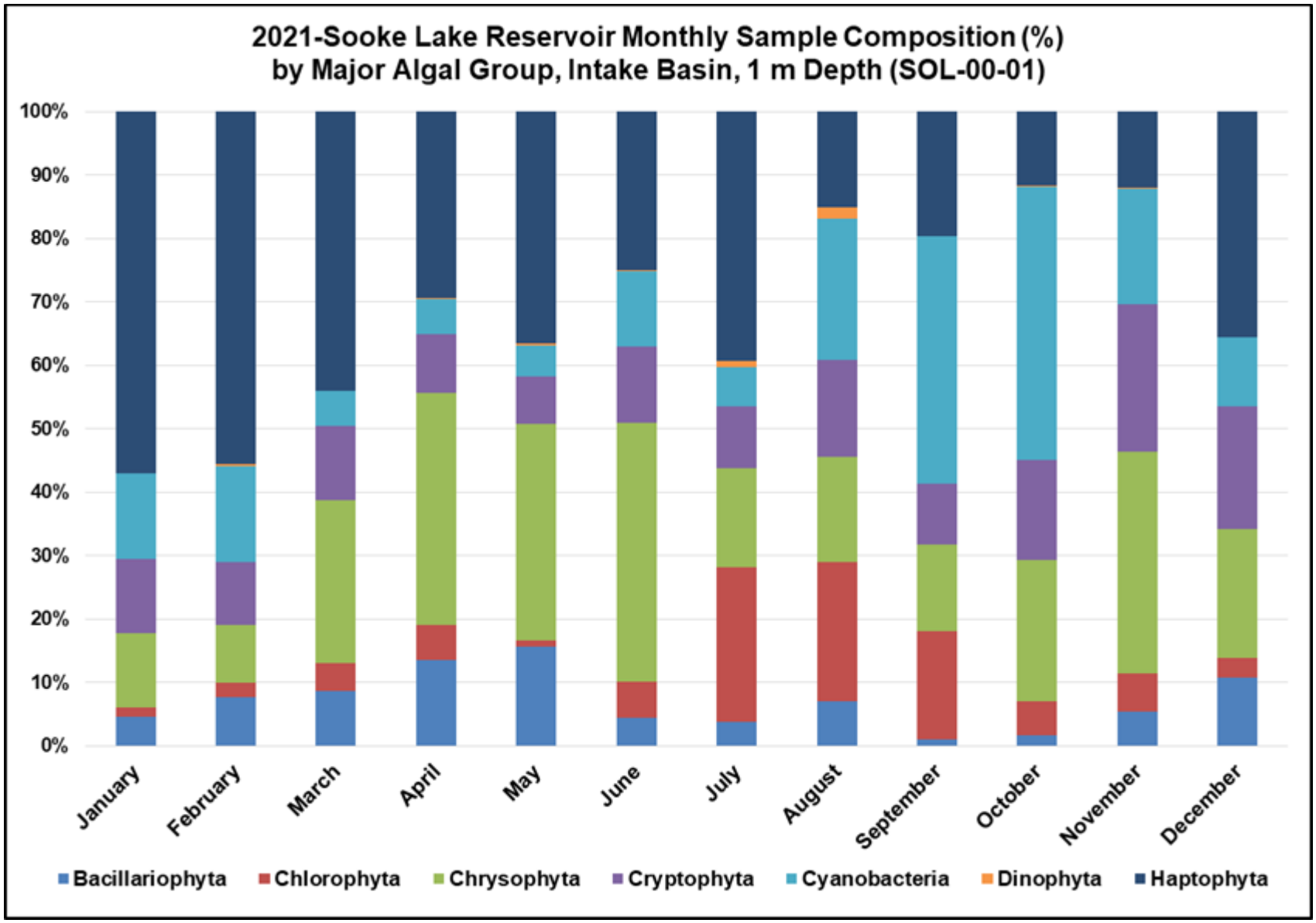


Figure 8 Monthly Abundance Percent of Different Algal Groups, Intake Basin, 1 m depth, SOL-00-01, 2021

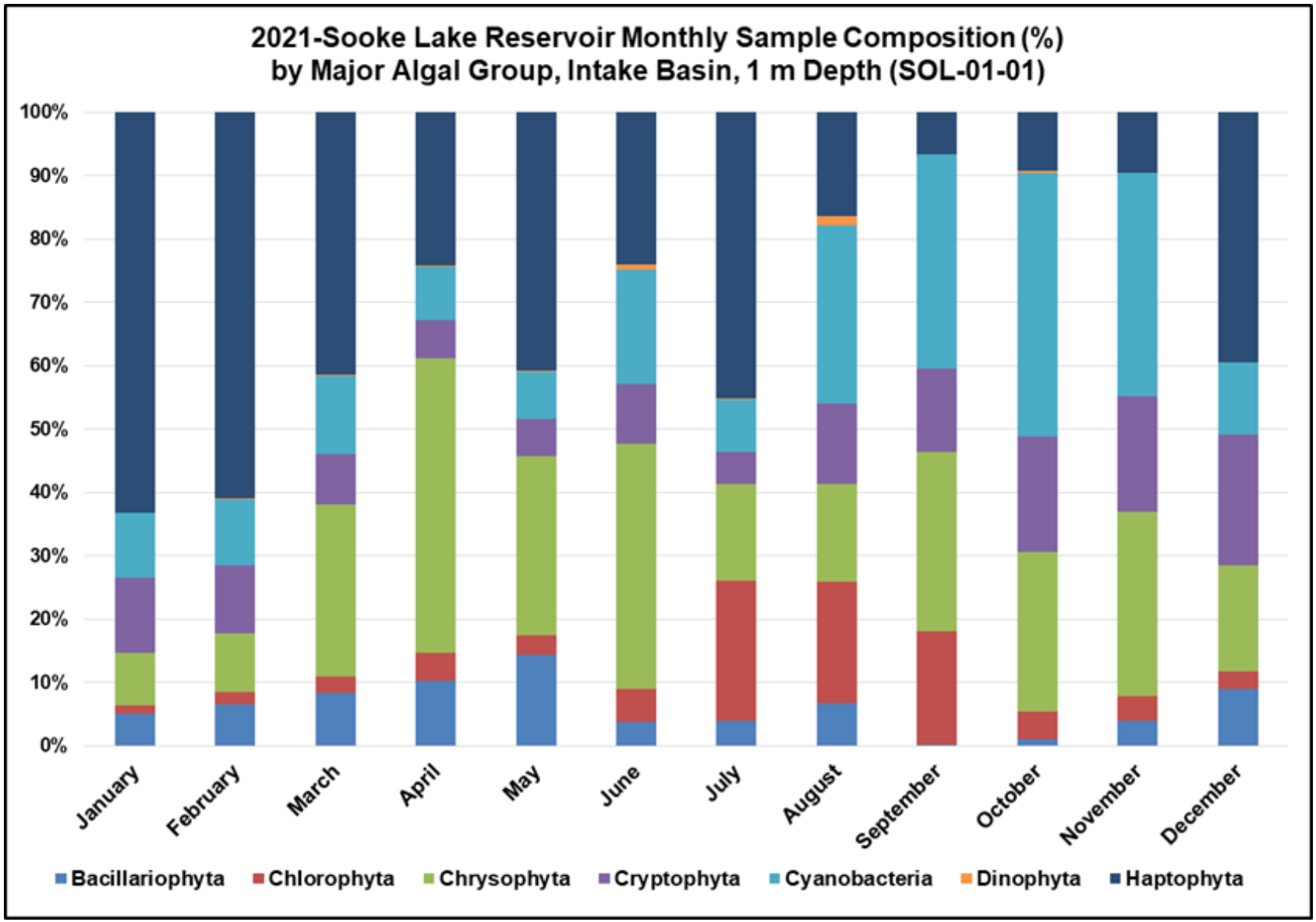


Figure 9 Monthly Abundance Percent of Different Algal Groups, South Basin, 1 m depth, SOL-01-01, 2021

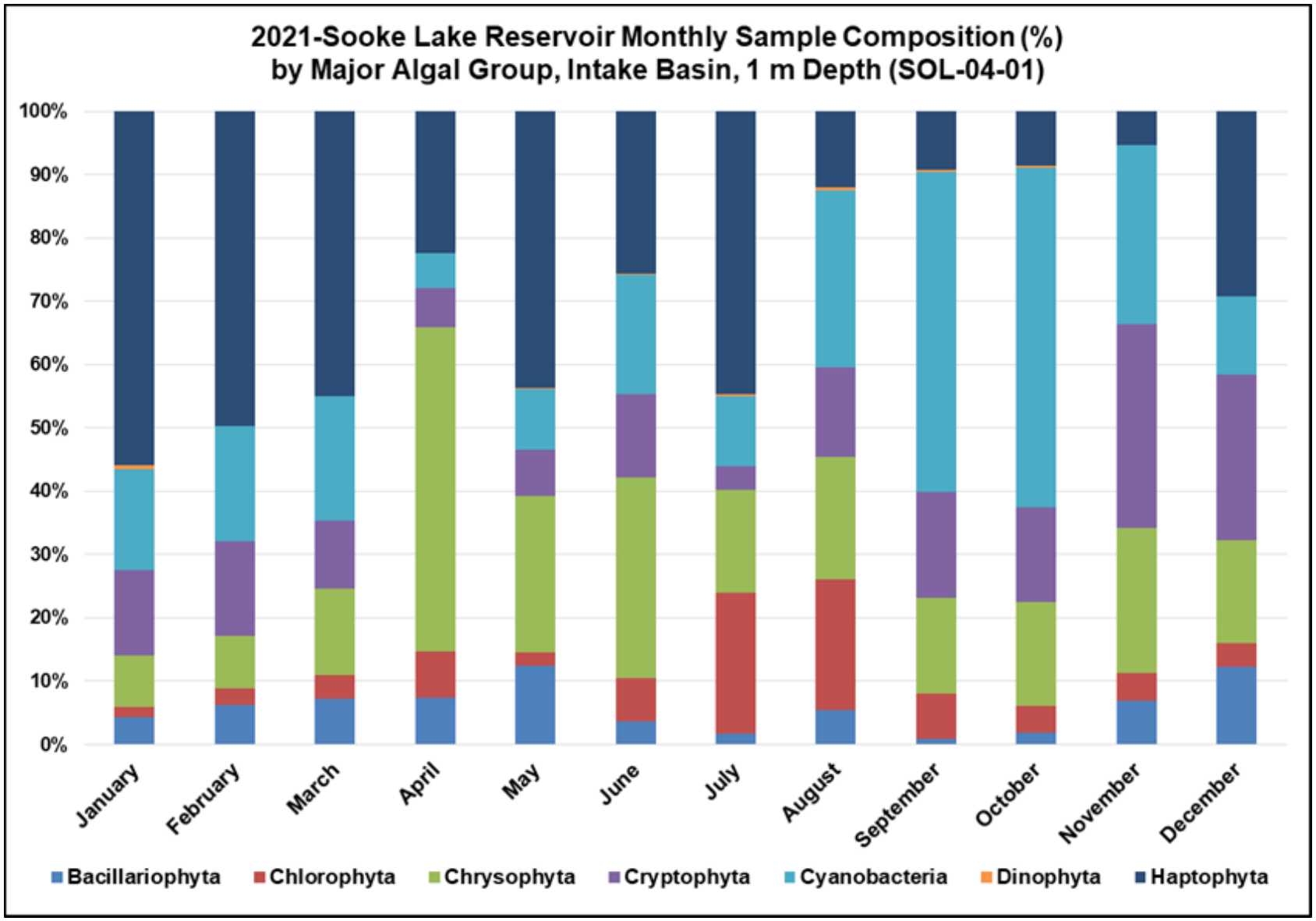


Figure 10 Monthly Abundance Percent of Different Algal Groups, North Basin, 1 m depth, SOL-04-01, 2021

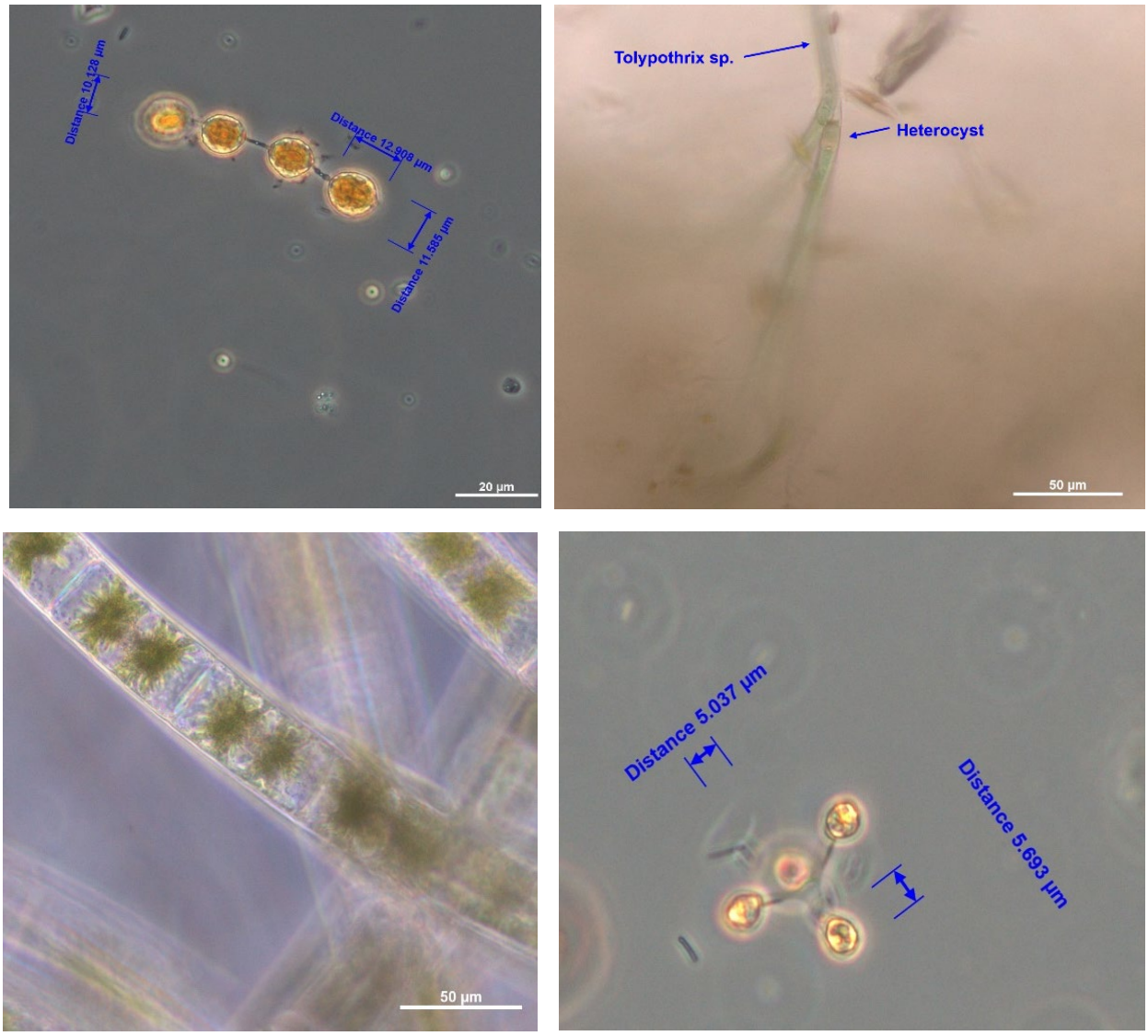


Figure 11 Some algae present in Sooke Lake Reservoir: Golden algae – *Chrysidiastrum* sp. (top left), Cyanobacteria – *Tolypothrix* sp. (top right), Green algae – *Zygnema* sp. (bottom left) and Green algae –*Dictyosphaerium* sp. (bottom right).

Algae – *Leech River Watershed*. Most current water quality monitoring programs for streams use periphyton as bioindicators rather than potamoplankton (phytoplankton in streams). Periphyton are algae that are attached to the stream substrates and constitute the most dominant form of algae in flowing water. Phytoplankton, which are the most prevailing algal forms in standing water, play an insignificant role in streams. Between August 2019 and December 2020, CRD staff collected periphyton samples, as part of a multi-season baseline monitoring project in the Leech River watershed. This project was concluded in 2020 and the results have been presented in the previous annual report, as well as in a separate technical report completed in October 2021 (Leech River Watershed – Water Quality Analysis Report). While regular periphyton sampling in the Leech watershed has been discontinued, standard water quality parameters continue to be monitored at 4 river sampling locations (see Figure 12).

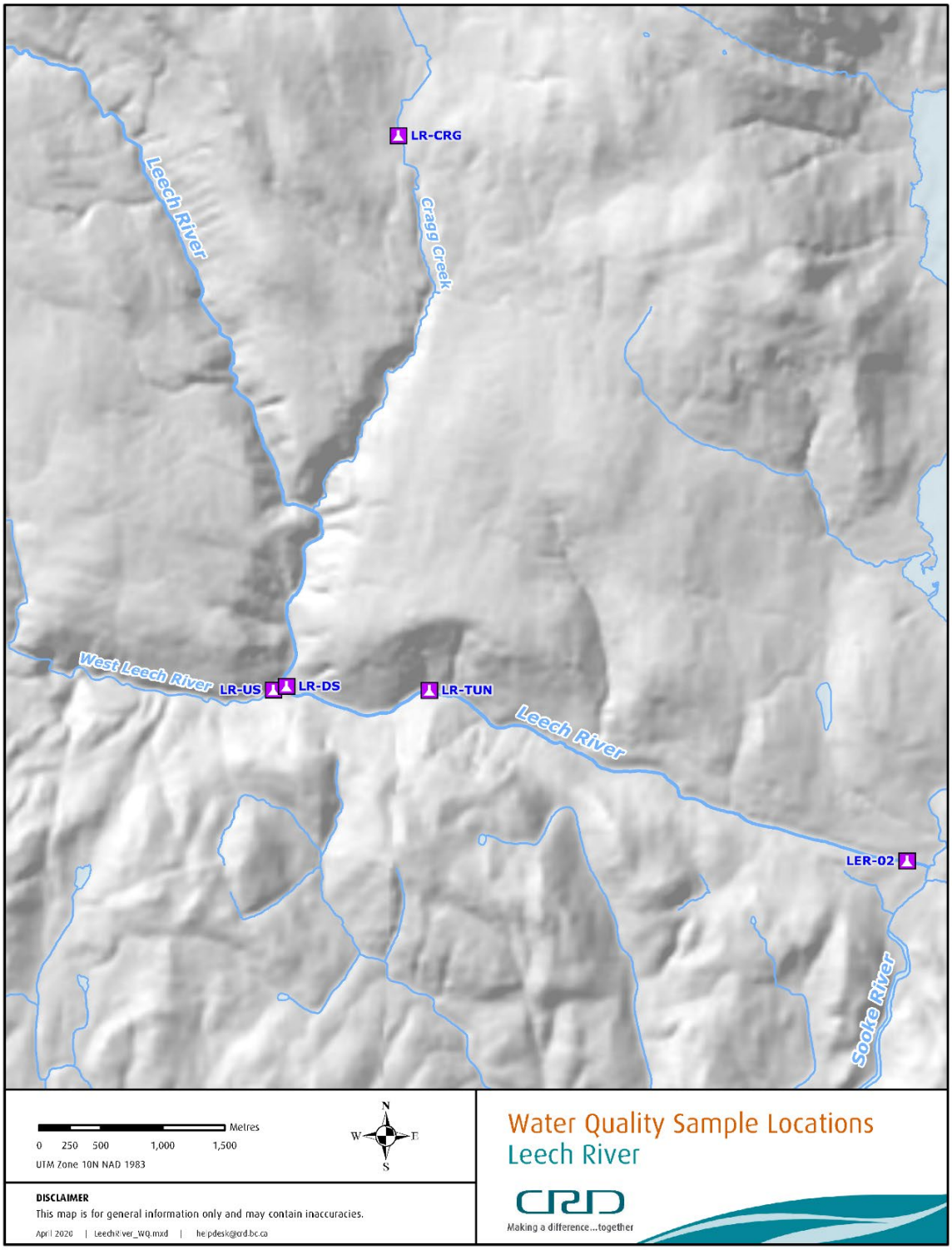


Figure 12 Leech River Water Sampling Stations

Zooplankton – *Sooke Lake Reservoir (SOL)*. Zooplankton play an important role as an intermediate trophic stage, ensuring the energy flow from primary producers to higher trophic levels, e.g., macroinvertebrates, fish and other aquatic animals in aquatic ecosystems. Previous studies have shown that fish in SOL predominantly rely on zooplankton for forage. Because of this important biological role, the CRD has included a regular zooplankton analysis to its source water monitoring program. Zooplanktonic species themselves can be herbivores, carnivores or omnivores. Studies have shown that any change of zooplankton species composition or densities or both could influence not only the trophic structure, but also physiochemical parameters in the ecosystems. There are three main zooplankton groups, e.g., Protozoa, Rotifera and Crustacea (Copepoda and Cladocera). In the ecosystems, phytoplankton are considered as a main food source for zooplankton and, therefore, phytoplankton dynamics can significantly reflect the changes of zooplankton and *vice versa*. The peak of zooplankton abundance normally occurs after the peak of phytoplankton. In general, zooplankton tend to have higher density during the spring-to-fall period than in winter.

In SOL, zooplankton mainly consist of Rotifera and Copepoda, although Cladocera taxa, such as *Daphnia* spp., can be occasionally recorded. In 2021, these three main zooplankton groups were recorded in SOL. Rotifera was the most dominant group. Abundances of Rotifera and Copepoda were consistent with the long-term trends. Cladocera zooplankton, on the other hand, was less common and only observed in some discrete samples, and was therefore excluded from the analysis.

As rotifers are considered as one of the main food sources for copepods, these two groups might show opposite abundance trends. Zooplankton dynamics in SOL are also regulated by other higher trophic organisms, such as macroinvertebrates and fish.

Zooplankton trends in Sooke Lake Reservoir are typical of ecological succession models. 2021 zooplankton activity was consistent with long-term trends (Figures 13 to 18).

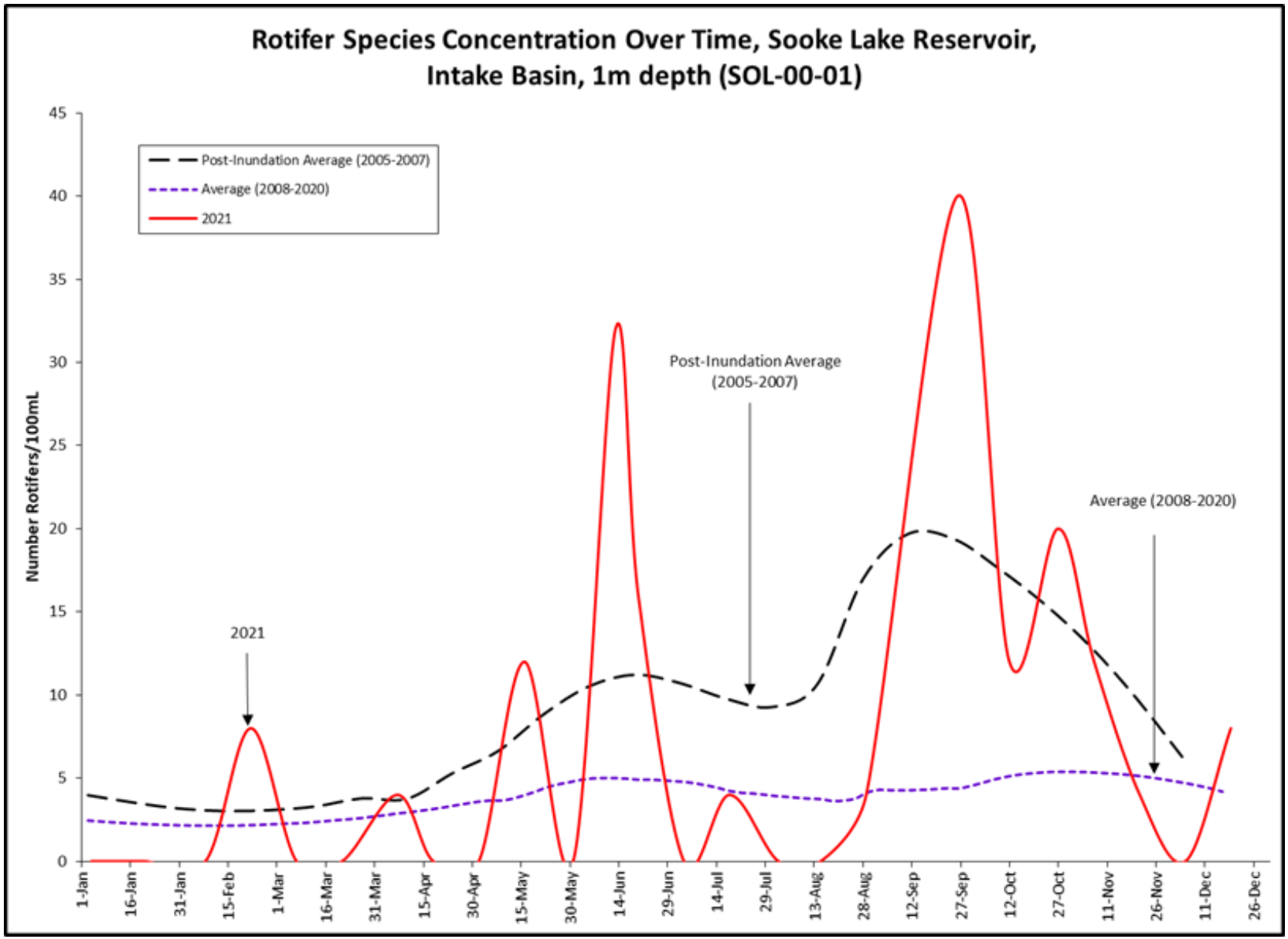


Figure 13 The Total Number of Rotifers Over Time, Sooke Lake Reservoir, Intake Basin, 1 m depth (SOL-00-01)

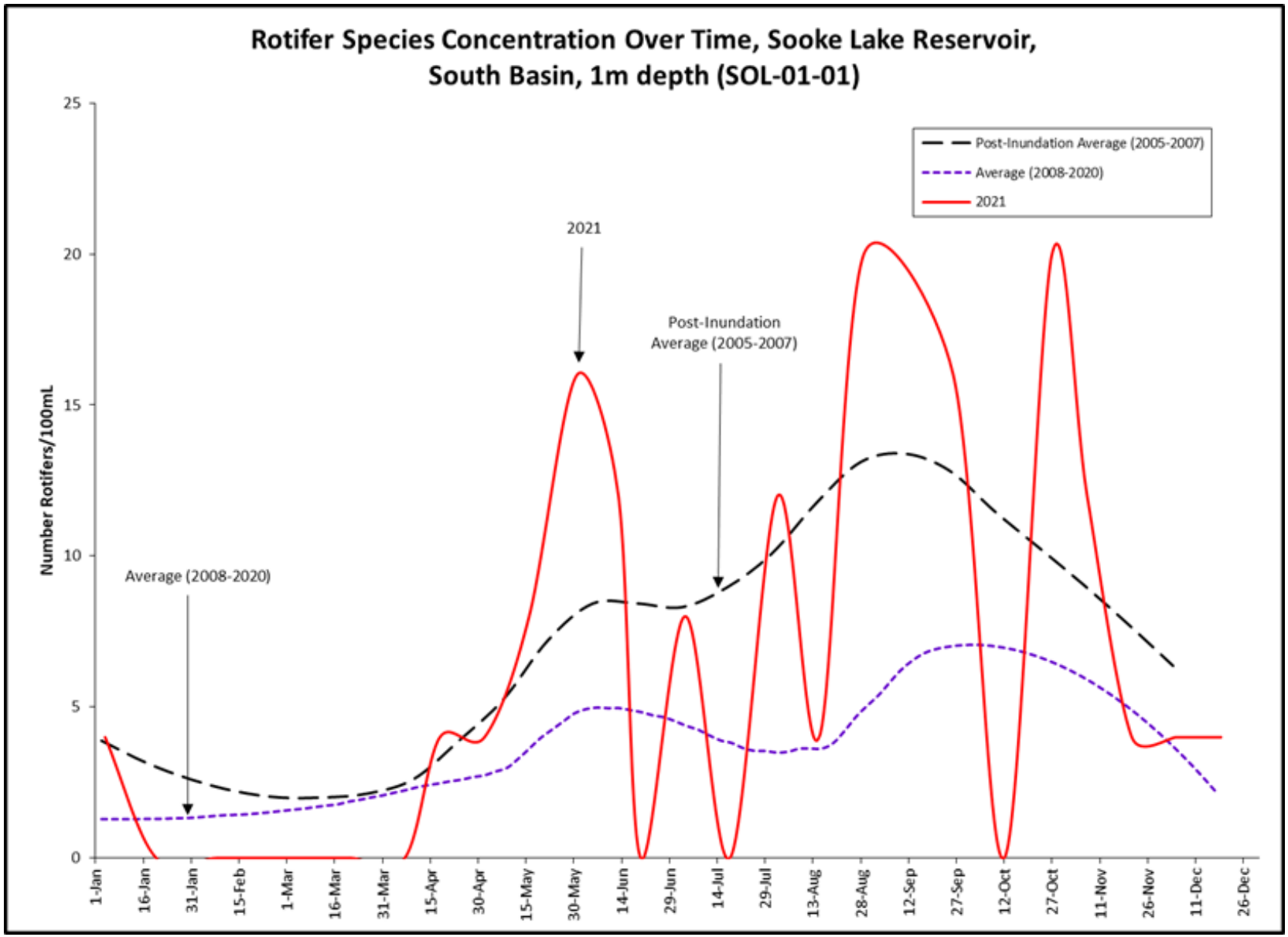


Figure 14 The Total Number of Rotifers Over Time, Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

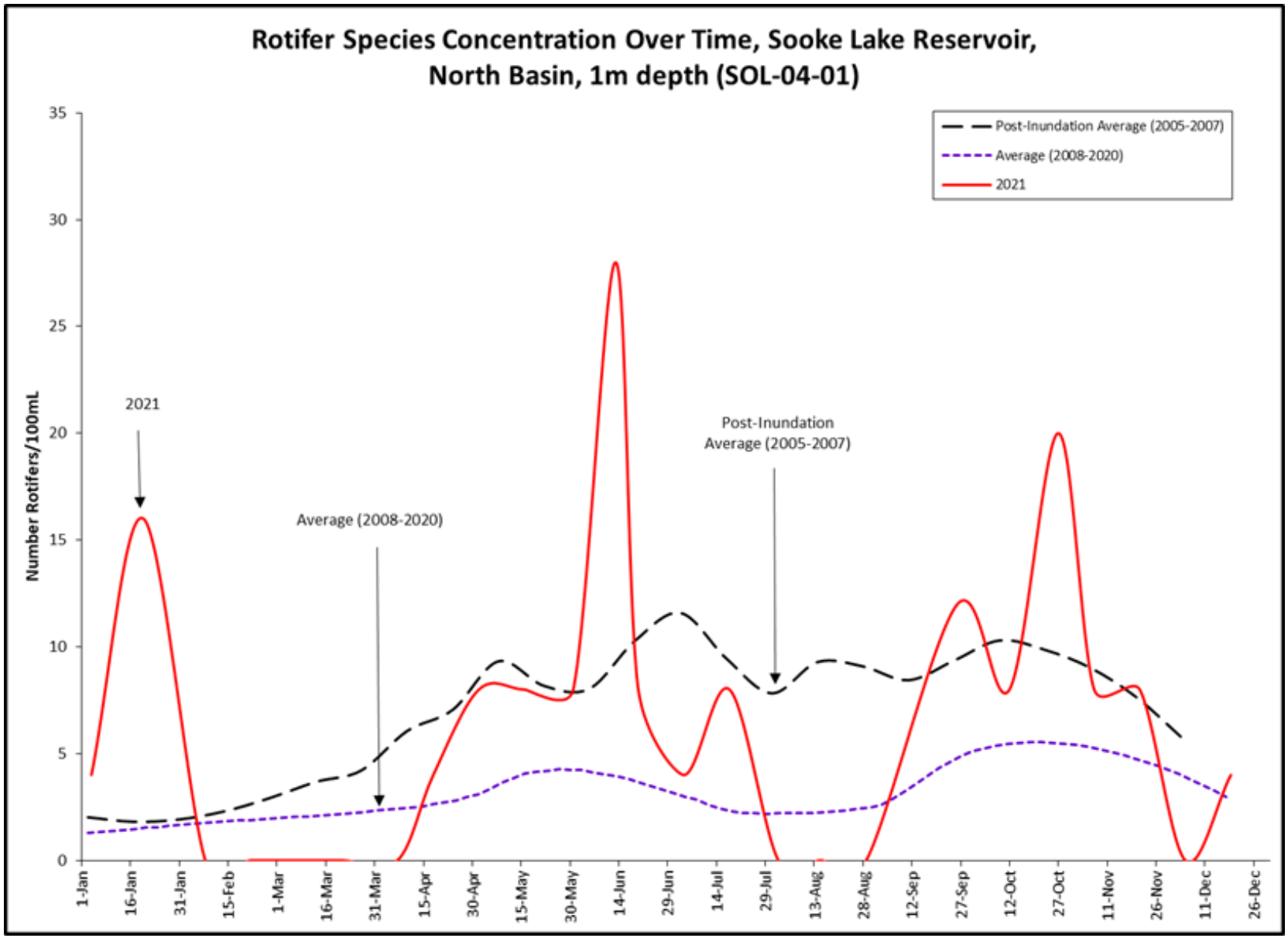


Figure 15 The Total Number of Rotifers Over Time, Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

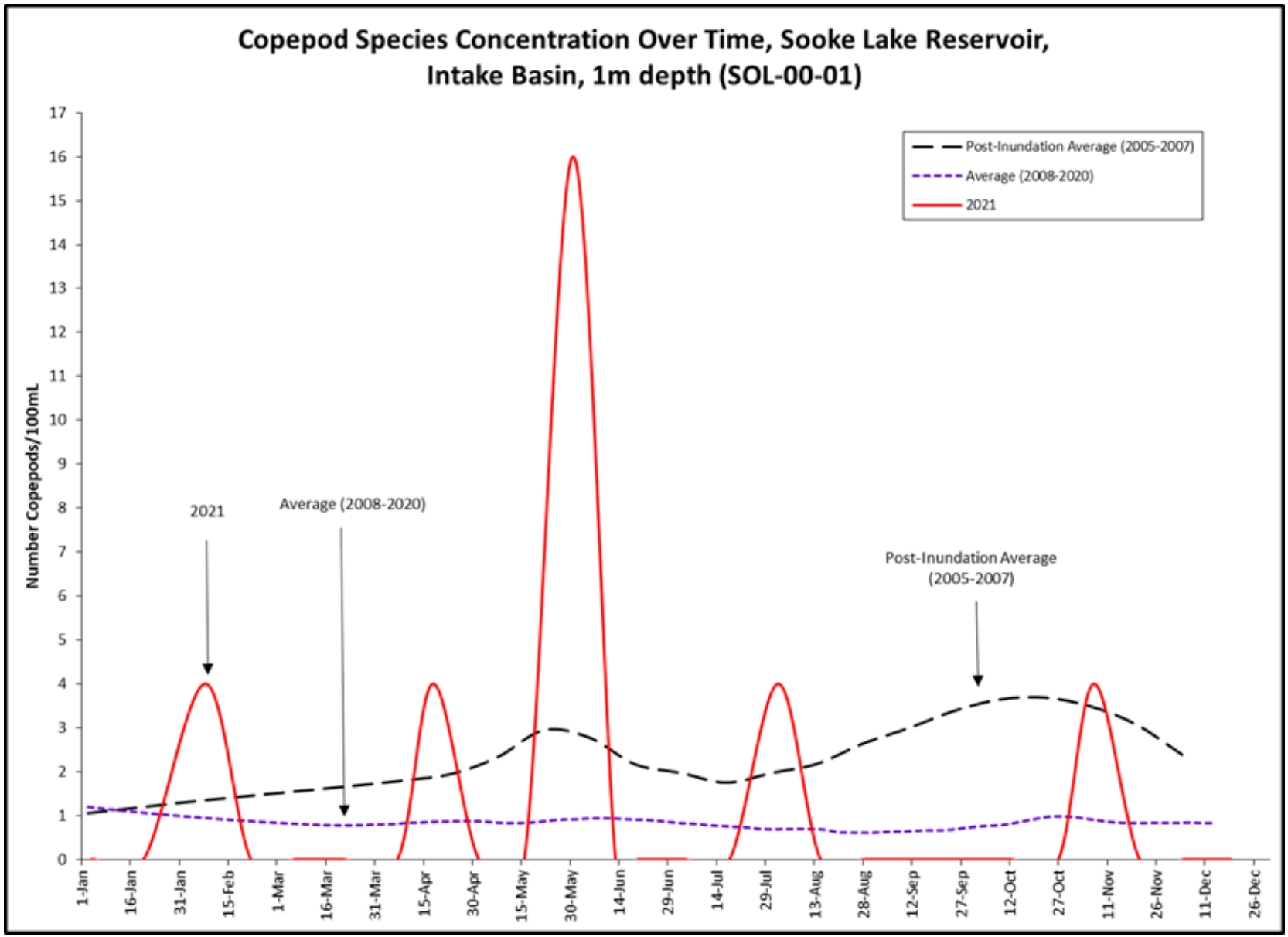


Figure 16 The Total Number of Copepods Over Time, Sooke Lake Reservoir, Intake Basin, 1 m depth (SOL-00-01)

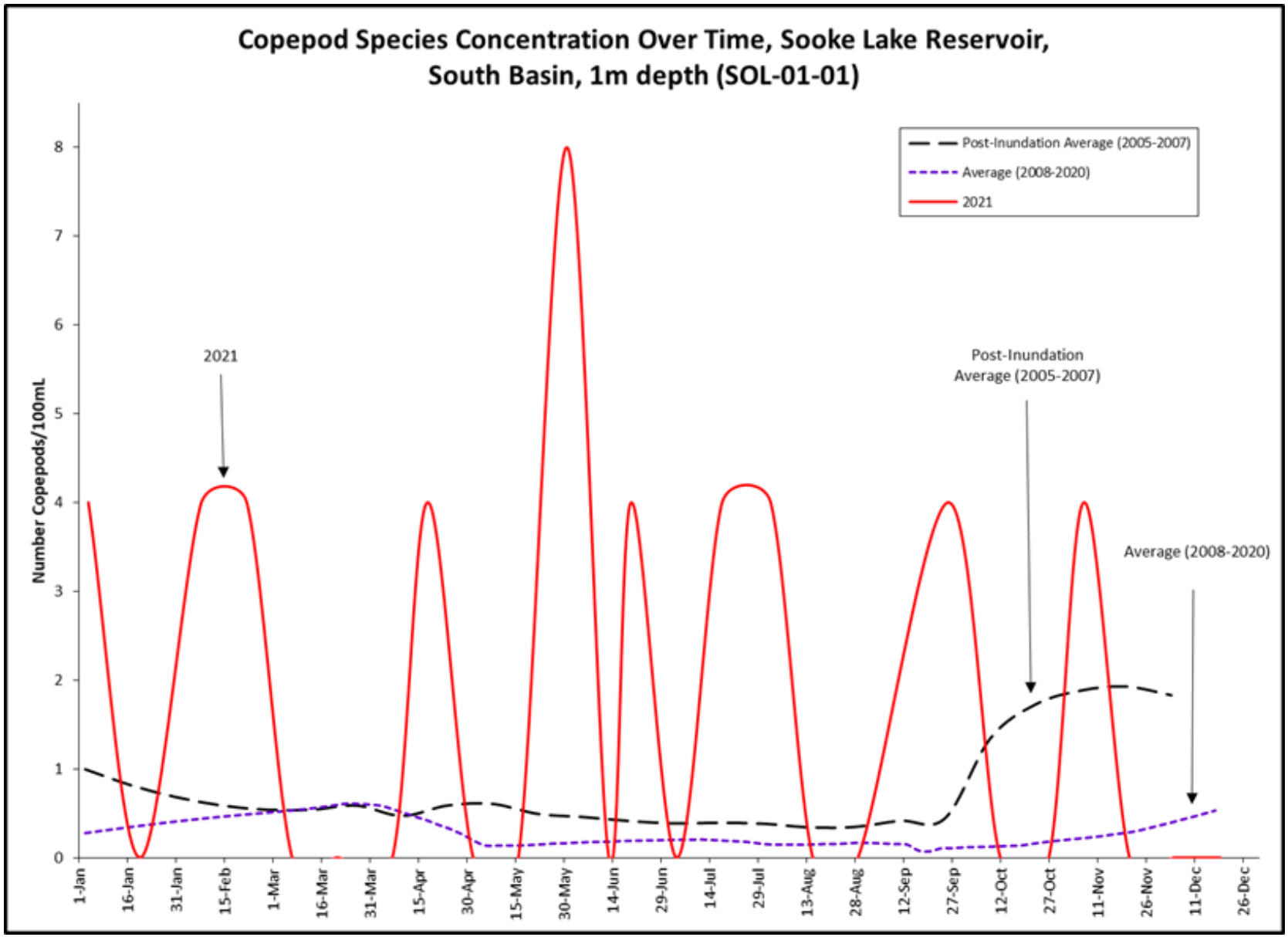


Figure 17 The Total Number of Copepods Over Time, Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

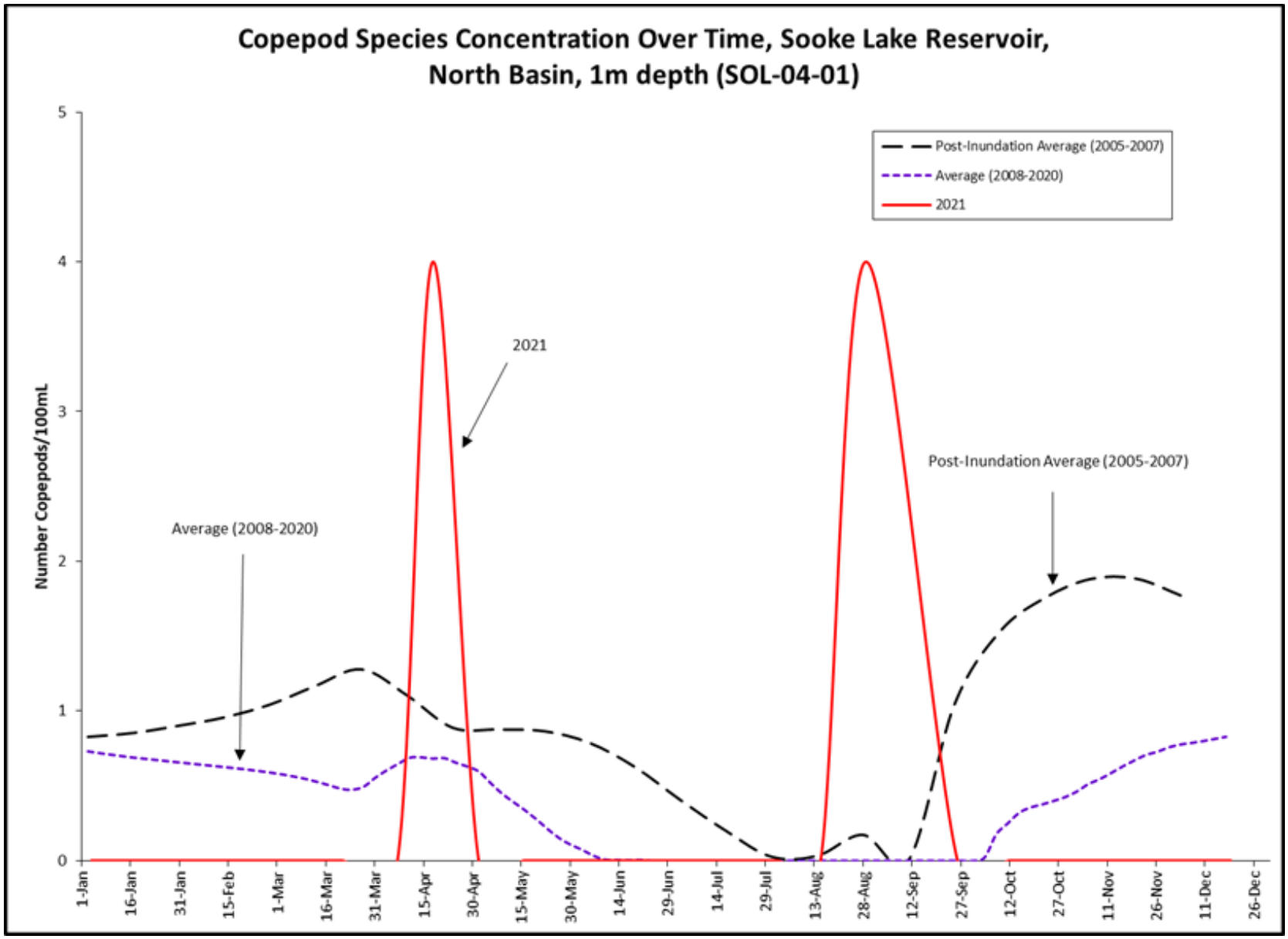


Figure 18 The Total Number of Copepods Over Time, Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

Stratification: The 2021 thermal stratification pattern in Sooke Lake Reservoir was consistent with historical trends, as stratification occurred during spring, summer and early fall months. This phenomenon happens when the water column is divided in three layers from top to bottom, including: *epilimnion* (atop, warm, circulating and fairly turbulent), *metalimnion* (characterized by a steep thermal gradient or rapid temperature change) and *hypolimnion* (bottom, denser and colder water with little temperature change). The stratification reflects the vertical heat distribution in the water column and, therefore, might have a significant association with the dynamics of plankton communities. In 2021, SOL started to stratify in mid-April. The South Basin remained stratified until late July when the hypolimnion was depleted due to the continuous deep water extraction. Compared to 2020, this hypolimnion depletion in the South Basin occurred about two weeks later which is somewhat surprising given the extreme heatwave during July of 2021. The deeper parts of the reservoir destratified naturally later in the fall – the exact timing was not captured in 2021 due to a malfunction of the CTD analyzer.

Turbidity. The turbidity is continuously measured at both water treatment plants and at the Sooke Lake intake tower, but also sampled and lab tested daily from the Goldstream Water Treatment Plant and weekly at the Sooke River Road Water Treatment Plant. Figure 19 shows that the source water turbidity was well under 1 NTU throughout 2021; however, on one day during the summer season, June 23, with peak demand and high flows due to outdoor water demand, sediments in the mains downstream of the Kapoor Tunnel were dislodged and caused short-period turbidity excursions to above 1 NTU (peak at 1.2 NTU). Similar events in the past have usually occurred on Wednesdays or Thursdays from 4 am to approximately 10 am or 11 am during the peak summer demand times, only at the Goldstream and not at the Sooke River Road Water Treatment Plant. Supervisory Control and Data Acquisition monitoring data shows that the average daily turbidity was still well below 1 NTU on this one turbidity event day in 2021. Also, the UV transmittance, a measure of how much ultraviolet light can pass through the water, was always around 90% during this event and the UV dose at least 60 mJ/cm^2, ensuring effective UV treatment. The CRD has taken measures to mitigate these turbidity events at the Goldstream Water Treatment Plant (changed watering restrictions in the region, flushed raw water mains upstream of Goldstream plant in April) and these measures were successful in greatly reducing the number of turbidity exceedances, compared to summers before 2018. A refined raw water main flushing program in the spring of 2021 has now almost eliminated these nuisance events. A second turbidity excursion on January 18 (see Figure 19) was likely due to sampling error or sample contamination as both online turbidity analyzers at the Goldstream plant could not validate the analytical sample test results.

Overall, Sooke Lake water was very clear in 2021, and turbidity of the raw water was at no time a factor of concern to the drinking water quality in the GVDWS.

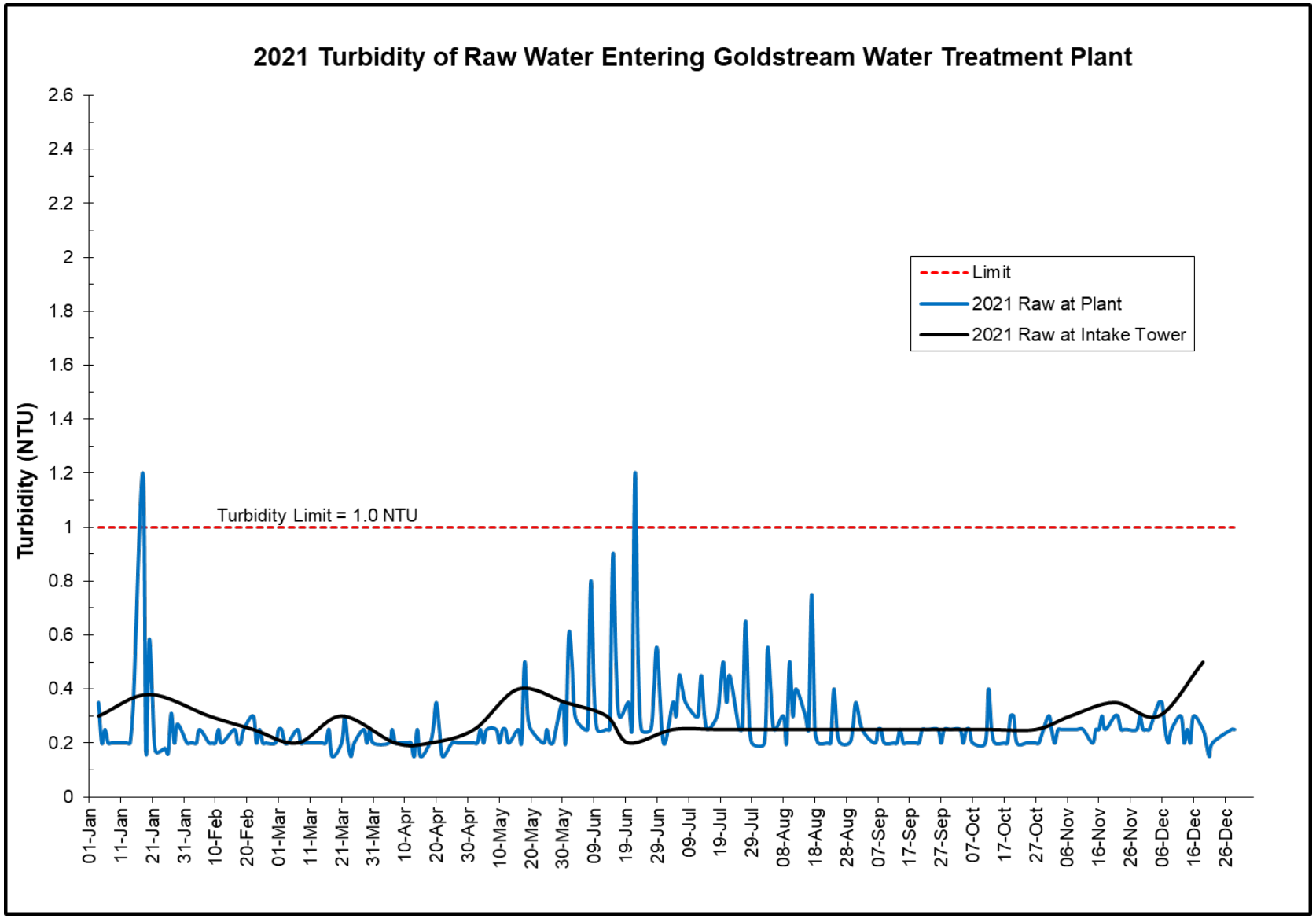


Figure 19 2021 Turbidity of Raw Water Entering Goldstream Water Treatment Plant

Raw Water Temperature. Cool water is beneficial in a distribution system because it reduces the potential for losses of chlorine residual and regrowth of bacteria. For that reason, the Canadian guidelines suggest a temperature limit of 15°C.

The temperature of the water entering the Goldstream Water Treatment Plant in 2021 was nearly following the long-term average trend line until the beginning of August. After that, for a period of six weeks, the temperature started to trend slightly above the long-term average (Figure 20). The raw water entering both treatment plants exceeded the 15°C guideline limit between mid-July and early October. Despite the extreme heatwave in late June and early July, the peak summer water temperatures were lower than in 2020 and the annual average water temperature was 0.2ºC lower than in 2020. The only noticeable effect of the early summer heatwave was a sharper rise of water temperatures in late July and reaching 19 ºC earlier than in previous years. The usage of the lowest intake gates during the summer led to the depletion of the cool water stored in the hypolimnion water column of the reservoir's south basin. The cool water stored in the hypolimnion of the much deeper north basin is currently inaccessible for CRD with the existing infrastructure.

High raw water temperatures during summer are not a new problem for the CRD. Before the expansion of Sooke Lake Reservoir in 2004, the water temperature entering the plant reached 15°C as early as mid-June. Warmer and longer summers, as a result of climate change, will likely exacerbate this problem in the future.

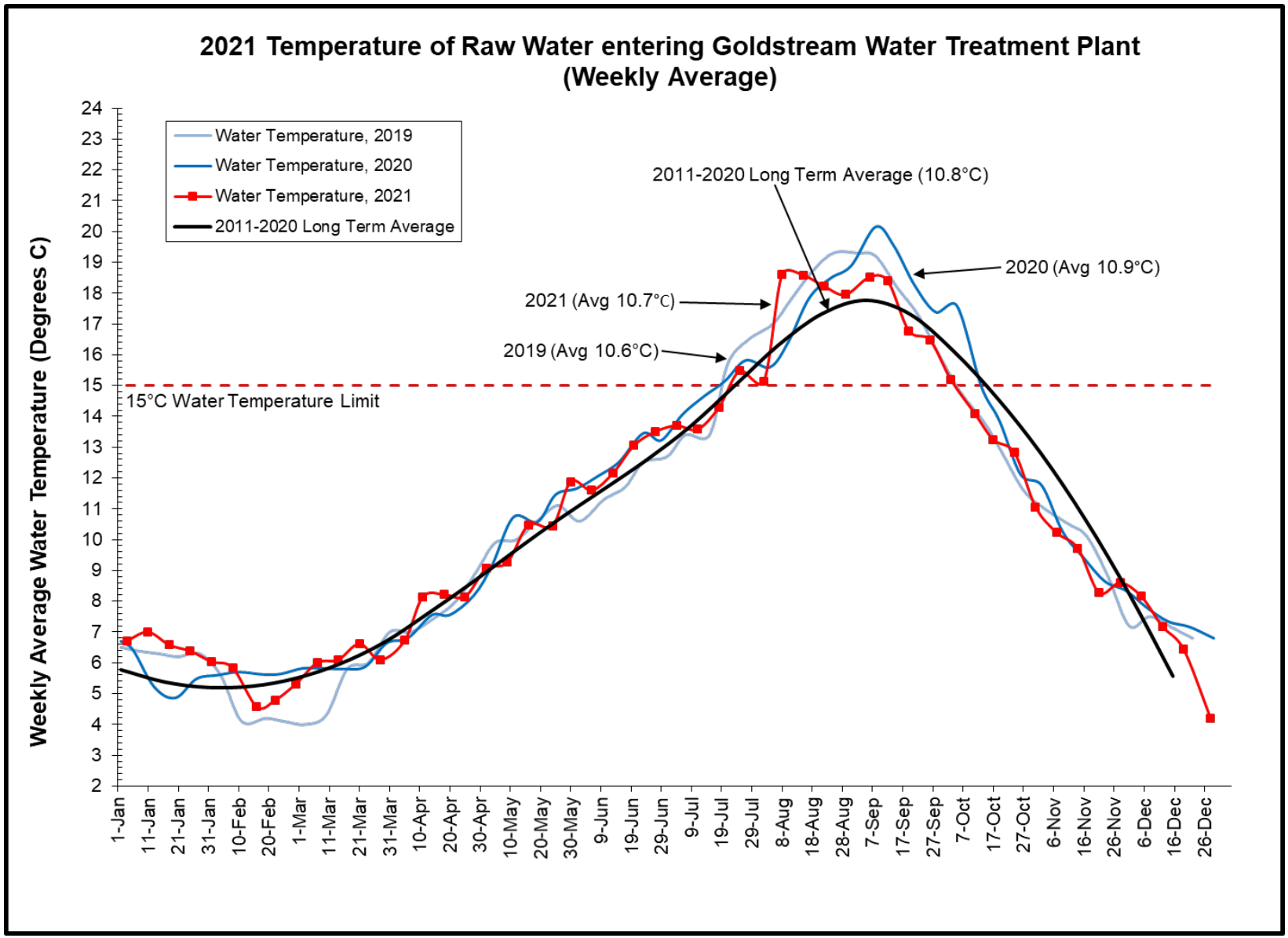


Figure 20 2021 Temperature of Raw Water Entering Goldstream Water Treatment Plant (Weekly Average)

Physical/Chemical Parameters. The raw water entering the Goldstream Water Treatment Plant had the following physical and chemical characteristics:

- Median pH: 7.3
- Median CaCO3 Hardness: 16.70 mg/L
- Median Alkalinity: 14.70 mg/L
- Median Colour: 6.0 TCU
- Median Total Organic Carbon: 1.75 mg/L
- Median Conductivity (25ºC): 41.10 µS/cm

The values of the parameters above are consistent with those of previous years.

Inorganics/Metals. Table 1 in Appendix A lists all the inorganic and metal parameters tested in the source water in 2021. No unusual or concerning levels or trends have been detected.

Organics/Radionuclides. Table 1 in Appendix A lists all the organic radiological parameters tested in the source water in 2021. Most of them were not detected or were in insignificant concentrations. These results confirm the high level of protection from any anthropogenic impacts on the supply watershed.

Nutrients. Figures 21 to 24 show the total nitrogen and the total phosphorus concentrations in both the south and north basins at 1 m depths in Sooke Lake Reservoir. Total phosphorus concentrations at both stations trended below the long-term average. In both lake basins, the total phosphorus concentration dropped at times to levels below the detection limit of 1µg/L, which indicates that biological activity in the lake used up all available phosphorus nutrients in the lake. The lack of phosphorus between April and the end of July limited the biological productivity during the summer which resulted in a favorably lower algal activity. Nitrogen concentrations have been slightly higher than the long term average trend. The majority of this nitrogen was present in the form of organic nitrogen and likely remained available for biological uptake due to the growth limitation dictated by the lack of phosphorus. This confirms previous conclusions that Sooke Lake Reservoir is extremely phosphorus limited.

In general, the nutrient concentrations confirm the ultra-oligotrophic status (extremely unproductive, phosphorus limited) of Sooke Lake Reservoir, which is positive for a drinking water supply source.

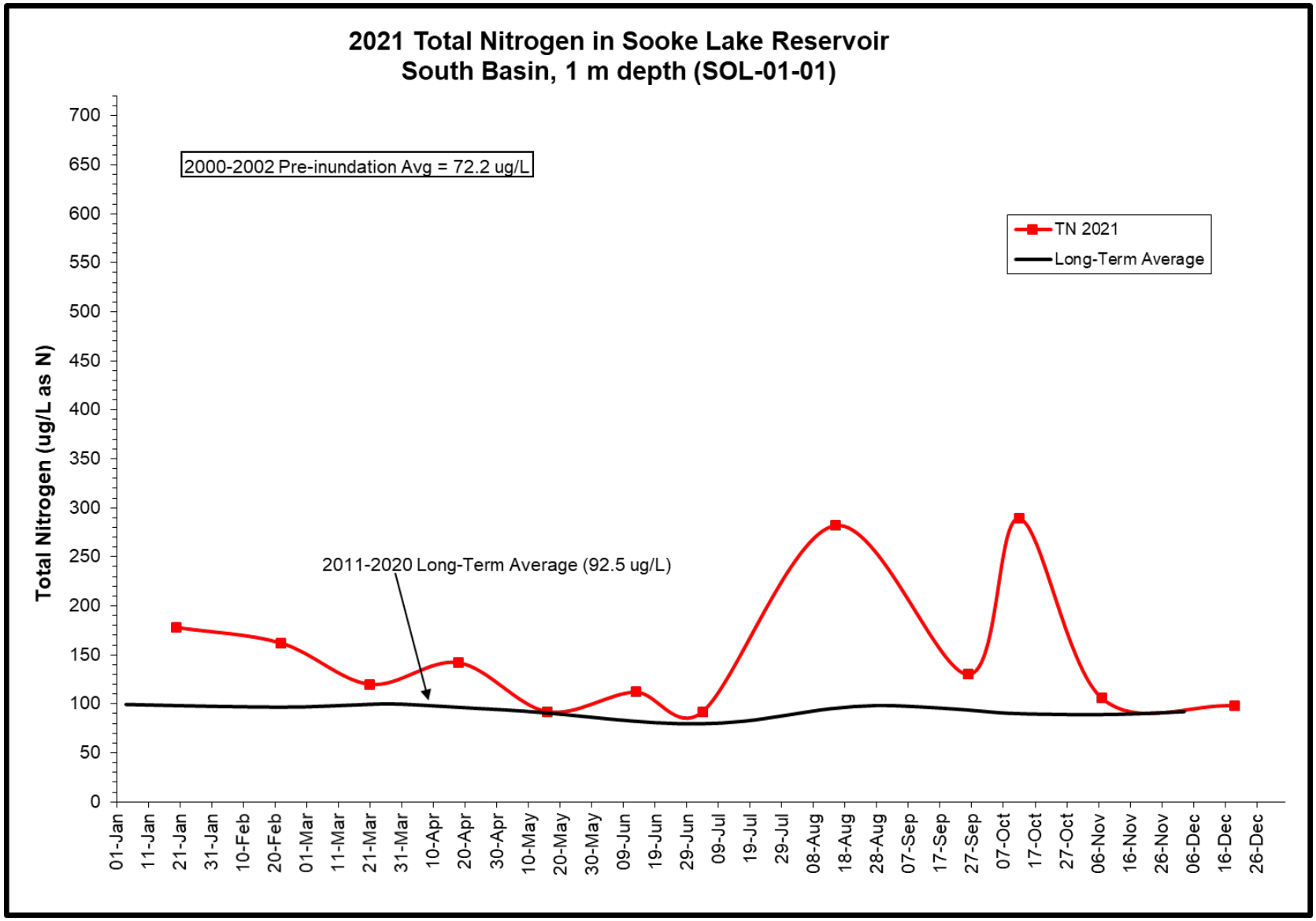


Figure 21 Total Nitrogen in Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

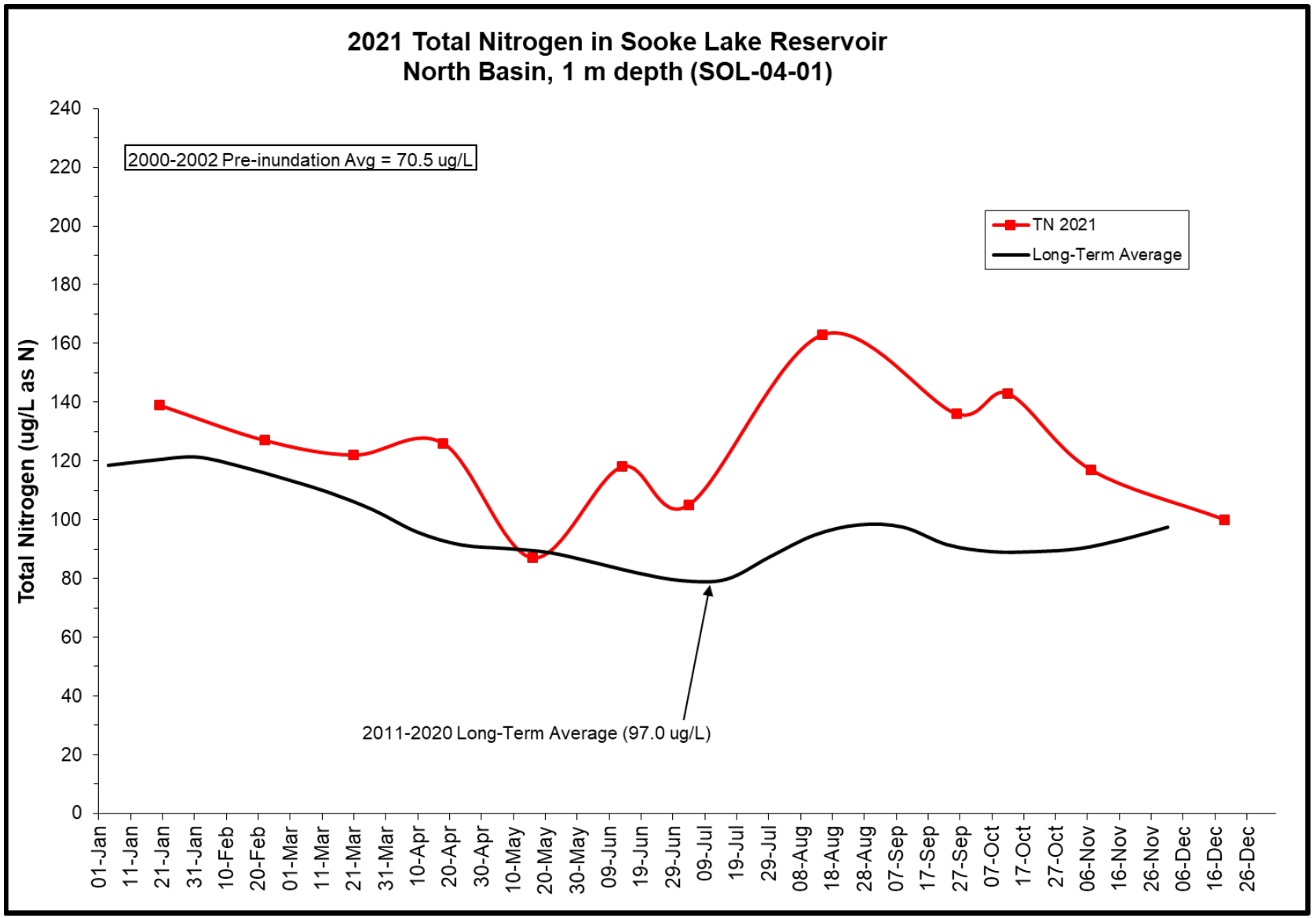


Figure 22 Total Nitrogen in Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

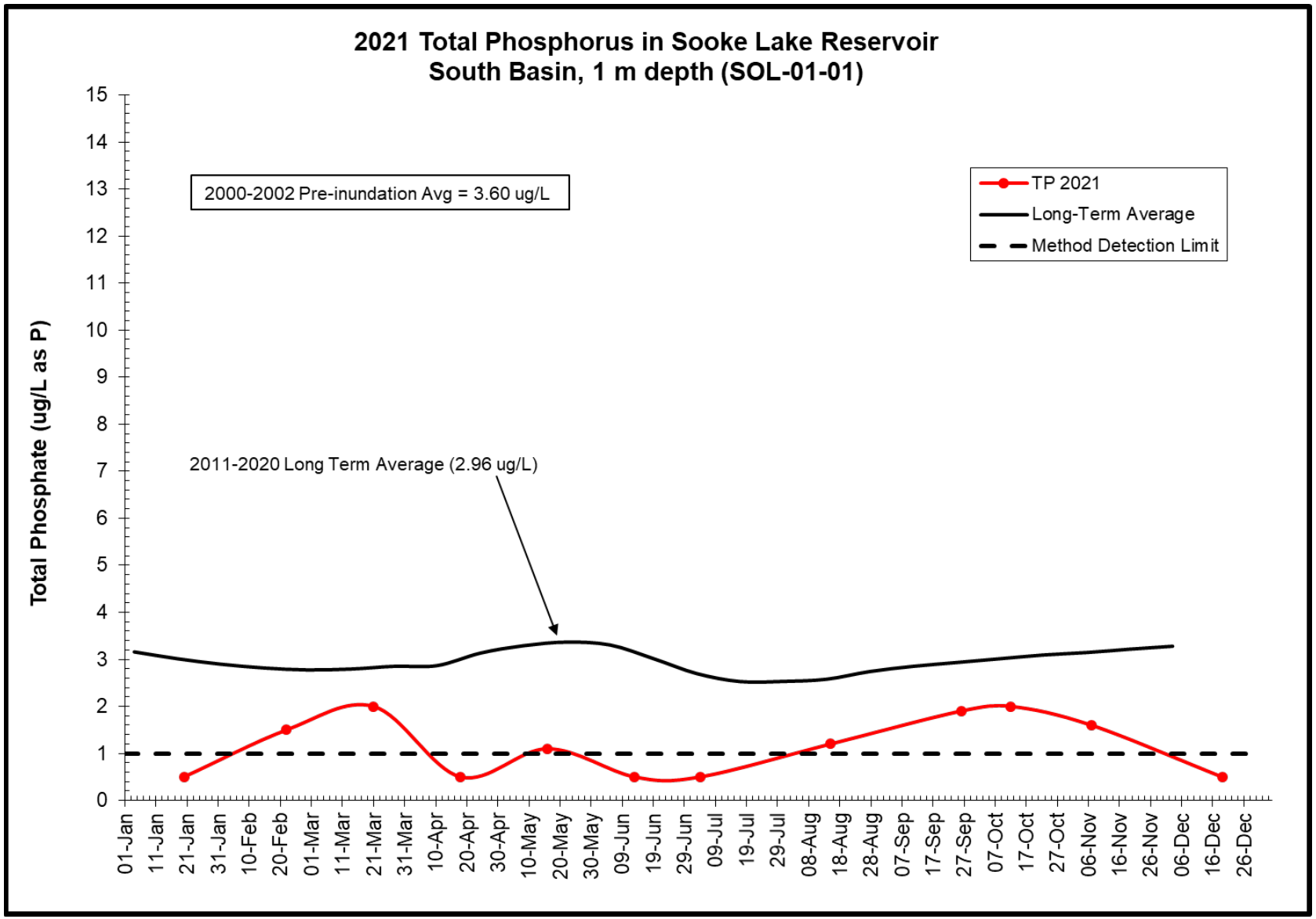


Figure 23 Total Phosphorus in Sooke Lake Reservoir, South Basin, 1 m depth (SOL-01-01)

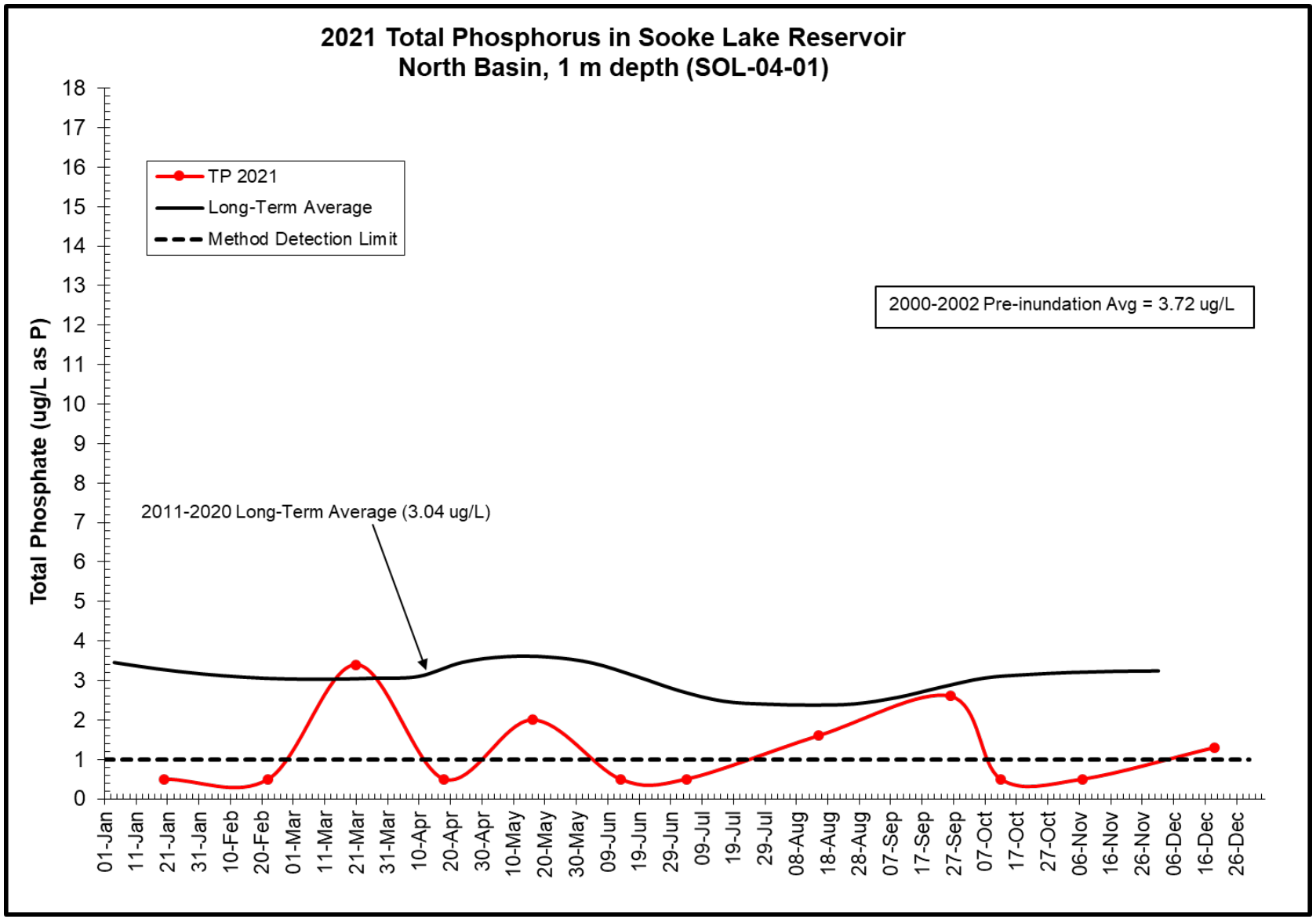


Figure 24 Total Phosphorus in Sooke Lake Reservoir, North Basin, 1 m depth (SOL-04-01)

7.2 Treatment Monitoring Results

The following sections summarize the water quality data collected and analyzed to monitor and verify the effectiveness of the disinfection process at both CRD disinfection facilities in the GVDWS.

7.2.1 Goldstream Water Treatment Plant

Bacteriological Results after UV Treatment. Figure 25 shows the results from 244 samples collected and analyzed just downstream of the UV reactors. The results indicate that the UV treatment is capable of greatly reducing the *E. coli* and total coliform concentrations. On very few occasions, in all of 2021, and only in very low concentrations, have total coliform bacteria been found downstream of the UV treatment. Only on November 17 was the post UV total coliform concentrations unusually high at 33 CFU/100mL despite a moderately low raw water total coliform concentration of 43 CFU/100mL. There are no indications that the UV treatment was malfunctioning that day. The post chlorination total coliform concentration was zero that day, which confirmed that the treated water was safe for consumption. It does demonstrate the importance of the multi-barrier concept, however, which eliminates the reliance on only one module to achieve compliance.

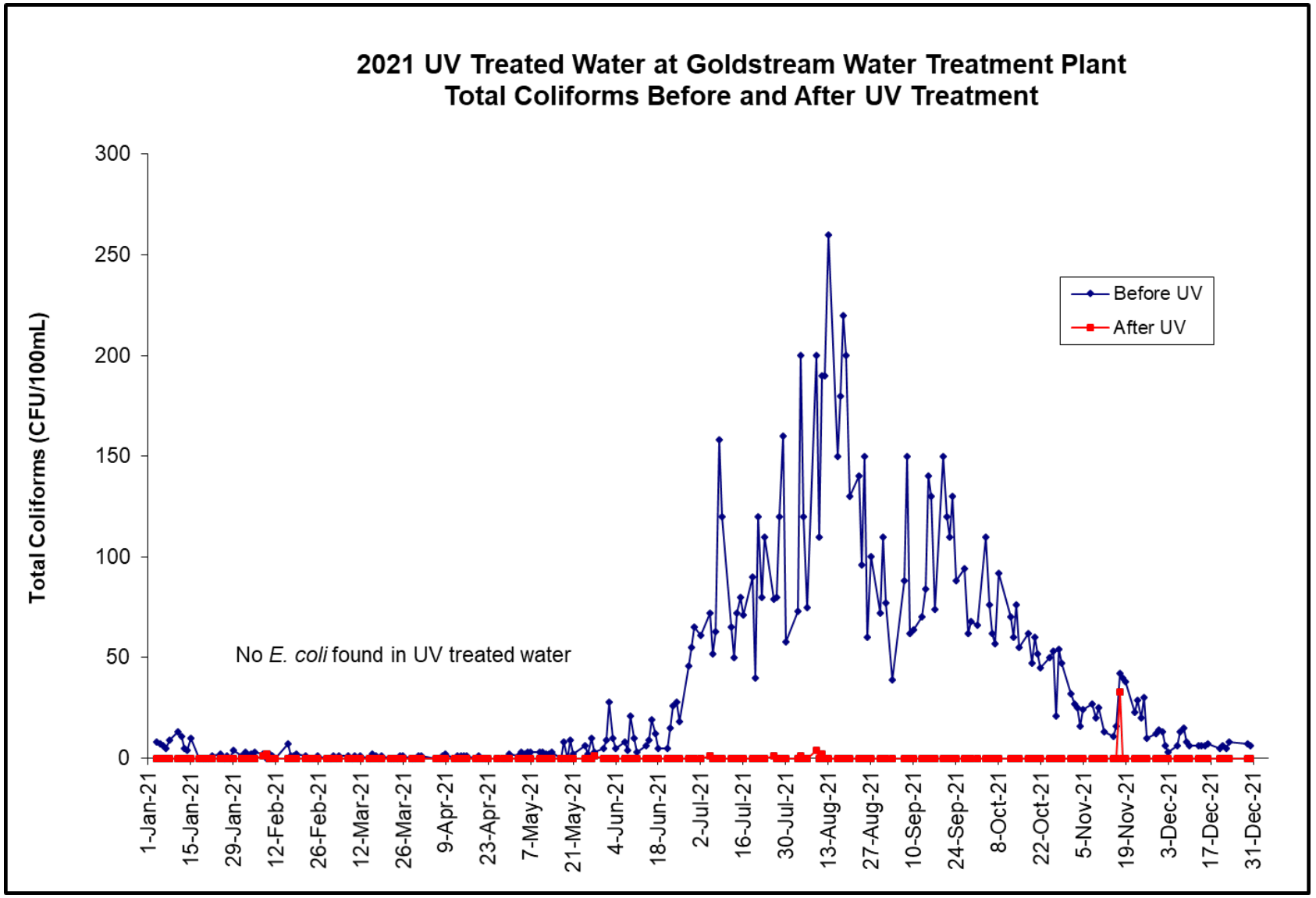


Figure 25 2021 UV Treated Water at Goldstream Water Treatment Plant Total Coliforms Before and After UV Treatment

Treated Water at Both First Customer Sampling Locations. The data collected from the two treated water sampling locations near the first customers below the Goldstream Water Treatment Plant (one at Main #4 and one at Main #5) indicated that the bacteriological quality of the disinfected water was good in all months of 2021 (Figure 26 and Appendix A, Table 2). In total, 245 samples were collected from the Main #4 first customer location and 224 samples from the Main #5 first customer location, for a combined total of 469 samples.

There were only four total coliform-positive samples from both sampling stations throughout the year. Three positive samples registered at the Main #5 first customer sampling station and one at the Main #4 station. All were very low total coliform concentrations. For all four positive results, no subsequent resample was positive for total coliform bacteria.

The few total coliform-positive results remained well under 10% of the monthly totals at both first customer locations. None of the positive results was in exceedance of the 10 CFU/100 mL total coliform limit, as per *Drinking Water Protection Regulation*. The negative resample results ruled out a breach in the system and any real contamination of the treated water. While the regulations require 90% of all monthly samples in the entire system to be free of total coliform bacteria, the CRD monitors the first customer locations based on even more stringent criteria, where water quality is gauged on the bacteriological results of these two first customer locations only.

The total chlorine residual ranged from 0.8 - 2.17 mg/L (Appendix A, Table 2) with a median value of 1.85 mg/L (Figure 26).

The treated water leaving the Goldstream Water Treatment Plant had the following physical and chemical characteristics:

- Median pH: 7.5
- Median Alkalinity: 16.70 mg/L
- Median Colour: 3.0 TCU
- Median Total Organic Carbon: 1.65 mg/L
- Median Conductivity (25ºC): 50.20 µS/cm
- Median turbidity: 0.2 NTU

The values of the parameters above are consistent with those of previous years.

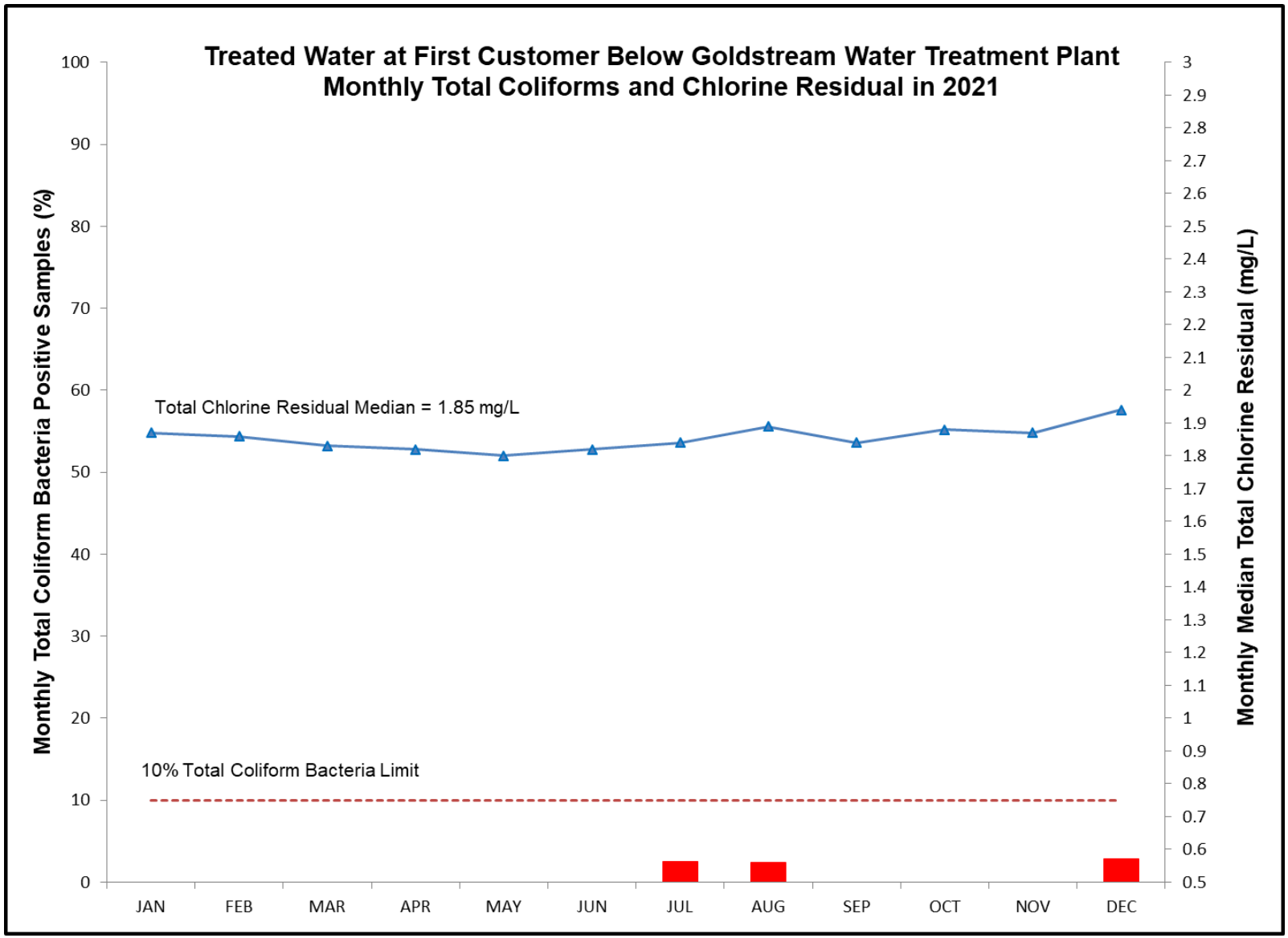


Figure 26 Treated Water at First Customer Locations below Goldstream Water Treatment Plant; Monthly Total Coliforms and Chlorine Residual in 2021

7.2.2 Sooke River Road Water Treatment Plant

Bacteriological Results after UV Treatment. Figure 27 shows the results from 40 samples collected and analyzed just downstream of the UV reactors. The results indicate that the UV treatment is capable of greatly reducing the *E. coli* and total coliform concentrations. No total coliform bacteria were detected downstream of the UV treatment. This is evidence of a very effective UV disinfection stage at this plant.

Turbidity. The Sooke River Road Water Treatment Plant experienced one adverse turbidity event in 2021.

March 25, 2021: A sudden turbidity spike at the plant that lasted about 42 minutes (length of time with turbidity > 1 NTU). The peak turbidity reached 6.6 NTU. The cause of this event is unknown. It is assumed that the raw main flushing activities on Main #4 and #5 that occurred around that time, changed the flow patterns in the headwork pipes sufficiently to dislodge some pipe sediments or debris in Main #15.

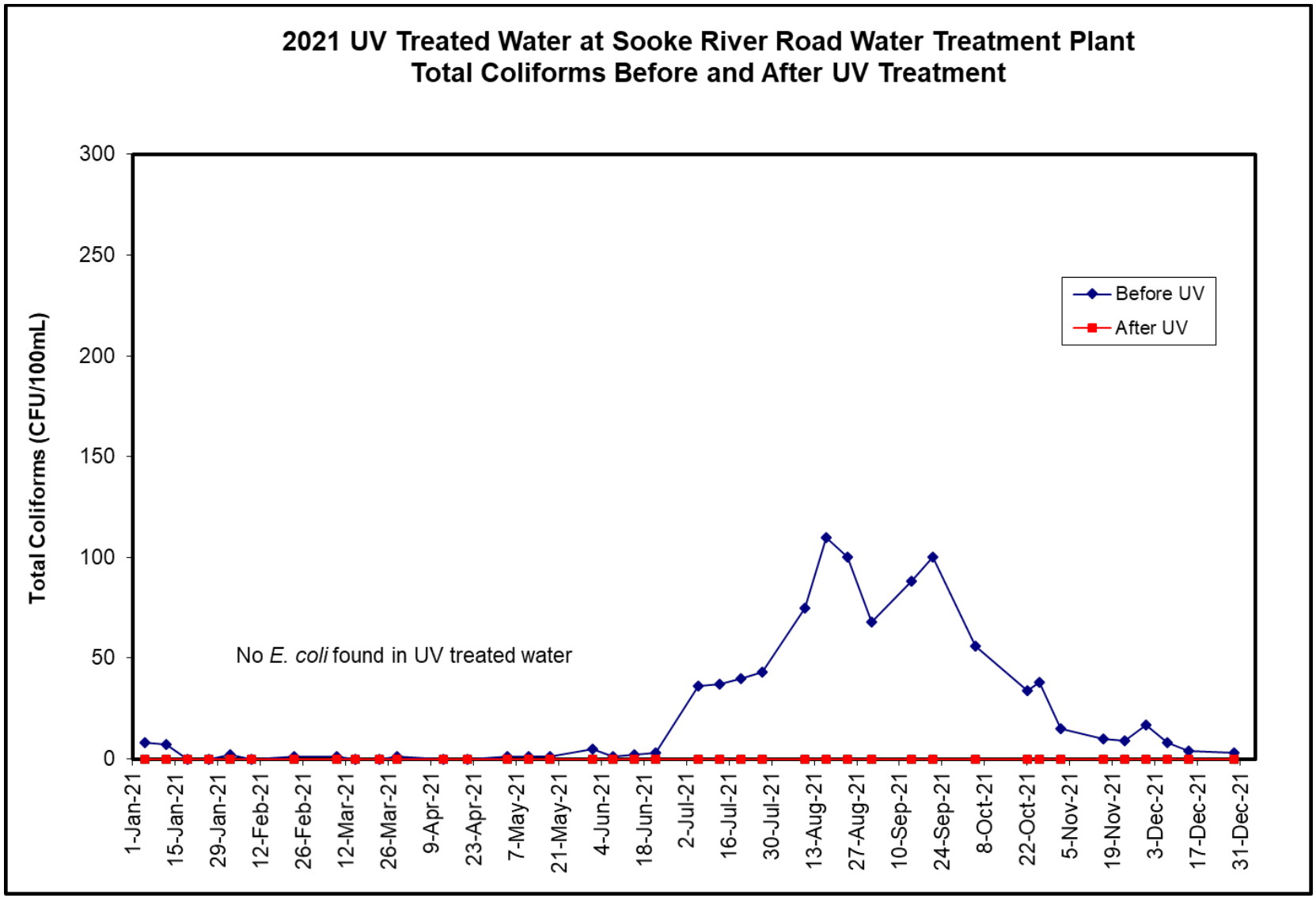


Figure 27 2021 UV Treated Water at Sooke River Road Water Treatment Plant Total Coliforms Before and After UV Treatment

Treated Water at First Customer. The data collected from the treated water sampling location near the first customer below the Sooke River Road Water Treatment Plant indicated that the bacteriological quality of the disinfected water was good in all months of 2021 (Figure 28). No total coliform bacteria were detected in all 40 samples from this sampling station in 2021.

The total chlorine residual ranged from 1.33 - 2.4 mg/L with a median value of 1.89 mg/L.

The treated water leaving the Sooke River Road Water Treatment Plant had the following physical and chemical characteristics:

- Median pH: 7.6
- Median Alkalinity: 16.20 mg/L
- Median Colour: ND
- Median Conductivity (25ºC): 55.80 µS/cm
- Median turbidity: 0.2 NTU

The values of the parameters above are consistent with those of previous years.

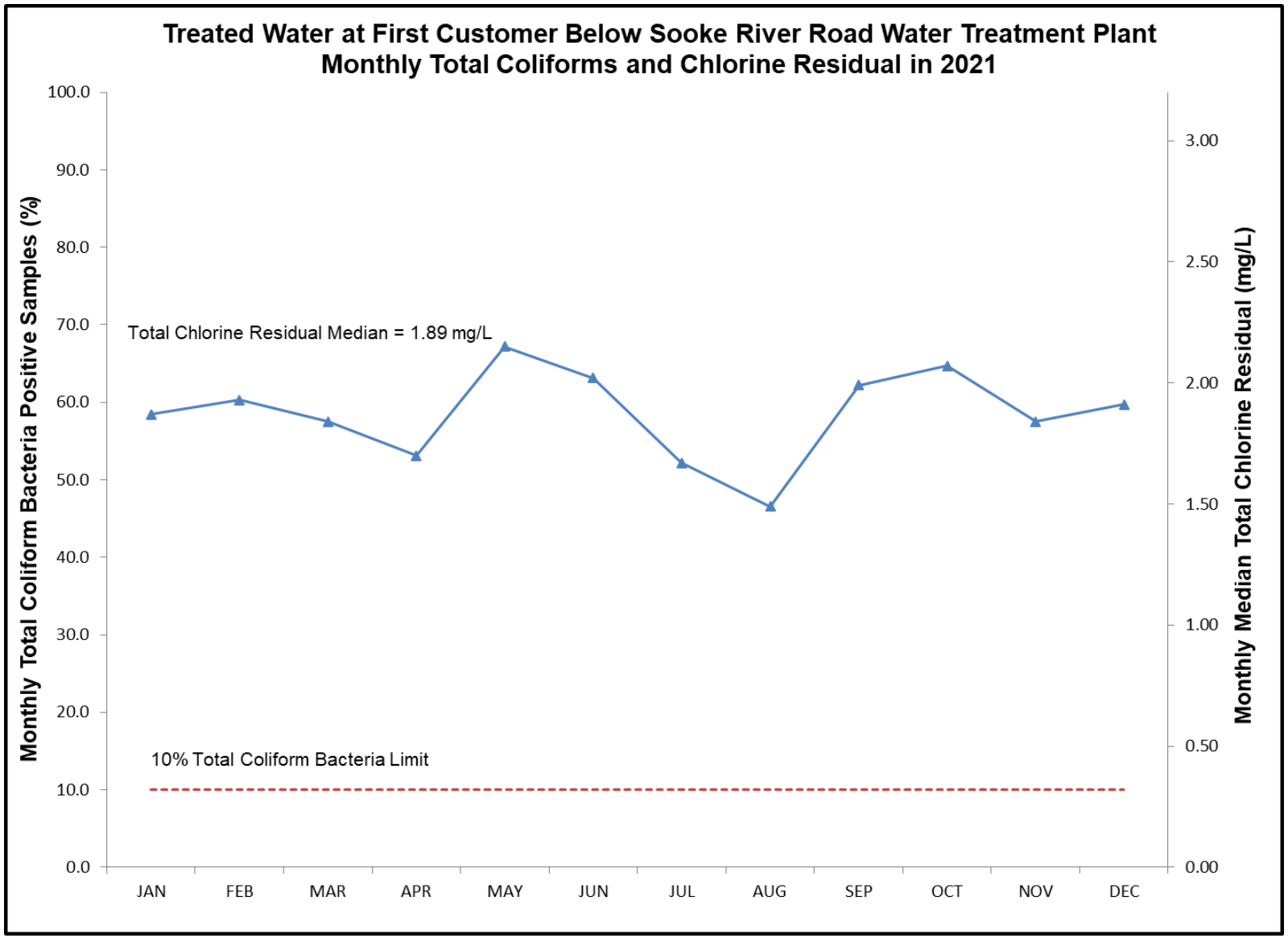


Figure 28 Treated Water at First Customer below Sooke Rover Road Water Treatment Plant, Monthly Total Coliforms and Chlorine Residual in 2021

7.3 CRD Transmission System Results

The following sections summarize the water quality data collected and analyzed for monitoring and verifying the safety of the drinking water conveyed through the transmission system before it reaches the municipal distribution systems. Bacteriological results of the samples collected in the transmission system are considered for compliance purposes. There is no applicable requirement for monthly sample numbers for a transmission system. The number of samples collected monthly from the CRD Transmission System infrastructure was based on a water quality risk assessment, and based on professional judgement.

7.3.1 Transmission Mains

The CRD transmission mains were sampled in 20 different sampling locations. The sampling locations for CRD transmission mains also include the Main #4 and Main #5 first customer sampling stations. In 2021, a total of 920 bacteriological and 915 water chemistry samples were collected and analyzed.

Bacteriological Results. Figure 29 and Table 1 show the results from 920 CRD transmission main samples collected and analyzed in 2021. The results (no *E. coli* and few total coliform bacteria detected) indicate that the water delivered through the transmission mains was bacteriologically safe. This system complied with the 10% total coliform-positive limit for all months. No sample exceeded the 10 CFU/100 mL total coliform concentration threshold.

Chlorine Residual. Table 1 and Figure 29 demonstrate that the annual median total chlorine concentration in the transmission mains was 1.62 mg/L and, therefore, provides for adequate secondary disinfection within the transmission system and within most areas of the downstream municipal distribution systems. The lower chlorine levels at the beginning of 2021 were due to the switch to free chlorine necessitated by a malfunctioning of the ammonia dosing system. The ammonia system came online again in mid-January and normal monochloramine residuals were established subsequently.

Water Temperature. The annual median water temperature in the transmission mains was 10.2°C, with monthly medians ranging between 5.6°C (February) and 18.4°C (August) (Table 1). Despite the extreme early summer heatwave, these temperatures are back in line with pre-2021 water temperatures in the transmission mains.

Table 1 2021 Bacteriological Quality of the CRD Transmission Mains

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as	Median ° C
JAN	74	0	0.0	0	0	0	37	0	1.22	7.0
FEB	75	0	0.0	0	0	0	40	0	1.66	5.6
MAR	86	0	0.0	0	0	0	46	0	1.58	6.3
APR	71	0	0.0	0	0	0	39	0	1.62	8.0
MAY	80	0	0.0	0	0	0	41	0	1.58	9.8
JUN	87	0	0.0	0	0	0	45	0	1.65	12.8
JUL	75	1	1.3	0	0	0	42	0	1.67	14.7
AUG	81	2	2.5	0	0	0	43	0	1.68	18.4
SEP	71	0	0.0	0	0	0	37	0	1.63	17.9
OCT	73	0	0.0	0	0	0	41	0	1.63	14.0
NOV	81	0	0.0	0	0	0	42	0	1.60	10.3
DEC	66	1	1.5	0	0	0	36	0	1.69	7.8
Total:	920	4	0.4	0	0	0	489	0	1.62	10.2

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. The CRD collected six sets of samples for a disinfection byproduct analysis from a transmission main at Mills Road. The annual average total trihalomethane (TTHM) and annual average total haloacetic acid (HAA) concentrations were 27.0 and 26.4 µg/L, respectively, well below the MAC (TTHM = 100 and HAA = 80 µg/L) stipulated in the Canadian guidelines. These annual averages are approximately 10 µg/L higher than historically due to much higher concentrations recorded during the free chlorine period in January 2021 when the ammonia system was not functioning. The individual TTHM and HAA concentrations recorded on January 4 at the Mills Road sampling station were 58 µg/L and 69 µg/L respectively. These values demonstrate the importance of using chloramines for secondary disinfection for the purpose of disinfection byproduct management. This sampling location was also sampled and tested for the disinfection byproduct Nitrosodimethylamine (NDMA), a newly-listed parameter that is classified as "probably carcinogenic" by Health Canada and associated with disinfection using chloramines. The Canadian guidelines MAC for NDMA is 40 ng/L. All NDMA results at this location were below the detection limit of 1.9 ng/L.

This was the only transmission main where disinfection byproduct samples were collected (bi-monthly). The CRD disinfection byproduct monitoring focuses on locations with higher potential for disinfection byproduct formation, such as system extremities with high water age or areas downstream of re-chlorination stations (free chlorine).

Metals. The CRD Water Quality Monitoring Program for the CRD Transmission System included regular metals tests in three strategic locations, where the water transitions from the CRD Transmission System to a downstream distribution system. In particular, the CRD pays attention to metals commonly found in drinking water, such as iron, manganese, copper and lead. All metal results were below the Canadian guideline limits including at the sampling station Lansdowne/Foul Bay where in previous years elevated lead concentrations had been detected due to old sampling infrastructure. In December of 2020, these old sampling lines had been replaced.

In 2019, CRD, in concert with Saanich, Victoria/Esquimalt and Oak Bay, started the Greater Victoria pH & Corrosion Study to investigate water properties that may contribute to metal corrosion, and in particular, to lead leaching into the drinking water. The study examines the water inside the public and also the private drinking water piping systems. As part of this study, samples from a multitude of sampling locations were analyzed for lead and copper. In 2021, the project scope was expanded to include region-wide sampling at customers' taps as per BC Ministry of Health guidelines. The project was completed in the fall of 2021. The study found that metal corrosion and lead leaching in the public piping systems as well as in the vast majority of private plumbing systems is not an issue in the Greater Victoria Drinking Water System.

Physical/Chemical Parameters. The drinking water in the regional transmission mains had the following physical and chemical characteristics:

- Median pH: 7.5
- Median CaCO3 Hardness: 16.8 mg/L
- Median Alkalinity: 17.90 mg/L
- Median Colour: 3.00 TCU
- Median Turbidity: 0.20 NTU
- Median Conductivity (25ºC): 50.20 µS/cm

Compliance Status. The transmission mains of the CRD Transmission System were in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation.*

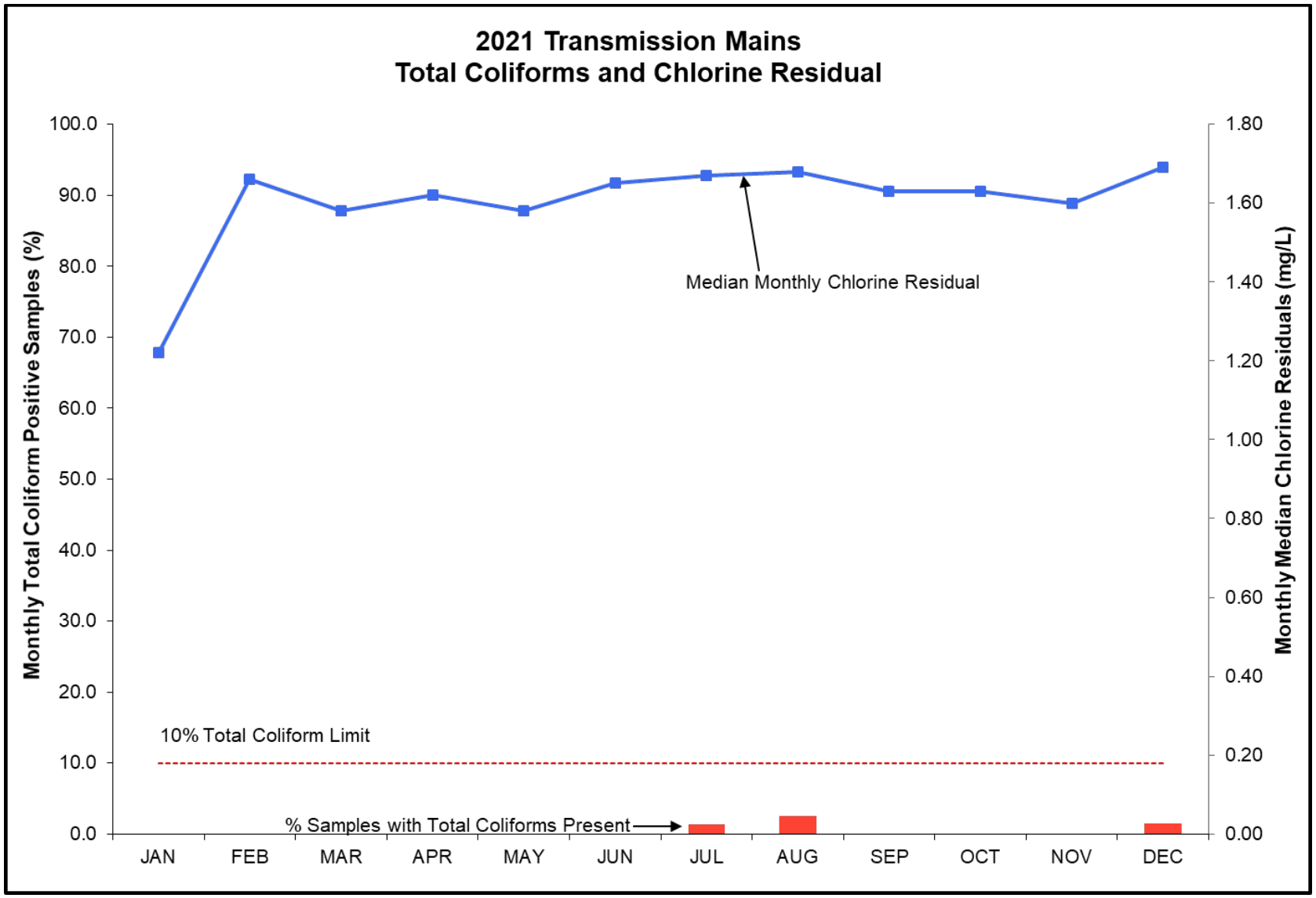


Figure 29 Transmission Mains Total Coliforms and Chlorine Residual in 2021

7.3.2 Supply Storage Reservoirs

The CRD supply storage reservoirs were sampled in 7 different sampling locations. In 2021, a total of 169 bacteriological and 55 water chemistry samples were collected and analyzed.

Bacteriological Results. Figure 30 and Table 2 show the 2021 results from the samples on CRD supply storage reservoirs that are considered part of the CRD Transmission System. The results indicate that the water in these storage reservoirs was bacteriologically safe. There were no total coliform-positive samples in 2021 (Table 2). Typically, storage reservoirs are vulnerable to bacteria regrowth and potential contamination, due to the long retention times and generally lower chlorine residual concentrations. Because of the higher risks to water quality in reservoirs compared to pipes, the CRD typically monitors the water quality closely in all of its storage reservoirs and follows a rigorous maintenance schedule at these facilities.

There were no *E coli* or total coliform positive samples in 2021.

Chlorine Residual. Table 2 and Figure 30 indicate that the median total chlorine concentration in the storage reservoirs ranged from 0.57 - 1.51 mg/L, with an annual median total chlorine concentration of 1.44 mg/L. The lower chlorine levels at the beginning of 2021 were due to the switch to free chlorine necessitated by a malfunctioning of the ammonia dosing system. The ammonia system came online again in mid-January and normal monochloramine residuals were established subsequently.

Water Temperature. The annual median water temperature in the storage reservoirs was 11.1°C, with monthly medians ranging between 7.0°C (March) and 19.3°C (August) (Table 2).

Table 2 2021 Bacteriological Quality of Storage Reservoirs

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	15	0	0.0	0	0	0	0	0	0.57	7.5
FEB	12	0	0.0	0	0	0	1	0	1.51	6.2
MAR	13	0	0.0	0	0	0	1	0	1.44	7.0
APR	13	0	0.0	0	0	0	1	0	1.44	8.2
MAY	15	0	0.0	0	0	0	1	0	1.45	10.4
JUN	18	0	0.0	0	0	0	1	0	1.45	13.0
JUL	16	0	0.0	0	0	0	1	0	1.49	15.4
AUG	14	0	0.0	0	0	0	1	0	1.51	19.3
SEP	14	0	0.0	0	0	0	1	0	1.48	18.2
OCT	13	0	0.0	0	0	0	1	0	1.44	15.0
NOV	13	0	0.0	0	0	0	0	0	1.35	11.7
DEC	13	0	0.0	0	0	0	1	0	1.43	8.8
Total:	169	0	0.0	0	0	0	10	0	1.44	11.1

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli;* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. The CRD collected a total of 36 samples for a disinfection byproduct analysis. The samples were collected at two storage reservoirs in the CRD Transmission System (Cloake Hill and Upper Dean Park reservoirs). At both locations, the CRD maintains a re-chlorination station that can boost free chlorine concentrations, if the residuals fall below 0.2 mg/L. While this procedure is rarely exercised, any free chlorine concentration can lead to an increase in disinfection byproduct formation. The annual average TTHM and HAA concentrations were 29.3 and 20.2 µg/L at Cloake Hill and 20.7 and 16.6 µg/L at Upper Dean, respectively, well below the MAC (TTHM = 100 and HAA = 80 µg/L) stipulated in the Canadian guidelines. These annual averages are slightly higher than historically due to much higher concentrations

recorded during the free chlorine period in January 2021 when the ammonia system was not functioning. The individual TTHM and HAA concentrations recorded on January 13 at the Cloak Hill reservoir sampling station were 71 µg/L and 85 µg/L respectively. The individual TTHM and HAA concentrations recorded on January 14 at the Upper Dean Park reservoir sampling station were 35 µg/L and 21 µg/L respectively. The high values especially from the Cloak Hill reservoir demonstrate the importance of using chloramines for secondary disinfection for the purpose of disinfection byproduct management. In five out of six samples, the NDMA concentrations at both locations were below the detection limit (1.9 ng/L). One sample from Upper Dean Park reservoir recorded a very low NDMA concentration of 2 ng/L. All NDMA results were therefore well below the Canadian guideline MAC of 40 ng/L.

Physical/Chemical Parameters. The drinking water in the regional supply storage reservoirs had the following physical and chemical characteristics in 2021:

- Median pH: 7.7
- Median Alkalinity: 16.6 mg/L
- Median Colour: ND
- Median Turbidity: 0.23 NTU
- Median Conductivity (25ºC): 51.00 µS/cm

Metals. No data for 2021.

Nitrification. Nitrification occurs in many chloraminated water systems. It is a complex bacteriological process in which ammonia is oxidized initially to nitrite and then to nitrate and is caused by two groups of bacteria that have low growth rates relative to other bacteria. Water temperature seems to be a critical factor for nitrification in distribution systems, as it has been almost exclusively associated with warm water temperatures. Nitrification is also associated with high water age (reservoirs, dead ends, low-flow pipes) and with sediment biofilms.

Monitoring for nitrifying bacteria directly is inefficient; however, the extent of nitrification in the distribution system can be monitored by measuring chlorine residuals and nitrite (also nitrate, free ammonia). When the chlorine residuals drop (in the absence of any pipe break or plant disinfection failure), accompanied by increases of nitrite, then nitrification is occurring. Since Greater Victoria's source water has no background nitrite, the presence of nitrite in the distribution system is the best indicator of nitrification.

The control of nitrification in a chloraminated distribution system involves limiting the excess free ammonia leaving the disinfection plant, maintaining an adequate chlorine residual throughout the distribution system, minimizing water age in storage facilities and in the low-flow areas of the distribution system, and maintaining annual flushing routines to limit the accumulation of sediment and biofilm in the distribution system piping. CRD Water Quality Operations staff, in conjunction with Integrated Water Services Department Operations and Engineering staff, are undertaking projects to optimize the reservoir and pipe-cleaning schedules to address nitrification and other water quality affecting processes throughout the distribution systems. The new hypochlorite plant at the Goldstream Water Treatment Plant has improved the chemical dosing system and reduced the potential for free ammonia in the treated water.

Compliance Status. The CRD-owned and operated supply storage reservoirs in the CRD Transmission System were in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

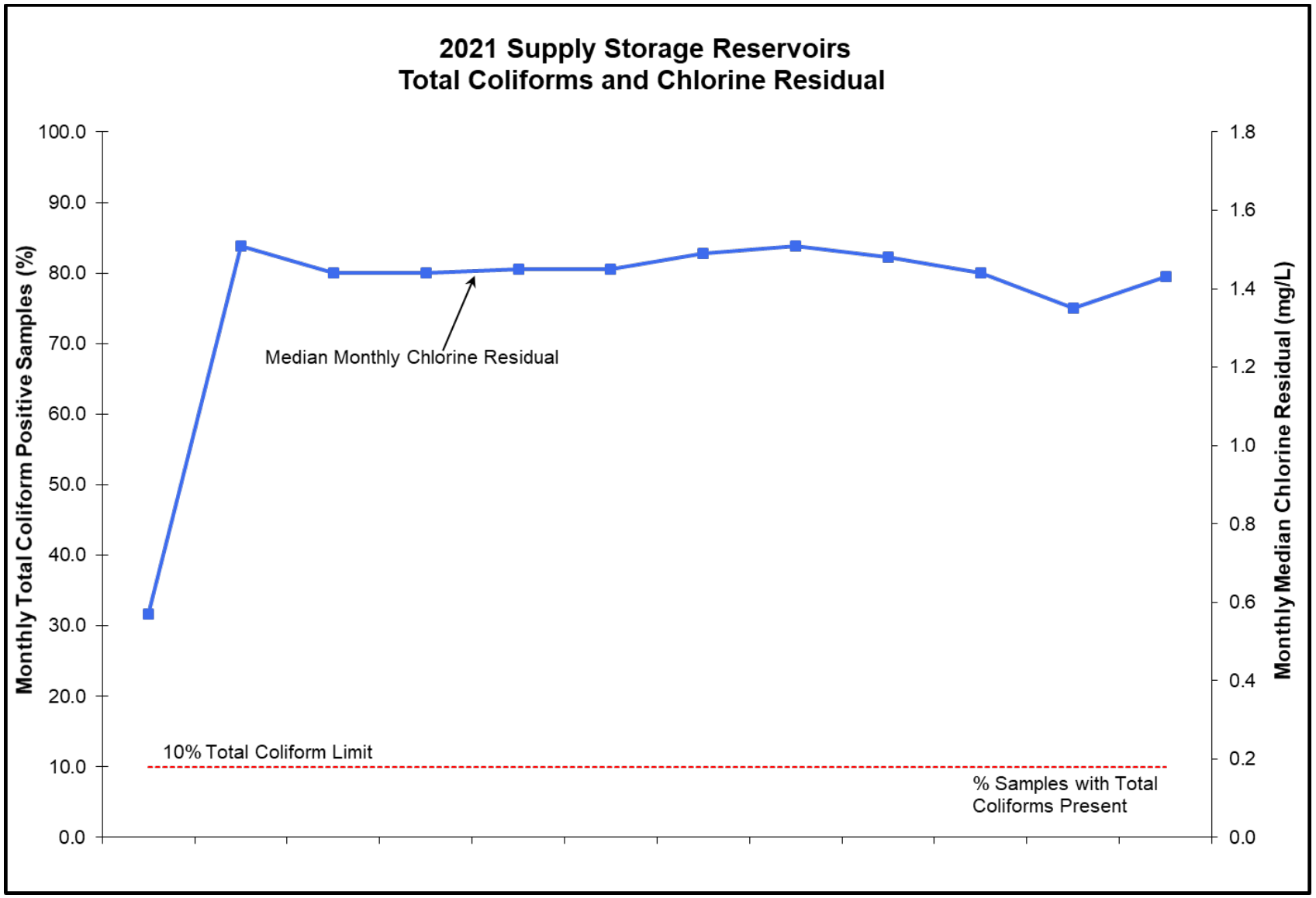


Figure 30 Supply Storage Reservoirs Total Coliforms and Chlorine Residual in 2021

7.4 Distribution System Results

The following sections summarize the water quality monitoring results within the various distribution systems and indicate the compliance status of each system.

7.4.1 Juan de Fuca Water Distribution System – Westshore Municipalities (CRD-owned and operated)

In 2021, 32 distribution system sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Westshore system.

Sample Collection. In 2021, 919 bacteriological and 284 water chemistry samples were collected from the Juan de Fuca Water Distribution System (Table 3). Based on current population data for the Westshore municipalities, 66 samples are required for bacteria testing each month. Table 3 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. Total coliforms were found in a few samples throughout the year. One sample in October exceeded the 10 CFU/100 mL total coliform concentration threshold. There were no consecutive positive samples in 2021. This system complied with the 10% total coliform-positive limit for all months of the year during 2021. The annual total coliform positive percentage was well below the 10% limit at 1.0% (Table 3).

There were no *E coli*-positive samples in 2021.

Chlorine Residual. The annual median chlorine residual in the Westshore municipalities of the Juan de Fuca Water Distribution System was 1.26 mg/L (Table 2). The lowest monthly median was in January (0.70 mg/L – due to switch to free chlorine) and the maximum monthly median was in April (1.45 mg/L) (Figure 31, Table 3).

Water Temperature. The annual median water temperature in the Juan de Fuca Water Distribution System was 11.6ºC, with monthly medians ranging between 6.5°C (February) and 18.5ºC (August) (Table 3).

Table 3 2021 Bacteriological Quality of the Juan de Fuca Distribution System – Westshore Municipalities (CRD)

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	72	0	0.0	0	0	0	7	0	0.70	7.7
FEB	67	0	0.0	0	0	0	8	0	1.36	6.5
MAR	83	1	1.2	0	0	0	7	0	1.39	7.0
APR	78	0	0.0	0	0	0	6	0	1.45	9.1
MAY	68	0	0.0	0	0	0	7	0	1.40	11.2
JUN	86	0	0.0	0	0	0	7	0	1.39	14.3
JUL	74	2	2.7	0	0	0	7	0	1.19	16.2
AUG	88	4	4.5	0	0	0	8	0	1.08	18.5
SEP	85	0	0.0	0	0	0	8	0	1.22	17.8
OCT	74	2	2.7	0	1	0	8	0	1.16	13.5
NOV	73	1	1.4	0	0	0	5	0	1.13	10.8
DEC	71	0	0.0	0	0	0	8	0	1.20	8.1
Total:	919	10	1.0	0	1	0	86	0	1.26	11.6

Notes:
TC = Total Coliforms, E. coli = Escherichia coli, Cl2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. One location in the Juan de Fuca Water Distribution System had 18 samples collected for disinfection byproducts. The annual average TTHM and haloacetic acid (HAA5) concentrations in six samples each were 15.2 and 2.2 µg/L, respectively, far below the Canadian guideline MAC (TTHM = 100; HAA5 = 80). In six samples, the NDMA concentrations were below the detection limit of 1.9 ng/L, well below the Canadian guideline MAC of 40 ng/L.

Physical/Chemical Parameters. The drinking water in the Westshore municipalities of the Juan de Fuca Water Distribution System had the following physical and chemical characteristics in 2021:

- Median pH: 7.4
- Median CaCO3 Hardness: 17.00 mg/L
- Median Alkalinity: 17.00 mg/L
- Median Colour: 3.0 TCU
- Median Conductivity (25ºC): 51.10 µS/cm
- Median Turbidity: 0.20 NTU

Metals. One sampling station in this system was sampled for metals bi-monthly. All metals were below the Canadian guideline limits. Lead concentrations varied from 'below detection limit' to 0.48 µg/L.

In 2019, CRD staff, in concert with Saanich, Victoria/Esquimalt and Oak Bay, started the Greater Victoria pH & Corrosion Study to investigate water properties that may contribute to metal corrosion and, in particular, to lead leaching into the drinking water. The study examines the water inside the public and also the private drinking water piping systems. As part of this study, samples from a multitude of sampling locations were analyzed for lead and copper. In 2021, the project scope was expanded to include region-wide sampling at customers' taps as per BC Ministry of Health guidelines. The project was completed in the fall of 2021. The study found that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Westshore municipalities of the Juan de Fuca Water Distribution System were in compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*, except for October, with one total coliform-positive result in exceedance of 10 CFU/100 mL. Immediate resamples following this result were negative for total coliform bacteria and did, therefore, confirm the safety of the drinking water.

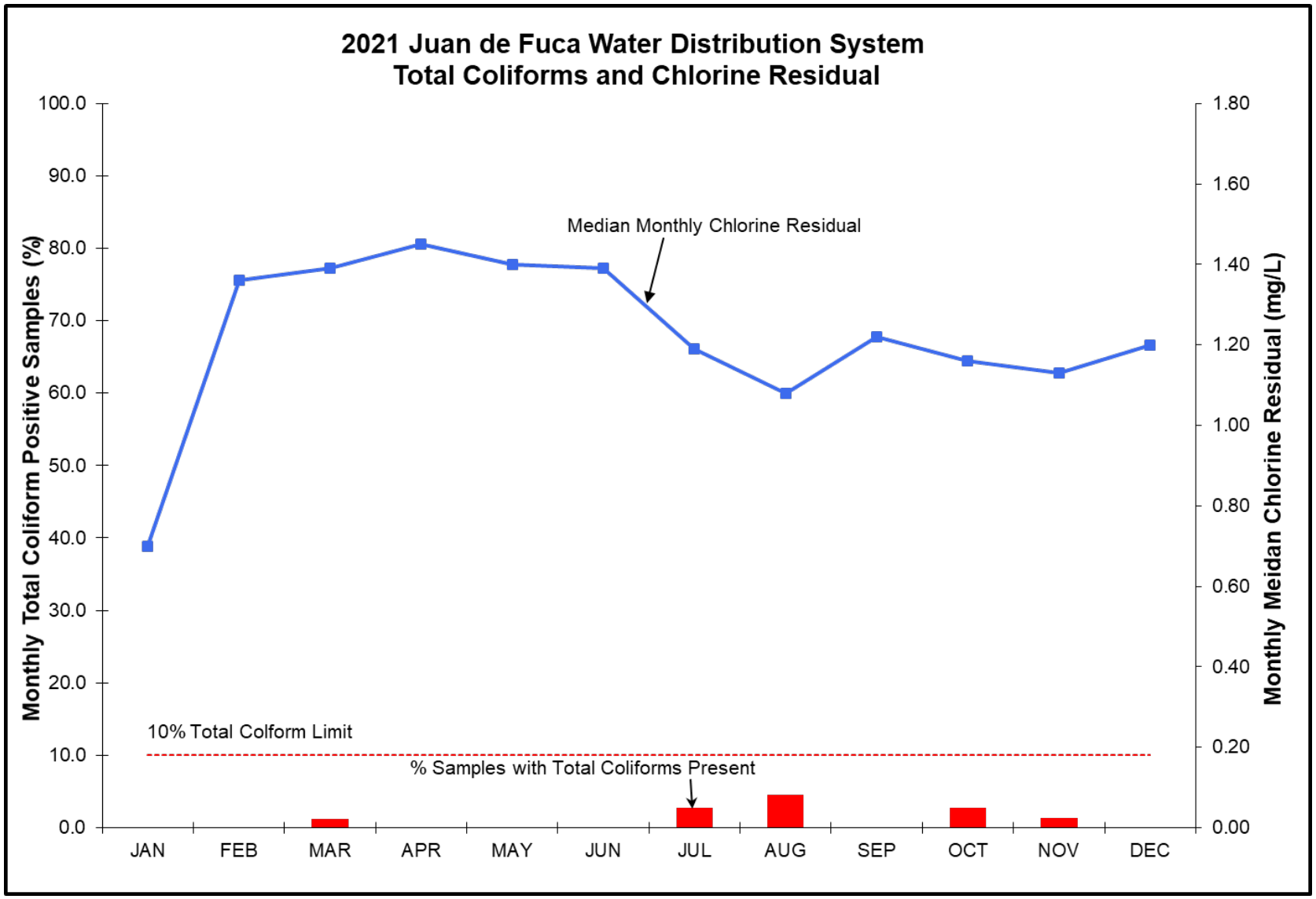


Figure 31 Juan de Fuca – Westshore Distribution System Total Coliforms and Chlorine Residual in 2021

7.4.2 Sooke/East Sooke Distribution System (CRD-Owned and Operated)

In 2021, 20 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in Sooke/East Sooke system. Half of all Sooke/East Sooke sampling stations were typically sampled once per week for a bi-weekly sampling frequency of all stations.

Sample Collection. In 2021, 384 bacteriological and 180 water chemistry samples were collected from the Sooke/East Sooke Distribution System (Table 4). Based on current population data for the District of Sooke, 13 samples are required for bacteria testing each month. Table 4 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. One sample in January and two samples in November tested positive for total coliform bacteria. One sample in November exceeded the 10 CFU/100 mL total coliform concentration threshold. All resamples were negative so there were no consecutive positive samples in 2021. The annual total coliform positive percentage was well below the 10% limit at 0.8% (Table 4).

No *E. coli* bacteria were found in any sample collected in 2021 (Table 4).

Chlorine Residual. The annual median chlorine residual in the Sooke/East Sooke Distribution System was 1.03 mg/L (Table 4, Figure 32). The lowest monthly median was in October (0.40 mg/L), and the maximum monthly median was in May (1.35 mg/L). The low chlorine residual in early fall is typical for the Sooke/East Sooke System, due to the increased chlorine demand in the warm water season.

Water Temperature. The annual median water temperature in the Sooke/East Sooke Distribution System was 11.4°C, with monthly medians ranging between 6.8ºC (February) and 18.9°C (August) (Table 4).

Table 4 2021 Bacteriological Quality of the Sooke/East Sooke Distribution System (CRD)

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	38	1	2.6	0	0	0	5	0	1.29	7.8
FEB	30	0	0.0	0	0	0	8	2	1.25	6.8
MAR	36	0	0.0	0	0	0	10	2	1.31	7.5
APR	24	0	0.0	0	0	0	6	0	1.29	9.9
MAY	30	0	0.0	0	0	0	7	0	1.35	12.2
JUN	43	0	0.0	0	0	0	9	1	1.08	14.9
JUL	36	0	0.0	0	0	0	8	0	0.97	17.2
AUG	30	0	0.0	0	0	0	7	0	0.58	18.9
SEP	30	0	0.0	0	0	0	6	0	0.70	17.8
OCT	24	0	0.0	0	0	0	6	0	0.40	13.7
NOV	35	2	5.7	0	1	0	5	0	0.72	10.6
DEC	28	0	0.0	0	0	0	5	0	0.92	8.8
Total:	384	3	0.8	0	1	0	82	5	1.03	11.4

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. One location in the Sooke distribution system had 18 samples collected for disinfection byproducts. The annual average TTHM and HAA5 concentrations from six samples each were 31.8 and 26.2 µg/L, respectively, far below the Canadian guideline MAC (TTHM = 100; HAA5 = 80). In six samples, the NDMA concentrations were below the detection limit of 1.9 ng/L, well below the Canadian guideline MAC of 40 ng/L.

Physical/Chemical Parameters. The drinking water in the Sooke/East Sooke Distribution System had the following physical and chemical characteristics:

- Median pH: 7.6
- Median CaCO3 Hardness: 17.40 mg/L
- Median Colour: ND
- Median Alkalinity: 16.70 mg/L
- Median Turbidity: 0.20 NTU
- Median Conductivity (25ºC): 55.60 µS/cm

Metals. The CRD Water Quality Monitoring Program for the Sooke/East Sooke system included bi-monthly metal tests in two strategic locations in 2021: first customer sampling station on Sooke River Road, and Whiffen Spit Road. All metallic parameters, including lead, were well below the Canadian guideline limits.

In 2019, CRD, in concert with Saanich, Victoria/Esquimalt and Oak Bay, started the Greater Victoria pH & Corrosion Study to investigate water properties that may contribute to metal corrosion, and in particular, to lead leaching into the drinking water. The study examines the water inside the public and also the private drinking water piping systems. As part of this study, samples from a multitude of sampling locations were analyzed for lead and copper. In 2021, the project scope was expanded to include region-wide sampling at customers' taps as per BC Ministry of Health guidelines. The project was completed in the fall of 2021. The study found that metal corrosion and lead leaching in the public piping systems, as well as in the vast majority of private plumbing systems, is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Sooke/East Sooke Distribution System was in compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*, except for November with one total coliform-positive result in exceedance of 10 CFU/100 mL. Immediate resamples following this result were negative for total coliform bacteria and did, therefore, confirm the safety of the drinking water.

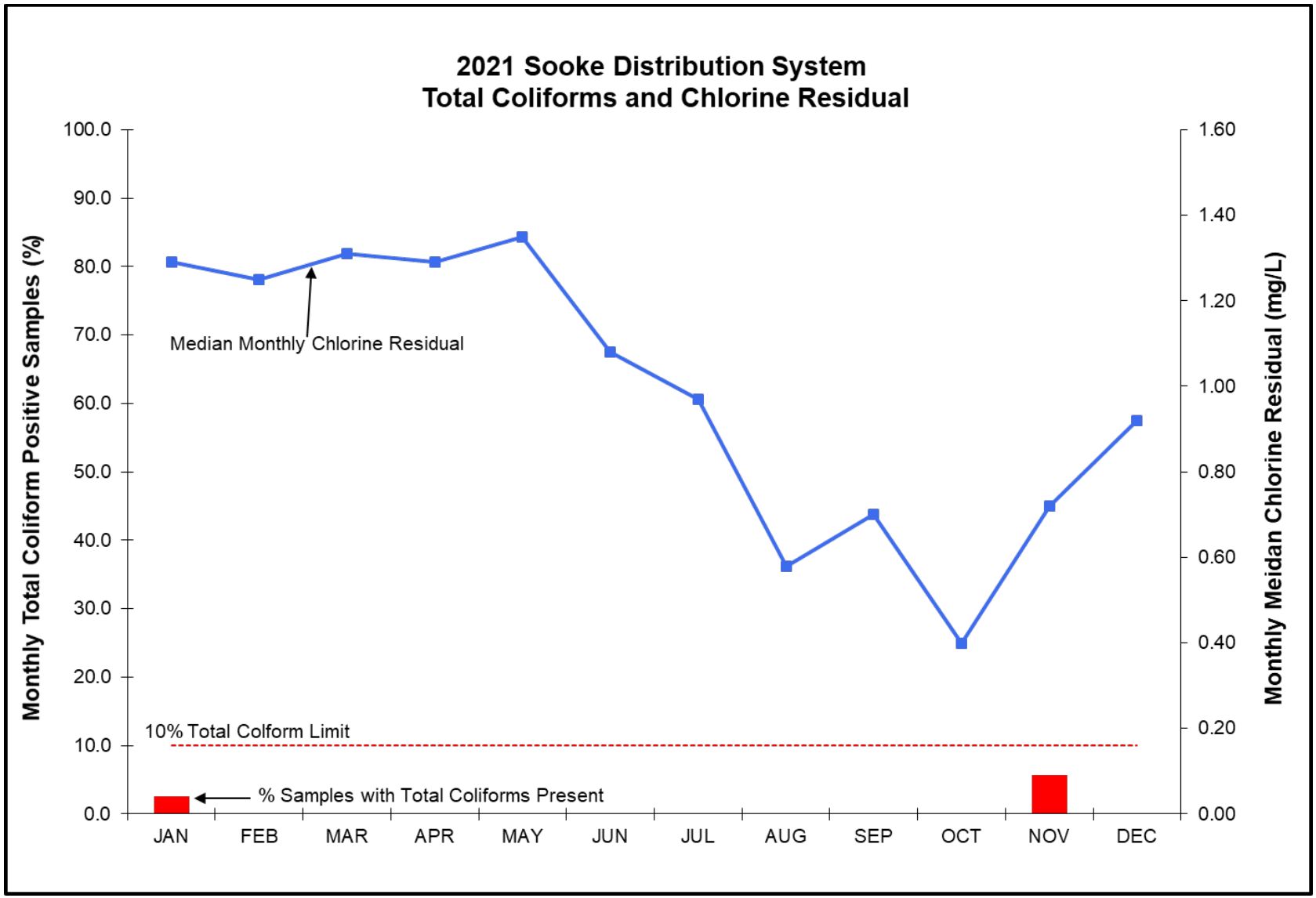


Figure 32 Sooke/East Sooke Distribution System Total Coliforms and Chlorine Residual in 2021

7.4.3 Central Saanich Distribution System – (District of Central Saanich-Owned and Operated)

In 2021, 11 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Central Saanich Distribution System. Central Saanich sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2021, 278 bacteriological and 179 water chemistry samples were collected from the Central Saanich Distribution System (Table 5). Based on current population data for the District of Central Saanich, 17 samples are required for bacteria testing each month. Table 5 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. Total coliforms were found in only one sample collected in May 2021. A resample was negative. This system complied with the 10% total coliform-positive limit for all of 2021. No samples exceeded the 10 CFU/100 mL total coliform concentration. There were also no consecutive positive samples in 2021 (Table 5).

None of the samples contained *E. coli* bacteria in 2021 (Table 5).

Chlorine Residual. The annual median chlorine residual in the Central Saanich Distribution System was 1.46 mg/L (Table 5). The lowest monthly median was in January (0.69 mg/L – due to switch to free chlorine) and the maximum monthly median was in August (1.54 mg/L) (Figure 33, Table 6).

Water Temperature. The annual median water temperature in the Central Saanich Distribution System was 12.1°C, with monthly medians ranging between 7.1°C (February) and 19.7°C (August) (Table 5).

Table 5 2021 Bacteriological Quality of the Central Saanich Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	22	0	0.0	0	0	0	7	0	0.69	8.2
FEB	22	0	0.0	0	0	0	9	0	1.51	7.1
MAR	26	0	0.0	0	0	0	10	0	1.45	7.9
APR	21	0	0.0	0	0	0	10	0	1.44	9.4
MAY	23	1	4.3	0	0	0	8	0	1.45	11.8
JUN	27	0	0.0	0	0	0	7	0	1.46	14.2
JUL	23	0	0.0	0	0	0	9	0	1.50	17.1
AUG	24	0	0.0	0	0	0	8	0	1.54	19.7
SEP	23	0	0.0	0	0	0	8	0	1.50	18.4
OCT	23	0	0.0	0	0	0	9	0	1.43	14.7
NOV	23	0	0.0	0	0	0	9	0	1.39	11.8
DEC	21	0	0.0	0	0	0	6	0	1.52	9.2
Total:	278	1	0.4	0	0	0	100	0	1.46	12.1

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2021.

Physical/Chemical Parameters. The drinking water in the Central Saanich Distribution System had the following physical and chemical characteristics in 2021:

- Median pH: 7.6
- Median Turbidity: 0.25 NTU
- Median Colour: 3.0 TCU
- Median Alkalinity: 16.50 mg/L
- Median Conductivity (25ºC): 51.00 µS/cm

Metals. No data for 2021.

Compliance Status. The Central Saanich Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2021.

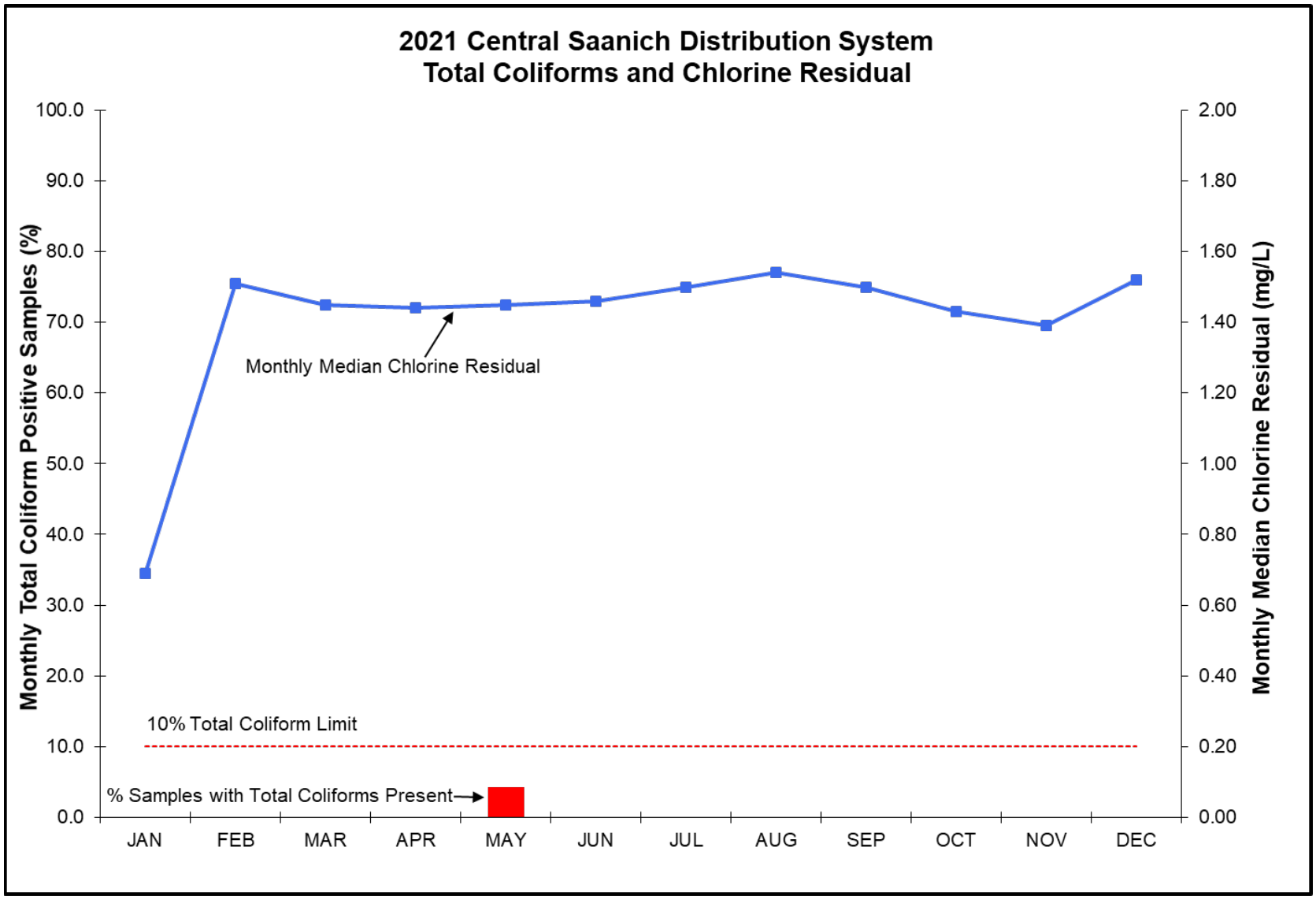


Figure 33 Central Saanich Distribution System Total Coliforms and Chlorine Residual in 2021

7.4.4 North Saanich Distribution System – (District of North Saanich-Owned and Operated)

In 2021, eight sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the North Saanich Distribution System. North Saanich sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2021, 200 bacteriological and 65 water chemistry samples were collected from the North Saanich Distribution System (Table 6). Based on current population data for the District of North Saanich, 12 samples are required for bacteria testing each month. Table 6 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. No sample in 2021 tested positive for total coliform bacteria (Table 7).

None of the samples contained *E. coli* in 2021 (Table 7).

Chlorine Residual. The annual median chlorine residual in the North Saanich Distribution System was 1.24 mg/L (Table 6). The lowest monthly median was in January (0.17 mg/L – due to a switch to free chlorine) and the maximum monthly median was in July (1.37 mg/L) (Figure 34, Table 7).

Water Temperature. The annual median water temperature in the North Saanich Distribution System was 12.4°C, with monthly medians ranging between 7.6°C (February) and 18.8°C (August) (Table 6).

Table 6 2021 Bacteriological Quality of the North Saanich Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	16	0	0.0	0	0	0	1	0	0.17	8.6
FEB	16	0	0.0	0	0	0	2	0	1.29	7.6
MAR	19	0	0.0	0	0	0	2	0	1.25	7.9
APR	15	0	0.0	0	0	0	1	0	1.29	9.6
MAY	16	0	0.0	0	0	0	1	0	1.30	12.0
JUN	18	0	0.0	0	0	0	2	0	1.33	14.2
JUL	17	0	0.0	0	0	0	1	0	1.37	16.8
AUG	18	0	0.0	0	0	0	0	0	1.27	18.8
SEP	17	0	0.0	0	0	0	1	0	1.29	18.4
OCT	16	0	0.0	0	0	0	0	0	0.91	15.0
NOV	17	0	0.0	0	0	0	1	0	0.81	12.0
DEC	15	0	0.0	0	0	0	1	0	0.76	9.3
Total:	200	0	0.0	0	0	0	13	0	1.24	12.4

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data in 2021.

Physical/Chemical Parameters. The drinking water in the North Saanich Distribution System had the following physical and chemical characteristics in 2021:

- Median pH: 7.7
- Median Colour: 3.5 TCU
- Median Turbidity: 0.20 NTU
- Median Alkalinity: 14.45 mg/L
- Median Conductivity (25ºC): 50.10 µS/cm

Metals. No data in 2021.

Compliance Status. The North Saanich Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation* in 2021.

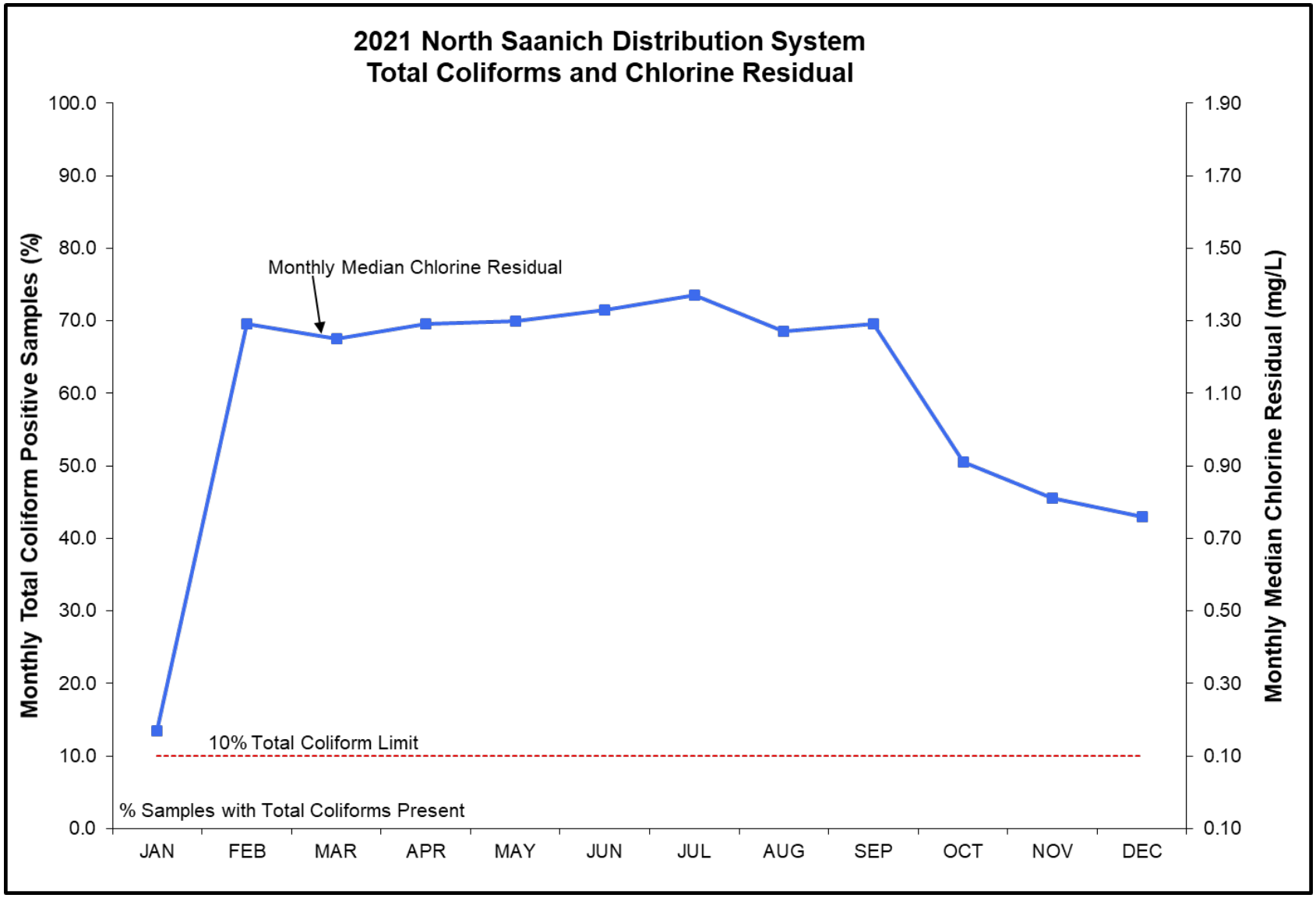


Figure 34 North Saanich Distribution System Total Coliforms and Chlorine Residual in 2021

7.4.5 Oak Bay Distribution System – (District of Oak Bay-Owned and Operated)

In 2021, eight sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Oak Bay Distribution System. Oak Bay sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2021, 285 bacteriological and 123 water chemistry samples were collected from the Oak Bay Distribution System (Table 7). Based on current population data for the District of Oak Bay, 19 samples are required for bacteria testing each month. Table 7 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. Three samples throughout the year tested positive for total coliform bacteria. No sample exceeded the 10 CFU/100 mL total coliform concentration threshold. All resamples were negative so there were no consecutive positive samples in 2021. The annual total coliform positive percentage was well below the 10% limit at 1.1% (Table 4).

No *E. coli* bacteria were found in any sample collected in 2021 (Table 4).

Chlorine Residual. The annual median chlorine residual in the Oak Bay Distribution System was 1.51 mg/L (Table 7). The lowest monthly median was in January (0.64 mg/L – due to switch to free chlorine) and the maximum monthly median was in August (1.63 mg/L) (Figure 35).

Water Temperature. The annual median water temperature in the Oak Bay Distribution System was 12.2°C, with monthly medians ranging between 7.3°C (February) and 19.7°C (August) (Table 7).

Table 7 2021 Bacteriological Quality of the Oak Bay Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	23	0	0.0	0	0	0	1	0	0.64	8.4
FEB	22	0	0.0	0	0	0	3	0	1.48	7.3
MAR	27	0	0.0	0	0	0	3	0	1.47	8.4
APR	24	1	4.2	0	0	0	3	0	1.49	10.6
MAY	23	0	0.0	0	0	0	2	0	1.56	12.2
JUN	26	0	0.0	0	0	0	3	0	1.61	15.3
JUL	22	0	0.0	0	0	0	2	0	1.53	17.1
AUG	27	1	3.7	0	0	0	1	0	1.63	19.7
SEP	23	0	0.0	0	0	0	2	0	1.54	18.9
OCT	23	0	0.0	0	0	0	2	0	1.33	15.1
NOV	24	1	4.2	0	0	0	2	0	1.18	11.9
DEC	21	0	0.0	0	0	0	2	0	1.56	9.6
Total:	285	3	1.1	0	0	0	26	0	1.51	12.2

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2021.

Physical/Chemical Parameters. The drinking water in the Oak Bay Distribution System had the following physical and chemical characteristics:

- Median pH: 7.7
- Median Alkalinity: 16.90 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25ºC): 51.30 µS/cm
- Median Colour: 4.0 TCU

Metals. In 2019, CRD, in concert with Saanich, Victoria/Esquimalt and Oak Bay, started the Greater Victoria pH & Corrosion Study to investigate water properties that may contribute to metal corrosion, and in particular, to lead leaching into the drinking water. The study examines the water inside the public and also the private drinking water piping systems. As part of this study, samples from a multitude of sampling locations were analyzed for lead and copper. In 2021, the project scope was expanded to include region-wide sampling at customers' taps as per BC Ministry of Health guidelines. The project was completed in the fall of 2021. The study found that metal corrosion and lead leaching in the public piping systems as well as in the vast majority of private plumbing systems is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Oak Bay Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

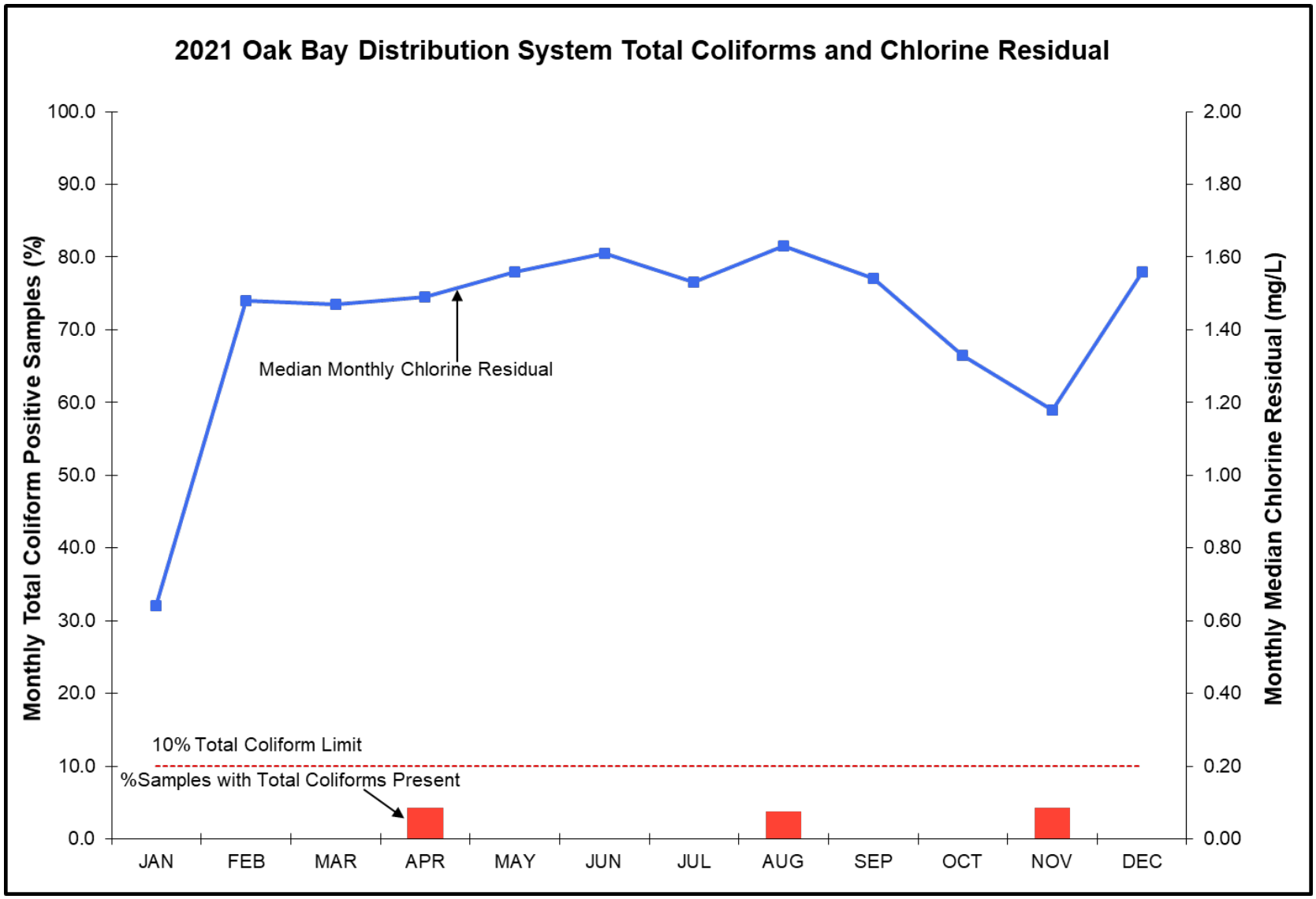


Figure 35 Oak Bay Distribution System Total Coliforms and Chlorine Residual in 2021

7.4.6 Saanich Distribution System – (District of Saanich-Owned and Operated)

In 2021, 64 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Saanich Distribution System. Saanich sampling stations were part of the daily distribution sampling runs by CRD staff and a weekly run by Saanich staff.

Sample Collection. In 2021, 1,166 bacteriological and 105 water chemistry samples were collected from the Saanich Distribution System (Table 8). Based on current population data for the District of Saanich, 93 samples are required for bacteria testing each month. Table 8 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. A small number of total coliform-positive results were recorded throughout the year. There were no consecutive positive samples in 2021. No sample in February exceeded the 10 CFU/100 mL total coliform concentration limit. This system complied with the 10% total coliform-positive limit for all months. The annual total coliform positive percentage was well below the 10% limit at only 0.5% (Table 8).

No *E. coli* bacteria were found in any sample collected in 2021 (Table 8).

Chlorine Residual. The annual median chlorine residual in the Saanich Distribution System was 1.43 mg/L (Table 8). The lowest monthly median was in January (0.82 mg/L – due to switch to free chlorine) and the maximum monthly median was in June/July (1.52 mg/L) (Figure 36).

Water Temperature. The annual median water temperature in the Saanich Distribution System was 12.0°C, with monthly medians ranging between 7.3°C (March) and 19.3°C (August) (Table 8).

Table 8 2021 Bacteriological Quality of the Saanich Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	96	0	0.0	0	0	0	3	0	0.82	8.3
FEB	99	1	1.0	0	0	0	5	1	1.46	7.6
MAR	100	0	0.0	0	0	0	4	0	1.45	7.3
APR	100	0	0.0	0	0	0	3	0	1.43	9.7
MAY	94	0	0.0	0	0	0	2	0	1.44	12.2
JUN	97	1	1.0	0	0	0	3	0	1.52	14.7
JUL	97	1	1.0	0	0	0	3	0	1.52	17.3
AUG	98	1	1.0	0	0	0	1	0	1.51	19.3
SEP	101	2	2.0	0	0	0	3	0	1.42	18.1
OCT	95	0	0.0	0	0	0	2	0	1.30	14.5
NOV	97	0	0.0	0	0	0	2	0	1.28	11.4
DEC	92	0	0.0	0	0	0	2	0	1.47	8.7
Total:	1166	6	0.5	0	0	0	33	1	1.43	12.0

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2021.

Physical/Chemical Parameters. The drinking water in the Saanich Distribution System had the following physical and chemical characteristics in 2021:

- Median pH: 7.6
- Median Alkalinity: 15.50 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25ºC): 51.40 µS/cm
- Median Colour: ND

Metals. In 2019, CRD staff, in concert with Saanich, Victoria/Esquimalt and Oak Bay, started the Greater Victoria pH & Corrosion Study to investigate water properties that may contribute to metal corrosion, and in particular, to lead leaching into the drinking water. The study examines the water inside the public and also the private drinking water piping systems. As part of this study, samples from a multitude of sampling locations were analyzed for lead and copper. In 2021, the project scope was expanded to include region-wide sampling at customers' taps, as per BC Ministry of Health guidelines. The project was completed in the fall of 2021. The study found that metal corrosion and lead leaching in the public piping systems as well as in the vast majority of private plumbing systems is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Saanich Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

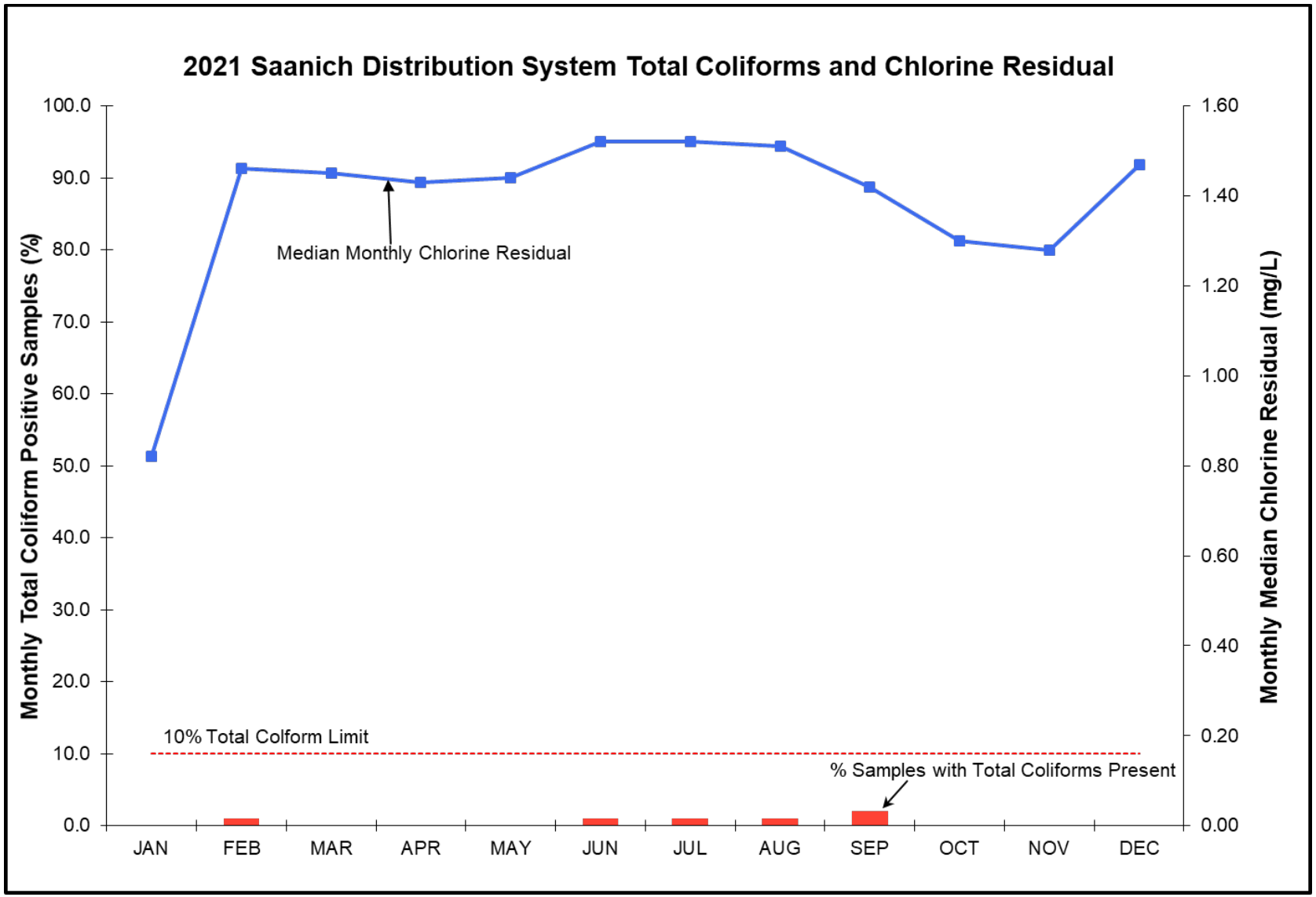


Figure 36 Saanich Distribution System Total Coliforms and Chlorine Residuals in 2021

7.4.7 Sidney Distribution System – (Town of Sidney-Owned and Operated)

In 2021, six sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Sidney Distribution System. Sidney sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2021, 182 bacteriological and 62 water chemistry samples were collected from the Sidney Distribution System (Table 9). Based on current population data for the Town of Sidney, 12 samples are required for bacteria testing each month. Table 9 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. One sample In October tested positive for total coliforms in 2021. A resample was negative, so there were no consecutive positive samples in 2021. No sample exceeded the 10 CFU/100 mL total coliform concentration. This system complied with the 10% total coliform-positive limit for all months. The annual total coliform positive percentage was well below the 10% limit at only 0.5% (Table 9).

Also, no sample tested positive for *E. coli* in 2021 (Table 9).

Chlorine Residual. The annual median chlorine residual in the Sidney Distribution System was 1.36 mg/L (Table 9). The lowest monthly median was in January (0.43 mg/L – due to switch to free chlorine) and the maximum monthly median was in February (1.44 mg/L) (Figure 37).

Water Temperature. The annual median water temperature in the Sidney Distribution System was 12.3°C, with monthly medians ranging between 8.2°C (March) and 19.3°C (August) (Table 9).

Table 9 2021 Bacteriological Quality of the Sidney Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	14	0	0.0	0	0	0	0	0	0.43	8.7
FEB	15	0	0.0	0	0	0	0	0	1.44	7.7
MAR	17	0	0.0	0	0	0	1	0	1.33	8.2
APR	15	0	0.0	0	0	0	2	0	1.37	10.0
MAY	15	0	0.0	0	0	0	1	0	1.35	12.8
JUN	14	0	0.0	0	0	0	1	0	1.36	14.6
JUL	16	0	0.0	0	0	0	1	0	1.34	17.0
AUG	16	0	0.0	0	0	0	1	0	1.40	19.3
SEP	15	0	0.0	0	0	0	1	0	1.41	18.4
OCT	16	1	6.3	0	0	0	1	0	1.37	15.0
NOV	15	0	0.0	0	0	0	2	0	1.20	11.9
DEC	14	0	0.0	0	0	0	0	0	1.39	9.6
Total:	182	1	0.5	0	0	0	11	0	1.36	12.3

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2021.

Physical/Chemical Parameters. The drinking water in the Sidney Distribution System had the following physical and chemical characteristics in 2019:

- Median pH: 7.7
- Median Alkalinity: 16.80 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25ºC): 51.90 µS/cm
- Median Colour: ND

Metals. No data in 2021.

Compliance Status. The Sidney Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

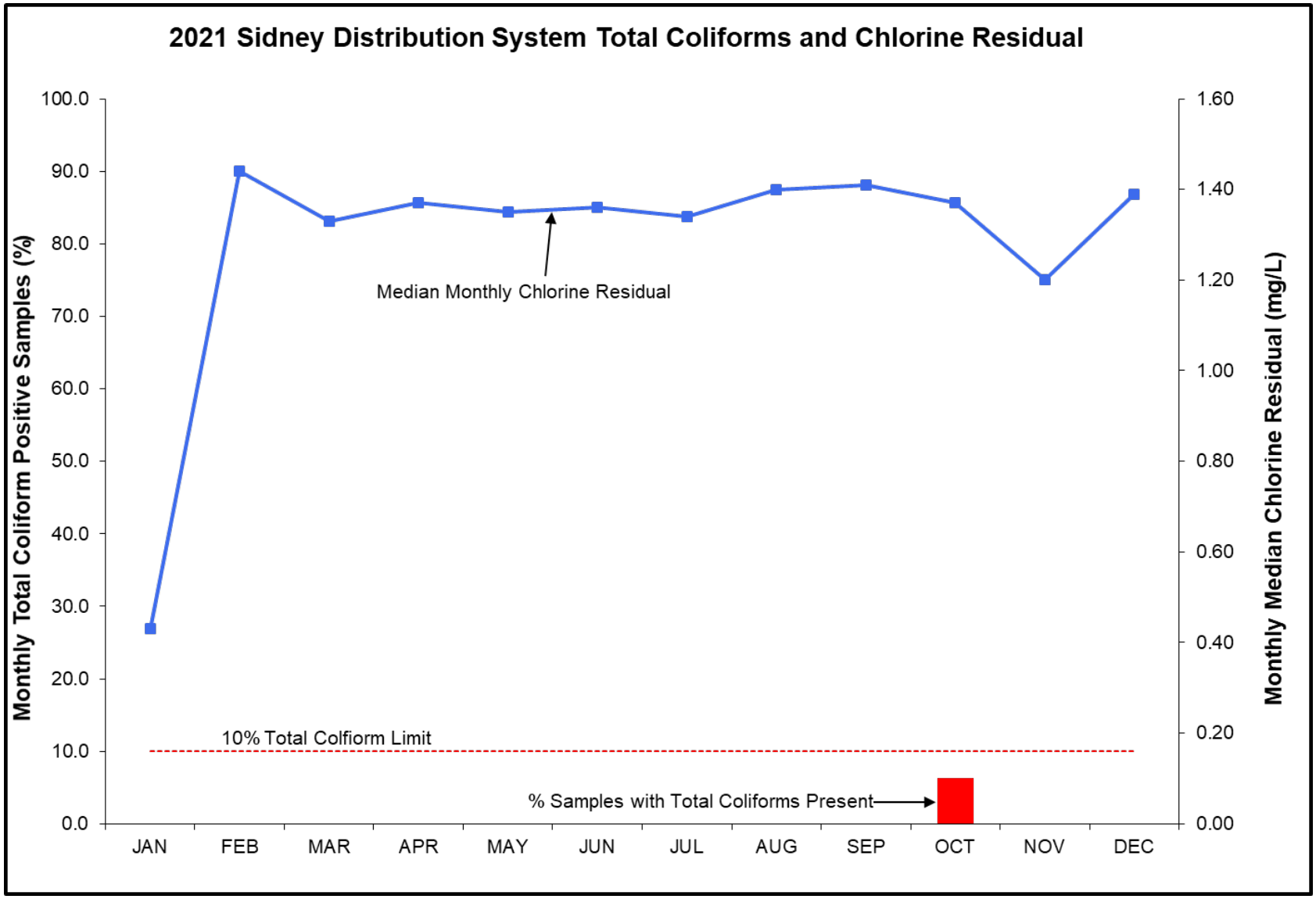


Figure 37 Sidney Distribution System Total Coliforms and Chlorine Residuals in 2021

7.4.8 Victoria/Esquimalt Distribution System – (City of Victoria-Owned and Operated)

In 2021, 16 sampling locations were used by the CRD Water Quality Monitoring Program to monitor the bacteriological quality of the water in the Victoria/Esquimalt Distribution System. Victoria/Esquimalt sampling stations are part of the daily distribution sampling runs by CRD staff.

Sample Collection. In 2021, 1,202 bacteriological and 202 water chemistry samples were collected from the Victoria/Esquimalt Distribution System (Table 10). Based on current population data for Victoria and Esquimalt, 92 samples are required for bacteria testing each month. Table 10 shows the number of monthly samples collected and analyzed for compliance.

Bacteriological Results. Only three total coliform-positive results occurred in five months throughout the year. There were no consecutive positive samples in 2021. No sample exceeded the 10 CFU/100 mL total coliform concentration limit. This system complied with the 10% total coliform-positive limit for all months. The annual total coliform percentage positive was well below the 10% limit at only 0.2% (Table 10).

No *E. coli* was detected in any sample in 2021 (Table 10).

Chlorine Residual. The annual median chlorine residual in the Victoria/Esquimalt Distribution System was 1.45 mg/L (Table 10). The lowest monthly median was in January (0.89 mg/L – due to switch to free chlorine) and the maximum monthly median was in March/May/December (1.51 mg/L) (Figure 38).

Water Temperature. The annual median water temperature in the Victoria/Esquimalt Distribution System was 13.2°C, with monthly medians ranging between 7.4°C (February) and 20.7°C (August) (Table 10).

Table 10 2021 Bacteriological Quality of the Victoria Distribution System

Month	Samples Collected	Total Coliforms (CFU/100mL)				*E.coli* CFU/100mL)	Turbidity		Chlorine Residual	Water Temp.
		Samples TC > 0	Percent TC>0	Resamples TC > 0	Samples TC > 10	Samples >0	Samples Collected	Samples >1 NTU	Median mg/L as CL2	Median ° C
JAN	95	0	0.0	0	0	0	7	1	0.89	8.4
FEB	95	1	1.1	0	0	0	7	0	1.48	7.4
MAR	108	0	0.0	0	0	0	8	0	1.51	8.3
APR	103	0	0.0	0	0	0	8	1	1.48	10.6
MAY	97	1	1.0	0	0	0	6	0	1.51	13.6
JUN	112	0	0.0	0	0	0	6	0	1.48	16.4
JUL	96	0	0.0	0	0	0	6	0	1.41	18.8
AUG	108	1	0.9	0	0	0	7	0	1.43	20.7
SEP	103	0	0.0	0	0	0	6	0	1.46	19.1
OCT	96	0	0.0	0	0	0	5	0	1.40	15.0
NOV	96	0	0.0	0	0	0	7	0	1.36	11.9
DEC	93	0	0.0	0	0	0	5	0	1.51	9.0
Total:	1202	3	0.2	0	0	0	78	2	1.45	13.2

Notes:
TC = Total Coliforms, *E. coli* = *Escherichia coli,* Cl_2 = chlorine, NTU = Nephelometric turbidity unit.
> = Greater than, mg/L = milligrams per litre, °C = degrees Celsius

Disinfection Byproducts. No data for 2021.

Physical/Chemical Parameters. The drinking water in the Victoria/Esquimalt Distribution System had the following physical and chemical characteristics in 2021:

- Median pH: 7.8
- Median Alkalinity: 16.70 mg/L
- Median Turbidity: 0.25 NTU
- Median Conductivity (25ºC): 51.40 µS/cm
- Median Colour: 3.0 TCU

The system experienced occasional elevated turbidity in certain dead-end pipe sections, which were addressed with regular or ad hoc flushing at those locations.

Metals. In 2019, CRD, in concert with Saanich, Victoria/Esquimalt and Oak Bay, started the Greater Victoria pH & Corrosion Study to investigate water properties that may contribute to metal corrosion, and in particular, to lead leaching into the drinking water. The study examines the water inside the public and also the private drinking water piping systems. As part of this study, samples from a multitude of sampling locations were analyzed for lead and copper. In 2021, the project scope was expanded to include region-wide sampling at customers' taps as per BC Ministry of Health guidelines. The project was completed in the fall of 2021. The study found that metal corrosion and lead leaching in the public piping systems as well as in the vast majority of private plumbing systems is not an issue in the Greater Victoria Drinking Water System.

Compliance Status. The Victoria/Esquimalt Distribution System was in full compliance with the *BC Drinking Water Protection Act* and *Drinking Water Protection Regulation*.

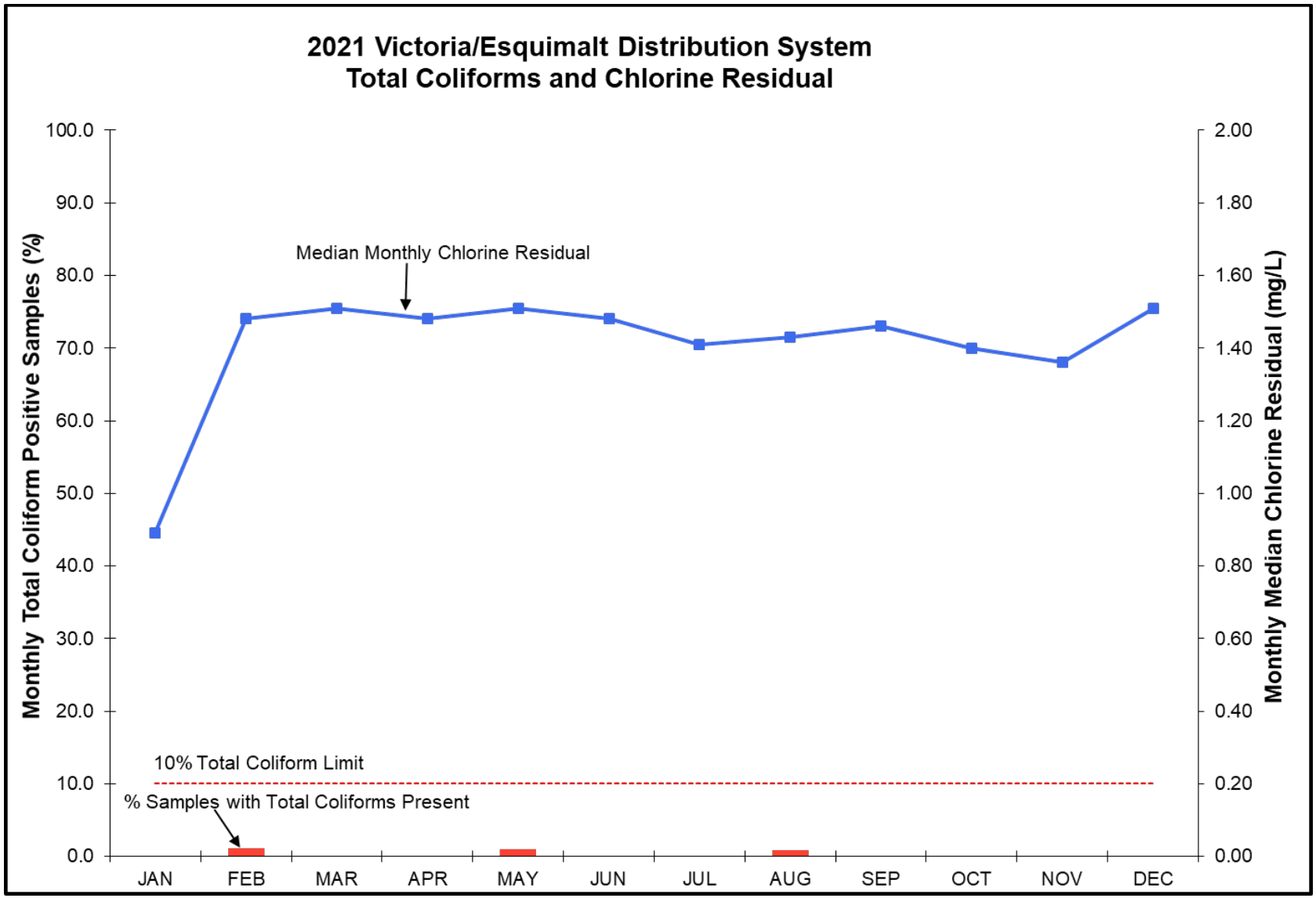


Figure 38 Victoria/Esquimalt Distribution System Total Coliforms and Chlorine Residuals in 2021

7.5 Water Quality Inquiry Program

Records of customer inquiries, including complaints about drinking water quality, have been maintained since 1992. In January 2021, as a result of the sudden switch to a free chlorine residual during repair works on the ammonia system, a flurry of several dozen customer complaints and concerns was received by Water Quality staff. The nature of the complaints was typically a strong and unusual chlorine/bleach taste and odour. On January 13, 2021, the CRD issued a taste and odour advisory to the public upon which the number of calls and emails subsided. Besides this particular event, there was no single category of water quality inquiry or complaint that stood out among the rest. During periods of water main flushing activities (January-May, September-December) in the distribution systems, complaints or concerns about water discolouration were more prevalent. Throughout the year, a number of inquiries or complaints about chlorine taste and odour were received in 2021, but most of these were of a general nature where people object to the addition of any chemical to the drinking water.

CRD staff have communicated regularly with Island Health hospital facility management staff to provide useful water quality information to these facilities. No hospital staff complaints or concerns were raised in 2021.

The continued absence of the intake screen until April 2021 did not result in any increase of customer concerns or complaints.

Due to the temporary switch to free chlorine residuals in January, the number of water quality complaints or inquiries in 2021 was higher than in previous years.

In addition to complaints, CRD staff received a number of queries from people concerned about the general safety of their drinking water. These concerns were addressed individually and, in general, most customers are content to know that CRD staff are actively sampling both the source water and the treated drinking water being delivered to their homes. For those people wanting to know more about the composition of their drinking water, they were either provided with the annual tables or directed to the CRD website. The heightened public awareness around health risks associated with lead in drinking water that was noticed in public interactions in previous years was somewhat subdued in 2021, likely as a result of the dominant attention to the Covid-19 public health risks throughout the year.

7.6 Cross Connection Control Program

This program was created based on an Order by the Chief Medical Health Officer of the Island Health Authority in 2005. Since then, it has become exemplary for an effective and efficient cross connection control program in Canada and it forms an important component of the multi-barrier concept in the Greater Victoria Drinking Water System. Working with Island Health, the 13 municipalities and participating electoral areas, the objective of this program is to identify, eliminate and prevent cross connections within the Greater Victoria Drinking Water System that could lead to drinking water contaminations. The CRD was tasked to take over the responsibility for this program under a newly-created Cross Connection Control Bylaw (enacted in 2006). In 2019, this bylaw saw its most recent update to bring the technical and administrative requirements in line with new provincial legislation. The method by which the program meets its objectives is enforcement of the cross connection control requirements under the BC Building Code and as described by the Canadian Standard Association, and through public education. CRD staff work with municipal building officials, industry professionals and business and facility owners to achieve the goals of the Cross Connection Control Program.

In 2021, the Cross Connection Control Program conducted a total of 394 facility audits on high risk (125) and moderate risk (269) facilities. The focus was on facilities in multi-unit residential buildings. The compliance rate, measured as facilities with outstanding deficiencies divided by the number of facilities audited, increased from 74% in 2020 to 78% by the end of 2021. This success is attributed to a shift to an outcome-oriented approach, coupled with effective outreach campaigns. It is expected that this compliance rate will further increase in future years.

In total, by the end of 2021, the Cross Connection Control Program had 27,484 cross connection control devices registered in its database (up from 27,147 in 2020). These devices were installed in 13,381 registered facilities across the region. On all testable devices, a total of 20,555 test reports (11,400 digital, 9,155 paper) were received and recorded by CRD staff in 2021. The compliance rate for getting testable devices tested in accordance with the bylaw was 73%.

8.0 CONCLUSIONS

1. The water quality data collected in 2021 indicate that the drinking water in Greater Victoria was of good quality and safe to drink. The drinking water temperature exceeded the aesthetic objective of 15°C between mid-July and early October. This is the only parameter that system-wide did not meet water quality criteria listed in the G*uidelines for Canadian Drinking Water Quality*.

2. Greater Victoria continues to enjoy a water supply in which *Giardia* and *Cryptosporidium* parasites are well below the levels commonly considered by the health authorities to be responsible for disease outbreaks.

3. The bacteriological quality of the raw source water was excellent in 2021. Total coliform concentrations during the summer months were on average higher than in previous years but very low during the rest of the year. The higher total coliform concentrations may be correlated with the extreme weather conditions during the summer of 2021. This seasonal increase in bacteria load had no impact on the treated water quality. *E. coli* bacterial levels in the raw source water were low for the entire year.

4. Consumers in the GVDWS received drinking water that had very low disinfection byproducts. Overall levels of trihalomethanes and haloacetic acids remain well below the Canadian guidelines' limits and the USEPA limits. A temporary switch to free chlorine residuals in January resulted short-term in significantly higher concentrations of trihalomethanes and haloacetic acids. Albeit mostly below the health limits for long-term exposure, this event has demonstrated the importance of chloramination for disinfection byproduct management in the GVDWS. The newly-monitored disinfection byproduct, Nitrosodimethylamine, was, if detected at all, only in concentrations well below the current MAC in the Canadian guidelines.

5. The algal activity in 2021 was in line with the long-term average trend in Sooke Lake Reservoir. The species that were active, and relatively abundant in 2021, belonged to known and low-risk algal species. Cyanobacteria, with the potential to produce harmful cyanotoxins under bloom conditions, were present, as usual, throughout the year. However, a stable and nutrient-poor ecosystem, such as the Sooke Lake Watershed, does not provide conditions needed for cyanobacteria or other adverse algal blooms with serious implications for the drinking water quality. These natural nutrient-poor conditions limit the biological productivity in Sooke Lake Reservoir, which is very favourable for a drinking water source.

6. The number of water quality inquiries and complaints received by CRD staff in 2021 was slightly higher due to the temporary switch to free chlorine in January. CRD issued a public advisory between January 13 and February 17, 2021 to alert customers of potentially stronger chlorine taste and odour in the drinking water. Aside from this event, the number and nature of customer complaints or inquiries were similar to previous years.

7. The CRD Sooke/East Sooke and the CRD Juan de Fuca distribution systems were not in full compliance with the *BC Drinking Water Protection Regulation*, due to samples containing total coliform concentrations higher than the limit of 10 CFU/100 mL. Resamples did not confirm an actual drinking water contamination, therefore, there was no risk to the public, due to these results.

8. All systems did meet the monthly sampling requirements, as per *BC Drinking Water Protection Regulation.*

9. The analytical results in all CRD and municipal water systems show that the drinking water was of good quality and was safe for consumption at all times throughout 2021.

10. The Greater Victoria pH & Corrosion Study including a region-wide tap sampling program was completed in October 2021. The findings have been reported separately.

APPENDIX A
TABLE 1. UNTREATED (RAW) WATER QUALITY ENTERING GOLDSTREAM (JAPAN GULCH) WATER TREATMENT PLANT
(Guideline values provide reference only for untreated water)

PARAMETER		2021 ANALYTICAL RESULTS				CANADIAN GUIDELINES	TEN YEAR RESULTS (2012-2021)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range		≤ = Less than or equal to	10 Year Median	Samples Analyzed	Range	
				Minimum	Maximum				Minimum - Maximum	
Physical Parameters (ND means less than instrument can detect)										
Alkalinity, Total	mg/L	**13.2**	16	13.2	16.7		15.2	158	8.84-19.1	12/yr
Carbon, Dissolved Organic	mg/L as C	**1.7**	12	1.1	2.6		1.7	116	ND-4.0	12/yr
Carbon,Total Organic	mg/L as C	**1.8**	12	1.6	2.7	Guideline Archived	1.9	117	0.82-3.9	12/yr
Colour, True	TCU	**6.0**	48	2.0	9.0	≤15 AO	6.4	532	ND-15.2	52/yr
Conductivity @ 25 C	uS/cm	**41.1**	49	39.2	46.7		42.2	522	27.5-59.3	52/yr
Hardness as $CaCO_3$	mg/L	**16.7**	7	16.1	18.3	No Guideline Required	17.3	153	6.95-20.9	6/yr
pH	pH units	**7.3**	71	6.5	7.6	7.0 - 10.5 AO	7.29	527	6.5-7.94	52/yr
Tannins and Lignins	mg/L	**ND**	2	ND	ND	Guideline Archived	0.22	21	ND-170	2/yr
Total Dissolved Solids	mg/L	**25.0**	12	ND	36.0	≤500 AO	26.8	112	ND-48	12/yr
Total Suspended Solids	mg/L	**ND**	12	ND	1.6		1	113	0.1-4	12/yr
Total Solids	mg/L	**30.0**	12	12.0	42.0		28	108	ND-48	12/yr
Turbidity, Grab Samples	NTU	**0.3**	243	0.2	1.2	1.0 Operational Guideline	0.32	2436	0.17-3.1	250/yr
Ultraviolet Absorption, 5 cm	Abs.@254 nm	**0.3**	49	0.2	0.3		0.26	502	0.16-88.2	52/yr
Ultraviolet Transmittance	%	**88.3**	48	86.4	91.3		88.8	527	0.2-94.4	52/yr
Water Temp., Grab Samples	degrees C	**9.9**	252	4.0	20.1	≤15 AO	10.3	2487	2.7-21	250/yr
Non-Metallic Inorganic Chemicals (ND means less than instrument can detect)										
Bromide	ug/L as Br	**ND**	4	ND	ND		ND	63	0.011-13	4/yr
Chloride	mg/L as Cl	**2.6**	3	2.3	4.90	≤ 250 AO	2.4	25	ND-4.58	4/yr
Cyanide	mg/L as Cn	**ND**	6	ND	0.002	0.2 MAC	ND	22	ND	4/yr
Fluoride	mg/L as F	**ND**	4	ND	ND	1.5 MAC	0.02	25	ND-0.07	4/yr
Iodide, dissolved	mg/L as I	**ND**	2	ND	ND		ND	8	ND	4/yr
Nitrate, Dissolved	ug/L as N	**ND**	12	ND	34.00	10000 MAC	ND	108	ND-222	12/yr
Nitrite, Dissolved	ug/L as N	**ND**	12	ND	ND	1000 MAC	ND	107	ND	12/yr
Nitrate + Nitrite	ug/L as N	**ND**	12	ND	34.00		ND	109	ND-55.1	12/yr
Nitrogen, Ammonia	ug/L as N	**ND**	12	ND	73.00	No Guideline Required	ND	111	0.079-130	12/yr
Nitrogen, Total Kjeldahl	ug/L as N	**129.5**	12	81	531.00		92.5	108	0-610	12/yr
Nitrogen, Total	ug/L as N	**147.5**	12	81	531.00		104	113	0-610	12/yr
Phosphate, Ortho, Dissolved	ug/L as P	**1.25**	12	ND	12.00		ND	109	ND	12/yr

Appendix A, Table 1, continued

Phosphate, Total, Dissolved	ug/L as P	**ND**	12	ND	2.10		ND	113	ND-31	12/yr
Phosphate,Total	ug/L as P	**1.35**	12	ND	5.20		3.46	113	ND-12.6	12/yr
Silica	mg/L as SiO_2	**4.4**	12	3.8	5.10		3.9	99	0.09-5.6	12/yr
Silicon	ug/L as Si	**2140**	7	1870	2270.00		1860	85	681-2520	6/yr
Sulphate	mg/L as SO_4	**1.5**	12	ND	2.10	≤ 500 AO	1.58	112	ND-8.16	12/yr
Sulphide	mg/L as H_2S	**ND**	13	ND	ND	≤ 0.05 AO	0.002	2	ND	12/yr
Sulphur	mg/L as S	**ND**	7	ND	ND		ND	84	ND	6/yr
Metallic Inorganic Chemicals (ND means less than instrument can detect)										
Aluminum	ug/L as Al	**17.2**	7	6.5	28.70	2900 MAC / 100 OG	15.1	85	ND-52.3	6/yr
Antimony	ug/L as Sb	**ND**	7	ND	ND	6 MAC	ND	85	ND	6/yr
Arsenic	ug/L as	**ND**	7	ND	ND	10 MAC	ND	85	ND-0.24	6/yr
Barium	ug/L as Ba	**3.7**	7	3.5	4.00	2000 MAC	3.8	85	1.6-5.3	6/yr
Beryllium	ug/L as Be	**ND**	7	ND	ND		ND	85	ND	6/yr
Bismuth	ug/L as Bi	**ND**	7	ND	ND		ND	85	ND	6/yr
Boron	ug/L as B	**ND**	7	ND	ND	5000 MAC	ND	85	ND	6/yr
Cadmium	ug/L as Cd	**ND**	7	ND	ND	7 MAC	ND	85	ND-0.07	6/yr
Calcium	mg/L as Ca	**4.81**	7	4.64	5.28	No Guideline Required	5	85	2.06-6.13	6/yr
Chromium	ug/L as Cr	**ND**	7	ND	ND	50 MAC	ND	85	ND	6/yr
Cobalt	ug/L as Co	**ND**	7	ND	ND		ND	85	ND	6/yr
Copper	ug/L as Cu	**0.81**	7	0.61	1.10	2000 MAC / ≤ 1000 AO	1.46	85	0.33-30.5	6/yr
Iron	ug/L as Fe	**19.8**	7	14.0	52.0	≤ 300 AO	30	85	12-217	6/yr
Lead	ug/L as Pb	**ND**	7	ND	ND	5 MAC	ND	85	ND-0.4	6/yr
Lithium	ug/L as Li	**ND**	7	ND	ND		ND	66	ND-10.4	6/yr
Magnesium	mg/L as Mg	**1.19**	7	1.09	1.24	No Guideline Required	1.18	85	0.44-1.6	6/yr
Manganese	ug/L as Mn	**4**	7	1.5	17.90	120 MAC / ≤ 20 AO	5.5	85	1.4-81.8	6/yr
Mercury, Total	ug/L as Hg	**ND**	7	ND	0.0021	1.0 MAC	ND	84	ND	6/yr
Molybdenum	ug/L as Mo	**ND**	7	ND	ND		ND	85	ND	6/yr
Nickel	ug/L as Ni	**ND**	7	ND	ND		ND	85	ND-2.3	6/yr
Potassium	mg/L as K	**0.13**	7	0.13	0.14		0.137	85	0.081-0.214	6/yr
Selenium	ug/L as Se	**ND**	7	ND	ND	50 MAC	ND	85	ND	6/yr
Silver	ug/L as Ag	**ND**	7	ND	ND	No Guideline Required	ND	85	ND-0.02	6/yr
Sodium	mg/L as Na	**1.63**	7	1.56	1.73	≤ 200 AO	1.7	85	0.65-2.91	6/yr
Strontium	ug/L as Sr	**14.9**	7	13.8	15.90	7000 MAC	15.4	85	6.3-21.8	6/yr
Thallium	ug/L as Tl	**ND**	7	ND	ND		ND	85	ND	6/yr
Tin	ug/L as Sn	**ND**	7	ND	ND		ND	85	ND	6/yr
Titanium	mg/L as Ti	**ND**	7	ND	ND		ND	89	ND	6/yr

Appendix A, Table 1, continued

Uranium	ug/L as U	**ND**	7	ND	ND	20 MAC	ND	85	ND	6/yr
Vanadium	ug/L as V	**ND**	7	ND	ND		ND	85	ND	6/yr
Zinc	ug/L as Zn	**ND**	7	ND	ND	≤ 5000 AO	ND	85	ND-82.9	6/yr
Zirconium	ug/L as Zr	**ND**	7	ND	ND	_	ND	85	ND	6/yr
Microbial Parameters										
Coliform Bacteria										
Coliforms, Total	Coliforms/100 mL	**8**	244	ND	260.00		11	2438	ND-24200	250/yr
E. coli	*E. coli*/100 mL	**ND**	244	ND	7.00		ND	2439	ND-15	250/yr
Heterotrophic / Other Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	**220.0**	222.0	ND	800.0		350	2231	ND-7200	250/yr
Cyanobacterial Toxins										
Anatoxin a	ug/L	Analyzed as required - last analyzed in 2005								Special
Microcystin-LR	ug/L	Analyzed as required - last analyzed in 2011				1.5 MAC (Total Microcystins)	ND	1	ND	Special
Parasites										
Cryptosporidium, Total oocysts	oocysts/100 L	**ND**	8	ND	ND	Zero detection desirable	0	118	ND - 2	8/yr
Giardia, Total cysts	cysts/100 L	**ND**	8	ND	ND	Zero detection desirable	0	107	ND	8/yr
Radiological Parameters (ND means less than instrument can detect)										
Gross alpha radiation	Bq/L	**0.04**	2	ND	0.06	0.5 (Screening)	ND	21	ND	2/yr
Gross beta radiation	Bq/L	**ND**	2	ND	ND	1.0 (Screening)	ND	21	ND - 0.11	2/yr
Iodine-131	Bq/L	**ND**	2	ND	ND	6 Bq/L	ND	19	ND	Special
Cesium-134	Bq/L	**Not tested in 2021**					ND	14	ND	Special
Cesium-137	Bq/L	**0.15**	2	ND	ND	10 Bq/L	ND	19	ND	Special
Ruthenium-103	Bq/L	**Not tested in 2021**					ND	12	ND	Special
Uranium	ug/L as U	**ND**	7	ND	ND	20 MAC	ND	85	ND	6/yr

Appendix A, Table 1, continued

Organic Parameters (ND means less than instrument can detect)										
Pesticides/Herbicides										
1,4-DDD	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
1,4'-DDE	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
1,4'-DDT	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
2,4,5-T	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
2,4,5-TP (Silvex)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
2,4-D (2,4-Dichlorophenoxyacetic acid)	ug/L	**ND**	2	ND	ND	100 MAC	ND	14	ND	2/yr
2,4-D (BEE)	ug/L	**ND**	2	ND	ND		ND	29	ND	2/yr
2,4-DP (Dichlorprop)	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
4,4'-DDD	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	15	ND	2/yr
4,4'-DDE	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
4,4'-DDT	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	16	ND	2/yr
Alachlor	ug/L	**Not tested in 2021**				Guideline Archived	ND	7	ND	2/yr
Aldicarb	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Aldrin	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Aldrin + Dieldrin	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	9	ND	2/yr
Atrazine	ug/L	**ND**	2	ND	ND	5 MAC	ND	20	ND	2/yr
Azinphos-methyl	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
BHC (alpha)	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
BHC (beta)	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
BHC (delta)	ug/L	**ND**	2	ND	ND		ND	15	ND	2/yr
Bendiocarb	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	Irregular
Bromacil	ug/L	**ND**	2	ND	ND		ND	14	ND	2/yr
Bromoxynil	ug/L	**ND**	2	ND	ND	5.0 MAC	ND	17	ND	2/yr
Captan	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
Carbaryl	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Carbofuran	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Chlordane (alpha)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	16	ND	2/yr
Chlordane (gamma)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
Chlorpyrifos (Dursban)	ug/L	**ND**	2	ND	ND	90 MAC	ND	20	ND	2/yr
Chlorothalonil	ug/L	**ND**	2	ND	ND		ND	12	ND	2/yr
Cyanazine (Bladex)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
Demeton	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
Desisopropylatrazine	ug/L	**ND**	2	ND	ND		Not reported prior to 2020			2/yr
Diazinon	ug/L	**ND**	2	ND	ND	Screening Value 30	ND	21	ND	2/yr
Dicamba	ug/L	**ND**	2	ND	ND	120 MAC	ND	20	ND	2/yr
Diclofop-methyl	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	16	ND	2/yr
Dichlorvos	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
Dieldrin	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Dimethoate	ug/L	**ND**	2	ND	ND	20 MAC	ND	21	ND	2/yr
Dinoseb (DNBP)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	4	ND	2/yr

Appendix A, Table 1, continued

Diquat	ug/L	**ND**	2	ND	ND	70 MAC	ND	19	ND	2/yr
Endosulfan I	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
Endosulfan II	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
Endosulfan Sulphate	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Endosulfan (Total)	ug/L	**ND**	2	ND	ND		ND	17	ND	2/yr
Endrin	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
Endrin Aldehyde	ug/L	**ND**	2	ND	ND		ND	20	ND	2/yr
Endrin Ketone	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Ethion	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Parathion Ethyl	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Fenchlorophos (Ronnel)	ug/L	**ND**	2	ND	ND		ND	17	ND	2/yr
Fenthion	ug/L	**ND**	2	ND	ND		ND	17	ND	2/yr
Fonofos	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Glyphosate	ug/L	**ND**	2	ND	ND	280 MAC	ND	20	ND	2/yr
Heptachlor	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
Heptachlor Epoxide	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
Imazapyr	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
Imidacloprid	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
IPBC	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
Lindane (Hch-gamma)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
Malathion	ug/L	**ND**	2	ND	ND	190 MAC	ND	21	ND	2/yr
MCPA	ug/L	**ND**	4	ND	ND	100 MAC	ND	24	ND	2/yr
MCPP	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
Methoxychlor	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND	2/yr
Methyl Parathion	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Metolachlor	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Metribuzin (Sencor)	ug/L	**ND**	2	ND	ND	80 MAC	ND	17	ND	2/yr
Mevinphos	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
Mirex	mg/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
Nitrilotriacetic acid (NTA)	ug/L	**ND**	2	ND	ND	400 MAC	ND	19	ND-0.1	Irregular
Oxychlordane	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
Parathion	ug/L	**ND**	4	ND	ND	Guideline Archived	ND	17	ND	2/yr
Paraquat (ion)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	19	ND	2/yr
Permethrin	ug/L	**ND**	2	ND	ND		ND	12	ND	2/yr
Phorate (Thimet)	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Phosmet	ug/L	**ND**	2	ND	ND		ND	19	ND	2/yr
Picloram	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Prometryn	ug/L	**ND**	2	ND	ND		ND	17	ND	Irregular
Simazine	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Tebuthiuron	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
Temephos	ug/L	**Not tested in 2021**				Guideline Archived	ND	5	ND	2/yr
Terbufos	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/Yyr
Toxaphene	ug/L	**Not tested in 2021**				Guideline Archived	ND	11	ND	2/Yyr
Trifluralin	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/Yyr

Appendix A, Table 1, continued

Polycyclic Aromatic Hydrocarbons (PAH's)										
Acenaphthene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Acenaphthylene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Anthracene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Benzo(a)anthracene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Benzo(a)pyrene	ug/L	**ND**	2	ND	ND	0.04 MAC	ND	20	ND	2/yr
Benzo(b)fluoranthene	ug/L	**Not tested in 2021**				Guideline Archived	ND	18	ND	2/yr
Benzo(g,h,i)perylene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Benzo(b&j)fluoranthene	ug/L	**ND**	2	ND	ND	Guideline Archived	Not reported prior to 2020			2/yr
Benzo(k)fluoranthene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Chrysene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND-0.03	2/yr
Dibenz(a,h)anthracene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND-0.04	2/yr
Fluoranthene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND-0.02	2/yr
Fluorene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND-0.03	2/yr
Indeno(1,2,3-c,d)pyrene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Naphthalene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	2/yr
Phenanthrene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND-0.08	2/yr
Pyrene	ug/L	**0.02**	2	ND	ND	Guideline Archived	ND	21	ND	2/yr
Volatile Hydrocarbons	ug/L	**ND**	3	ND	ND	Guideline Archived	ND	26	ND	2/yr
Phenols										
2,3,4,5-Tetrachlorophenol	ug/L	**ND**	2	ND	ND		ND	11	ND	2/yr
2,3,4,6-Tetrachlorophenol	ug/L	**ND**	2	ND	ND	100 MAC and ≤ 1.0 AO	ND	17	ND	2/yr
2,3,5,6-Tetrachlorophenol	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	10	ND	2/yr
2,4,6-Trichlorophenol	ug/L	**ND**	2	ND	ND	5.0 MAC and ≤ 2.0 AO	ND	20	ND	2/yr
2,4-Dichlorophenol	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	11	ND	2/yr
2,4-Dimethylphenol	ug/L	**ND**	2	ND	ND		ND	20	ND	2/yr
2,4-Dinitrophenol	ug/L	**ND**	2	ND	ND		ND	21	ND	2/yr
2-Chlorophenol	ug/L	**ND**	2	ND	ND		ND	21	ND	2/yr
2-Nitrophenol	ug/L	**ND**	2	ND	ND		ND	18	ND	2/yr
4,6-Dinitro-2-Methylphenol	ug/L	**ND**	2	ND	ND		ND	21	ND	2/yr
4-Chloro-3-Methylphenol	ug/L	**ND**	2	ND	ND		ND	21	ND	2/yr
4-Nitrophenol	ug/L	**ND**	2	ND	ND		ND	21	ND	2/yr
Alpha-Terpineol	ug/L	**ND**	2	ND	ND		ND	21	ND	2/yr
Pentachlorophenol	ug/L	**ND**	2	ND	ND	60 MAC and ≤ 30 AO	ND	20	ND	2/yr
Phenol	ug/L	**ND**	2	ND	ND		ND	21	0.002-6.2	2/yr
Total Phenolics	ug/L	ND	2	ND	ND	Guideline Archived	ND	14	ND-8.2	2/yr

Appendix A, Table 1, continued

Polychlorinated Biphenyls (PCBs)										
PCB-1016	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
PCB-1221	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
PCB-1232	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
PCB-1242	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
PCB-1248	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
PCB-1254	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
PCB-1260	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	18	ND-ND	Irregular
PCB-1262	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	7	ND-ND	Irregular
PCB-1268	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	7	ND-ND	Irregular
Total PCBs	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	17	ND-ND	Irregular
Other Synthetic Chemicals										
1,1,1-Trichloroethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,1,1,2-Tetrachloroethane	ug/L	**ND**	2	ND	ND		ND	23	ND	
1,1,2,2-Tetrachloroethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,1,2-Trichloroethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,1-Dichloroethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,1-Dichloroethene (1,1-Dichloroethylene)	ug/L	**ND**	2	ND	ND	14 MAC	ND	21	ND	
1,2,3-Trichlorobenzene	ug/L	**ND**	2	ND	ND		ND	16	ND	
1,2,4-Trichlorobenzene	ug/L	**ND**	2	ND	ND		ND	21	ND-0.2	
1,2-Dibromoethane	ug/L	**ND**	2	ND	ND		ND	20	ND	
1,2-Dichlorobenzene	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	21	ND	
1,2-Dichloroethane	ug/L	**ND**	2	ND	ND	5.0 MAC	ND	19	ND	
1,2-Dichloroethene (cis)	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,2-dichloroethene (trans)	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,2-Dichloropropane	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,2-Diphenylhydrazine	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,3-Dichlorobenzene	ug/L	**ND**	2	ND	ND		ND	20	ND	
1,3-Dichloropropene (cis)	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,3-Dichloropropene (trans)	ug/L	**ND**	2	ND	ND		ND	21	ND	
1,4-Dichlorobenzene	ug/L	**ND**	2	ND	ND	5.0 MAC and ≤ 1.0 AO	ND	20	ND	
2,4-Dinitrotoluene	ug/L	**ND**	2	ND	ND		ND	21	ND	
2,6-Dinitrotoluene	ug/L	**ND**	2	ND	ND		ND	21	ND	
2-Chloronaphthalene	ug/L	**ND**	2	ND	ND		ND	21	ND	
1-Methylnaphthalene	ug/L	**ND**	2	ND	ND		ND	6	ND	
2-Methylnaphthalene	ug/L	**ND**	2	ND	ND		ND	21	ND	
3,3'-Dichlorobenzidene	ug/L	**ND**	2	ND	ND		ND	20	ND	
4-Bromophenyl-phenylether	ug/L	**ND**	2	ND	ND		ND	21	ND	

Appendix A, Table 1, continued

4-Chlorophenyl-phenylether	ug/L	**ND**	2	ND	ND		ND	21	ND	
Atrazine	ug/L	**ND**	2	ND	ND	5.0 MAC	ND	20	ND	
Atrazine + Desethyl Atrazine	ug/L	**ND**	2	ND	ND		ND	8	ND	
Benzene	ug/L	**ND**	4	ND	ND	5.0 MAC	ND	26	ND	
Benzidine	ug/L	**Not tested in 2021**					ND	13	ND	
Bis(-2-chloroethoxy) methane	ug/L	**ND**	2	ND	ND		ND	1	ND	
Bis(-2-chloroethyl) ether	ug/L	**ND**	2	ND	ND		ND	21	ND	
Bis(2-chloroisopropyl) ether	ug/L	**ND**	2	ND	ND		ND	1	ND	
Bis(2-ethylhexyl) phthalate	ug/L	**ND**	2	ND	ND		ND	21	ND-1.7	
Bromodichloromethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
Bromobenzene	ug/L	**ND**	2	ND	ND		ND	13	ND	
Bromoform	ug/L	**ND**	2	ND	ND		ND	20	ND	
Bromomethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
Butylbenzyl phthalate	ug/L	**ND**	2	ND	ND		ND	19	ND	
Carbon Tetrachloride (Tetrabromomethane)	ug/L	**ND**	2	ND	ND	2.0 MAC	ND	21	ND	
Chloroform	ug/L	**ND**	2	ND	ND		ND	21	ND	
Chloroethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
Chloromethane	ug/L	**ND**	2	ND	ND		ND	21	ND	
Desethyl Atrazine	ug/L	**ND**	2	ND	ND		ND	15	ND	
Dibromochloromethane	ug/L	**ND**	2	ND	ND		ND	7	ND	
Dibromomethane	ug/L	**ND**	2	ND	ND		ND	7	ND	
Dichlorodifluoromethane	ug/L	**ND**	2	ND	ND		ND	16	ND	
Dichloromethane	ug/L	**ND**	2	ND	ND	50 MAC	ND	20	ND	
Diethyl phthalate	ug/L	**ND**	2	ND	1.00		ND	20	ND-0.6	
Dimethyl phthalate	ug/L	**ND**	2	ND	ND		ND	20	ND	
Di-n-butyl phthalate	ug/L	**ND**	2	ND	ND		ND	19	ND-4.9	
Di-n-ocyl phthalate	ug/L	**ND**	2	ND	ND		ND	20	ND	
Diuron	ug/L	**ND**	2	ND	ND	Screening Value 15	ND	14	ND	
Ethylbenzene	ug/L	**ND**	4	ND	ND	140 MAC and ≤ 1.6 AO	ND	26	ND	
Formaldehyde	ug/L	**ND**	4	ND	ND	No Guideline Required	ND	19	ND	
Hexachlorobenzene	ug/L	**ND**	2	ND	ND		ND	20	ND	
Hexachlorobutadiene	ug/L	**ND**	4	ND	ND		ND	25	ND	
Hexachlorocyclopentadiene	ug/L	**ND**	2	ND	ND		ND	22	ND	
Hexachloroethane	ug/L	**ND**	2	ND	ND		ND	22	ND	
Isophorone	ug/L	**ND**	2	ND	ND	30 MAC	ND	21	ND	
Methyltertiarybutylether (MTBE)	ug/L	**ND**	4	ND	ND	15 AO	ND	32	ND	
Monochlorobenzene	ug/L	**ND**	2	ND	0.00	Guideline Archived	ND	21	ND	
Nitrobenzene	ug/L	**ND**	2	ND	ND	0.04 MAC	ND	21	ND	
N-nitroso-di-n-propylamine	ug/L	**ND**	2	ND	ND		ND	20	ND	
N-nitrosodiphenylamine	ug/L	**ND**	2	ND	ND		ND	21	ND	
Octachlorostyrene	ug/L	**ND**	2	ND	ND		ND	20	ND	
Styrene	ug/L	**ND**	4	ND	ND		ND	26	ND	
Tetrachloroethene	ug/L	**ND**	2	ND	ND	10 MAC	ND	21	ND	
Toluene	ug/L	**ND**	4	ND	ND	60 MAC and ≤ 24 AO	ND	26	ND	

Appendix A, Table 1, continued

Triallate	ug/L	**ND**	2	ND	ND	Guideline Archived	ND	20	ND	
Trichloroethene	ug/L	**ND**	2	ND	ND	5.0 MAC	ND	18	ND	
Trichlorofluoromethane	ug/L	**ND**	2	ND	ND		ND	20	ND	
Trichlorotrifluoroethane	ug/L	**ND**	2	ND	ND		ND	11	ND	
Vinyl Chloride	ug/L	**ND**	2	ND	ND	2.0 MAC	ND	21	ND	
o-Xylene	ug/L	**ND**	4	ND	ND		ND	26	ND	
m&p-Xylene	ug/L	**ND**	4	ND	ND		ND	25	ND	
Xylenes (Total)	ug/L	**ND**	4	ND	ND	90 MAC and ≤ 20 AO	ND	25	ND	
Miscellaneous										
Perfluorobutanioc Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluoropentanoic Acid (PFPeA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorohexanoic Acid (PFHxA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluoroheptanoic Acid (PFHpA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorooctanoic Acid (PFOA)	ug/L	**ND**	2	ND	ND	0.2 MAC	ND	1	ND	2/yr
Perfluorononanoic Acid (PFNA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorodecanoic Acid (PFDoA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluoroundecanoic Acid (PFUnA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perflurotridecanoic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorotetradecnoic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorobutanesulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluoropentanesulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorohexanesulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluoroheptanesulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorooctanesulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorononane sulfonic Acid (PFOS)	ug/L	**ND**	2	ND	ND	0.6 MAC	ND	1	ND	2/yr
Perfluorodecanesulfonic Acid (PFDS)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
Perfluorooctane Sulfonamide (PFOSA)	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
4:2 Flurotelomer Sulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
6:2 Flurotelomer Sulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr
8:2 Flurotelomer Sulfonic Acid	ug/L	**ND**	2	ND	ND		ND	1	ND	2/yr

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A

TABLE 2. 2021 TREATED WATER QUALITY AFTER GOLDSTREAM (JAPAN GULCH) WATER TREATMENT PLANT

PARAMETER		2021 ANALYTICAL RESULTS				CANADIAN GUIDELINES	TEN YEAR RESULTS (2012-2021)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range Minimum	Range Maximum	≤ = Less than or equal to	10 Year Median	Samples Analyzed	Range Minimum - Maximum	
Physical Parameters (ND means less than instrument can detect)										
Alkalinity, Total	mg/L	**16.7**	31	11.2	18.5		13.4	183	6.92-18.8	12/yr
Carbon, Dissolved Organic	mg/L	**1.55**	12	ND	2.3		1.76	115	0.59-370	12/yr
Carbon, Total Organic	mg/L	**1.65**	12	1.1	2.1	Guideline Archived	1.8	115	0.93-4.99	12/yr
Colour, True	TCU	**3**	96	ND	7	≤ 15 AO	4	665	ND-30	52/yr
Conductivity @ 25 C	uS/cm	**50.2**	97	41.5	56.1		45.4	649	30.5-152	52/yr
Hardness as $CaCO_3$	mg/L	**16.6**	12	15.6	18.4	No Guideline Required	17.3	179	7.19-22.1	12/yr
Odour	Odour Profile	**1**	400	1	2	Inoffensive	1	2962	1 - 3	250/yr
pH	pH units	**7.5**	173	6.6	8.5	7.0-10.5 AO	7.1	652	6.5-8.1	52/yr
Taste	Flavour Profile	**1**	457	1	2	Inoffensive	1	2951	1 - 3	250/yr
Total Dissolved Solids	mg/L	**35**	12	20	48	≤500 AO	27	111	ND-78	12/yr
Total Suspended Solids	mg/L	**ND**	12	ND	2.4		ND	110	0.07-11	12/yr
Total Solids	mg/L	**38**	12	14	70		29	107	ND	12/yr
Turbidity, Grab Samples	NTU	**0.2**	466	0.15	0.8	1 Operational and ≤ 5 AO	0.33	3049	0.14-6.3	250/yr
Water Temperature, Grab Samples	degrees C	**9.6**	468	3.7	20.1	≤ 15 AO	9.5	3194	2.5-21.1	250/yr
Non-Metallic Inorganic Chemicals (ND means less than instrument can detect)										
Bromate	mg/L as BrO3	**ND**	10	ND	0.011	0.01 MAC	ND	9	ND-6.77	
Bromide	ug/L as Br	**ND**	4	ND	ND		ND	64	0.018-43	4/yr
Chloride	mg/L as Cl	4.4	3	2.5	4.60	≤ 250 AO	4.24	27	ND-5.4	4/yr
Chlorate, dissolved	mg/L as ClO2	ND	13	ND	ND	1 MAC	ND	3	ND	4/yr
Chlorite, dissolved	mg/L as ClO3	ND	7	ND	ND	1 MAC	ND	3	ND	4/yr
Cyanide	mg/L as Cn	**ND**	6	ND	0.005	0.2 MAC	ND	23	ND	4/yr
Fluoride	mg/L as F	**ND**	4	ND	ND	1.5 MAC	ND	19	ND-0.04	4/yr
Nitrate, Dissolved	ug/L as N	**ND**	12	ND	32	10000 MAC	10	107	ND-61.7	12/yr
Nitrite, Dissolved	ug/L as N	**ND**	12	ND	ND	1000 MAC	ND	110	ND-25	12/yr
Nitrate + Nitrite	ug/L as N	**ND**	12	ND	32		ND	109	ND-61.7	12/yr
Nitrogen, Ammonia	ug/L as N	**260**	12	ND	760		120	112	0.11-500	12/yr
Nitrogen, Total Kjeldahl	ug/L as N	**403**	12	157	950		259	107	0.0003-490	12/yr
Nitrogen, Total	ug/L as N	**418**	12	189	976		259	113	0.0002-508	12/yr
Phosphate, Ortho, Dissolved	ug/L as P	**1.2**	12	ND	3		ND	109	ND-6.2	12/yr
Phosphate, Total, Dissolved	ug/L as P	**ND**	12	ND	4.6		2.7	113	ND-18	12/yr

Appendix A, Table 2, continued

Phosphate, Total	ug/L as P	**1.75**	12	ND	3.4		3.33	113	ND-14	12/yr
Silica	mg/L as SiO2	**4.4**	12	4.1	5.2		3.91	98	0.09-5.3	12/yr
Silicon	ug/L as Si	**2075**	12	1760	2310		1,880.00	114	693-2740	12/yr
Sulphate	mg/L as SO4	**1.45**	12	ND	3.9	≤ 500 AO	1.62	110	0.8-5.31	12/yr
Sulphide	mg/L as H2S	**ND**	13	ND	0.028	≤ 0.05 AO	ND	59	ND-0.1	12/yr
Sulfur	mg/L as S	**ND**	12	ND	ND		ND	114	ND	12/yr
Metallic Inorganic Chemicals (ND means less than instrument can detect)										
Aluminum	ug/L as Al	**16.4**	12	5.8	30	2900 MAC / 100 OG	15.8	114	4.5-67.7	12/yr
Antimony	ug/L as Sb	**ND**	12	ND	ND	6 MAC	ND	114	ND	12/yr
Arsenic	ug/L as	**ND**	12	ND	ND	10 MAC	ND	114	0.04-0.17	12/yr
Barium	ug/L as Ba	**3.6**	12	3.3	4.1	2000 MAC	3.8	114	1.4-4.8	12/yr
Beryllium	ug/L as Be	**ND**	12	ND	ND		ND	113	ND	12/yr
Bismuth	ug/L as Bi	**ND**	12	ND	ND		ND	114	ND	12/yr
Boron	ug/L as B	**ND**	12	ND	ND	5000 MAC	ND	114	ND	12/yr
Cadmium	ug/L as Cd	**ND**	12	ND	ND	7 MAC	ND	114	ND	12/yr
Calcium	mg/L as Ca	**4.76**	12	4.45	5.4	No Guideline Required	4.99	114	2.1-6.82	12/yr
Chromium	ug/L as Cr	**ND**	12	ND	ND	50 MAC	ND	114	ND-1.2	12/yr
Cobalt	ug/L as Co	**ND**	12	ND	ND		ND	114	ND	12/yr
Copper	ug/L as Cu	**2.3**	12	1.12	7	2000 MAC / ≤ 1000 AO	17.1	114	1.03-202	12/yr
Iron	ug/L as Fe	**23.5**	12	12.1	57.5	≤ 300 AO	28.2	114	12.2-198	12/yr
Lead	ug/L as Pb	**ND**	12	ND	ND	5 MAC	ND	114	ND-0.92	12/yr
Lithium	ug/L as Li	**ND**	12	ND	ND		ND	75	ND-13.5	12/yr
Magnesium	mg/L as Mg	**1.14**	12	1.07	1.23	No Guideline Required	1.16	114	0.15-1.6	12/yr
Manganese	ug/L as Mn	**3.15**	12	1.4	16.1	120 MAC / ≤ 20 AO	4.85	114	1.4-51.1	12/yr
Mercury, Total	ug/L as Hg	**ND**	12	ND	ND	1.0 MAC	ND	112	ND	12/yr
Molybdenum	Ug/L as Mo	**ND**	12	ND	ND		ND	114	ND-3.0	12/yr
Nickel	mg/L as Ni	**ND**	12	ND	ND		ND	114	0.21-16	12/yr
Potassium	mg/L as K	**0.13**	12	0.12	0.14		0.14	114	0.07-0.22	12/yr
Selenium	ug/L as Se	**ND**	12	ND	ND	50 MAC	ND	114	ND	12/yr
Silver	ug/L as Ag	**ND**	12	ND	ND	No Guideline Required	ND	114	ND-0.06	12/yr
Sodium	mg/L as Na	**3.12**	12	1.58	3.36	≤ 200 AO	1.7	114	0.67-3.56	12/yr
Strontium	ug/L as Sr	**14.9**	12	13.7	16.3	7000 MAC	15.4	114	6.3-19.7	12/yr
Thallium	ug/L as Tl	**ND**	12	ND	ND		ND	114	ND	12/yr
Tin	ug/L as Sn	**ND**	12	ND	ND		ND	114	ND	12/yr
Titanium	ug/L as Ti	**ND**	12	ND	ND		ND	114	ND	12/yr
Uranium	ug/L as U	**ND**	12	ND	ND	20 MAC	ND	114	ND	12/yr
Vanadium	ug/L as V	**ND**	12	ND	ND		ND	114	ND	12/yr
Zinc	ug/L as Zn	**ND**	12	ND	ND	≤ 5000 AO	ND	114	0.37-82	12/yr
Zirconium	ug/L as Zr	**ND**	12	ND	ND		ND	114	ND	12/yr

Appendix A, Table 2, continued

Microbial Parameters (ND means less than method or instrument can detect)										
Coliform Bacteria										
Coliforms, Total	CFU/100 mL	**ND**	469	ND	4	0 MAC	ND	3056	ND-85	250/yr
E. coli	CFU/100 mL	**ND**	467	ND	ND	0 MAC	ND	3059	ND	250/yr
Heterotrophic/Other Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	**ND**	219	ND	200		ND	2303	ND-770	250/yr
Disinfectants (ND means less than instrument can detect)										
Disinfectants										
Chlorine, Total Residual	mg/L as Cl_2	**1.84**	470	0.8	2.17	No Guideline Required (chloramines)	1.36	3223	0.83-2.17	250/yr
Monochloramine	mg/L as Cl_2	**1.74**	445	0	2.04		1.69	3035	0.03-2.17	250/yr

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A

TABLE 3. 2021 TREATED WATER QUALITY AFTER SOOKE RIVER ROAD WATER TREATMENT PLANT

PARAMETER		2021 ANALYTICAL RESULTS				CANADIAN GUIDELINES	TEN YEAR RESULTS (2012-2021)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range Minimum	Maximum	≤ = Less than or equal to	10 Year Median	Samples Analyzed	Range Minimum - Maximum	
Physical Parameters (ND means less than instrument can detect)										
Alkalinity, Total	mg/L	**16.2**	14	7.5	17.7		16.4	70	7.1-19	12/yr
Colour, True	TCU	**ND**	36	ND	5.0	≤ 15 AO	3.3	219	1-11.3	52/yr
Conductivity @ 25 C	uS/cm	**55.8**	36	50.1	59.7		56.9	214	26.4-71.6	52/yr
Hardness as $CaCO_3$	mg/L	**16.7**	6	15.8	23.9	No Guideline Required	16.9	29	15.3-18.7	6/yr
Odour	Flavour Profile	**1.0**	38	1.0	1.0	Inoffensive	1	229	44652	52/yr
pH	pH units	**7.6**	39	7.1	8.3	7.0-10.5 AO	7.5	213	7.1-8.3	52/yr
Taste	Flavour Profile	**1.0**	39	1.0	1.0	Inoffensive	1	229	44593	52/yr
Turbidity, Grab Samples	NTU	**0.2**	40	0.2	0.3	1 MAC	0.3	238	ND-0.55	52/yr
Water Temperature, Grab Samples	degrees C	**9.9**	40	4.7	18.9	≤ 15 AO	11.1	238	1.2-20	52/yr
Microbial Parameters (ND means less than instrument can detect)										
Coliform Bacteria										
Coliform, Total	CFU/100 mL	**ND**	40	ND	ND	0 MAC	ND	240	ND	52/yr
E. coli	CFU/100 mL	**ND**	40	ND	ND	0 MAC	ND	240	ND	52/yr
Heterotrophic Bacteria										
Hetero. Plate Count, 28C (7 day)	CFU/1 mL	**ND**	33	ND	40		ND	207	ND-210	52/yr
Disinfectants (ND means less than instrument can detect)										
Disinfectants										
Chlorine, Total Residual	mg/L as Cl_2	**1.88**	40	1.33	2.4	3.0 MAC (chloramines)	1.81	241	0.90-2.31	52/yr
Monochloramine	mg/L as Cl_2	**1.69**	40	1.28	2.01		1.59	73	1.15-2.16	52/yr

Appendix A, Table 3, continued

Metallic Inorganic Chemicals (ND means less than instrument can detect)										
Aluminum	ug/L as Al	**13.9**	6	6.3	18.9	2900 MAC / 100 OG	13.9	29	5.3-22.7	6/yr
Antimony	ug/L as Sb	**ND**	6	ND	ND	6 MAC	ND	29	ND	6/yr
Arsenic	ug/L aAs	**ND**	6	ND	ND	10 MAC	ND	29	ND	6/yr
Barium	ug/L as Ba	**3.7**	6	3.4	3.8	2000 MAC	3.7	29	3.3-4.2	6/yr
Beryllium	ug/L as Be	**ND**	6	ND	ND		ND	29	ND	6/yr
Bismuth	ug/L as Bi	**ND**	6	ND	ND		ND	29	ND	6/yr
Boron	ug/L as B	**ND**	6	ND	ND	5000 MAC	ND	29	ND	6/yr
Cadmium	ug/L as Cd	**ND**	6	ND	ND	7 MAC	ND	29	ND-0.02	6/yr
Calcium	mg/L as Ca	**4.8**	6	4.5	7.7	No Guideline Required	4.92	31	4.31-5.43	6/yr
Chromium	ug/L as Cr	**ND**	6	ND	ND	50 MAC	ND	29	ND	6/yr
Cobalt	ug/L as Co	**ND**	6	ND	ND		ND	29	ND	6/yr
Copper	ug/L as Cu	**22.7**	6	14.6	41.8	2000 MAC / ≤ 1000 AO	30.4	29	10.9-80.4	6/yr
Iron	ug/L as Fe	**26.9**	6	12.3	34.8	≤ 300 AO	24.4	29	12-53	6/yr
Lead	ug/L as Pb	**ND**	6	ND	ND	5 MAC	0.26	30	ND-0.64	6/yr
Lithium	ug/L as Li	**ND**	6	ND	ND		ND	11	ND	6/yr
Magnesium	mg/L as Mg	**1.15**	6	1.09	1.28	No Guideline Required	1.15	29	1-1.34	6/yr
Manganese	ug/L as Mn	**2.5**	6	1.3	4.9	120 MAC / ≤ 20 AO	3.6	2.9	1.3-10	6/yr
Mercury, Total	ug/L as Hg	**ND**	6	ND	ND	1.0 MAC	ND	29	ND	6/yr
Molybdenum	ug/L as Mo	**ND**	6	ND	ND		ND	29	ND	6/yr
Nickel	ug/L as Ni	**ND**	6	ND	ND		ND	29	ND	6/yr
Potassium	mg/L as K	**0.13**	6	0.12	0.13		0.14	29	0.12-0.25	6/yr
Selenium	ug/L as Se	**ND**	6	ND	ND	50 MAC	ND	29	ND	6/yr
Silver	ug/L as Ag	**ND**	6	ND	ND	No Guideline Required	ND	29	ND	6/yr
Sodium	mg/L as Na	**4.3**	6	3.4	4.8	≤ 200 AO	4.41	29	3.74-7.02	6/yr
Strontium	ug/L as Sr	**15.4**	6	13.9	17.1	7000 MAC	14.7	29	13.2-16.2	6/yr
Thallium	ug/L as Tl	**ND**	6	ND	ND		ND	29	ND	6/yr
Tin	ug/L as Sn	**ND**	6	ND	ND		ND	29	ND	6/yr
Titanium	ug/L as Ti	**ND**	6	ND	ND		ND	29	ND	6/yr
Uranium	ug/L as U	**ND**	6	ND	ND	20 MAC	ND	29	ND	6/yr
Vanadium	ug/L as V	**ND**	6	ND	ND		ND	29	ND	6/yr
Zinc	ug/L as Zn	**ND**	6	ND	79.4	≤ 5000 AO	ND	29	ND-9.6	6/yr
Zirconium	ug/L as Zr	**ND**	6	ND	ND		ND	29	ND	6/yr

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A

TABLE 4. 2021 TREATED WATER QUALITY TRANSMISSION / DISTRIBUTION SYSTEMS GOLDSTREAM SERVICE AREA

PARAMETER		2021 ANALYTICAL RESULTS				CANADIAN GUIDELINES	TEN YEAR RESULTS (2012-2021)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range Minimum	Maximum	≤ = Less than or equal to	10 Year Median	Samples Analyzed	Range Minimum - Maximum	
Metals (ND means less than instrument can detect)										
Mercury, Total	ug/L as Hg	**ND**	24	ND	ND	1 MAC	ND	111	ND	24/yr
Aluminum	ug/L as Al	**15**	29	6.5	56.60	2900 MAC / 100 OG	14	114	6.3-61	24/yr
Antimony	ug/L as Sb	**ND**	29	ND	ND	6 MAC	ND	114	ND	24/yr
Arsenic	ug/L as	**ND**	29	ND	ND	10 MAC	ND	114	ND-0.5	24/yr
Barium	ug/L as Ba	**3.6**	29	3	4.70	2000 MAC	3.9	114	2.8-4.4	24/yr
Boron	ug/L as B	**ND**	29	ND	ND	5000 MAC	ND	114	ND	24/yr
Cadmium	ug/L as B	**ND**	29	ND	0.09	7 MAC	ND	114	ND-0.01	24/yr
Chromium	ug/L as Cr	**ND**	29	ND	ND	50 MAC	ND	114	ND	24/yr
Copper	mg/L as Cu	**10.9**	29	1.61	103.00	2000 MAC / 1000 AO	27.3	114	3.22-387	24/yr
Iron	ug/L as Fe	**21.3**	29	13.8	35.80	300 AO	27.1	114	12.5-118	24/yr
Lead	ug/L as Pb	**0.31**	29	ND	2.96	5 MAC	0.42	122	ND-185	24/yr
Manganese	ug/L as Mn	**2.8**	29	1.4	10.30	120 MAC / 20 AO	4.4	114	1.5-35.1	24/yr
Selenium	ug/L as Se	**ND**	29	ND	ND	50 MAC	ND	114	ND	24/yr
Strontrium	ug/L as Sr	**15.2**	29	13.6	18.70	7000 MAC	15.3	114	13.1-18.4	24/yr
Uranium	ug/L as U	**ND**	29	ND	ND	20 MAC	ND	114	ND	24/yr
Zinc	ug/L as Zn	**ND**	29	ND	22.10	5000 MAC	ND	114	ND-41.5	24/yr
Sodium	mg/L as Na	**3.15**	29	1.63	13.00		1.7	113	1.46-3.46	24/yr
Disinfection Byproducts Parameters (ND means less than method or instrument can detect)										
Nitrosamines										
N-Nitrosodiethylamine	ng/L	ND	23	ND	ND		2	72	ND-3.8	24/yr
N-Nitrosodimethylamine	ng/L	ND	23	ND	3.4	40 MAC	ND	76	ND-4.9	24/yr
N-Nitroso-di-n-butylamine	ng/L	ND	23	ND	ND		ND	67	ND-42	24/yr
N-nitroso-di-n-propylamine	ng/L	ND	23	ND	ND		ND	61	ND	24/yr
N-Nitrosoethylmethylamine	ng/L	ND	23	ND	ND		ND	66	ND	24/yr
N-Nitrosomorpholine	ng/L	ND	23	ND	ND		ND	67	ND-4.6	24/yr
N-nitrosopiperidine	ng/L	ND	23	ND	ND		ND	65	ND	24/yr
N-Nitrosopyrrolidine	ng/L	ND	23	ND	ND		ND	66	ND	24/yr

Appendix A, Table 4, continued

Haloacetic Acids (HAAs)										
Total Haloacetic Acids	ug/L	**17**	23	ND	85	80 MAC	15	141	ND-104	24/yr
Monobromoacetic Acid (MBAA)	ug/L	**ND**	23	ND	ND		ND	142	ND-15.04	24/yr
Dichloroacetic Acid (DCAA)	ug/L	**11**	23	ND	30		7.11	142	0.58-25.6	24/yr
Trichloroacetic Acid (TCAA)	ug/L	**5.9**	23	ND	56		6.75	142	1.25-35	24/yr
Bromochloroacetic Acid (BCAA)	ug/L	**ND**	23	ND	ND		ND	142	0.2-11.6	24/yr
Dibromoacetic Acid (DBAA)	ug/L	**ND**	23	ND	ND		ND	142	ND	24/yr
Monochloroacetic Acid (MCAA)	ug/L	**ND**	23	ND	ND		ND	142	0.21-26.73	24/yr
Trihalomethanes TTHMs)										
Total Trihalomethanes	ug/L	**18**	23	13	71	100 MAC	19	144	3.3-77.9	24/yr
Bromodichloromethane	ug/L	**2**	23	2	4.4		2	144	ND-5.7	24/yr
Bromoform	ug/L	**ND**	23	ND	ND		ND	144	ND	24/yr
Chlorodibromomethane	ug/L	**ND**	23	ND	ND		ND	144	ND	24/yr
Chloroform	ug/L	**16**	23	12	66		17	144	3.3-77.9	24/yr

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

APPENDIX A
TABLE 5. 2021 TREATED WATER QUALITY DISTRIBUTION SYSTEM SOOKE SERVICE AREA

PARAMETER		2021 ANALYTICAL RESULTS				CANADIAN GUIDELINES	TEN YEAR RESULTS (2012-2021)			Target Sampling Frequency
Parameter Name	Units of Measure	Median Value	Samples Analyzed	Range Minimum	Maximum	≤ = Less than or equal to	10 Year Median	Samples Analyzed	Range Minimum - Maximum	
Metals (ND means less than instrument can detect)										
Mercury, Total	ug/L as Hg	**ND**	6	ND	ND	1 MAC	ND	30	ND	6/yr
Aluminum	ug/L as Al	**13.5**	6	9.7	17.6	2900 MAC / 100 OG	14	32	7.5 - 242	6/yr
Antimony	ug/L as Sb	**ND**	6	ND	ND	6 MAC	ND	32	ND	6/yr
Arsenic	ug/L as	**ND**	6	ND	ND	10 MAC	ND	32	ND-0.24	6/yr
Barium	ug/L as Ba	**3.7**	6	3.3	4.1	2000 MAC	3.7	32	3.2-4.6	6/yr
Boron	ug/L as B	**ND**	6	ND	ND	5000 MAC	ND	32	ND	6/yr
Cadmium	ug/L as B	**ND**	6	ND	ND	7 MAC	ND	32	ND-0.075	6/yr
Chromium	ug/L as Cr	**ND**	6	ND	ND	50 MAC	ND	32	ND	6/yr
Copper	mg/L as Cu	**4.74**	6	3.15	6.05	2000 MAC / 1000 AO	5.98	38	0.85 - 417	6/yr
Iron	ug/L as Fe	**47.6**	6	23.1	64.4	300 AO	34.50	32	19.5-278	6/yr
Lead	ug/L as Pb	**ND**	6	ND	ND	5 MAC	ND	86	ND	6/yr
Manganese	ug/L as Mn	**2.6**	6	1.6	3.4	120 MAC / 20 AO	3.00	39	ND-1760	6/yr
Selenium	ug/L as Se	**ND**	6	ND	ND	50 MAC	ND	31	ND	6/yr
Strontrium	ug/L as Sr	**18.3**	6	17.5	20.8	7000 MAC	18.40	31	16.1-21.5	6/yr
Uranium	ug/L as U	**ND**	6	ND	ND	20 MAC	ND	32	ND	6/yr
Zinc	ug/L as Zn	**ND**	6	ND	ND	5000 MAC	ND	32	ND-660	6/yr
Sodium	mg/L as Na	**4.14**	6	3.41	4.74	200 MAC	4.49	31	3.47-6.08	6/yr
Disinfection Byproducts Parameters (ND means less than method or instrument can detect)										
Nitrosamines										6/yr
N-Nitrosodiethylamine	ng/L	**ND**	6	ND	ND		ND	21	0.00006 - 3.22	6/yr
N-Nitrosodimethylamine	ng/L	**ND**	6	ND	ND	40 MAC	ND	22	ND-3.71	6/yr
N-Nitroso-di-n-butylamine	ng/L	**ND**	6	ND	ND		ND	18	ND	6/yr
N-nitroso-di-n-propylamine	ng/L	**ND**	6	ND	ND		ND	9	ND	6/yr
N-Nitrosoethylmethylamine	ng/L	**ND**	6	ND	ND		ND	18	ND	6/yr
N-Nitrosomorpholine	ng/L	**ND**	6	ND	ND		ND	19	ND	6/yr
N-nitrosopiperidine	ng/L	**ND**	6	ND	ND		ND	18	ND	6/yr
N-Nitrosopyrrolidine	ng/L	**ND**	6	ND	ND		ND	18	ND	6/yr

Appendix A, Table 5, continued

Haloacetic Acids (HAAs)										
Total Haloacetic Acids	ug/L	**22**	6	16	29	80 MAC	27	22	21-34	6/yr
Monobromoacetic Acid (MBAA)	ug/L	**ND**	6	ND	ND		ND	22	ND	6/yr
Dichloroacetic Acid (DCAA)	ug/L	**12.5**	6	9.3	15		14	22	11-19	6/yr
Trichloroacetic Acid (TCAA)	ug/L	**9.05**	6	7	14		13	22	9.1-18	6/yr
Bromochloroacetic Acid (BCAA)	ug/L	**ND**	6	ND	ND		ND	22	ND	6/yr
Dibromoacetic Acid (DBAA)	ug/L	**ND**	6	ND	ND		ND	22	ND	6/yr
Monochloroacetic Acid (MCAA)	ug/L	**ND**	6	ND	ND		ND	22	ND	6/yr
Trihalomethanes TTHMs)										
Total Trihalomethanes	ug/L	**29.5**	6	25	33	100 MAC	35	22	26-49	6/yr
Bromodichloromethane	ug/L	**3**	6	2	3		3	22	ND-4.4	6/yr
Bromoform	ug/L	**ND**	6	ND	ND		ND	22	ND	6/yr
Chlorodibromomethane	ug/L	**ND**	6	ND	ND		ND	22	ND	6/yr
Chloroform	ug/L	**26.5**	6	22	31		32	22	23-45	6/yr

Notes: mg/L = milligrams per litre; ug/L = micrograms per litre; ND = Not Detected; CFU = Colony Forming Units; NTU = Nephelometric Units; TCU = True Colour Units; AO = Aesthetic Objective; MAC = Max. Acceptable Conc.; Median = middle point of all values

Making a difference...together

RWSC 22-06

REPORT TO REGIONAL WATER SUPPLY COMMISSION
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT **2022 Master Plan - Regional Water Supply Service**

ISSUE SUMMARY

To present the 2022 Regional Water Supply (RWS) Master Plan (2022 Master Plan) to the RWS Commission, and seek direction to receive public feedback.

BACKGROUND

The Greater Victoria Water District adopted the last Long Term Water Supply Plan in 1994 (1994 Master Plan). The 1994 Master Plan executive summary is attached as Appendix A. The 2022 Master Plan has been prepared to update the 1994 Master Plan and to advance the Commitments, Strategic Priorities and Actions set out in the Regional Water Supply Strategic Plan that was adopted in 2017 (2017 Strategic Plan).

The 1994 Master Plan, recommended many system improvements, 21 in total, which are summarized in Appendix B. Many of the improvements and subsequent decisions have focused on securing supply, such as raising of Sooke Lake Dam, rehabilitating the Goldstream Water System dams, and the acquisition of the Leech Water Supply Area. The 2022 Master Plan focuses on a new infrastructure program intended to address the highest risks facing the RWS System including lack of redundancy of critical components, climate change impacts, seismic vulnerabilities, and changing water treatment needs, as well as increasing water supply to serve a growing population to 2050 and beyond.

The Capital Regional District (CRD) retained Stantec Consulting Ltd. (Stantec) to prepare the 2022 Master Plan. The (2022 Master Plan) executive summary is attached as Appendix C. In early 2021 Stantec initiated the process, along with three other system related assignments; Deep Northern Intake Feasibility Study, Risk and Resiliency Assessment and Seismic Assessment - Phase 1 Facility Screening Level. The 2017 Strategic Plan Commitments, Areas of Focus, and Strategic Priorities, were used to guide the master planning process, with a goal of providing recommendations that would be adaptable over time, but would ultimately result in new resilient supply system infrastructure that would mitigate or address near and long-term water supply and system risks. This report summarizes the key findings and recommendations which have been incorporated into the plan.

To arrive at the final list of recommendations, Stantec and CRD staff developed 18 options for future improvements and evaluated the options against 2017 Strategic Plan objectives. This resulted in four alternatives that grouped together combinations of compatible projects. The four alternatives were then compared and scored against six non-financial criteria and construction and operational cost estimates. This resulted in 21 recommendations spanning a 30 year program of system improvements attached as a summary in Table E.4 of Appendix C. Although there is no immediate urgency for any particular project to proceed, the planning and design project phases are recommended to begin in the coming years.

The following summarizes the primary elements of the 2022 Master Plan:

Future Water Demand – Determining the future water demand is a significant task in master planning and involves establishing the volume of water required to meet the projected demand. Further, it also establishes the capacity of the supply system components such as transmission main sizing, water treatment plant process rate, and balancing storage volumes. Stantec reviewed the historical demands, population growth, and the effect of water conservation measures, as well as the Regional Growth Strategy, and recommended that, for the master plan planning horizon, a 1.25% annual population growth rate be used, resulting in a projected population in the service area of 569,000 at 2050.

The total supply-level (all sectors/uses and nonrevenue water) per capita water demand is currently 337 litres per capita per day (L/c/d), down from the 2010 to 2019 average of 366 L/c/d. This equates to a total annual demand of 48 million cubic metres per year. Although per capita water demand has remained relatively stable over the past ten years, further reductions in residential demand could be achieved up to a certain limit. For the 2022 Master Plan, using a conservative approach, the recent ten year average of 366 L/c/d has been used, and demand has been estimated to remain stable when projecting future demands. With population growth, the total annual demand is forecasted to be 74 million cubic metres per year at 2050, excluding environmental release commitments.

Water Supply – The hydrological assessment completed for the Sooke watershed determined that Sooke Lake Reservoir has the capability to supply an additional 40% increase in annual demand, up to 67 million cubic metres per year. This equates to the maximum annual demand that can be sustained without impacting the ability of the Sooke Lake Reservoir filling during a normal precipitation year following a 1:50 drought year, and no multi-year drought scenario. So for the short-term, there is sufficient water supply, but in the future there will be a threshold where a supplementary water source(s) will be required. Water from the northern basin of Sooke Lake Reservoir can be accessed with new deep intake and transmission infrastructure, but eventually, additional sources will be required to supplement supply and storage in Sooke Lake Reservoir. Similar to most water systems in the Pacific Northwest that rely primarily on rainfall (and less on snowpack) for supply, the RWS is challenged by the annual precipitation pattern and annual water demand trend. There is more water than needed in the rainy season but very little inflow into the reservoirs during the summer months. Climate change is expected to yield more precipitation in the rainy season (e.g. atmospheric rivers) and less in the summer season (drought conditions), with higher summer temperatures. Another factor is the requirement of the BC Provincial Water Sustainability Act's *Environmental Flow Needs Policy* that could reduce the licensed quantity of water available from the Leech Watershed for drinking water supply.

With these forecasts, assumptions and limitations, to support subsequent growth beyond 2045 additional source water such as drawing from the deep north basin of Sooke Lake Reservoir and diverting the Leech River into Sooke Lake Reservoir, as well as new infrastructure and increased capacity for the system is projected to be required.

The Goldstream Reservoirs store about ten million cubic metres of water at full capacity and will continue to be used as a secondary or emergency source of water when Sooke Lake Reservoir is not available. Currently, this source can be subject to turbidity fluctuations during heavy rainfall due to landslides which can occur in the Goldstream River Canyon upstream of the raw water intake in Japan Gulch Reservoir. Connecting the Goldstream source directly to the transmission

system via a pipeline from the Goldstream Reservoir, eliminating the Goldstream River risks, would improve the overall resiliency of supply.

Water Quality and Treatment – Treated water meets the current drinking water quality regulations and most aesthetic criteria with the current means of disinfection. But it was concluded that it is likely that a filtration process will be required to supplement the existing disinfection processes in the future, particularly when water from the Goldstream and Leech water sources are used to supplement supply. Although the water sources are bacteriologically similar, the Leech River water tends to be more turbid, nitrogen-rich, sulfate deficient, and have higher True Colour levels. Filtration not only removes turbidity (organic and inorganic particles), but also harmful bacteria, protozoa, algal cells, and other True Colour causing substances. Over time, even the Sooke source water quality is expected to decrease due to the impacts of climate change, mixing with the other source(s), and more significant seasonal water level fluctuations resulting from increasing demand. Source water quality could also be significantly impacted by wildfire and other natural hazards. Provincial drinking water quality regulations and Federal drinking water quality guidelines are expected to become more stringent. Several nearby water suppliers have implemented filtration over the past two decades, including Metro Vancouver (2010), Nanaimo (2016), Comox Valley (2021), Seattle-Tacoma (2001/2015), and Portland (2027). Planning and implementing filtration treatment will take several years and it is recommended to have filtration systems ready in advance of any needs or requirements. Three options for siting a filtration plant were identified which resulted in the Japan Gulch area being the preferred location.

The use of ultraviolet and chloramine disinfection will continue to satisfy current Island Health treatment requirements as long as the raw water quality characteristics remain stable. However, as noted, there is some uncertainty as to the future watershed health and raw water quality even with proactive risk management. The addition of filtration in combination with existing disinfection processes would provide a robust multi-barrier system able to better mitigate potential adverse raw water quality, reduce the vulnerability of the current treatment system, and protect public health.

Treated Water Balancing Storage – There are two general needs for water storage; raw water storage within the watershed(s) (reservoirs and related dams) and treated water balancing or equalization storage (storage tanks) which is an integral part of the transmission system.

Currently, the transmission system has limited balancing storage which results in higher than necessary (or desirable) peak flows through the transmission system during high daily and seasonal demand periods. There are two active balancing storage tanks in the transmission system, at Mt. Tolmie and McTavish Road. Without water being stored and available to meet the peak demands, the existing system capacity and future sizing of improvements will need to be larger than necessary – treatment and transmission system infrastructure is typically sized to meet future total annual demand and total summer demand capacity requirements; balancing storage provides maximum day and peak hour capacity requirements. Between the water supply and the customers, there should be a combination of transmission and distribution system storage (storage tanks) for which there is currently a deficiency, hence the proposed improvement to provide storage at both Japan Gulch (relative to the filtration plant) and at Smith Hill in the City of Victoria to address short and long term balancing during high demand periods. Although not the primary function or reason for creating storage, additional storage has a benefit for post-disaster/emergency water supply.

Water Transmission System – Several transmission system improvements have been recommended, some of which would result from other infrastructure projects referenced above and some address deficiencies, including:

- Replacing transmission main segments where headloss is greater than 2.5 m/km
- Twinning deficient sections of transmission mains to provide redundancy to critical mains and increase hydraulic capacity
- Increased operating pressure
- Installing new transmission mains to provide interconnections to improve redundancy

ALTERNATIVES

Alternative 1

1. That staff be directed to seek public feedback on the 2022 Master Plan through the CRD website public engagement portal and report back to the Commission with a summary of the public feedback as well as the Water Advisory Committee feedback resulting from the staff referral of the 2022 Master Plan, and that the Commission consider endorsing the 2022 Master Plan at that time.

2. That the 2022 Master Plan be forwarded to the CRD Board for information.

Alternative 2

That the 2022 Master Plan be referred back to staff for more information.

IMPLICATIONS

Intergovernmental

The proposed projects in the 2022 Master Plan are located in traditional territories of local First Nations and some projects are likely located in areas of cultural significance to Nations. The CRD is committed to engaging with First Nations on the projects in the early phases of project development.

The Regional Water Supply Service provides drinking water service to 13 municipalities and one Electoral Area across Greater Victoria, via the water distribution systems operated by the municipal and sub-regional service providers, who in turn provide drinking water to eight First Nations. All of these local and First Nations governments will be engaged as the plan is implemented over time. The plan will inform how the municipal and sub-regional service providers plan for the future needs of their water distribution systems, particularly with respect to system capacity, infrastructure improvements and financial sustainability.

Regulatory and Policy

The 2022 Master Plan aligns with CRD Board and Regional Water Supply Commission plans including:

- CRD Board 2019 – 2022 Corporate Plan – Drinking Water Community Need: Envision a sustainable and resilient water supply
- Regional Water Supply Commission – 2017 Regional Water Supply Service Strategic Plan: Commitments, Strategic Priorities and Actions

- 2018 CRD Regional Growth Strategy: Environment and Infrastructure
- CRD 2019 – 2038 Population Report – BC Stats

The 2022 Master Plan aligns with current Provincial drinking water quality regulations and Federal drinking water quality guidelines, and anticipates future requirements. The regulatory requirements are subject to change, particularly in the longer term, in response to changing environmental and health parameters, and the service will need to be prepared to adapt to these requirements.

Environmental
The 2022 Master Plan acknowledges the need to meet the requirements of the Provincial Water Sustainability Act and Environmental Flow Needs Policy with any future water licensing additions or amendments. For many years, the CRD has released raw water from the Regional Water Supply storage reservoirs to help support fish and fish habitat in the downstream rivers.

Regional projections of potential climate change impacts relevant to water quantity within the CRD watersheds were assessed using the Pacific Climate Impacts Consortium 2021 data. Predicted changes in total annual precipitation within the CRD range from minor increases in the near future to increases of 2.3% in the 2050s and 8.0% in the 2080s, with total annual precipitation expected to increase. Seasonal distributions are projected to change with increasing precipitation an intensity variation in winter months and decreasing precipitation during summer months. Future temperatures within the CRD are projected to increase in every season through to 2100, with the greatest temperature increases expected in the summer months. Based on these climate change projections, there are anticipated impacts on water supply, watershed health, water quality and water demand, all of which have been considered in the 2022 Master Plan.

Social
The RWS System provides drinking water across Greater Victoria area for residential, commercial, agriculture, institutional and industrial uses, as well as fire protection. Water use across the Region almost doubles in the summer months due to irrigation and other outdoor uses. The CRD's Demand Management Program has assisted in managing water demand and water conservation efforts and the public have responded in many ways, including reducing outdoor lawn watering in the summer and replacing inefficient appliances and fixtures. The CRD has also benefited by having water metering in place across Greater Victoria for many years, which supports awareness around water use and the user-pay approach. Any significant water demand reductions on a per capita basis in the future have the potential to partially offset projected demand increases and defer source development and capacity related infrastructure improvements in the future.

With respect to public engagement on the 2022 Master Plan, the CRD plans to post the 2022 Master Plan and summary documents on the CRD website's public engagement platform and receive feedback. All feedback received will be shared with the RWS Commission and considered as the individual major projects are planned and implemented moving forward which is also when staff will be seeking specific project direction and approvals from the RWS Commission and CRD Board. CRD staff have presented a summary report of the Plan to the Water Advisory Committee and have asked for written feedback that will also be shared with the Commission.

Financial

The 2022 Master Plan recommends 21 major projects be implemented over the next 30 years that will come at considerable cost, but they are deemed critical to improve the resiliency of the Regional Water Supply Treatment and Transmission System and will be necessary in the longer term in order to provide enough drinking water to support the growing Region.

For each of the projects, present and future conceptual inflated capital costs to mid-construction year have been developed for budgeting and financial planning purposes. In total, the recommended projects are valued at $1.53 billion in 2022 dollars and $2.05 billion in inflated dollars to 2050 to account for future design and construction costs. A 2% per year inflationary factor has been used to derive future costs from 2022 estimates. There will also be new operating costs associated with the new infrastructure. All of the existing and new capital and operating costs have been conceptually forecast to 2050, and are graphically represented in Appendix D. Capital spending is projected to begin increasing in 2024, and peak and stabilize in the late 2030s.

The CRD ensures the financial integrity of the RWS Service through sound financial management of the water utility. The CRD considers water rate implications and an equitable allocation of capital costs between current and future ratepayers. One of the key financial health indicators evaluated is with respect to maintaining an affordable level of service debt. To fund the capital program, it would be necessary to debt finance a significant portion, potentially in the range of $1.31 billion. A capital plan of this magnitude is going to increase the percent of revenue used for debt servicing costs on an annual basis. Although it would be preferable to target a percentage in the range of 25%, for a larger water utility, the percentage could be as high as +/- 40%, particularly during periods of more intensive capital investment and borrowing. Based on the conceptual financial modeling completed for the Plan, the percentage of revenue used for debt servicing could range between 20% in the early years to 43% in the mid-2030s, then dropping below 40% by 2050. To achieve this, 25 year amortization periods would be used for the loans and annual cash funding (transfer to water capital fund) would be increased significantly.

The wholesale water rate was also conceptually modeled. In order to balance the annual budgets to 2050, the rate would have to substantially increase on a year over basis at least until the late 2030s, when it is forecast that growth related demand and revenue would begin to mitigate larger year over year increases. Through the mid to late 2020s, the rate could increase in the 10% to 20% range on a year over year basis, based on projected water demand with increasing population. The rate could peak in late 2030s at approximately $3.60 per cubic meter, which has been estimated based on inflationary adjusted construction cost estimates.

The funding and water rate implications noted above are based on 100% of the required funding being derived from the service ratepayers. There has been no allowance for senior government grant funding or allowance for a portion of the capital funding that is expected to be provided through RWS development cost charges in the near future (CRD staff are currently advancing this initiative). CRD staff will actively seek grant opportunities where the eligibility criteria align with the recommended projects and make application for funding. Grant funding would help offset the debt burden and help mitigate water rate increases. Although development cost charges will increase the cost of development, these funds would also help mitigate the cost of water for the average ratepayer over time.

Future Plan Updates
The 2022 Master Plan recommendations and proposed infrastructure will continue to be reassessed, on a five to 10 year cycle, to consider new information and latest trends in population growth and water demand, and evaluate risks to the service, including climate change and water quality. Current technology and construction costs will also be evaluated. As a result of this continuous and adaptive process, the 2022 Master Plan implementation will be adjusted moving forward, to reflect any changes in assumptions or conditions.

CONCLUSION

The investments that have been made in the existing Regional Water Supply system have served its customers reliably and the system continues to perform very well. Recognizing the outcomes of the 1994 Plan and decades of implementing system improvements, particularly with respect to securing long term water supply, the Regional Water Supply Commission has taken steps to stay ahead of any emerging issues.

The 2022 Master Plan assessed the existing water system from a variety of perspectives consistent with the 2017 Regional Water Supply Strategic Plan. The 2022 Master Plan focuses on a new infrastructure program intended to address the highest risks facing the RWS System including lack of redundancy of critical components, climate change impacts, seismic vulnerabilities, and changing water treatment needs, as well as increasing water supply to serve a growing population to 2050 and beyond.

RECOMMENDATION

1. That staff be directed to seek public feedback on the 2022 Master Plan through the CRD website public engagement portal and report back to the Commission with a summary of the public feedback as well as the Water Advisory Committee feedback resulting from the staff referral of the 2022 Master Plan, and that the Commission consider endorsing the 2022 Master Plan at that time.

2. That the 2022 Master Plan be forwarded to the CRD Board for information.

Submitted by:	Ted Robbins, BSc, CTech, General Manager, Integrated Water Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: 1994 Long Term Water Supply Plan Executive Summary
Appendix B: 1994 Long Term Water Supply Plan “Alternative A” Capital Works Recommendations
Appendix C: Regional Water Supply 2022 Master Plan Executive Summary
Appendix D: Conceptual Model of RWS Service Operating and Capital Forecast Costs


Greater Victoria Water District
LONG TERM WATER SUPPLY PLAN
Executive Summary
MONTGOMERY WATSON
DAYTON & KNIGHT LTD.
Consulting Engineers

GREATER VICTORIA WATER DISTRICT

LONG TERM WATER SUPPLY PLAN

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The following executive summary for the Greater Victoria Water District Long Term Water Supply Plan provides the important findings, conclusions and recommendations.

Mission Statement - The following mission statement was adopted for the study and the work plan:

> *To provide for the future needs of the Greater Victoria area by planning effectively for an adequate supply of water that meets or exceeds water quality standards and regulations. The plan will reflect community environmental and economic expectations and values.*

Existing Conditions - Findings

1) The GVWD is responsible for delivering potable water to its members and customers. Most of the deliveries are "as required" in quantity.

2) The GVWD has problems with delivering the required quantities because of increased demands associated with population growth and the loss of some water storage capacity in some of its watershed storage reservoirs. The loss of storage capacity results from lowering of operating levels on the Goldstream and Waugh reservoirs because of a concern with dam safety.

3) The GVWD has problems with water quality because the increasing water demands from population growth and the partial loss of Goldstream and Waugh Reservoirs reduces the natural purification ability of the remaining Sooke Reservoir. Water quality issues are also resulting from changing regulatory criteria and increasing awareness and expectations by the waterworks industry and the public respectively about the quality of water delivered to the user.

4) The GVWD has concerns with the security of supply as over 90% of the water is now delivered through the single lifeline Kapoor Tunnel and should anything happen to the tunnel, the GVWD would rapidly be short of water.

Water Quantity - Findings

1) The GVWD service area population is increasing. For water supply planning purposes the following population levels are projected:

1994	-	295,000 persons
2012	-	389,000 persons
2045	-	667,000 persons
Long Term (75-100 years)	-	800,000 persons

2) The existing GVWD controlled or licensed watersheds tributary to Sooke Reservoir, Upper Goldstream River Reservoirs and Leech River Diversion Tunnel have the water quantity to provide for an 800,000 population level as long as more storage and the appropriate facilities are completed or provided. A summary of the water storage capability of each of these watersheds and the corresponding population levels that can

be accommodated are listed in the following table.

POPULATION SERVICEABLE FROM VARIOUS GREATER VICTORIA WATERSHEDS

Watershed	Water Storage Volume, Million m^3	Population
Upper Goldstream	10 (existing) 25 (maximum suppliable by watershed)	30,000 70,000
Sooke Reservoir	50 (existing) 100 (Sooke Reservoir raised) 115 (Sooke Reservoir drawn down) 165 (Sooke Reservoir raised and drawn down)	225,000 350,000 360,000 400,000
Sooke and Leech	165 (Sooke Reservoir raised and drawn down)	700,000
Sooke, Leech and Goldstream	185 (Sooke Reservoir raised and drawn down and Weeks Lake and Goldstream Reservoirs provided).	800,000

3) If the foregoing is provided, then there is no need to consider new sources because the existing watersheds will meet GVWD estimated demands in the next 75-100 years as long as some demand management is used to keep the per capita water demands at current levels. The development of new sources is also much more costly than the upgrading of existing sources.

4) Aditional demand management has the ability to defer the District's new source development requirements possibly in excess of 100 years or to serve close to 1,000,000 people.

Water Quality - Findings

1) Sooke Reservoir contains high quality water that meets all current health-related regulations. Summer temperatures exceed the aesthetic objective of 15°C and there are occasional problems with colour in the winter and tastes and odours associated with mini algal blooms.

Similar to Sooke Reservoir, the water in the Goldstream Reservoirs is also a high quality water source. However, the water delivered to Japan Gulch Reservoir via the Goldstream River is variable, especially during major run-off periods.

The Leech River is not impounded or controlled by reservoirs so its quality tends to be more variable than that of the Sooke Reservoir and the Goldstream Reservoirs. Colour and turbidity peaks can be high during runoff events.

2) The present method of disinfection of Sooke Reservoir water with chloramination does not provide adequate protection against waterborne disease. However, it is anticipated disinfection goals can be met with enhanced disinfection with ozone.

3) With addition of other watersheds, particuarly Leech River to the Sooke Reservoir, filtration may be necessary to achieve turbidity, colour and disinfection by-product

water quality goals. It is likely that direct filtration will provide the necessary level of treatment although no decision should be made until after a pilot study is completed and final recommendations made.

4) It is important that the GVWD begin source of supply treatment studies as soon as possible. The studies should include a pilot treatment study and a mixing/limnology study. These should be performed for at least 12 months to obtain the seasonal water quality variations.

5) The timing for filtration is uncertain and will depend on the percentage of the total Sooke Reservoir water originating from outside the Sooke watershed. The limnology/mixing study in the Sooke Reservoir will provide direction as to when filtration may be required.

Transmission System and Security of Supply - Findings

1) The existing transmission system from Sooke Reservoir has a major security of supply problem with the single lifeline Kapoor Tunnel. There are also a number of other lesser problems in the transmission system, notably in the Saanich Peninsula.

2) To provide backup to the Kapoor Tunnel, either the Goldstream Dams have to be reconstructed, or a second independent line of supply from the Sooke Reservoir provided. The second line of supply can be over the Jack Lake Pass or to the Saanich Peninsula via a northern supply main. Pumping of the water would be required in both of the latter cases.

3) The existing transmission system downstream of the Kapoor Tunnel can be readily expanded for capacity by implementing either Plan 3, (expansion of system through Victoria) or Plan 4 (the use of GVWD No. 4 Main and a new system through Saanich) of the 1988 comprehensive system study. Both Plans recognize overall costs and the security of supply of the transmission system downstream of the tunnel.

4) Plan 3, involving a strengthening of the transmission system through southern Victoria, is now recommended because of the anticipated population growth in the Saanich Peninsula. The corresponding intensive usage of the No. 4 Main for these demands uses up the spare capacity in the main previously available for Plan 4.

5) Utilization of the storage reservoirs within the service area needs to be addressed for reasons of overall transmission system cost, security of supply and water quality.

Alternative Plan Development - Findings

1) Six alternatives have been developed and evaluated. The principal elements in each Alternative include:

Alternative A - Raise Sooke Reservoir for immediate additional storage and restore Goldstream Reservoir for security of supply.

Alternative B - Lower Sooke Reservoir for immediate additional storage and restore Goldstream Reservoir for security of supply.

Alternative C - Raise Sooke Reservoir for immediate additional storage and provide a pumped line over the Jack Lake pass.

Alternative D - Lower Sooke Reservoir for immediate additional storage and provide a pumped line over the Jack Lake pass.

Alternative E - Raise Sooke Reservoir for immediate additional storage and provide a Northern Supply line.

Alternative F - Lower Sooke Reservoir for immediate additional storage and provide a Northern Supply line.

2) The Alternatives are not significantly different in their total long term cost.

Total GVWD Capital Cost $279.5 million to $305.5 million (8.5% spread)

Total Capital & Yearly O&M
at 4% Present Value GVWD Cost $213.28 million to $256.06 million (20.0% spread)

Using present value discount factors of 6% and 8% does not affect the financial evaluation of the Alternatives to any major extent.

3) The early stages of the Northern Supply main alternatives (Alternatives E and F) are more costly in comparison to the others.

Alternatives	A	B	C	D	E	F
Total 1994-2000 Capital GVWD Cost (million $)	81.4	73.4	69.5	61.5	106.6	98.6

4) The alternatives need to be evaluated to account for other benefits as well as the net long term costs and on an overall basis.

Cost Criteria - Findings

1) The cost estimates provided in this study and report have been extensively reviewed and found accurate for evaluation of alternatives.

2) The estimates are projected 1994 costs and need to be adjusted for budgetary purposes to correspond to the inflationary level at the time of implementation.

3) The more distant in time costs also need to be updated in the future for conditions anticipated to prevail at the time of implementation.

Evaluation of Alternatives - Conclusions

1) The estimated cost in million 1994 dollars for the Alternatives are:

	Alternatives					
	A	B	C	D	E	F
GVWD 1994-2000 Capital Cost	81.4	73.4	69.5	61.5	106.6	98.6
GVWD Long Term Capital Cost	305.5	297.0	288.0	279.5	297.1	288.6
GVWD and Non Common Municipal Long Term Capital Cost	347.1	338.6	329.6	321.1	310.1	301.6
4% Present Value of long term Capital and Operating and Maintenance Costs:						
- GVWD	226.44	233.9	213.28	221.84	245.94	256.06
- GVWD and Non Common Municipal*	278.39	285.85	265.24	275.01	258.87	268.99

* - Non Common refers to work by Saanich Peninsula municipalities and work by Saanich in its northern areas.

2) An effective program of demand management has the ability to reduce the unit water demand per consumer. Based on achieving a fifteen percent reduction in the per capita water consumption, a savings of between $50 and $60 million dollars could be realized compared to no demand management conditions.

3) Senior Government Grants are not assumed, but if such were to be available, most likely the capital cost would be reduced while the Operating and Maintenance costs would remain a local responsibility in perpetuity.

4) The alternatives can be further evaluated by a number of other parameters some quite difficult to define. Evaluation with an emphasis on security of supply, water quality and environmental considerations favours Alternative A (Raise Sooke Reservoir/Restore Goldstream Dams), with Alternative E (Raise Sooke Reservoir/Northern Supply Line) being second. Evaluation with an emphasis on least initial cost and least long term cost favour Alternative D (Lower Sooke Reservoir/Pumped line over Jack Lake pass) and Alternative E (Raise Sooke Reservoir/Northern Supply line) respectively. Technical simplicity and ease of expansion beyond the study horizon also favour Alternative A.

Recommendations

1) Alternative A involving an early raising of the Sooke Reservoir as well as the restoration of the Goldstream Reservoir for emergency storage is recommended.

2) The principal reasons for the recommendation include:

   a) Reasonable security of supply.
   b) Potential ability to defer costly water filtration as long as possible.

c) Least environmental impact.
d) Technical simplicity.
e) Reasonable cost to users.

3) Also recommended is the implementation of demand management to lower per capita water demands, the initiation of Development Cost Charges and a better definition of GVWD responsibilities including the assumption for responsibilities of some trunk system elements in Victoria, Saanich and the Saanich Peninsula.

Table 1.1: 1994 Long Term Water Supply Plan (Montgomery Watson / Dayton & Knight Ltd.) "Alternative A" Capital Works Recommendations

Item	Recommendation	Capital Project Name	Year Constructed	Status	Comments	2022 Master Plan Commentary
a1)	Rehabilitate three Upper Goldstream Reservoirs (Butchart, Lubbe and Goldstream Reservoirs)	Goldstream Dams Rehabilitation	1995	Completed	Capital project included Butchart Dam #1, 2 & 5, Lubbe Dams #1-4, Goldstream Dam and Japan Gulch Dam (not included in report recommendation)	Work was completed to improve reliability of this critical secondary source.
a2)	Connect Goldstream Reservoirs with a 600-750 mm transmission main to Kapoor Tunnel outlet for use during emergencies and tunnel maintenance	NA	Not completed	No action	No action since 1994. This pipeline is still an option and should be evaluated further to provide a secondary supply to RWS when Kapoor Tunnel is taken offline for inspection.	This is included as a recommendation of the 2022 Master Plan with connection to Japan Gulch.
a3)	Pilot test water filtration for Leech River/Sooke Lake Reservoir water integration	Leech River-Sooke Lake Reservoir Mixing Experiment	2008	Started (not completed)	Preliminary PowerPoint was completed by UVic but not in sufficient detail for planning of water treatment facilities. Further piloting is recommended as part of this Master Plan.	Recommendation of 2022 Master Plan. Blending will be assessed during the pilot program.
b)	Ozonation	UV Disinfection System Installed instead of ozonation	2004	Completed	Ultraviolet facility (alternative to ozonation) was constructed at Goldstream Disinfection Facility location, downstream of tunnel outlet adjacent to Japan Gulch Reservoir.	UV is a more cost-effective treatment for unfiltered source water than ozone. Once the final filtration process is selected the requirement for UV will be assessed.
c1)	Replacement of Humpback Reservoir with a smaller flood control facility	Deactivation of Humpback Dam	1999	Completed	Works included Humpback Dam stabilization berm and Humpback Reservoir overflow structure and channel along Kapoor Main (Humpback Dam and reservoir out of service)	NA
c2)	Decommission/remove Japan Gulch Dam	NA	Not completed	No action	Japan Gulch Dam rehabilitated in 1995 (refer to Item a1 above). Used to accept Goldstream River water during inspections and maintenance of Kapoor Tunnel.	Japan Gulch is critical reservoir for transfer of Goldstream water to RWS until Goldstream transmission main is constructed.

Item	Recommendation	Capital Project Name	Year Constructed	Status	Comments	2022 Master Plan Commentary
d)	Connect Kapoor Tunnel to No. 1 and No. 3 Mains	Kapoor/Humpback Watermain	1996	Completed	Main No. 5 installed from Kapoor Tunnel outlet to Humpback Reservoir (included Humpback PCS)	NA
e)	Raise Sooke Lake Reservoir	Raising Sooke Lake Reservoir	2002	Completed	Dam raised to provide additional storage.	Raising of SLR has provided source reliability consistent with 2017 Strategic Plan.
f)	Langford to Sooke Community water main	New Supply Pipeline to Sooke (3 Phases)	2007-2009	Completed	Alternative alignment (Main No. 15) installed from Sooke Head Tank to the District of Sooke (includes SRRDF).	Recommendation to install this main included in 2022 Master Plan (subsequent to Filtration Plant construction)
g1)	Leech River diversion Stage 1 to north end of Sooke Lake Reservoir	NA	Not completed	No action	No action since 1994. Further investigation required to determine best method for diversion of Leech River water to Sooke Lake Reservoir.	Diversion will be reviewed further as part of hydrology study and reservoir operating rules for combined Leech /SLR supply. It may be possible to transfer Leech water through DGR to SLR.
g2)	Leech River diversion Stage 2 - Pressurize Leech Tunnel to increase hydraulic capacity	NA	Not completed	No action	No action since 1994. This will require further investigation pending investigation of direct diversion of Leech River or construction of dam on Leech River.	This will be explored in hydrology study see g1) commentary above. Leech River not required for 20 years.
h)	Plan phase 3 work in Victoria to increase supply to south Victoria, Oak Bay, and southeast Saanich	NA	Modeling completed	No action	No action since 1994.	Hydraulic modeling has been completed and upgrades to Main No. 3 are recommendation of 2022 Master Plan. See Section 6.1.3.
i)	Water filtration plant at Kapoor Tunnel inlet	NA	Not completed	No action	Refer to CRD IWS Report No. 279 -Compliance with Surface Water Treatment Rule for Filtration Avoidance. Installation of UV enables compliance with SWTR Filtration Avoidance for most criteria as well as IHA requirements.	Future water filtration recommended to improve resiliency and a potential site recommended as part of this 2022 Master Plan.

Item	Recommendation	Capital Project Name	Year Constructed	Status	Comments	2022 Master Plan Commentary
j)	Progressively replace No. 1 Main with larger diameter steel system	Main No. 1 Replacement program	1994-2006	Completed	Entire Main No. 1 replaced in 12 phases	
k)	Deep Intake at northern basin of Sooke Lake Reservoir	NA	Not completed	No action	No action since 1994. Stantec report in 2021 studied this further.	Study completed to assess options.
l)	Second major transmission system from Sooke Lake Reservoir	NA	Not completed	No action	Alignment assumed to follow Sooke River to District of Sooke and loop back to the City of Langford. Partially completed (Main No. 15 installed)	An east west Juan De Fuca Water Services supply main is proposed to supply filtered water to Sooke after new plant is constructed. Overland “Jack Lake” alignment recommended in this Plan
m1)	Increase system storage volume - Sooke Community Tank	Sooke Community Water System Improvements	1998	Completed	JDFWD service improvements completed.	NA
m2)	Increase system storage volume - New Upper Mount Tolmie Tank	NA	Not completed	No action	No action since 1994. Not required.	Not required
m3)	Increase system storage volume - Haliburton Tank Expansion	NA	Not completed	No action	Haliburton Tank out of service since 2017	Not required.
m4)	Increase system storage volume - Smith Hill "Reservoir"	NA	Not completed	No action	No action since 1994.	Tank recommended at Smith Hill as part of this Master Plan.
n)	Diversion of Upper Goldstream Reservoirs to Sooke Lake Reservoir	NA	Not completed	No action	No action since 1994. Not necessary if pipeline from Goldstream to Japan Gulch is constructed. Diversion to Japan Gulch rather than Sooke Lake.	Goldstream Reservoirs will be diverted to recommended filtration plant site at Japan Gulch; transmission main included in 2022 Master Plan.

APPENDIX C

CRD/IWS REPORT NO. 1186



Capital Regional District | Regional Water Supply 2022 Master Plan

MAY 2022

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APPENDIX C

Capital Regional District
Regional Water Supply Service

2022 Master Plan

IWS Report No. 1186

Stantec

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May 2022

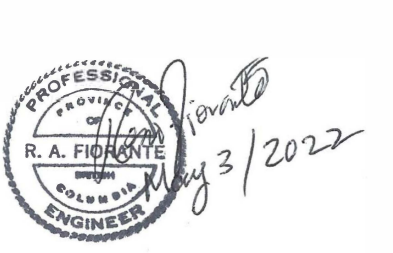
Revision Record

Revision	Description	Date	Author	Quality Check	Independent Review
1	Draft	Sept. 29, 2021	Stantec Team	AG	RF
2	Draft	March 16, 2022	Stantec Team	MP	SS
3	Final Draft	April 8, 2022	Stantec Team	SS	TB
4	Final	May 3, 2022	Stantec Team	RF	TB

Sign-off Sheet

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ABBREVIATIONS

AC	Asbestos Cement
ACH	Aluminum Chlorohydrate
ADD	Average Day Demand
AEP	Annual Exceedance Probability
ALA	American Lifelines Alliance
AWWA	American Water Works Association
BC	British Columbia
BCBC	British Columbia Building Code
CDA	Canadian Dam Association
CFU	Colony Forming Units
CIP	Clean-in-place
CRD	Capital Regional District
CWH	Coastal Western Hemlock
DAF	Dissolved Air Flotation
DCS	District of Central Saanich
DGR	Deception Gulch Reservoir
DMF	Devil's Mountain Fault
DNS	District of North Saanich
DOC	Dissolved Organic Carbon
DWOs	Drinking Water Officers
DWOG	Drinking Water Officers' Guide
DWPA	Drinking Water Protection Act
DWPR	Drinking Water Protection Regulation
ECCC	Environment and Climate Change Canada
EDGM	Earthquake Design Ground Motion
EFNP	Environmental Flow Needs Policy (BC Water Sustainability Act)
EGBC	Engineers and Geoscientists BC
FCM	Federation of Canadian Municipalities
FLNRORD	Forests, Lands, Natural Resource Operations and Rural Development
FUS	Fire Underwriters Survey
GAC	Granular Activated Carbon
GDS	Goldstream Disinfection Facility
GVWSA	Greater Victoria Water Supply Area
GVWD	Greater Victoria Water District

HGL	Hydraulic Grade Line
HP	Horsepower
ID	Identification
IHA	Island Health Authority
ICI	Industrial/Commercial/Institutional
IESWTR	Interim Enhanced Surface Water Treatment Rule
IWS	Integrated Water Services
JDFWD	Juan De Fuca Water Distribution
JGDF	Japan Gulch Disinfection Facility
JGR	Japan Gulch Reservoir
KWL	Kerr Wood Leidal Consulting Engineers
L/c/d	Litres /capita/day
LRVF	Leech River Valley Fault
LOS	Level of Service
L/S	Litres Per Second
1994 Plan	Long Term Water Supply Plan (Greater Victoria Water District, Long Term Water Supply Plan, Montgomery Watson, and Dayton & Knight, 1994)
MAC	Maximum Acceptable Concentration
MAMP	Municipal Asset Management Program
MCL	Maximum Contaminant Level
MDD	Maximum Day Demand
MF	Microfiltration
ML	Million Litres
MLD	Megalitre Per Day (million litres per day)
MMCD	Master Municipal Construction Documents
MoE	Ministry of Environment
Mm^3Y	Million cubic metres Per Year
MTBM	Micro Tunnel Boring Machine
NBC	National Building Code
NOM	Natural Organic Matter
NPV	Net Present Value
NTU	Nephelometric Turbidity Unit
OD	Outside Diameter
ORP	Oxidation-Reduction Potential
OTC	Once-Through Cooling
PCIC	Pacific Climate Impacts Consortium – University of Victoria

PCS	Pressure Control Station
PCCP	Prestressed Concrete Cylinder Pipe
PHD	Peak Hour Demand
PRV	Pressure Reducing Valve
PS	Pump Station
PSHA	Probabilistic Seismic Hazard Analysis
PVC	Polyvinyl Chloride
QMRA	Quantitative Microbial Risk Assessment
RCP	Relative Concentration Pathway
RFP	Request for Proposal
RISC	Resources Information Standards Committee
RWS	Regional Water Supply
RWSC	Regional Water Supply Commission
SCADA	Supervisory Control and Data Acquisition
SDWA	Safe Drinking Water Act
SHR	Smith Hill Reservoir
SLR	Sooke Lake Reservoir
SRRDF	Sooke River Road Disinfection Facility
SUVA	Specific Ultraviolet Absorbance
SWTR	Surface Water Treatment Rule (USEPA)
TAD	Total Annual Demand
TBD	To Be Determined
TBM	Tunnel Boring Machine
TCU	Temperature Control Unit
TDH	Total Dynamic Head
TDS	Total Dissolved Solids
TOC	Total Organic Carbon
TP	Total Phosphorus
TSD	Total Summer Demand
TWL	Top Water Level
UF	Ultrafiltration
US	United States
USEPA	United States Environmental Protection Agency
UV	Ultraviolet
UVIC	University of Victoria

UVR	Ultraviolet Radiation
UVT	Ultraviolet Transmittance
WDD	Winter Day Demand
WFT	Water Filtration Plant
WSA(s)	Water Supply Area(s)
WTP	Water Treatment Plant

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Appendices

Appendix A Hydraulic Data Tables (from GeoAdvice 2020)
Appendix B Cost Estimates

EXECUTIVE SUMMARY

The CRD supplies bulk drinking water for residential, commercial, institutional, and agricultural uses to approximately 400,000 people throughout the Greater Victoria area by the Regional Water Supply (RWS) service. The RWS operates the watersheds, dams, reservoirs, treatment (disinfection) and transmission systems which supply municipal water systems at metered transfer points to each municipality and sub-regional water services. The CRD supplies water to sub-regional water services, including the Juan de Fuca Water Distribution Services, Saanich Peninsula Water Service, bulk water municipal customers, and eight First Nation communities. The overall organization of the RWS service and their major customers is shown in **Figure E.1.**

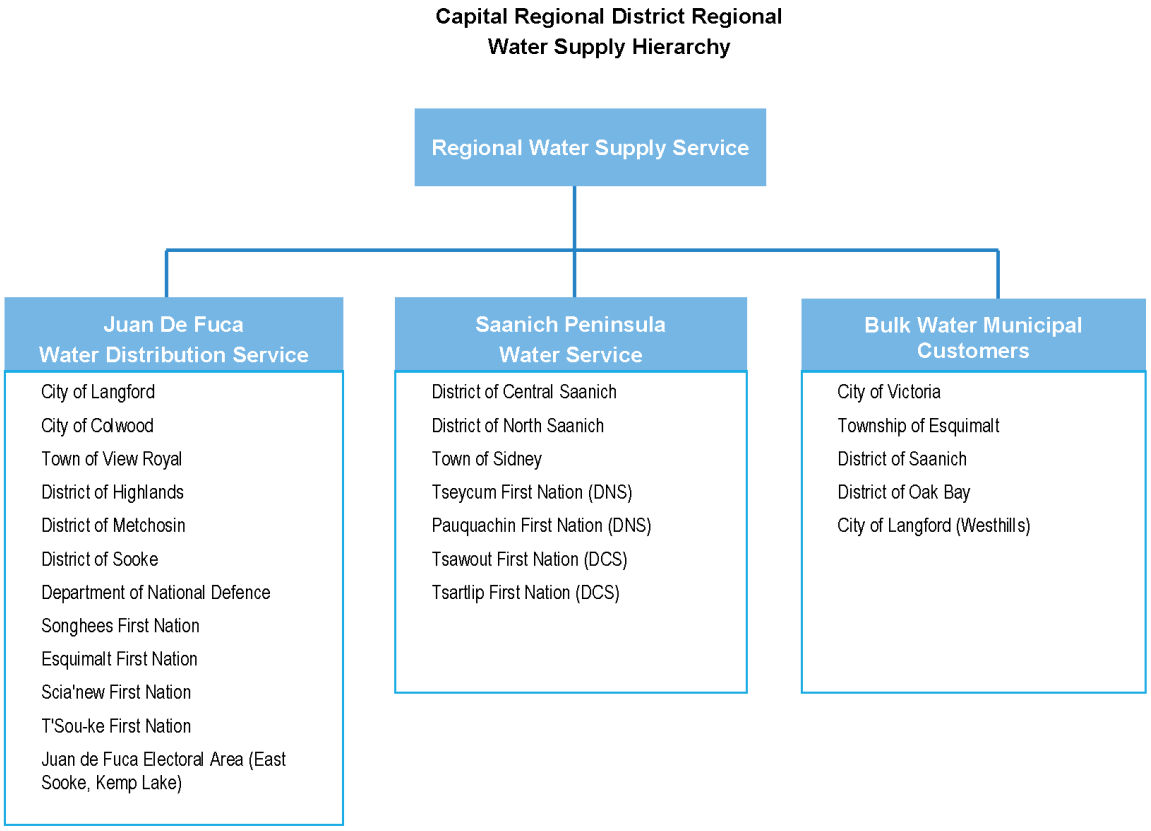


Figure E.1: Regional Water Supply Hierarchy

The primary water supply source for the RWS is the Sooke Lake Reservoir (SLR). The Sooke watershed supply is a high-quality, low turbidity source which enables the RWS to currently operate as an unfiltered source. Advanced disinfection facilities consisting of UV, chlorine and ammonia are used for treatment. The water produced by the RWS meets all Provincial and Canadian guidelines for drinking water quality. **Figure E.2** illustrates the components and service area of the RWS.

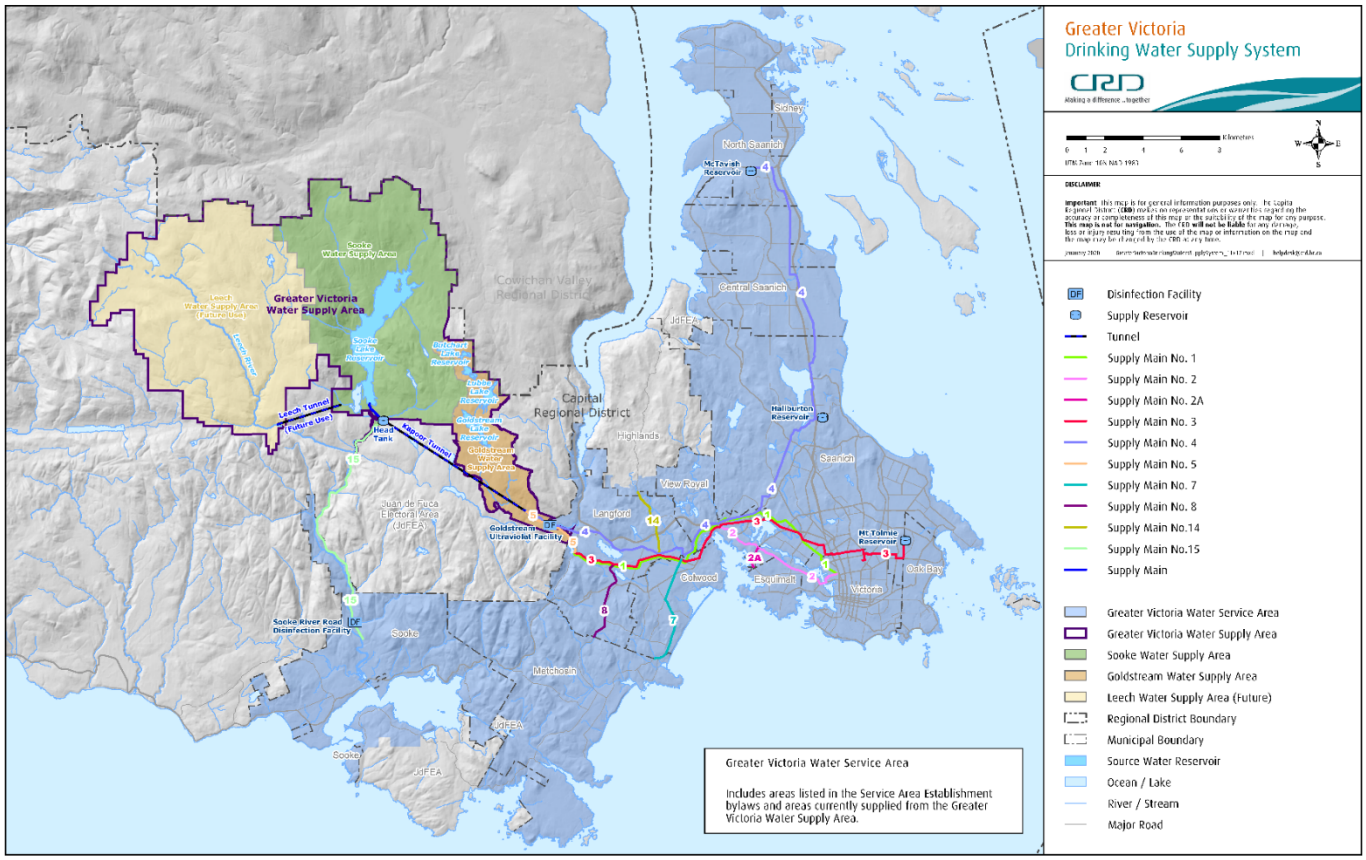


Figure E.2: RWS Water Service Area

The last Long Term Water Supply Plan for the Regional Water Service was completed in 1994 by Montgomery Watson and Dayton & Knight Ltd.(1994 Plan). The 1994 Plan outlined recommended improvements to increase the capacity and resiliency of the water supply and treatment facilities. Many of the critical improvements such as raising of the Sooke Lake Reservoir Dam, replacement of critical transmission mains, and installation of UV disinfection facilities to improve treatment were completed. This Master Plan for the Regional Water Service has been completed to update the 1994 Long Term Water Supply Plan, address key objectives identified in the 2017 Strategic Plan for the Regional Water Supply Service and sets out requirements for service upgrades based on a 2050 planning horizon.

2017 Strategic Plan

The CRD's 2017 Strategic Plan for Regional Water Service identified three primary commitments as follows:

1. To provide high quality, safe drinking water
2. To provide an adequate, long-term supply of drinking water
3. To provide a reliable and efficient drinking water transmission system

The Strategic Plan also identified Areas of Focus, strategic priorities, and actions including:

- CRD Board Priorities – Sustainable and Livable Region
- Climate Change Impacts – Mitigation and Adaptation
- Preparation for Emergencies and Post-Disaster Water Supply
- Supply System Infrastructure Investment – Renewing Existing and Preparing for New Infrastructure
- Planning for the Future Use of the Leech Water Supply Area
- Demand Management – Addressing Changing Trends in Water Demand

This 2022 Master Plan has been prepared to address the primary objectives and strategic priorities outlined in the 2017 Strategic Plan.

Concurrent Studies Informing the Master Plan

As part of this RWS 2022 Master Plan, three concurrent studies were completed by Stantec to inform this report. Key findings from these studies have been considered in this 2022 Master Plan. The studies and their content are summarized as follows and have been published by Stantec as stand-alone documents for use by the CRD.

Study 1 – Deep Northern Intake, Transmission and Treatment Study

This study investigated the option of installing a second intake to access deeper water in the north basin of the Sooke Lake Reservoir. The deeper intake would improve overall system resiliency and provide a more robust system in the event that the watershed is impacted by natural occurrences such as wildfires. Even though the proposed Deep Northern Intake would improve overall water quality, the deep intake would not enable the SLR to be drawn down below elevation 177m during a 1:50 year drought conditions without diversion of the Leech River to the SLR. Future diversion of Leech River water to SLR would assist in filling of the Sooke Lake Reservoir and reducing potential for water supply shortages during drought conditions. Excessive drawdown of SLR would also likely lead to water quality issues. The study also investigates transmission facilities necessary to connect the second intake to the existing RWS transmission system and outlines water treatment requirements.

Study 2 – Supply System Risk and Resiliency Study

Using the AWWA J100 methodology, the RWS has been assessed to determine potential vulnerabilities, risks, and threats to the water supply system associated with natural disasters, climate change, failure of equipment and other considerations such as damage to water supply infrastructure from seismic events.

Study 3 – Seismic Assessment of Critical Facilities (Phase 1)

A Phase 1 seismic assessment was completed for critical CRD water supply facilities. This study was a high-level screening assessment to evaluate the vulnerability of a limited number of priority CRD water supply facilities consistent with screening level assessment. The Phase 1 seismic assessment identified facilities that will require further Phase 2 detailed seismic evaluations and likely future seismic improvements pending the outcome of the Phase 2 evaluations.

Population Growth, Projected Water Demands, and Demand Management

Future population, within the CRD, has been projected using annual growth rates ranging from a low 1% annual growth to a high of 1.5% annual growth from the current population. The projections to 2050 planning horizon are outlined in **Table E.1**. A mid-range 1.25% annual population growth rate was selected for the purposes of planning future water supply facilities.

Table E.1: Projected Population of Regional Water Supply Service Area for Three Population Growth Scenarios

Year	Low (1.00%)	Med (1.25%)	High (1.50%)
2030	432,000	444,000	456,000
2050	527,000	569,000	615,000

The CRD has a very successful water demand management program. RWS water demands are amongst the lowest in British Columbia for a major metropolitan area. Per capita demands have declined from 559 L/c/d in 1998 to the current per capita demand of 337 L/c/d (combined residential, ICI and agricultural). **Figure E.3** illustrates the benefit of targeting even lower demand rates. With a modest reduction to 300 L/c/d, the Sooke watershed could supply enough water to meet demand until 2060. The red dashed line in **Figure E.3** depicts an estimate of the safe 1:50 year drought yield (67Mm^3Y) of SLR and illustrates the impact of different consumption levels on extending the life of the SLR. If demand continues at the current rate (no decline curve), the SLR source will be at its capacity limit by 2045. The CRD should continue to promote water conservation throughout the region and strive to lower per capita demands from current levels. Given the finite capacity of the Sooke watershed, planning for the future diversion of Leech River to SLR should commence within the next 10 years.

Recommendations arising out of this Master Plan include continued demand management and conservation programs on a regional basis with all RWS member municipalities including ICI and agricultural customers served by RWS.

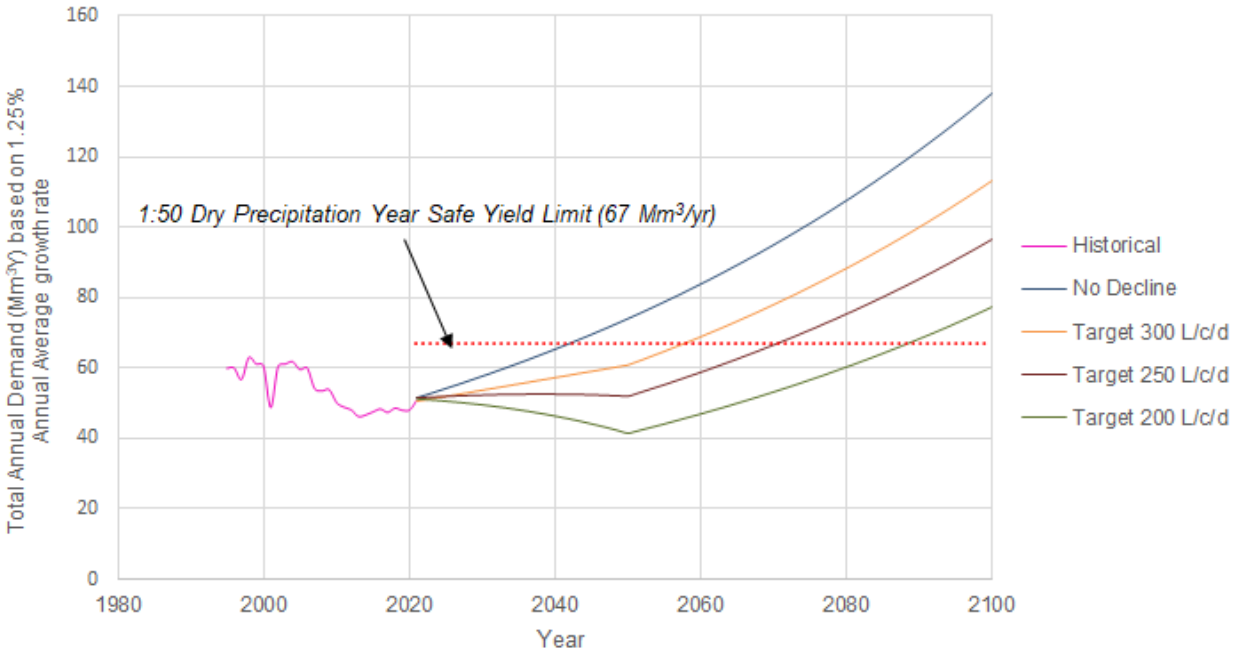


Figure E.3: Water Demand Projections

Water Quantity

A hydrological assessment has been completed for the Sooke and Leech watersheds. It is estimated that the Sooke watershed has the capability to supply an additional 40% increase in annual demand (up to 67 Mm^3 Y) over the current demand of 48 Mm^3Y. Projecting from the current annual demand level using a population growth rate of 1.25%, the Sooke watershed safe yield capacity will be reached before the 2050 planning design horizon in the year 2045. **Figure E.4** illustrates the Sooke Lake Reservoir water level response to varying increases in annual demand ranging from a 10 to 50% increase over current annual demand levels for a 1:50 year drought precipitation year followed by a year of normal precipitation.

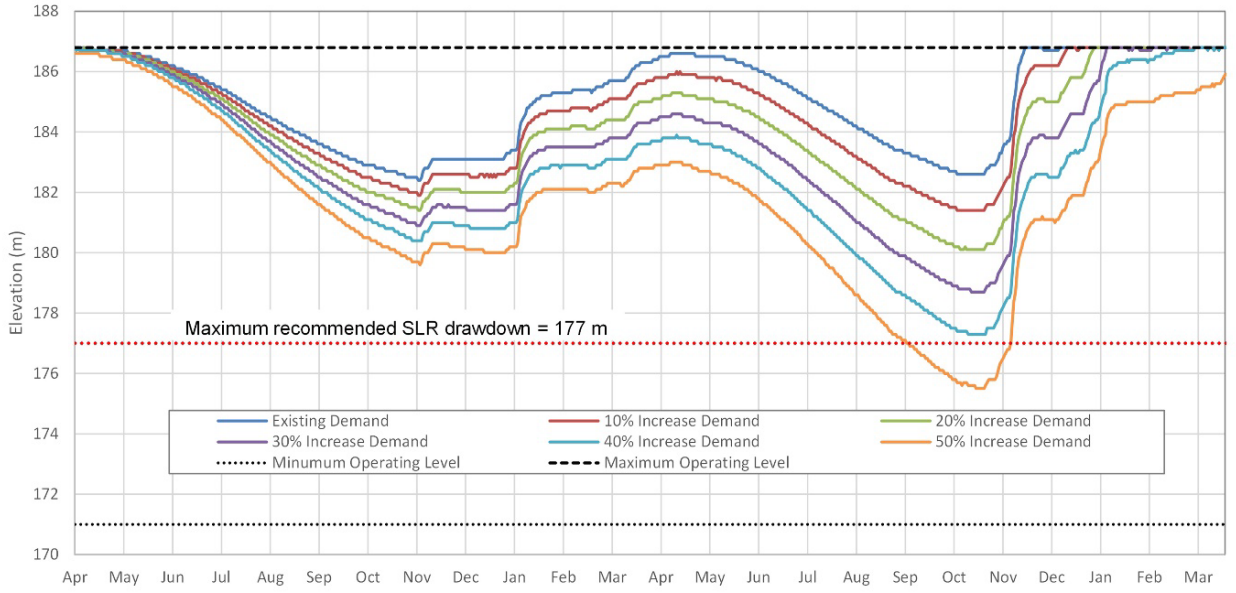


Figure E.4: Simulated Water Level in Sooke Lake Reservoir for a 1:50 Dry Precipitation Year

The SLR response assumes there is no multi-year drought condition experienced, which is consistent with historical records for this source. This figure indicates that an increase of 40% over current annual demand is the maximum that can be sustained without impacting the ability of the SLR to fill during a normal precipitation year following a 1:50 drought year.

Leech Watershed

The Leech watershed has been identified as a possible long-term additional supply for the RWS. The Leech watershed has a large catchment area of 9,600 hectares in comparison to Sooke watershed with 8,862 hectares. The Leech watershed has the capability of producing significant flows in the winter months. However, during the summer months the Leech River inflows are negligible. Development of storage on the Leech River or direct diversion will be required to augment flows to SLR. The amount of water that can be diverted to Sooke Lake will depend on the outcome of a further detailed hydrology and water balance model as well as discussions with the Province on the Environmental Flow Needs Policy requirements under the Water Sustainability Act. In lieu of construction of a dam, another possibility is a direct intake into Leech River and diverting flows to SLR via the Leech tunnel during periods of higher flow in the shoulder seasons depending on SLR water levels. Direct diversion would also improve SLR resiliency during drought conditions and assist in refilling of the SLR to protect against multi-year drought conditions impacting SLR water levels. This would require development of a reservoir water balance and operating model to determine the optimal operation of the combined SLR and Leech River diversions. This model would also assist in managing water levels in SLR for dam safety. The Deception Gulch Reservoir could be used to transfer flows to SLR, but upgrades to Deception Gulch Dam and spillway would be required as well as improvements to the Sooke Lake Reservoir Saddle Dam.

As population grows in the CRD water demands will also increase to a threshold limit and ultimately the finite capacity of the Sooke watershed will be reached and the Leech watershed will have to be brought into service. At a mid-range demand growth of 1.25% annually it is projected that the Leech water supply would have to be in service by the year 2045. This is the approximate year when demands will reach the 1:50 year safe drought yield of the Sooke watershed.

Planning for diversion of the Leech River should commence by 2032 as it can take some time to conduct the required planning, environmental studies, permitting, design, and construction of works necessary to develop this source. The Leech River source should be in service no later than 2042 several years ahead of time when the safe yield of the Sooke watershed is reached.

Goldstream Watershed

The Goldstream watershed and the series of upland lakes serve as a valuable secondary source with an available storage of 10 Mm^3. This storage is suitable for suppling RWS when the Kapoor Tunnel must be taken out of service for inspection and maintenance. Potential landslides in the Goldstream Canyon limit the use of this source during wet weather but if an intake to Goldstream Lake and a transmission main are constructed to Japan Gulch then this source could serve as a year-round supply and provide up to 20% of the current annual demand. Detailed hydrology was not completed for the Goldstream watershed as it primarily serves as a secondary supply for RWS.

Deep Northern Intake and Transmission

The possibility of installing an intake to extract water from the deeper basin of the SLR has been investigated and is discussed in detail in the *Deep Northern Intake, Transmission and Treatment Study* (Stantec 2021). Major findings of the study indicate that a deeper intake would be useful to provide a second redundant intake into the SLR which would improve system resilience and enable extraction of water below the existing intake tower low port elevation of 169 m. While the Deep Northern Intake provides improved water quality and resiliency during drought conditions, reservoir operation below levels of 177 m would make it more difficult to replenish the reservoir during average winter precipitation periods following a 1:50 year drought condition unless water from Leech is diverted to the SLR. In addition, drawing the SLR below 177 m could also lead to water quality issues from low water levels in some areas of the reservoir and siltation associated with shore erosion. The deeper intake does provide added benefits of better water quality, more stable temperature, and less likelihood of algae related water quality concerns. It would also serve as a redundant supply if the existing intake tower were to fail during a seismic event or if an extended multi-year drought condition is experienced.

A preliminary location has been identified for the deep northern intake approximately 2 km north of the boat launch. This intake location will be confirmed by further investigations including geotechnical, and further water quality sampling.

Connection of a proposed Deep Northern Intake could be made in a staged approach by connecting to the existing Head Tank downstream of Sooke Lake Dam. This would enable the CRD to draw from deeper sections of the SLR to better manage water quality as well as provide improved resiliency during emergency conditions or drought periods. Ultimately, the intake could be connected to a second transmission system (1994 Jack Lake alignment) connecting to Japan Gulch Reservoir to provide redundancy to the Kapoor Tunnel.

A variety of options have been investigated for connection of the proposed Deep Northern Intake to a secondary transmission system for Kapoor Tunnel. These include a second intake and gravity conveyance tunnel, pumped overland transmission mains along different alignments, a floating pump station and submerged marine pipeline, or a hybrid tunnel and pumped transmission system. The final selection of the preferred option can be made at the preliminary design phase, but all options are feasible. A lower level of service suitable to supply the year 2100 ADD would be suitable for sizing of this transmission main and reducing the overall pumping power required to deliver water via a transmission main corridor which was referenced in the 1994 Plan as the Jack Lake alignment. The intake, pump station, and transmission main for delivery of flows to the Head Tank would be sized for the year 2100 MDD so the pump station can serve as a complete redundant intake serving the Head Tank and Kapoor Tunnel. The second phase of the project would involve construction of additional booster pumping stations and the transmission main following the Jack Lake alignment.

A floating pump station is an option that could be considered for the Deep Northern Intake. A similar size facility was constructed for Seattle Public Utilities Chester Morse Lake pump station and large capacity facilities have been built overseas. The decision on which option to pursue, a fixed land-based pump station and micro tunneled intake or a floating pump station can be made at the preliminary design phase.

The Kapoor Tunnel has sufficient hydraulic capacity to convey demands to the year 2100. IWS has been effective in managing this critical asset through regular inspections and maintenance repairs.

One of the recommendations of this 2022 Master Plan is to complete a seismic assessment of the tunnel to assess its vulnerability to seismic events.

Water Quality and Treatment

The RWS currently operates as an unfiltered system with advanced disinfection. Water quality from SLR with UV, chlorine and chloramine disinfection meets current provincial *Drinking Water Treatment Objectives for Surface Water Supplies* and Health Canada's *Guidelines for Canadian Drinking Water Quality.* The current practice of advanced disinfection using Ultraviolet light, chlorine, and ammonia provides an acceptable level of protection for RWS water customers. However, the disinfection systems can become compromised if turbidity, colour, and organic levels increase due to wildfires in the watershed or other environmental factors including climate change.

Many previously unfiltered sources serving large populations across North America are now considering or have installed filtration. These include the Portland Bull Run source and the New York Croton source. The Comox Valley Regional District also recently commissioned a new water filtration facility in July 2021. The long-term plan for Metro Vancouver's unfiltered Coquitlam source is to install filtration. With the trend to more stringent water quality requirements, it is likely just a matter of time before provincial or federal health authorities will be requiring filtration on all surface waters serving major population centres. Filtration has other benefits including improving overall water quality consistency, improvements in transmission system water quality and providing operational resiliency during periods of changing raw water quality. Filtration will also be required once Leech River water is brought online. A recommendation of this 2022 Master Plan is to plan for construction of filtration by the year 2037.

Several feasible multi-barrier filtration and disinfection process options have been identified and evaluated including direct filtration, DAF plus filtration and membranes. Based on the existing SLR raw water quality and life cycle cost evaluation direct filtration is a viable option for filtration of Sooke Lake Reservoir water. Further evaluation including filtration pilot studies is required to confirm the process selection. If Leech River water is used in the future it may require the addition of a sedimentation, flotation, or other clarification process to treat elevated turbidity, organics, and colour. A recommendation is that a filtration piloting program be completed for Sooke Lake and blended Leech River and Sooke Lake Reservoir water.

Three sites were evaluated for future filtration facilities. A potential water filtration site has been identified adjacent to the Japan Gulch Reservoir. This site offers advantages as it is central to CRD operations, readily accessible, and the plant can easily be connected to Kapoor Tunnel and the RWS transmission system. Further refinement of the final filtration plant location will depend on a variety of factors including geotechnical investigations and preliminary design details. The final site can be determined once further investigations are completed. Under the current configuration of the water transmission system, the Japan Gulch location would be unable to provide filtered water for the District of Sooke. Providing filtered water for the District of Sooke would require the construction of a new east – west transmission main, or a second filtration plant could be constructed at the Sooke River Road Disinfection Facility.

Planning for filtration and pilot investigations should commence in the next several years with a goal to having new filtration plant online by 2037. This timeline will provide sufficient time for the CRD to complete the necessary studies, investigations, and preliminary designs for the proposed facilities.

Water Storage Tanks

Water storage is required in a regional transmission system to balance peak hour demands and to provide for discretionary emergency storage. Currently there are only three in-service storage tanks (Head Tank, McTavish and Mount Tolmie) in the RWS system and most of the system operates as an on-demand system providing flows for peak hour balancing and fire protection via the RWS transmission system from Sooke Lake Reservoir. This operational approach places significant hydraulic capacity demands on the CRD transmission system and consumes residual hydraulic capacity for future growth. Balancing storage for the transmission system combined with distribution system balancing and fire storage is the recommended approach to reduce hydraulic demands on the RWS transmission system and defer future capacity improvements in the transmission system. The Mount Tolmie storage tank does not have sufficient capacity to meet the peak hour balancing demands of the service areas. It is recommended that an additional peak hour balancing tank and pump station be constructed at Smith Hill to serve major demand areas including the City of Victoria, District of Oak Bay, and District of Saanich. This tank will conserve the RWS transmission system capacity and enable the system to operate at the same or higher HGL with pumping and defer future capital investments in transmission mains as well as water filtration plant capacity expansion. A second clearwell equalization storage tank is also recommended immediately downstream of a proposed future water filtration plant at Japan Gulch. This clearwell will balance flows through the filtration plant so the plant is only sized to provide maximum day demand rather than peak hour demand. Elevated balancing storage or service pumping at the proposed Japan Gulch Filtration Plant site could be constructed at an HGL of 169 m (same as Head Tank) so filtered water could be pumped to this TWL so the transmission system hydraulic operation would be the same as current operations.

The provision of transmission system balancing storage has mutual benefits for treatment. The filtration plant can be “downsized” to supply the maximum day demand rather than the peak hour demand. The future water filtration facilities would have to be built with an additional 35% capacity without the installation of balancing storage on the transmission system.

Options Screening and Alternatives Evaluation

The development of Alternatives for this 2022 Master Plan used a similar methodology to the 1994 Plan, but the methodology employed was more complex. The principal considerations for this 2022 Master Plan are:

1. Security of supply (i.e., redundancy)
2. Conveyance of water between SLR and Japan Gulch
3. Siting of the Filtration Treatment Plant

Eighteen (18) options were identified for infrastructure improvements (see **Table E.2)** that support the principal considerations shown above. These options were evaluated with advantages and disadvantages summarized for each option and a numerical scoring was applied to each option to result in an initial screening of the preferred alternatives for further evaluation including cost considerations.

Table E.2: Master Plan Options Evaluation

Category	Component	Option	Description
Supply	Sooke Lake Reservoir (Intake)	S1	Deep Northern Intake
		S2	Lake Bottom Marine Intake
		S3	Floating Pump Station Intake
	Leech River (Intake)	S4	Leech River Diversion Intake to Leech Tunnel
		S5	Leech River Dam
Raw Water Transmission	Leech River to Sooke Lake Reservoir	RWT1	Leech Tunnel to Deception Gulch Reservoir
		RWT2	Leech Tunnel to Sooke Lake Reservoir deep basin
	Sooke Lake Reservoir to Japan Gulch	RWT3	Sooke Lake Reservoir to Japan Gulch tunnel
		RWT4	Hybrid pumping/tunnel alternative
		RWT5	Overland route through Leechtown and Jack Lake – 3 PS (DNI PS + 2 PS)
		RWT6	Overland Council Lake Alignment – 3 PS (DNI PS + 2 PS)
		RWT7	Overland Malahat Alignment - 3 PS (DNI PS + 2 PS)
Filtration	Filtration Plant Sites	T1	Sooke Lake Reservoir site
		T2	Japan Gulch site
		T3	Japan Gulch site + Sooke River Road site
	Filtration Technology	T4	Direct Filtration with granular media filtration
		T5	Dissolved Air Flotation (DAF) with granular media filtration
		T6	Membrane Filtration

The 18 options were evaluated and scored for alignment with the 2017 Strategic Plan Commitments and Areas of Focus. Each option was evaluated and then scored based on meeting the three primary objectives outlined in the 2017 Strategic Plan, including:

1. Level of Service Maintenance/Improvement
2. Resolving a RWS infrastructure improvement needs gap
3. Redundancy and security of supply

The results of the options scoring evaluations are shown in **Table E.3.**

Table E.3: Options Scoring Evaluation

Option	Description	Raw Score	Weighted
S1	Deep Northern Intake	37	80
S2	Lake Bottom Marine Intake	33	73
S3	Floating Pump Station Intake	33	69
S4	Leech River Diversion Intake to Leech Tunnel	27	57
S5	Leech River Dam / Storage	32	67
RWT1	Leech Tunnel to Deception Gulch Reservoir	29	60
RWT2	Leech Tunnel to Sooke Lake Reservoir deep basin	31	66
RWT3	Sooke Lake Reservoir to Japan Gulch tunnel	36	75
RWT4	Hybrid pumping/tunnel	31	64
RWT5	Overland route through Leechtown and Jack Lake – 3 PS	30	62
RWT6	Overland Council Lake Alignment – 3 &1 PS	30	62
RWT7	Overland Malahat Alignment - 3 &1 PS	28	56
T1	Sooke Lake Reservoir site	31	68
T2	Japan Gulch site	36	78
T3	Japan Gulch site + Sooke River Road site	30	66
T4	Direct Filtration	32	68
T5	Dissolved Air Flotation (DAF) with granular media filtration	32	68
T6	Membrane Filtration	33	70

This assessment resulted in a recommended priority capital improvement program which is outlined in **Table E.4.** The major capital works included in recommendation include a proposed Deep Northern Intake and pump station on the SLR, a transmission main sized for ADD to supply water from SLR to Japan Gulch in the event of an outage of Kapoor Tunnel and a direct filtration water filtration plant at Japan Gulch. Transmission mains to improve the hydraulic level of service as recommended in the 2018 GeoAdvice report and a new balancing storage tank and pump station at Smith Hill are also included in the recommended capital works plan. **Figure E.5** illustrates the recommended plan of improvements.

Table E.4: Capital Works Recommendations

	Option	2022$	Mid-Point of Construction	Inflated $
Supply				
Deep Northern Intake/Floating Pump Station	S3	$72,505,000	12/31/2031	$87,929,000
Leech River Diversion	S4/RWT1	$16,700,000	12/31/2044	$26,204,000
Sooke Lake Saddle Dam Hydraulic Improvements	M1	$10,000,000	12/31/2044	$15,691,000
Water Treatment				
Japan Gulch Dam Decommissioning	T2/T4	$10,256,000	12/31/2033	$12,940,000
Direct Filtration	T2/T4	$736,155,000	12/31/2035	$966,353,000
Clearwell	T2/T4	$23,999,000	12/31/2036	$32,134,000
Treated Water Pump Station	T2/T4	$29,780,000	12/31/2036	$39,873,000
Japan Gulch Water Filtration Plant Stage 2 Balancing Tank	M2	$15,384,000	12/31/2036	$20,599,000
Raw Water Transmission Mains				
DNI Transmission Main to Head Tank	M3	$38,768,000	06/30/2032	$47,483,000
3rd Main - Sooke Lake Dam to Head Tank	M4	$7,384,000	12/31/2032	$9,134,000
Jack Lake - Head Tank to Japan Gulch + 2 PS @ 2100 ADD	RWT5*	$208,649,000	12/31/2037	$284,959,000
Goldstream Reservoir Connector				
Goldstream Dam to Japan Gulch	M5	$67,075,000	12/31/2030	$82,971,000
Stage 1 Balancing Tank	M6	$5,538,000	12/31/2030	$6,850,000
Treated Water Transmission Mains				
Phase 1 Upgrades	M7	$7,499,000	6/30/2024	$7,838,000
Phase 2 Upgrades	M8	$38,204,000	6/30/2029	$44,085,000
Phase 3 Upgrades	M9	$55,293,000	6/30/2039	$77,792,000
Phase 4.1 Upgrades	M10	$47,670,000	6/30/2049	$81,771,000
Phase 4.2 Upgrades	M11	$48,928,000	6/30/2049	$83,930,000
East-West Connector				
Option 2 Transmission Main	M12	$58,562,000	6/30/2036	$77,639,000
Storage Tank				
Smith Hill Tank	M13	$12,820,000	12/31/2038	$17,859,000
Smith Hill Tank Pump Station	M14	$17,148,000	12/31/2038	$23,887,800
Total Estimated Cost		**$1,528,000,000**		**$2,048,000,000**

*Jack Lake alignment with Pump Stations and transmission main sized for 2100 ADD Level of Service flow ~375 MLD

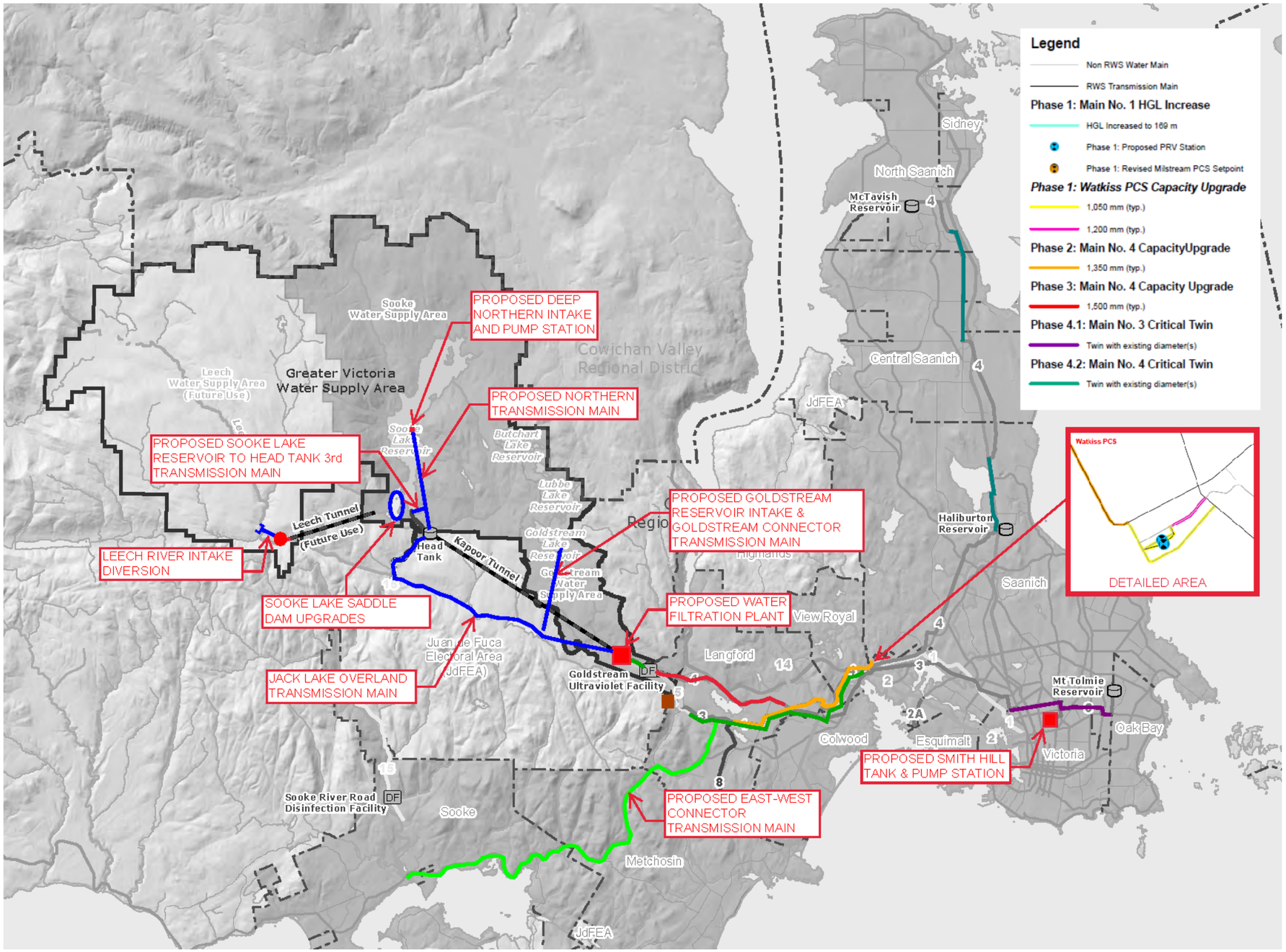
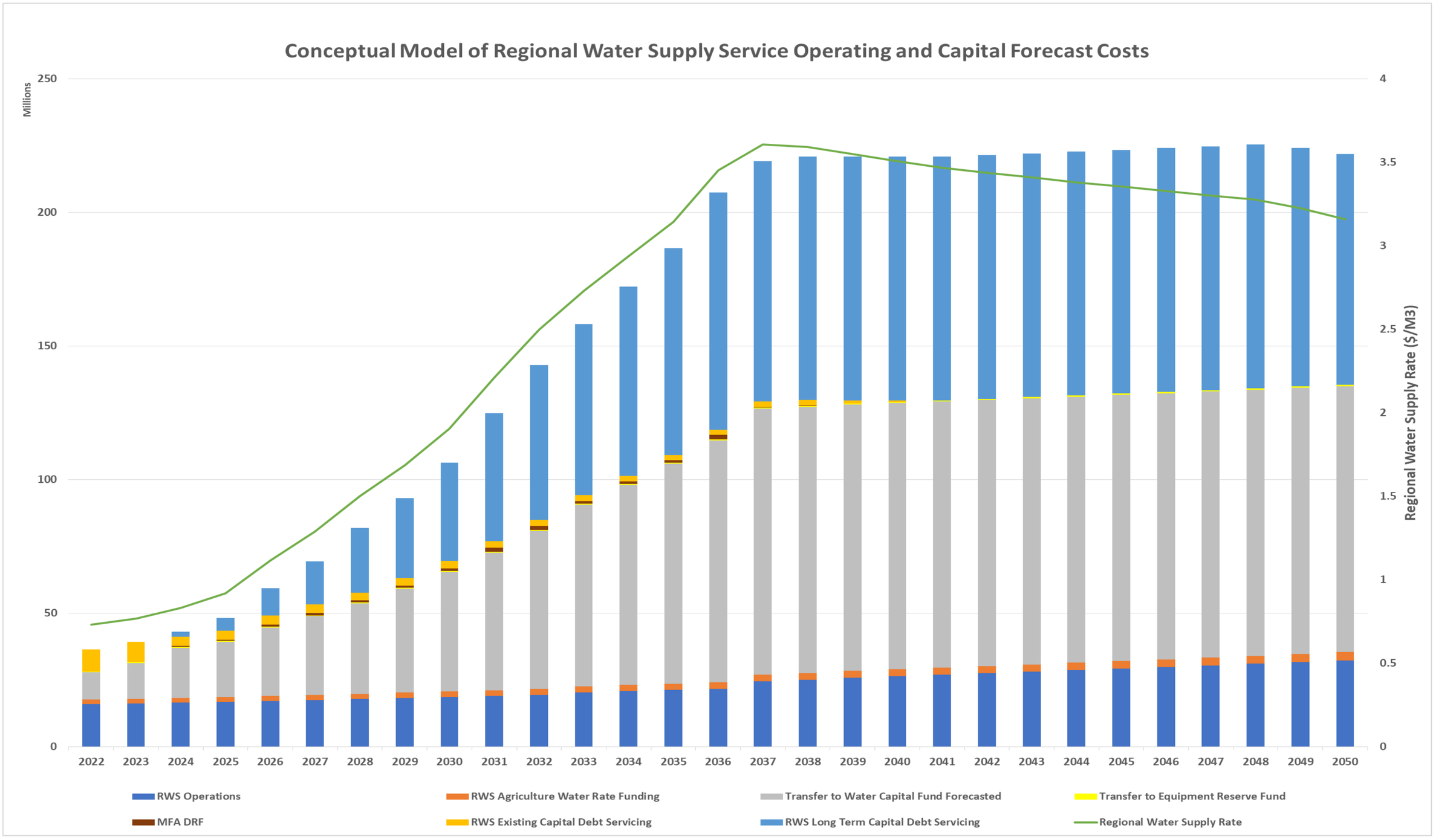


Figure E.5: Recommended RWS Capital Improvement Program


Conceptual Model of Regional Water Supply Service Operating and Capital Forecast Costs
Millions
250
200
150
100
50
0
4
3.5
3
2.5
2
1.5
1
0.5
0
Regional Water Supply Rate ($/M3)
2022
2023
2024
2025
2026
2027
2028
2029
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2044
2045
2046
2047
2048
2049
2050
RWS Operations
RWS Agriculture Water Rate Funding
Transfer to Water Capital Fund Forecasted
Transfer to Equipment Reserve Fund
MFA DRF
RWS Existing Capital Debt Servicing
RWS Long Term Capital Debt Servicing
Regional Water Supply Rate

2022 Long Term Water Supply Master Plan



GVWD 1994 Long Term Water Supply Plan



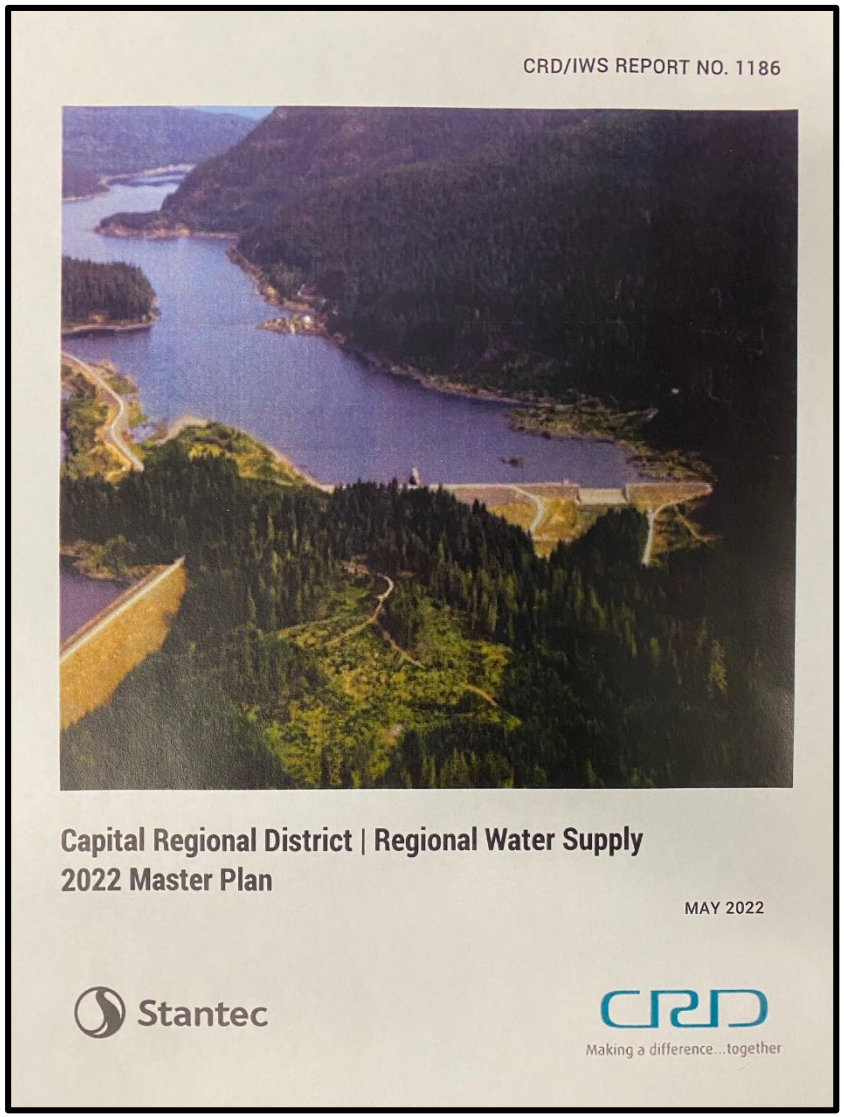
Key projects completed since 1994:

- Rehabilitate Goldstream Reservoirs/Dams
- UV Disinfection
- Raise Sooke Lake Reservoir Dam
- District of Sooke supply and treatment (replace Charters Treatment Plant) – Transmission Main #15 & SRRDF
- Replace Transmission Main #1

Other recommended considerations in 1994:

- Filtration
- Sooke Lake Deep Northern Intake
- Leech River diversion
- Second major transmission system from Sooke Lake Reservoir
- Goldstream
- Additional balancing storage

Regional Water Supply 2022 Master Plan



Primary elements of 2022 Master Plan:

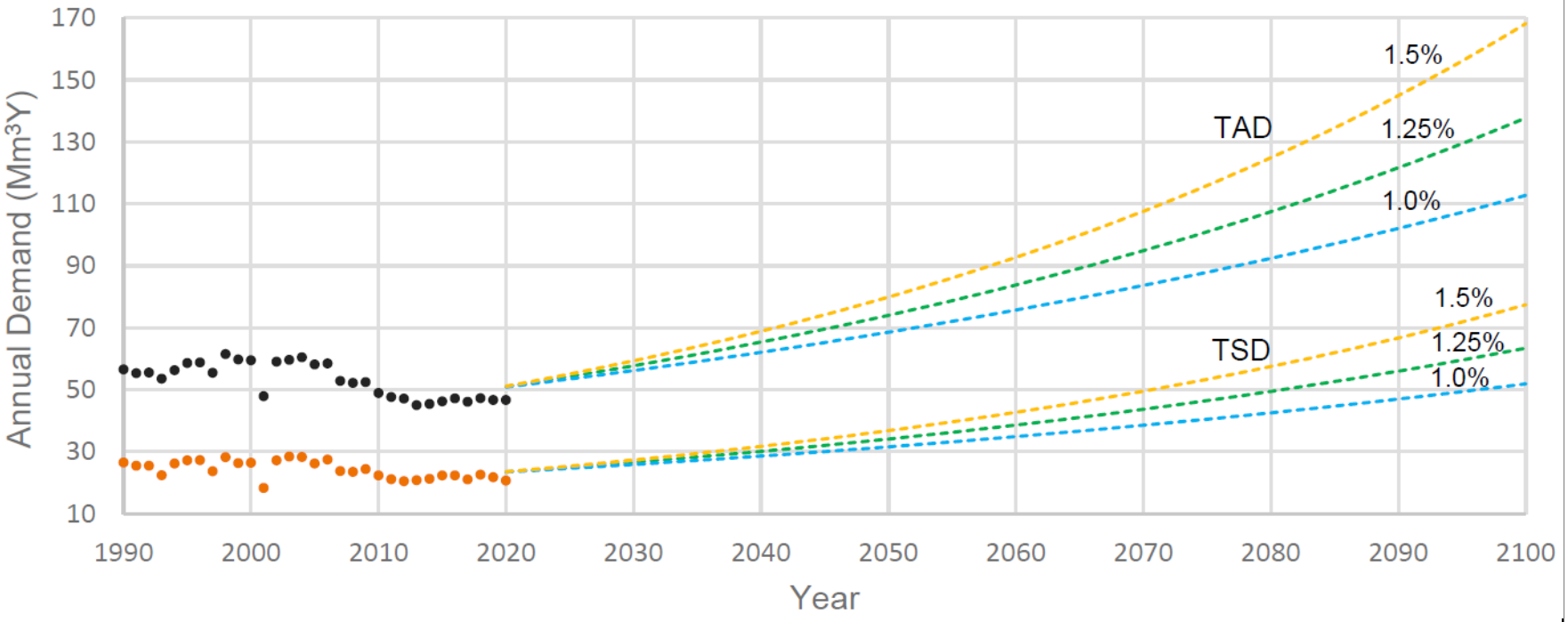
- Future water demand
- Water supply
- Water quality and treatment
- Treated water balancing storage
- Water transmission system

COMMITMENT:
Provide high quality, safe drinking water

COMMITMENT:
Provide an adequate, long-term supply of drinking water

COMMITMENT:
Provide a reliable and efficient drinking water transmission system

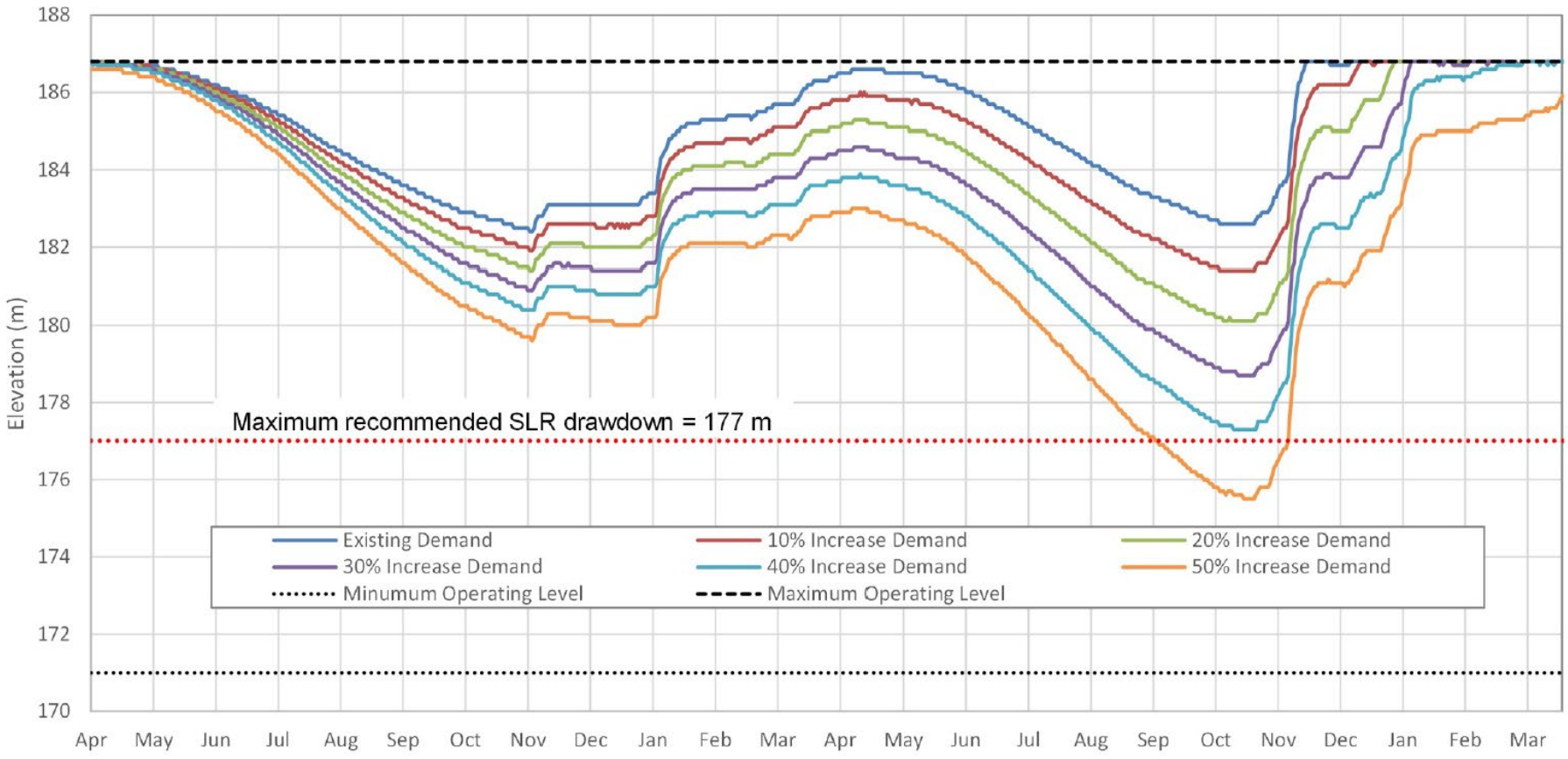
Total Annual & Summer Demands – 2020 to 2100



TAD – Total Annual Demand TSD – Total Summer Demand

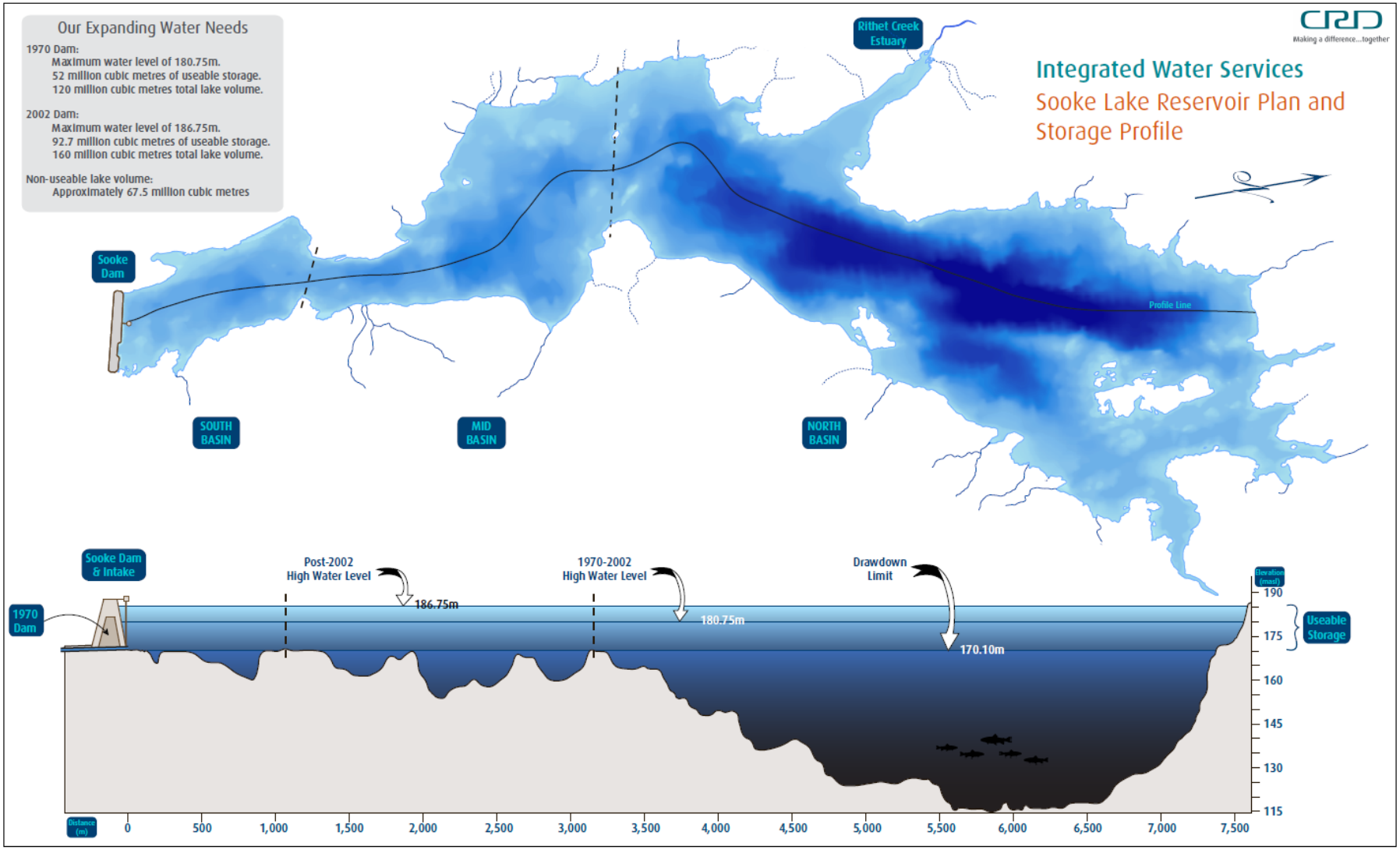
Population growth rates (%) - (low/medium/high)

Sooke Lake Reservoir – Demand Scenarios*

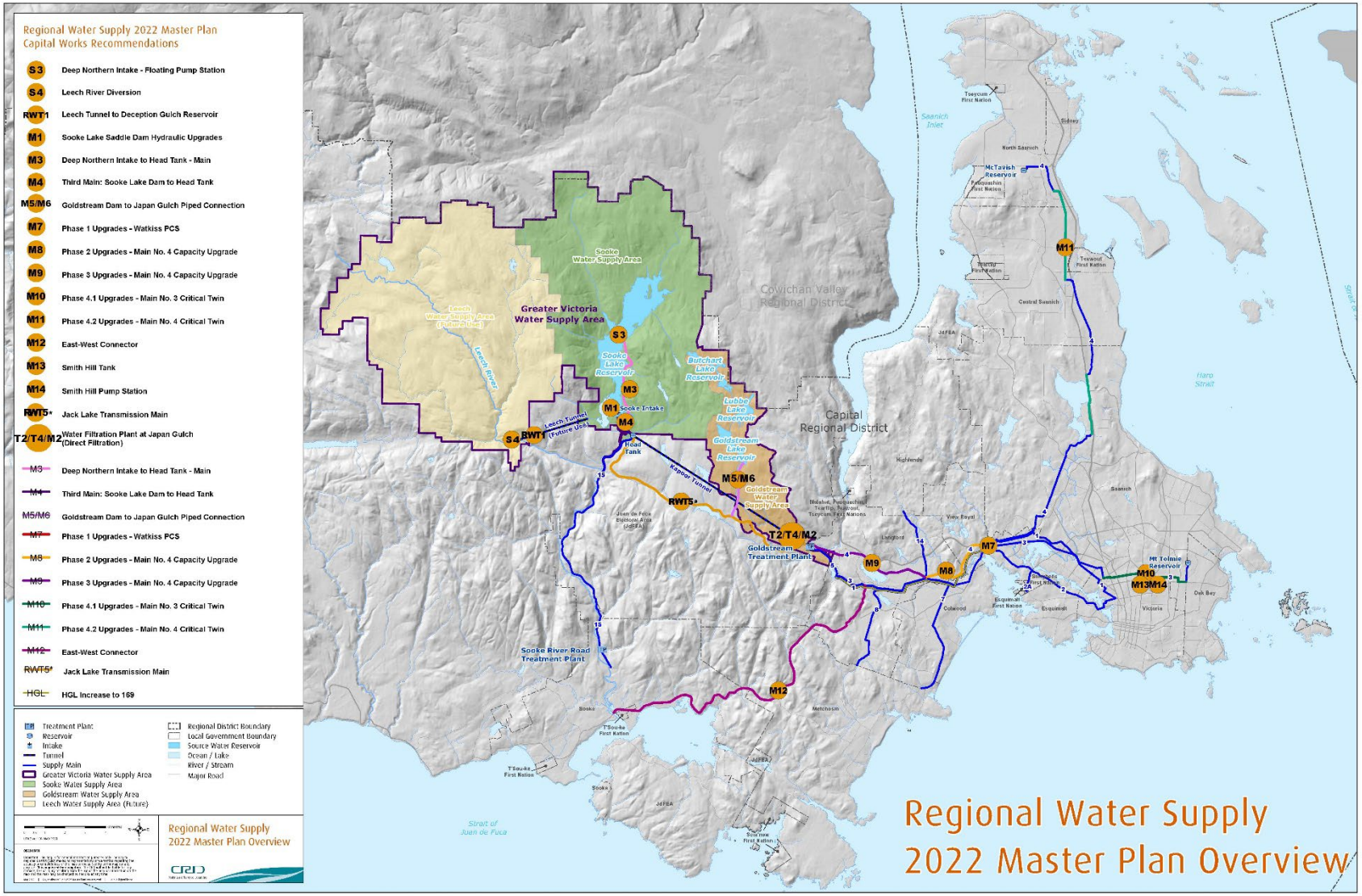


*Simulated Water Level in Sooke Lake Reservoir for a 1:50 Dry Precipitation Year Followed by an Average Precipitation Year with different Demand Scenarios

Sooke Lake Reservoir Plan and Profile

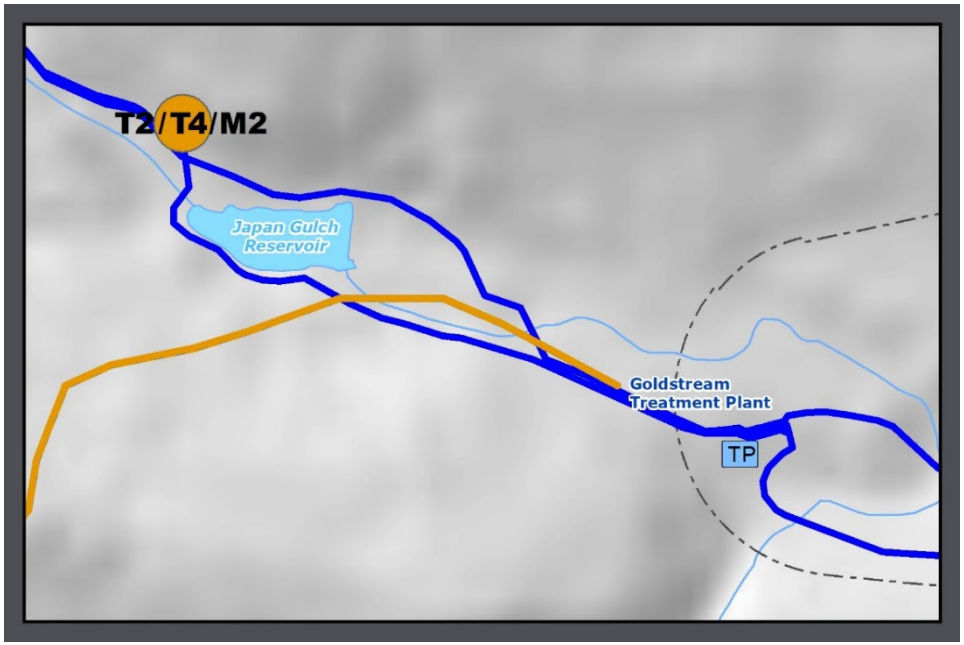


2022 Master Plan: Overview



Goldstream Water Filtration Plant (T2/T4/M2)

COMMITMENT:
Provide high quality, safe drinking water



Project Timeline:

2023-2025	2026-2030	2030-2037
Planning	Design	Construction

Estimated Cost: $1.07 Billion

A direct filtration plant located upstream of the Goldstream Disinfection Facility to better protect the Regional Water Supply from potential raw water quality fluctuations due to climate change, forest fires and the eventual integration of water from the Leech and Goldstream Water Supply Areas.

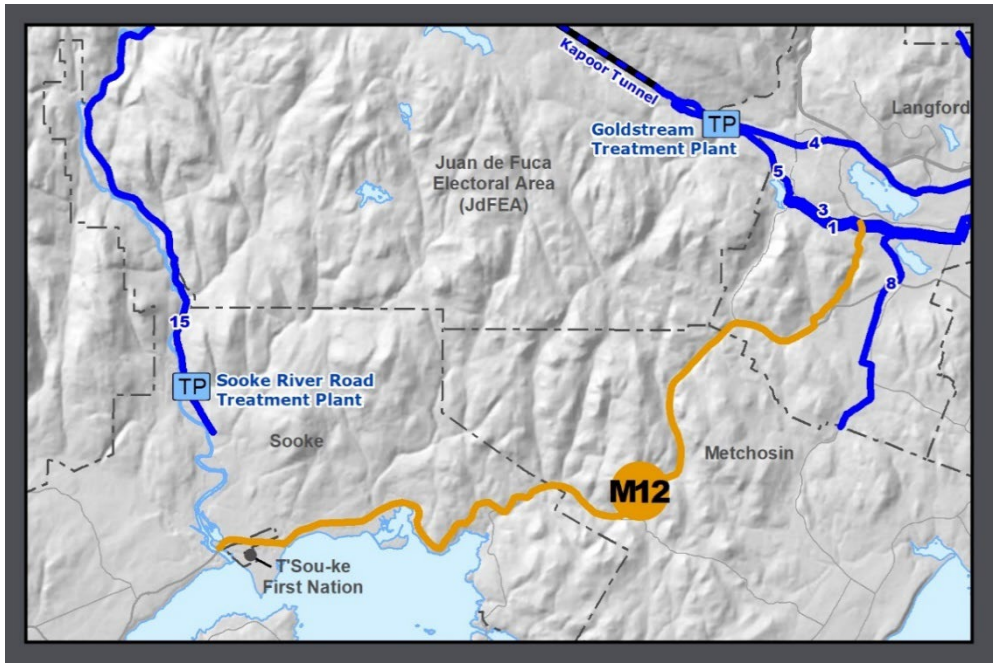
Includes a pump station, clearwell, balancing tank and the decommissioning of the Japan Gulch Dam and Reservoir.

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

CLIMATE CHANGE IMPACTS - MITIGATION AND ADAPTATION

East – West Connector (M12)

COMMITMENT:
Provide a reliable and efficient drinking water transmission system



Estimated Cost: $77.64 Million

A transmission main to connect the proposed Filtration Plant with the Juan de Fuca Water Distribution Service.

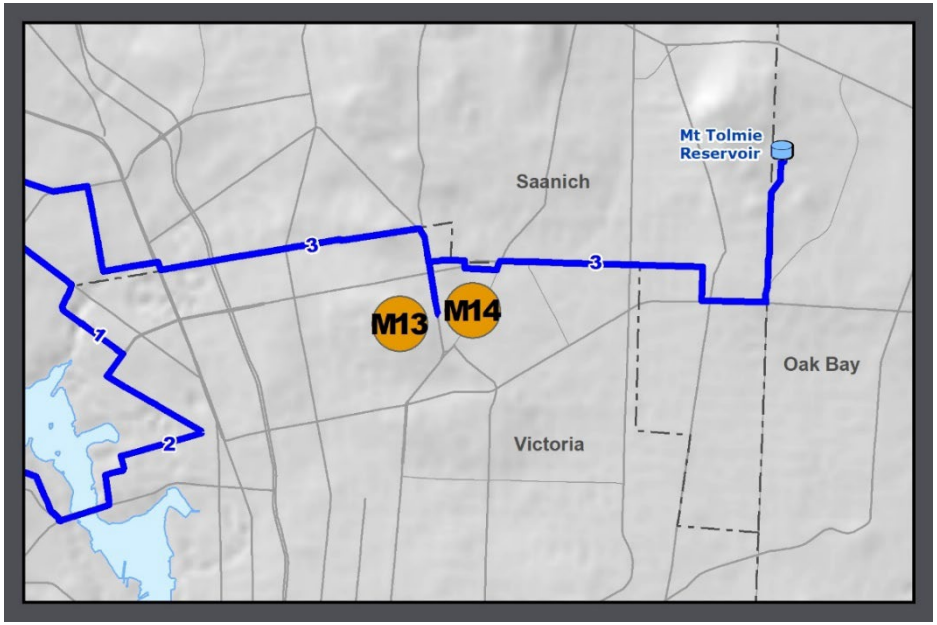
Project Timeline:

2026-2027	2028-2031	2034-2037
Planning	Design	Construction

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

Smith Hill Tank and Pump Station (M13/M14)

COMMITMENT:
Provide a reliable and efficient drinking water transmission system



Estimated Cost: $41.75 Million

A storage tank and associated pump station at the existing, decommissioned Smith Hill site to provide a number of benefits including emergency storage, balancing of instantaneous/peak demands, reduce the capacity required at treatment plants, reduce risk of transient pressure surges, reduce head losses and deferral of transmission main hydraulic upgrade.

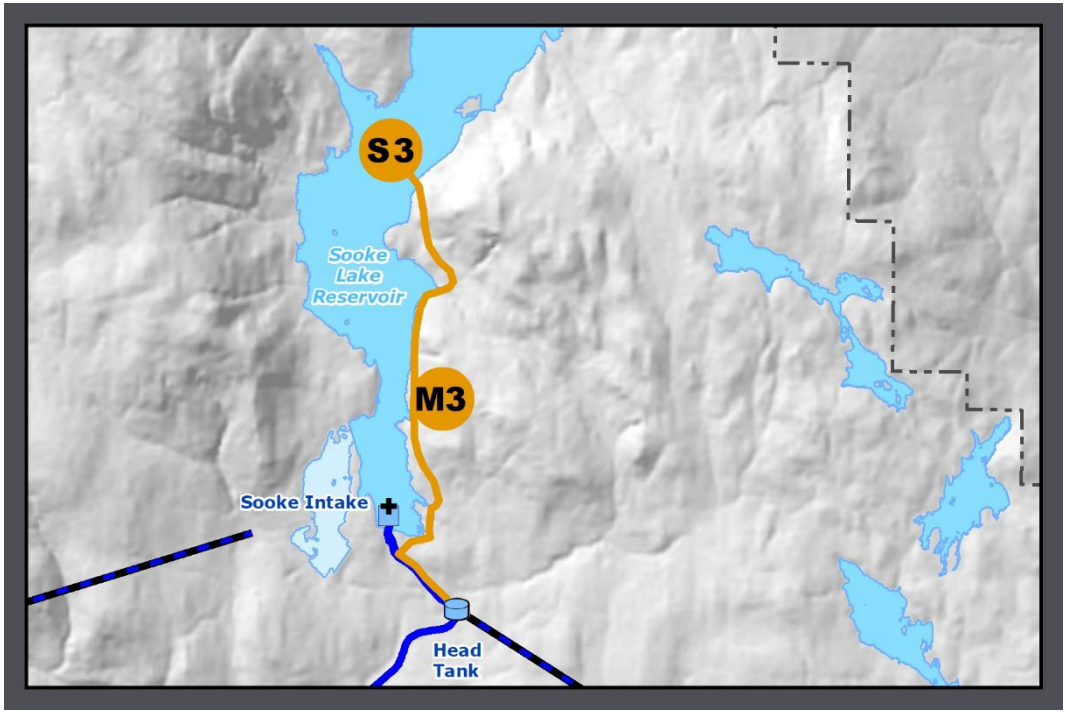
Project Timeline:

2029-2030	2031-2035	2036-2039
Planning	Design	Construction

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

Deep Northern Intake- Floating Pump Station (S3) and Transmission Main to Head Tank (M3)

COMMITMENT:
Provide an adequate, long-term supply of drinking water



Estimated Cost: $135.41 Million

A second intake and raw water transmission main pumped to the Head Tank to add redundancy to the existing single southern intake, allow access to deeper, high quality water and allow for further drawdown of the Sooke Lake Reservoir to increase supply.

Project Timeline:

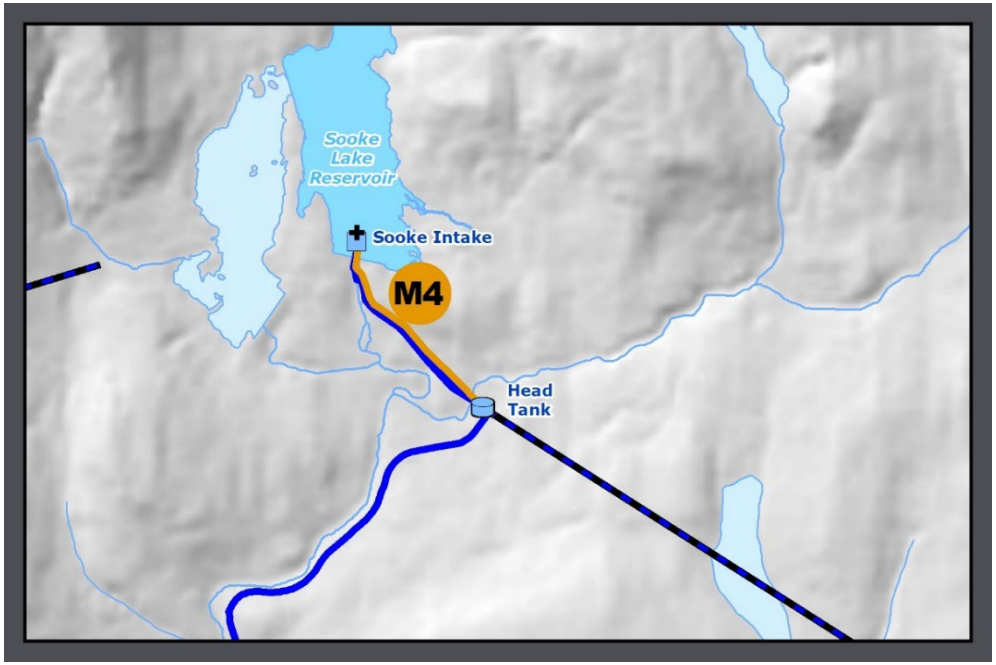
2023-2024	2025-2029	2030-2033
Planning	Design	Construction

PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

Third Main: SLD to Head Tank (M4)

COMMITMENT:
Provide a reliable and efficient drinking water transmission system



Estimated Cost: $9.13 Million

A third raw water main extending between the Sooke Lake Dam and the Head Tank to increase capacity, improve redundancy and ensure service continuation in the event of a natural disaster or failure.

Project Timeline:

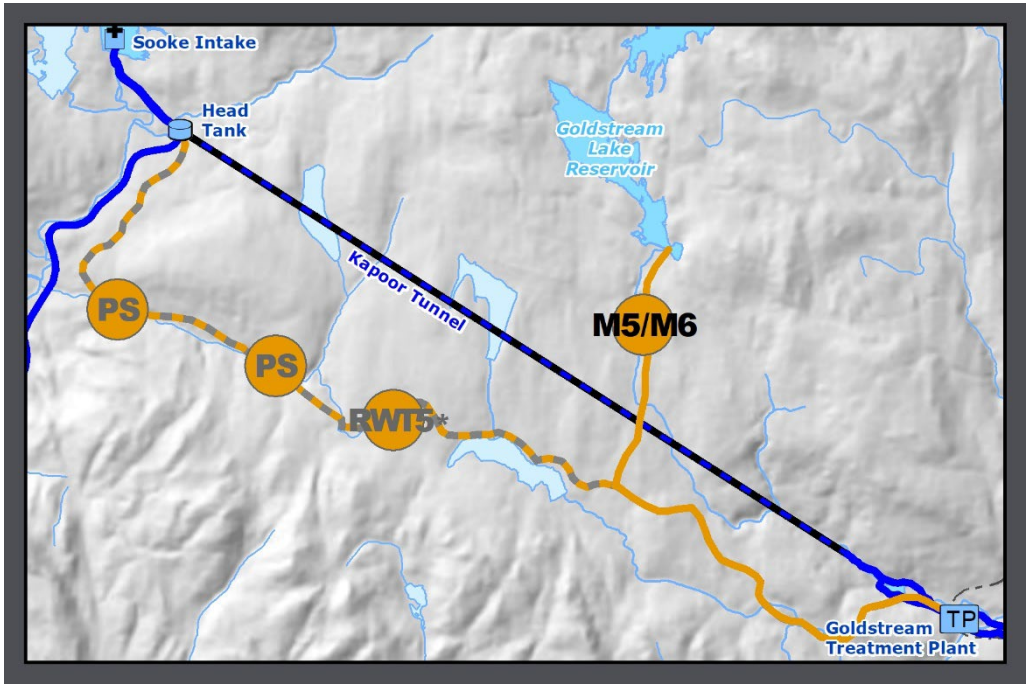
2023-2024	2025-2029	2030-2033
Planning	Design	Construction

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY

Goldstream Reservoir Connector (M5) Including Stage 1 Balancing Tank (M6)

COMMITMENT:
Provide a reliable and efficient drinking water transmission system



Project Timeline:

2023-2024	2025-2029	2030-2033
Planning	Design	Construction

Estimated Cost: $89.82 Million

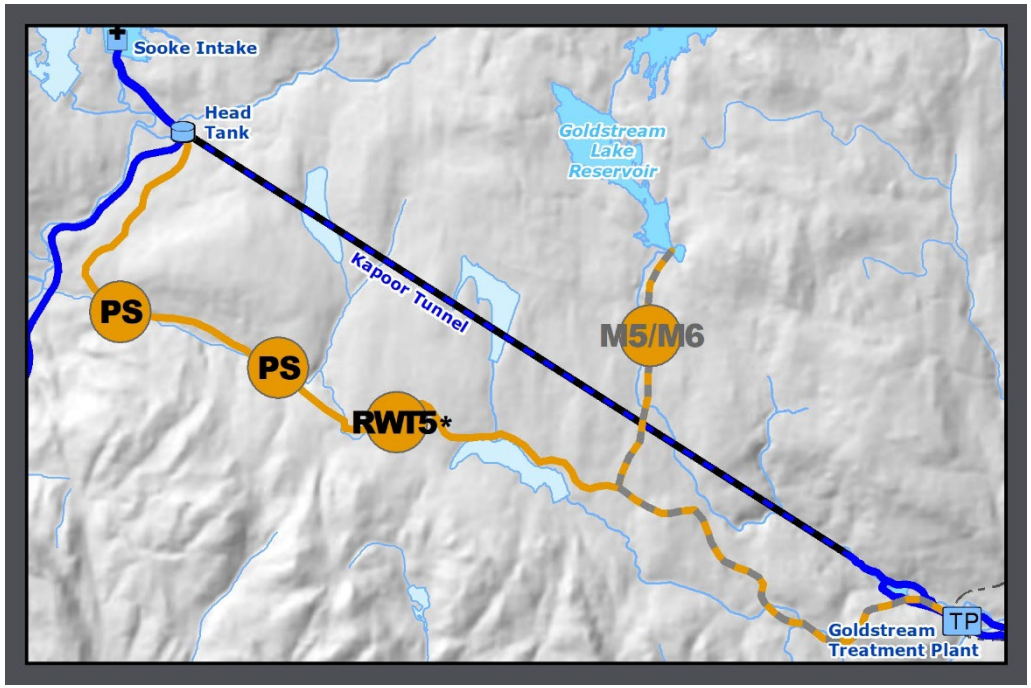
A piped connection between Goldstream Lake Reservoir and the proposed Goldstream Treatment Plant to protect the water quality of the secondary water supply for use during emergencies, Kapoor Tunnel shut down, and eventually allow Kapoor Tunnel redundancy and increased raw water transmission capacity.

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY

Jack Lake Raw Water Transmission Main (RWT5)

COMMITMENT:
Provide a reliable and efficient drinking water transmission system



Estimated Cost: $284.96 Million

A piped connection between the existing Head Tank and Goldstream Treatment Plant to provide redundancy to the Kapoor Tunnel for backup or emergency purposes and increased raw water transmission capacity.

Project Timeline:

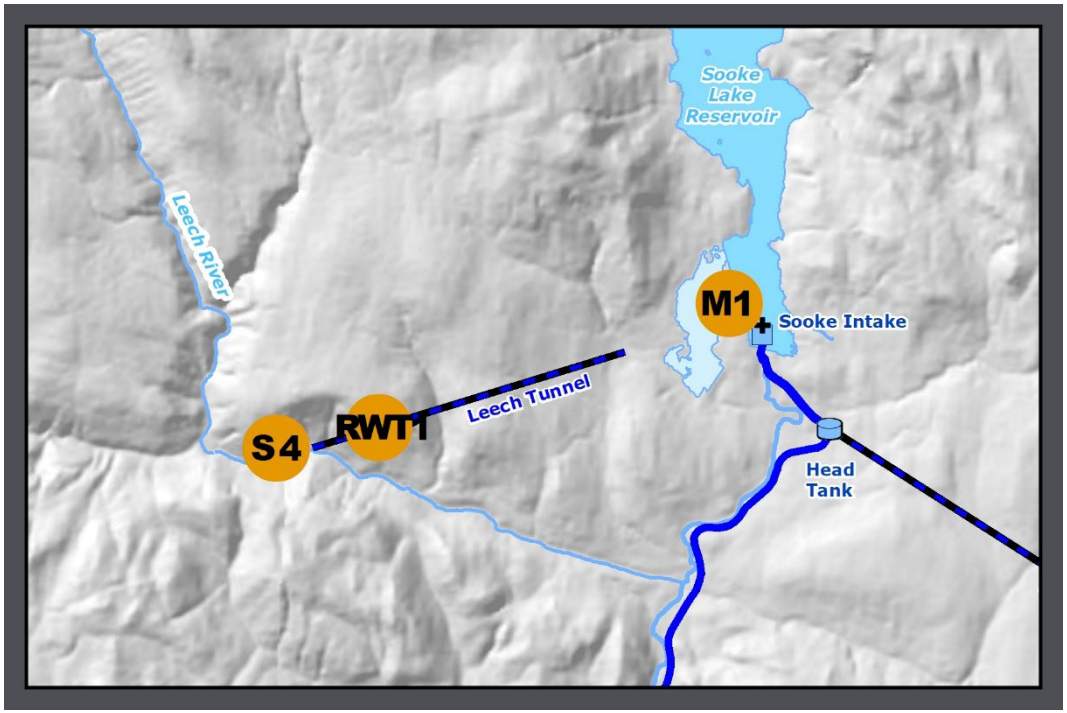
2023-2024	2025-2029	2036-2039
Planning	Design	Construction

PREPARING FOR EMERGENCY AND POST-DISASTER WATER SUPPLY

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

Leech River Diversion (S4/RWT1) and Sooke Lake Saddle Dam Hydraulic Upgrades (M1)

COMMITMENT:
Provide an adequate, long-term supply of drinking water



Estimated Cost: $41.9 Million

An intake structure to divert Leech River water through the existing Leech Tunnel to Deception Gulch Reservoir as a supplemental source to Sooke Lake Reservoir.

Sooke Lake Saddle Dam and Deception Gulch Dam will both require upgrades in order to transfer water from Deception Gulch Reservoir to Sooke Lake Reservoir.

Project Timeline:

2034-2035	2036-2041	2042-2045
Planning	Design	Construction

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

PLANNING FOR THE FUTURE USE OF THE LEECH WATER SUPPLY AREA

Treated Water Transmission Main Upgrades (Phases 1-4.2) (M7, M8, M9, M10, M11)

COMMITMENT:
Provide a reliable and efficient drinking water transmission system



Project Timeline:

2027-2050

Annual Program

Estimated Cost: $295.42 Million

A variety of renewal and capacity-related transmission system upgrades throughout the Regional Water Supply (RWS) aligned into a $10M/year re-occurring annual program.

SUPPLY SYSTEM INFRASTRUCTURE INVESTMENT - RENEWING EXISTING AND PREPARING FOR NEW INFRASTRUCTURE

DEMAND MANAGEMENT - ADDRESSING CHANGING TRENDS IN WATER DEMAND

2022 Master Plan Financial Implications

Financial Implications of 2022 Master Plan:

- Capital and operating costs
- Funding – debt financing and cash contributions
- Financial health of Regional Water Supply Service
- Future water rates



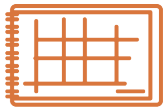
CRD BOARD PRIORITIES -
SUSTAINABLE AND LIVABLE REGION



CLIMATE CHANGE IMPACTS -
MITIGATION AND ADAPTATION



DEMAND MANAGEMENT -
ADDRESSING CHANGING TRENDS
IN WATER DEMAND



PLANNING FOR THE FUTURE USE
OF THE LEECH WATER SUPPLY AREA

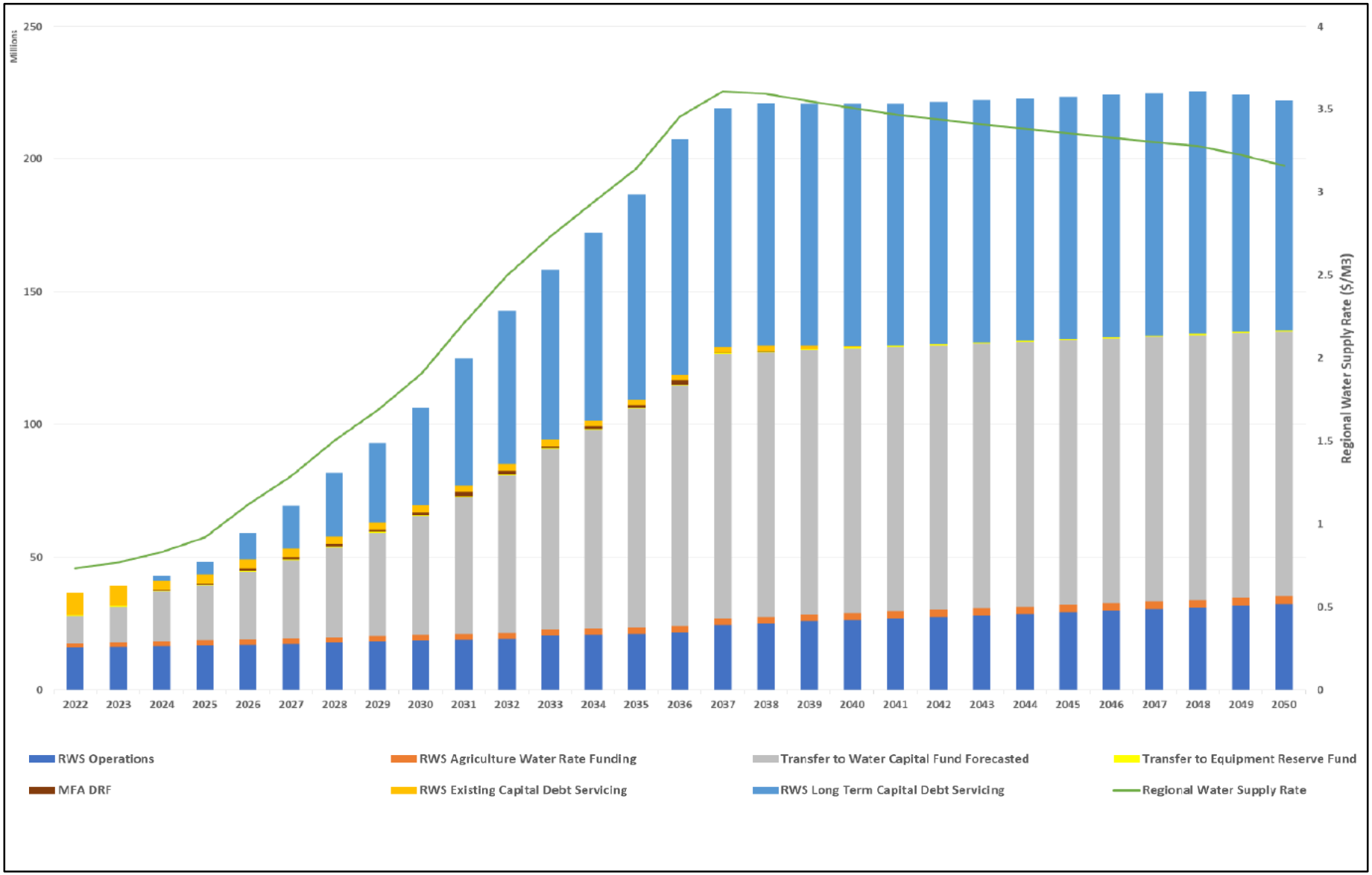


SUPPLY SYSTEM INFRASTRUCTURE
INVESTMENT - RENEWING EXISTING
AND PREPARING FOR NEW
INFRASTRUCTURE



PREPARING FOR EMERGENCY AND
POST-DISASTER WATER SUPPLY

RWS Service Conceptual Operating and Capital Cost & Rate Model



Next Steps & Discussion

- RWS Commission presentation and feedback
- CRD Board
- Water Advisory Committee & Public feedback
- Report consolidated feedback to RWS Commission & seek Commission endorsement
- Begin implementation (subject to RWS Commission and CRD Board direction) through 5 year capital plan and budget process



Sooke Lake Reservoir and Watershed

Making a difference...together

REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, JUNE 08, 2022

SUBJECT **Complete the Beddis Water Intake Project**

ISSUE

CRD staff intend to complete the design of the Beddis Water Intake Project. Additional funds will be required from the Capital Reserve Fund to complete the design.

BACKGROUND

The Beddis Intake Screen project was first initiated in 2019 and the detailed design for the "offshore" portion is essentially complete. The only work remaining for the offshore portion is the revision to the length of the vertical section leading to the screen on the intake structure. The work remaining is for the "onshore" portion of the design, something not originally contemplated in the initial design but necessary for the successful completion of the project. In April of 2021, the CRD declined to proceed with the "onshore" portion of the project as there were insufficient funds to contract for the work at the time. The design consultant for the project has submitted a Change Order for the onshore portion in the amount of $24,874.50. The current balance remaining for the design portion of the project is a deficit of (-$2,600.00). The balance in the Capital Reserve Fund is currently $26,282 which will soon be increased by the return of surplus funds from the Lautman Reservoir Demolition Project of approximately $10,274 for a total of $36,556.

ALTERNATIVES

Alternative 1

That the Electoral Areas Committee recommends to the Capital Regional District Board:
That the 2022 Five Year Financial Plan be amended to transfer $32,725 from the Beddis Capital Reserve Fund so that detailed engineering and design can be completed for both the offshore and onshore portions.

Alternative 2

That this report be referred back to staff for additional information.

IMPLICATIONS

A delay in the transfer of the funds will unduly postpone the project until 2023 where changes will need to be made to the 2023 Capital Plan in order to fund the project to complete detailed design. Construction might not then occur until 2024. The table below quantifies the costs to date, costs to complete and the balance needed to be transferred.

	$ Amount
Project Funding – Initial Funding	$20,000
Costs to Date	$22,600
Balance Remaining (Deficit)	**($2,600)**

Change Order for Onshore Portion	$24,875
CRD Project Management and Internal Costs	$2,500
Contingency	$2,750
Total Revised Project Budget	**$30,125**
Funding Required from CRF	**$32,725**
Remaining CRF funds	$3,831

CONCLUSION

There are adequate funds in the Capital Reserve Fund to complete the detailed design for the onshore portion and remaining offshore portion of the Beddis Intake project and avoid schedule delays. Note though that the remaining balance in the Capital Reserve Fund will remain quite low with very little "replenishment" currently planned for either 2023 or 2024. Prudent financial management will be required starting in 2023 to increase the balance to a level that is in accordance with good financial management practices.

RECOMMENDATION

That the Electoral Areas Committee recommends to the Capital Regional District Board:
That the 2022 Five Year Financial Plan be amended to transfer $32,725 from the Beddis Capital Reserve Fund so that detailed engineering and design can be completed for both the offshore and onshore portions.

Submitted by:	Dean Olafson, P. Eng., MBA, Engineering Manager, Salt Spring Electoral Area
Concurrence:	Karla Campbell, BPA, Senior Manager, Salt Spring Electoral Area
Concurrence:	Lia Xu, Manager, Financial Services
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

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REPORT TO THE CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, JUNE 08, 2022

SUBJECT **Nils Jensen Memorial Bursary 2022**

ISSUE SUMMARY

To announce the student selected from Saanich School District #63 to receive the 2022 Nils Jensen Memorial Bursary.

BACKGROUND

Nils was a Councillor for 15 years on the Oak Bay Municipal Council before becoming the Mayor of Oak Bay in 2011, a position he held until 2018. Nils also served the broader community by acting as the Chair of the CRD Board and as Chair of the Regional Water Supply Commission for 12 years during which time he helped preserve water security for the region. In April 2022 the family of Nils Jensen established a bursary fund in his memory. This bursary will be awarded to the following School Districts (SD): Greater Victoria SD #61; Sooke SD #62; Saanich SD #63; and Southern Gulf Islands SD #64 on a rotating basis.

These are the criteria for awarding the Nils Jensen Memorial Bursary:

- The bursary will be awarded annually, on a rotating basis, to a graduating Grade 12 student from one of the School Districts of Sooke, Greater Victoria, Saanich, or Gulf Islands, to assist the student in pursuing post-secondary education.
- The bursary is to be awarded on the basis of financial need and an interest in environmental protection or water security.
- The participating secondary school principals will recommend which student is to receive the award.
- The bursary is to be in the amount of $2,500 per annum.

The 2022 recipient, as chosen by the selection committee from Saanich School District No. 63 is Tahlia Cook.

RECOMMENDATION

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

Submitted by:	Carolyn Jenkinson, Manager, Executive Administration
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

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REPORT TO THE CAPITAL REGIONAL DISTRICT BOARD
MEETING OF WEDNESDAY, JUNE 08, 2022

SUBJECT **Ed MacGregor Memorial Bursary 2022**

ISSUE SUMMARY

To announce the student selected from Saanich School District #63 to receive the Capital Regional District's 2022 Ed MacGregor Memorial Bursary.

BACKGROUND

Ed MacGregor, the first Mayor of the District of Sooke and a Capital Regional District (CRD) Director, passed away in March 2003 while in office. In April 2003 the CRD Board established a bursary fund in his memory. In the earlier years, this bursary was awarded only to students in Sooke; however, in 2008 it was recognized that bursary funds are raised by all municipalities and electoral areas within the Capital Region and in September 2008 the CRD Board amended the criteria to include the following School Districts (SD): Greater Victoria SD #61; Sooke SD #62; Saanich SD #63; and Southern Gulf Islands SD #64 on a rotating basis.

These are the criteria for awarding the Ed MacGregor Memorial Bursary:

- The bursary will be awarded annually, on a rotating basis, to a graduating Grade 12 student from one of the School Districts of Sooke, Greater Victoria, Saanich, or Gulf Islands, to assist the student in pursuing post-secondary education.
- The bursary is to be awarded on the basis of financial need.
- The participating secondary school principals will recommend which student is to receive the award.
- The bursary is to be in the amount of $2,500 per annum.

The 2022 recipient, as chosen by the selection committee from Saanich School District No. 63 is Michael McClelland.

RECOMMENDATION

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

Submitted by:	Carolyn Jenkinson, Manager, Executive Administration
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

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REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, JUNE 08, 2022

SUBJECT **Bylaw No. 4484: Service Establishment for the Southern Gulf Islands Transportation Service**

ISSUE SUMMARY

Consideration of Bylaw 4484 to establish an integrated transportation service for the Southern Gulf Islands Electoral Area.

BACKGROUND

This report advances Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022", a bylaw to establish an integrated transportation service funded by tax requisition for the Southern Gulf Islands Electoral Area. In accordance with the bylaw, the scope of the service may include:

- funding and facilitating transportation studies;
- administering, facilitating, and issuing grants, sponsorships, and contributions to transportation initiatives on a one-time or ongoing basis;
- acquiring, developing, managing, and maintaining:
    - sidewalks and multi-modal paths;
    - parking spaces, areas and facilities; and
    - pedestrian safety and traffic calming facilities;
- implementing and providing transportation demand management programs;
- administering, facilitating, and issuing grants-in-aid to non-profits or societies for operations and capital costs that benefit integrated transportation in the Southern Gulf Island Electoral Area, including public transit, active transportation, and water-based transportation services;
- entering into partnerships and agreements, including funding contributions, with third party operators, government agencies, public authorities, and non-profits for the delivery of transportation within the Southern Gulf Island Electoral Area, and to connect the Southern Gulf Island Electoral Area with other regions;
- coordinating integrated transportation services across modes; and
- establishing one or more reserve funds for capital or operating purposes.

This project has been advanced in stages since 2018, as set out in the timeline below:

- May 2018: the Southern Gulf Islands Community Economic Sustainability Commission (CESC) requested that the CRD establish a new Transportation Commission for the SGI Electoral Area.
- June 2018: the CRD Board directed that staff:
    - consult with community groups, BC Transit, and BC ferries to define a service model that would best serve the transportation needs of the Southern Gulf Islands;
    - consult with the community bus service providers within the Southern Gulf Islands to determine operating requirements, costs, and service levels to support a CRD transportation service for the Southern Gulf Islands; and
    - include the establishment of an SGI transportation service in service and budget planning for 2020.

- November 2018: BC Transit updated its Southern Gulf Islands Service Discussion Document and found little had changed for public transit feasibility, the islands remained on the cusp of viability for a BC Transit service.
- 2019: CRD SGI team consulted existing public transit service providers (community bus societies) on the islands and updated the 2016 Community Bus Assessment with current data.
- 2020: Project planning included development of a project charter, project proposal and community engagement plan for corporate communications, grant applications to fund a feasibility study (which were successful), and development of an RFP to be let in 2021.
- 2021: Watt Consulting Group engaged to undertake feasibility study for an integrated transportation service: linking public transit, active transportation, and inter-island connections in the Southern Gulf Islands.
- April 2021: Planning process initiated that engaged stakeholders, community groups, and other agencies to confirm need, provide technical analysis and operational considerations for each transportation mode. The process was grounded in an in-depth community and stakeholder consultation program which included on-line interactive engagement, surveys, workshops and meetings, in-person information tables on the islands, and two different mail outs to SGI households.
- December 2021: Service model options and quantified costs developed. Preliminary business case for a range of service level options received.
- January 2022: Round 2 community engagement sought community feedback on service levels and associated costs, and the overall appetite to establish an SGI transportation service funded by a tax requisition. Consultation results indicated majority support for a tax requisition to increase transportation solutions in the islands.
- February 2022: The SGI Community Economic Sustainability Commission passed a resolution recommending the CRD Board implement "Option D, Fully Integrated Transportation Service," with a maximum requisition of up to $675,000.
- April 2022: SGI Active Transportation Plan completed.
- May 2022: Final report and business case received in support of an integrated transportation service for the Southern Gulf Islands Electoral Area.

To proceed with this initiative, a new service must be created by adoption of a service establishment bylaw. This bylaw is subject to elector approval under the *Local Government Act*, which may take the form of a referendum or an alternative approval process in the service area. Staff recommend the proposed bylaw be submitted to elector approval by way of referendum concurrently with the 2022 General Local Election. If the referendum is successful, the CRD Board must adopt Bylaw No. 4484 by December 31, 2022 pursuant to the *BC Assessment Act* in order to requisition funds for the service in 2023.

ALTERNATIVES

Alternative 1
The Electoral Areas Committee recommends to the Capital Regional District Board that:

1. Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022", be introduced and read a first, second, and third time;
2. That staff be directed to implement the elector approval process by way of referendum;
3. That Kristen Morley be appointed Chief Election Officer with the power to appoint one or more Deputy Chief Election Officer(s);

4. That the wording of the referendum question for the purposes of the ballot shall be as follows:

   Are you in favour of the Capital Regional District (CRD) Board adopting Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022" authorizing the CRD to establish an integrated transportation service for the Southern Gulf Islands Electoral Area to raise a maximum annual requisition up to the greater of SIX HUNDRED AND SEVENTY FIVE THOUSAND DOLLARS ($675,000) or $0.1414 per ONE THOUSAND DOLLARS ($1,000.00) of taxable land and improvements for the purpose of funding the operating costs of the service.
   YES or NO?

5. That general voting be held on Saturday, October 15, 2022 in concurrence with the General Local Election, with Advance voting opportunities held on dates and voting places to be determined by the Chief Election Officer;
6. That the synopsis of Bylaw No. 4484, attached as Appendix B, be approved for advertising purposes.

Alternative 2
The Electoral Areas Committee recommends to the Capital Regional District Board that Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022", be referred back to staff for more information.

IMPLICATIONS

Social Implications
The SGI does not currently have public transit options, safe cycling routes, or the ability to travel efficiently between the islands. An integrated transportation system would change the economic and social geography and enable shared services and increased connections throughout the islands. Overall, the theme heard repeatedly from the public and stakeholders was that there was a need to improve alternate transportation options on the Southern Gulf Islands, particularly due to a lack of safety for users of the hilly, winding and narrow road network.

Improved transportation alternatives would:

- better connect major origins and destinations on the islands;
- provide alternatives to single occupancy vehicles;
- reduce car dependency;
- provide seniors and low-income populations better travel options;
- better enable kids the ability to travel safely and independently; and
- be more sustainable and better stewards for the environment.

Environmental & Climate Implications
The CRD's Regional Climate Action Strategy ("RCAS") has identified on-road transportation as the region's most significant source of greenhouse gas emissions ("GHGe"), and notes that the CRD needs to focus on mitigating impacts of transportation by moving towards lower carbon emissions options such as walking, cycling, transit and electric vehicles. In 2019, the CRD declared a climate emergency and committed to reducing GHGe by 40% by 2030. An SGI Transportation service would enable the islands to advance low carbon transportation solutions.

Service Delivery Implications
If approved by referendum and the CRD Board, the new service will be established for transportation improvements in the SGI Electoral Area and will be accompanied by the establishment of an SGI Transportation Advisory Commission. The Commission would include representation from each island, as well as representation by stakeholders in each of the three transportation modes.

While proposed Bylaw No. 4484 is broadly enabling, the level of funding anticipates CRD in a coordinating role, supporting transportation improvements by third party service providers and providing general governance for modal integration. The service model proposed by Watt Consulting in the business case recommends the SGI Transportation Service undertake the following:

- Establish a Commission to oversee strategic planning for multi-modal, integrated transportation planning across the SGI EA.
- Develop and administer an internal grant program:
    - Fund third party grants for active transportation - enable non-profit trail societies to plan for and build walking and cycling routes connecting key community destinations.
    - Fund third party grants for public transportation - enable funding for local community bus societies to support continual operations, provide service across more times of the year, and be able to pay drivers and reduce reliance on volunteers (this was noted as a key need for sustainable service).
- Create coordinating tools that support multiple types of travel, including a website showing travel options and trip booking software.
- Apply for and receive grants. Provide staff support to access and receive funding for transportation projects through provincial and federal programs.
- Hold licences of occupation in the Ministry of Transportation road right of way, as needed.
- Other CRD support, as needed, to help local organizations make transportation happen, such as developing partnerships, strategic planning, and leasing or owning land and vehicles if required and a local organization is not able to do so.

In 2023, work will be required to establish the Commission, hire new staff, and coordinate strategic planning for service priorities. Through the CRD service planning process, the following timeline has been proposed for year 1 of the service:

Quarters 1 & 2:
- Advertise for Commissioners and appoint Commission.
- Develop job description(s), post and hire new staff.

Quarters 2 & 3:
- Develop strategic plan and prioritized work plan with Commission.
- Start to implement short term priorities of work plan.
- Develop Grant Program based on transportation criteria; design application process.
- Service and Budget planning for 2024.

Quarter 4:
- Progress with work plan.
- Confirm 2024 work plan priorities and final budget for 2024.

Financial Implications
The proposed service bylaw includes a maximum requisition equaling the greater of $675,000 or $0.1414 per $1,000 of assessed value. For communications purposes, this can also be expressed as $14.10 per $100,000 of assessed property value.

If the service is established, 2023 would be a transitional year and the full suite of transportation service elements would not yet be phased in. A draft budget has been prepared for 2023 to support the service's inaugural year in the case it is approved by the referendum and the CRD Board. Year 1 of the service would see a requisition amount at a fraction of the maximum, reflecting the best practice of starting small and sustainable within the available requisition amount, and prudently increasing in accordance with inflation and increased service needs. Ultimately, the service priorities and budget allocated will be proposed by the Commission for approval by the CRD Board and may change from year to year.

At maximum requisition levels, the service model proposed by the business case is as follows:

***Maximum Requisition:* $675,000**		
Allocation	*Function*	*Service*
$169, 000	CRD Staffing & Coordination	1.0 FTE (J17 position) Analyst for professional level service such as managing licenses of occupation, roadside trail project management, supporting strategic planning, support commission work program, and administering internal/external grant programs. 0.5 FTE (J12 position) Administrative support to manage records, correspondence, commission clerk support.
$15,000	Coordination and Marketing Tools	Funding for coordinating tools to support consolidated SGI transportation communications and marketing, trip-booking, online information, promoting car shares programs, etc.
$16,000	Supporting Infrastructure & Maintenance	Targeted infrastructure improvements and maintenance to better connect modes, such as bike racks, benches, and bus stop signage, dockside improvements.
$124,000	Active Transportation	Grant program to help offset costs of materials, development, and/or maintenance of active transportation trails. Roadside trails/Licence of Occupation would likely be co-funded through third party grants.
$294,000	Public Transportation	Grant program of up to support local community bus societies towards delivering year-round service.
$57,000	Water Transportation	Convenes partnerships, provides financial contributions to non-profit societies, and provides general support for seasonal and potentially year-round water taxi services.

Alignment with Board & Corporate Priorities

- 2018-22 Board Priority: Community Wellbeing (Transportation & Housing)
- 2019-22 Corporate Business Plan – 2e - EA transportation services

CONCLUSION

Bylaw No. 4484 is proposed to establish an integrated transportation service for the Southern Gulf Islands Electoral Area. If approved by referendum and the CRD Board, the new service will be established beginning in 2023 for transportation improvements in the Southern Gulf Islands Electoral Area and will have a Commission established to advise on the service.

RECOMMENDATION

The Electoral Areas Committee recommends to the Capital Regional District Board that:

1. Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022", be introduced and read a first, second, and third time;
2. That staff be directed to implement the elector approval process by way of referendum;
3. That Kristen Morley be appointed Chief Election Officer with the power to appoint one or more Deputy Chief Election Officer(s);
4. That the wording of the referendum question for the purposes of the ballot shall be as follows:

   Are you in favour of the Capital Regional District (CRD) Board adopting Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022" authorizing the CRD to establish an integrated transportation service for the Southern Gulf Islands Electoral Area to raise a maximum annual requisition up to the greater of SIX HUNDRED AND SEVENTY FIVE THOUSAND DOLLARS ($675,000) or $0.1414 per ONE THOUSAND DOLLARS ($1,000.00) of taxable land and improvements for the purpose of funding the operating costs of the service.
   YES or NO?
5. That general voting be held on Saturday, October 15, 2022 in concurrence with the General Local Election, with Advance voting opportunities held on dates and voting places to be determined by the Chief Election Officer;
6. That the synopsis of Bylaw No. 4484, attached as Appendix B, be approved for advertising purposes.

Submitted by:	Justine Starke, MCIP, RRP, Manager, Southern Gulf Islands Service Delivery
Concurrence	Stephen Henderson, Senior Manager, Real Estate and SGI Service Delivery
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Bylaw No. 4484, "Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022."
Appendix B: Synopsis of Bylaw No. 4484

Appendix A

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4484

****

A BYLAW TO ESTABLISH A TRANSPORTATION SERVICE
FOR THE SOUTHERN GULF ISLANDS

****

WHEREAS:

A. Under section 332 of the *Local Government Act*, RSBC 2015 c 1, a regional district may, by bylaw, establish and operate any service the Board considers necessary or desirable for all or part of the regional district;

B. By elector assent pursuant to ss. 344 and 342 of the *Local Government Act*, the Southern Gulf Island Electoral Area electors have approved the creation of an electoral-area-wide service to address transportation needs of, and to operate, administrate, and fund public transportation systems on and connecting to, the Electoral Area;

C. The Board wishes to establish the transportation service as directed by the Southern Gulf Islands Electoral Area electors;

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

Service

1. The Capital Regional District hereby establishes a service of providing an integrated transportation service for the Southern Gulf Islands Electoral Area for the purpose of providing water and land-based transportation within and connecting the electoral area with other regions.

2. The scope of the service includes:
    i. funding and facilitating transportation studies;
    ii. administering, facilitating, and issuing grants, sponsorships, and contributions to transportation initiatives on a one-time or ongoing basis,
    iii. acquiring, developing, managing, and maintaining
        A. sidewalks and multi-modal paths,
        B. parking spaces, areas and facilities, and
        C. pedestrian safety and traffic calming facilities;
    iv. implementing and providing transportation demand management programs;
    v. administering, facilitating, and issuing grants-in-aid to non-profits or societies for operations and capital costs that benefit integrated transportation in the Southern Gulf Island Electoral Area, including public transit, active transportation, and water-based transportation services;
    vi. entering into partnerships and agreements, including funding contributions, with third party operators, government agencies, public authorities, and non-profits for the delivery of transportation within the Southern Gulf Island Electoral Area, and to connect the Southern Gulf Island Electoral Area with other regions;
    vii. coordinating integrated transportation services across modes; and
    viii. establishing of one or more reserve funds for capital or operating purposes.

Boundaries

3. The boundaries of the Service Area are the boundaries of the Southern Gulf Islands Electoral Area.

Participating Area

4. The participating area for the service is the whole of the Southern Gulf Islands Electoral Area.

Cost Recovery

5. As provided in Section 378 of the *Local Government Act*, the annual costs of providing the Service, net of grants and revenue, shall be recovered by one or more of the following:

   (a) property value taxes imposed in accordance with Division 3 [*Requisition and Tax Collection*], Part 11 of the *Local Government Act*;

   (b) fees and charges imposed under Section 397 of the *Local Government Act;*

   (c) revenues raised by other means authorized under the *Local Government Act* or another Act;

   (d) revenues received by agreement, enterprise, gift, grant or otherwise.

Maximum Requisition

6. In accordance with Section 339(1)(e) of the *Local Government Act*, the maximum amount that may be requisitioned annually for the cost of the Service is the greater of:

   (a) Six hundred and seventy five thousand dollars ($675,000); or
   (b) An amount equal to the amount that could be raised by a property value tax rate of $0.1414 per One Thousand Dollars ($1,000) that, when applied to the net taxable value of land and improvements in the Service Area, will yield the maximum amount that may be requisitioned for the Service.

Citation

7. This Bylaw may be cited as the “Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022”.

READ A FIRST TIME THIS	th	day of	20__
READ A SECOND TIME THIS	th	day of	20__
READ A THIRD TIME THIS	th	day of	20__
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	th	day of	20__
APPROVED BY ELECTOR ASSENT THIS	th	day of	20__
ADOPTED THIS	th	day of	20__

CHAIR

CORPORATE OFFICER

Appendix B

Synopsis of Bylaw No. 4484

The intent of Bylaw No. 4484, the “Southern Gulf Islands Transportation Service Establishing Bylaw No. 1, 2022” is to establish a new integrated transportation service for the Southern Gulf Islands Electoral Area to coordinate, fund, and operate land and water-based transportation services within the electoral area. The bylaw permits the CRD to raise a maximum annual requisition for the purpose of funding the service to the greater of six hundred and seventy five thousand dollars ($675,000) or $0.1414 per one thousand dollars ($1,000) of taxable land and improvements in the service area. The maximum requisition is the upwards limit of what would be collected.

Please note that this synopsis of Bylaw No. 4484 is not intended to be or understood as an interpretation of the bylaw. A copy of the complete bylaw and this notice may be viewed at the Capital Regional District offices located at 625 Fisgard Street, Victoria B.C. during business hours. This information may also be viewed on the website at www.crd.bc.ca.

Making a difference...together

REPORT TO ELECTORAL AREAS COMMITTEE
MEETING OF WEDNESDAY, JUNE 8, 2022

SUBJECT **Electoral Areas Water Conservation Bylaw No. 1, 2022 (Bylaw No. 4492)**

ISSUE SUMMARY

Approval of a water conservation bylaw for the Electoral Areas.

BACKGROUND

Over the past several years, the need for water conservation measures in the Electoral Areas' local water services has become more critical due to seasonal drought conditions imposing stress on source water supplies. The Capital Regional District (CRD) Electoral Area water services have adhered to voluntary conservation measures since 2016 when staff and the Local Service Area water committees agreed to measures tailored to each individual service. The basis for the voluntary restrictions were the conservation stages set out in Bylaw No. 4099, "Consolidated Capital Regional District Water Conservation Bylaw No. 1, 2016". However, there is a need to formalize these measures and add an enforcement provision in order to improve the effectiveness and adherence to the restrictions across the local services.

The Electoral Areas Water Conservation Bylaw applies to all of the CRD's electoral area water services, including:

Salt Spring Island Electoral Area:

- Beddis Water System (Bylaw No. 3188)
- Cedar Lane Water System (Bylaw No. 3424)
- Cedars of Tuam Water System (Bylaw No. 3021)
- Fulford Water System (Bylaw No. 3202)
- Highland/Fernwood Water System (Bylaw No. 3753)

Southern Gulf Islands Electoral Area:

- Lyall Harbour/Boot Cove Water System (Bylaw No. 2920)
- Magic Lakes Water System (Bylaw No. 1874)
- Skana Water System (Bylaw No. 3089)
- Sticks Allison Water System (Bylaw No. 2556)
- Surfside Parks Water System (Bylaw No. 3087)

Juan de Fuca Electoral Area:

- Port Renfrew Water System (Bylaw No. 1747)
- Wilderness Mountain Water System (Bylaw No. 3503)

ALTERNATIVES

Alternative 1

The Electoral Areas Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4492, "Capital Regional District Electoral Areas Water Conservation Bylaw No. 1, 2022", be introduced and read a first, second, and third time; and
2. That Bylaw No. 4492 be adopted.
3. That Bylaw No. 4499, "Capital Regional District Ticket Information Authorization Bylaw, 1990, Amendment Bylaw No. 74, 2022", be introduced and read a first, second and third time; and,
4. That Bylaw No. 4499 be adopted.

Alternative 2

That CRD Bylaws No. 4492 and 4499 be referred back to staff for additional information.

IMPLICATIONS

Service Delivery Implications
Similar to the Regional Water Conservation Bylaw, adherence to water conservation measures are best managed through education and proactive communications to increase the chances of voluntary behavioral change. These means have proven effective for a number of years in reducing water demand in the systems in which they are requested. However, the addition of a bylaw will provide formalization and standardization of language as well as provide a venue for enforcement in the event it is required.

Bylaw No. 4492 only applies to the regulation of water use provided under each CRD local service. It does not apply to private wells or water systems provided by other public authorities.

Financial Implications

The costs of promoting and enforcing Bylaw No. 4992 would be borne by the specific service in which the action is taken as an operational expenditure. However, the Electoral Areas will benefit from the Regional approach to education and promotion thereby reducing the costs to more localized education and enforcement as required.

Environmental & Climate Implications
The Electoral Areas Water Conservation Bylaw aligns with the regional water conservation bylaw and is consistent with CRD's strategic goals to provide adequate and long term supply of drinking water to the customers in which each system serves. It forms part of the planning and preparation for future water supply needs to meet demand and consider the impacts of climate change, population growth and per-capita demand trends. It is the foundation of a strategy to reduce per capita water use in order to defer the need for additional water supply and treatment capacity in the supply system, until necessary to support population growth.

CONCLUSION

Bylaw No. 4492, "Capital Regional District Electoral Areas Water Conservation Bylaw No. 1, 2022", is recommended to formalize language and measures already requested voluntarily of the customers of the CRD's water systems in the Electoral Areas. It will allow for standardized water conservation stages, the adherence to which would be primarily through education and proactive communications measures. However, the bylaw also includes a provision for enforcement in the event that is required to drive behavior.

RECOMMENDATION

The Electoral Areas Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4492, "Capital Regional District Electoral Areas Water Conservation Bylaw No. 1, 2022", be introduced and read a first, second, and third time; and
2. That Bylaw No. 4492 be adopted.
3. That Bylaw No. 4499, "Capital Regional District Ticket Information Authorization Bylaw, 1990, Amendment Bylaw No. 74, 2022", be introduced and read a first, second and third time; and,
4. That Bylaw No. 4499 be adopted.

Submitted by:	Matt McCrank, MSc, P.Eng., Senior Manager, Wastewater Infrastructure Operations
Concurrence:	Ted Robbins, B.Sc., C.Tech., General Manager, Integrated Water Services
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Bylaw No. 4492, "Electoral Areas Water Conservation Bylaw No. 1, 2022"
Appendix B: Bylaw No. 4499, "Capital Regional District Ticket Information Authorization Bylaw, 1990, Amendment Bylaw No. 74, 2022"

CAPITAL REGIONAL DISTRICT
Bylaw No. 4492

****

ELECTORAL AREAS WATER CONSERVATION BYLAW

****

WHEREAS under Section 335 of the *Local Government Act*, a regional district may regulate in relation to a service;

AND WHEREAS the Capital Regional District ("CRD") has established or continued Water Supply local services providing drinking water in the Southern Gulf Islands, Salt Spring Island, and Juan de Fuca Electoral Areas;

AND WHEREAS the CRD desires to enact regulations to protect local Water System supplies to mitigate the risk of low water storage levels within these Water Systems;

AND WHEREAS this bylaw does not apply to water not provided under a Water System operated by the CRD on behalf of service participants, such as water from private water systems, irrigation wells, or water provided by other public authorities;

NOW, THEREFORE, the Board of the Capital Regional District in open meeting assembled enacts as follows:

1. Definitions

In this bylaw, the following terms, whether capitalized or not, have the following meanings:

"Automatic shut-off nozzle" means a nozzle, attached to a water hose, that shuts off the supply of water automatically unless the application of hand pressure allows the supply of water.

"Board" means the Board of the Capital Regional District.

"Boat" means a vessel propelled on water by an engine, oars or sails.

"Boulevard" means that portion of any highway other than the paved, improved or main travelled roadway, driveway or sidewalk and includes any landscaped median.

"Bylaw Enforcement Officer" means a person appointed or contracted by the Board or the Council of a Municipality to enforce this bylaw.

"CRD" means the Capital Regional District.

"Excess Water Use" means to apply or use more Water than is required to provide a service, produce a product or complete a task, and without limitation includes the application of Water to a hardscape, such as a sidewalk, driveway or parking lot, or to exterior windows or exterior building surfaces, through a hose or power-washer to the point that Water runs-off or spreads to surrounding areas.

"Exempted Person" means an Owner or Occupier of property identified in Schedule "A" as exempt or excused from one or more of the regulations under this bylaw.

"Farm" refers to a parcel of land classified as farmland for assessment and taxation purposes.

"Fill" means to completely fill or partially fill with Water an empty or substantially empty hot tub, swimming pool, fountain, wading pool, or similar structure, but for certainty does not include topping up with or adding Water in the normal course of operation, where the hot tub, swimming pool, fountain, wading pool, or similar structure is filled with Water and is in operation at the time Water Use Restrictions come into effect.

"General Manager" means the General Manager of the Capital Regional District Integrated Water Services Department.

"Irrigation System" means an irrigation system that consists of controllers, wiring, and accessories such as climate and soil sensors, piping, and emission devices such as sprinklers, rotors or micro-irrigation components that artificially supplies water to a landscaped area, lawn or garden.

"Lawn" or "Turf" means a cultivated area that surrounds or is adjacent to an institutional, commercial or residential building, and that is covered by grass, turf or other plants used as ground cover, such as but not limited to clover, and that is used for decorative, ornamental or recreational purposes.

"Micro-irrigation or Drip-irrigation System" means a system using irrigation components which consume less than 20 gallons per hour and operate at less than 25 Pounds per square inch to deliver Water to the root zone of the plant material being irrigated, and includes spray emitter systems (Micro-Sprays), point source emitters and linear tape systems as defined in the BC Trickle Irrigation Manual prepared and published by the Irrigation Industry Association of British Columbia (1999), but does not include weeper hoses or soaker hoses.

"Motion-Activated Sprinkler Device" means a water sprinkling device that automatically operates through detection of motion or similar event and is used to deter wildlife and other animals.

"New Lawn" or "New Turf" means a lawn that is newly established either by seeding or the laying of new sod or turf on a property.

"Newspaper" has the same meaning as in the *Community Charter.*

"Notice" means a Notice given under Section 5 of this bylaw.

"Nursery" means a commercial business in which flowers, plants, trees or shrubs are grown or displayed for sale.

"Occupier" has the same meaning as in the *Community Charter*.

"Once-Through Cooling" means to use Water to provide a cooling effect through the transfer of heat to Water that circulates only once through equipment, and is then discharged,

whether to a sewer, stream, other water body, to the ground, or otherwise.

"Over-Water" means to apply Water in a manner that saturates the lawn, Boulevard or landscaped area being watered to the point of saturation and results in Water spreading or running-off to other areas including, but not limited to, municipal storm drains.

"Owner" has the same meaning as in the *Community Charter*.

"Public Authority" has the same meaning as in the *Community Charter*.

"Public, Institutional or Community Playing Field" means grass, sod or turf covered grounds that are owned, maintained or operated by a public authority, or by a private institution such as a private school, and are designed to be played upon, or that are used for sporting or other community events and activities, but for certainty does not include a lawn or turf on private residential property.

"Public Spray Park" means a facility that is open to the public and that that is equipped with water sprays, water jets, sprinklers and similar devices that spray water for recreation and enjoyment of the users.

"Residential Property" means a property which is used primarily for the purpose of residence by persons on a permanent, temporary or seasonal basis.

"Soaker Hose" or "Weeper Hose" means a garden hose or a pipe with small holes that allow water to seep into the ground, to the roots of plants, discharging water through the entire length of its porous surface.

"Sprinkler" means an Irrigation System, a sprinkler system, or a hose connected, water emitting device such as sprinklers, rotors, or sprayer components, that artificially supply water to a landscaped area, lawn or garden, but excludes a Micro-irrigation or Drip-irrigation System.

"Stage" refers to the Stages 1, 2 and 3 of Water Use Restrictions prescribed in Schedule "A" of this bylaw.

"Surface Coating" means one or more coatings such as paint, preservative, or stucco applied to exterior building surfaces.

"Tree Farm" means a commercial operation or business such as a tree plantation, tree nursery, or Christmas tree farm that grows trees for sale, and includes a privately owned forest that is managed for timber production.

"Turf Farm" means a commercial operation or business that grows and sells sod or turf.

"Vehicle" means a device in, on or by which a person or thing is or may be transported or drawn on a highway or other roadway.

"Water", when used as a noun, means drinking water supplied by the CRD from a Water System Supply directly or indirectly to an Owner or Occupier, and when used as a verb means the act of using or applying such Water.

"Water System" or "Water Systems" means the following local services, individually or collectively as applicable, as set out in the below table:

Water System Name	**Establishing Bylaw**
Beddis Water System	Bylaw No. 3188, "Beddis Water Service Establishment Bylaw No. 1, 2004"
Cedar Lane Water System	Bylaw No. 3424, "Cedar Lane Water Service Establishment Bylaw No. 1, 2007"
Cedars of Tuam Water System	Bylaw No. 3021, "Salt Spring Island Cedars of Tuam Water System Service Establishment Bylaw No. 1, 2002"
Fulford Water System	Bylaw No. 3202, "Fulford Water Service Establishment Bylaw No. 1, 2004"
Highland/Fernwood Water System	Bylaw No. 3753, "Highland and Fernwood Water Service Establishment Bylaw No. 1, 2010"
Lyall Harbour/Boot Cove Water System	Bylaw No. 2920, "Lyall Harbour/Boot Cove Water Service Establishment Bylaw No. 1, 2001"
Magic Lake Estates Water System	Bylaw No. 1874, "Outer Gulf Islands Magic Lake Estates Water System Local Service Establishment Bylaw, 1990"
Skana Water System	Bylaw No. 3089, "Skana Water Service Establishment Bylaw No. 1, 2003"
Sticks Allison Water System	Bylaw No. 2556, "Sticks Allison Water Local Service Establishment Bylaw No. 1, 1997"
Surfside Park Water System	Bylaw No. 3087, "Surfside Park Estates Water Service Establishment Bylaw No. 1, 2003"
Port Renfrew Water System	Bylaw No. 1747, "Port Renfrew Water Supply Local Service Establishment Bylaw No. 1, 1989"
Wilderness Mountain Water System	Bylaw No. 3503, "Wilderness Mountain Water Service Establishment Bylaw No. 1, 2008"

"Water System Area" means the area serviced by a Water System, as may be amended by the CRD from time to time.

"Water System Supply" means the CRD drinking water supplies for the Water Systems operated and administered by the CRD under the authority referred to in the Recitals to this bylaw.

"Water Use Restrictions" means the restrictions prescribed in Schedule "A" of this bylaw.

"Wading Pool" means a shallow, artificial pool 600 mm or less in depth, of portable or permanent construction for children to play or wade in.

2. Application

The restrictions and regulations in this bylaw are applicable in each Water System's service area.

3. Inspection

A Bylaw Enforcement Officer has the authority to enter at all reasonable times on any property which is subject to this bylaw to ascertain whether the requirements of this bylaw are being met or the regulations in this bylaw are being observed.

4. Water Use Restriction Stages

(1) The Stage 1 Water Use Restrictions prescribed in Schedule "A" are in effect each year from May 1 to September 30 inclusive, except as provided under subsection (2).

(2) When necessary for the conservation of Water or the preservation of the Water Supply the General Manager may:

(a) amend the effective period of time for Stage 1 for any or all Water Systems, or

(b) terminate or bring into effect a Stage more restrictive than Stage 1 at any time of the year for any period of time for any or all Water Systems.

(3) The Stage determined under subsection (2) and the Water Use Restrictions prescribed under Schedule "A" for that Stage take effect 48 hours after the Notice for that Stage under section 5(1) and remain in effect until that Stage is terminated.

(4) A Stage will remain in effect until it is terminated under this bylaw, or until the commencement of another Stage.

5. Notice

The General Manager must make a public announcement of the activation or termination of any water use restriction stage, other than the automatic activation and termination of the Stage 1 water use restriction on May 1 and September 30 of each calendar year, and may do so by one or more of the following means:

(a) radio or television broadcast;

(b) posting on the CRD website and social media;

(c) posting or delivery of notices; or

(d) publication in a local newspaper.

6. Determining Water Use Restriction Stages

In making a determination under Section 4(2), the General Manager may consider the following factors:

(1) time of year and typical seasonal water demand trends;

(2) precipitation and temperature conditions and forecasts;

(3) current and forecasted storage levels and storage volumes of CRD Reservoirs or Water Systems and draw down rates;

(4) stream flows and inflows into CRD Reservoirs and Water Systems;

(5) water usage, recent consumption and trends, and customer compliance with restrictions on Water use under this bylaw;

(6) Water System performance;

(7) the effects of climate change; and

(8) any other factor the General Manager considers to be relevant for making a determination under Section 4(2).

7. Water Use Restrictions

(1) The Water Use Restrictions for each Stage are prescribed for each Water System in Schedule "A" to this bylaw and must be followed during the period that the applicable Stage is in effect under this bylaw.

(2) For greater clarity, when a Stage is in effect under this bylaw, no person shall perform any of the outdoor watering activities described in Schedule "A" to this bylaw except at the days and times, and in the manner permitted, during that Stage as set out in Schedule "A".

(3) No person shall waste Water by using more Water from a Water System than is required to provide a service, produce a product or complete a task, including but not limited to:

(a) allowing a tap or hose to run Water unnecessarily,

(b) the Over-Watering of plants or lawns,

(c) power-washing, using water from a hose, or otherwise applying or using Water in a manner that constitutes Excess Water Use, or

(d) using a Motion-Activated Sprinkler Device or Sprinkler in such a manner that water spray patterns are not confined to the property on which the device is located, and are allowed to spray onto adjoining public or private property.

(4) No person, being an Owner or Occupier of property in a Water System Area, shall use Water or cause Water from a Water System to be used contrary to the provisions of this bylaw in effect at the time of use.

8. Exemptions to Water Use Restrictions

(1) Nurseries, Farms, Turf Farms and Tree Farms are exempted from all Stage restrictions.

(2) Exempted Persons are exempted from Section 7 to the extent permitted by Schedule "A".

9. Schedules

(1) Schedule "A" of this bylaw forms part of and is enforceable in the same manner as the bylaw.

10. Offences and Penalties

(1) A person who contravenes this bylaw commits an offence and is liable to a fine not less than $100 and not exceeding $10,000.

(2) Where an offence is committed or continues for more than one day, a person shall be

deemed to have committed separate offences for each day on or during which an offence occurs or continues, and separate fines, each not less than $100 and not exceeding $10,000, may be imposed for each day on or during which an offence occurs or continues.

(3) Nothing in this bylaw shall limit the District from pursuing any other remedy that would otherwise be available to the District at law.

(4) A Bylaw Enforcement Officer may, if they have reason to believe an offence has been committed against this bylaw, complete and leave with the alleged offender, or at the address of the alleged offender with someone who appears to be 16 years of age or older, a ticket information pursuant to Bylaw No. 1857, "Capital Regional District Ticket Information Authorization Bylaw, 1990", as may be amended or repealed and replaced from time to time, indicating a penalty equal to the amount stipulated for such an offence.

11. Bylaw Citation

This Bylaw may be cited as "Capital Regional District Electoral Areas Water Conservation Bylaw No. 1, 2022".

READ A FIRST TIME THIS	th	day of	2022
READ A SECOND TIME THIS	th	day of	2022
READ A THIRD TIME THIS	th	day of	2022
ADOPTED THIS	th	day of	2022

CHAIR

CORPORATE OFFICER

SCHEDULE "A"
to Bylaw No. 4492

OUTDOOR WATER USE RESTRICTION STAGES

APPLICATION
This schedule does not apply to Nurseries, Farms, Turf Farms and Tree Farms.

1. STAGE 1 Water Restrictions

(1) During Stage 1,

(a) no person shall, by any method, water a lawn growing on a property, including but not limited to a property that is used for residential, commercial, or institutional purposes, on more than one day per week between the hours of 4:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m.

(b) no person shall

(i) water trees, shrubs, flowers and vegetables on any day with a Sprinkler other than during the prescribed hours for Stage 1 lawn watering or on any day at any time if watering is done other than by hand-held container, hand held hose equipped with an automatic shut-off nozzle, or by Micro-irrigation or Drip-irrigation systems;

(ii) water newly planted trees, shrubs, flowers and vegetables by any method referred to in Section 1(1)(b)(i) of this Schedule other than during installation and the following 24 hours;

(iii) outside the prescribed Stage 1 lawn Watering hours, water new sod or newly seeded lawns, other than on new sod installation and during the first 21 days after installation, or for newly seeded lawns, water until growth is established or for 49 days after installation, whichever is less;

(iv) water public, institutional or community playing fields other than between the hours of 1:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m. on any day, unless failure to water will result in a permanent loss of plant material;

(v) wash a Vehicle with Water other than by using a hand held container or a hand held hose equipped with an automatic shut-off nozzle or at car dealerships or commercial car washes; and

(vi) use Water to wash sidewalks, driveways, parking lots, exterior windows or exterior building surfaces, by means of other than a power washer or hand-held hose equipped with a shut-off valve or in a manner that results in Excess Water Use.

(c) a person must not allow a Public Spray Park

(i) to emit Water continuously;

(ii) to be operated other than by either:

1) a motion sensor timer, or

2) manually by the user provided the device that is activated manually by the user is equipped with a timer or automatic shut-off that prevents continuous emission of Water.

(2) As exceptions to the Stage 1 restrictions,

(a) Owners or Occupiers of property who, by reason of physical or mental incapacity, are unable to water their property within the restricted days and times, and whose property is not equipped with an automatic in-ground Irrigation System, with the written approval of the General Manager given under this bylaw, shall not water their lawn or turf on more than two days of the week for a maximum of 9 hours per day;

(b) no Public Authority shall:

(i) water public, institutional or community playing fields, lawns and Boulevards other than during the hours of 1:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m. on more than one day per week; and

(ii) water trees, shrubs, flowers and vegetable gardens other than at the times and in the manner prescribed under Section 1(1)(b)(i) of this Schedule.

(c) owners or operators of golf courses shall not water

(i) fairways on any day, other than during the Stage 1 lawn prescribed times;

(ii) trees, shrubs, flowers and vegetables grown on golf courses other than in accordance with Section 1(1)(b)(i), of this Schedule; and

(iii) golf greens and tees on any day unless failure to water will result in permanent loss of plant material.

2. STAGE 2 Water Restrictions

(1) During Stage 2,

(a) no person shall, by any method, water a lawn growing on a property including but not limited to property that is used for residential, commercial or institutional purposes, on more than one day per two-week period between the hours of 4:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m.

(b) no person shall

(i) use Water to wash sidewalks, driveways or parking lots, exterior windows or exterior building surfaces, except as necessary for applying surface coating, preparing a surface prior to paving or repointing bricks, or if required by law to comply with health or safety regulations;

(ii) utilize a Motion-Activated Sprinkler Device to deter animals or wildlife;

(iii) water a lawn on property used as a cemetery;

(c) a person must not allow a Public Spray Park

(i) to emit Water continuously;

(ii) to be operated other than by either:

1) a motion sensor timer, or

2) manually by the user provided the device activated manually by the user is equipped with a timer or automatic shut off that prevents continuous emission of Water;

(d) a person must not

(i) fill an ornamental fountain with Water, or

(ii) operate an ornamental fountain that uses Water, other than an ornamental fountain that re-circulates continuously and is not replenished or re-Filled with Water from the a Water System Supply; and

(e) no person shall

(i) water trees, shrubs, flowers and vegetables on more than one day per week with a Sprinkler other than during the prescribed morning hours (4:00 a.m. to 10:00 a.m.) for Stage 2 lawn watering or on any day at any time if watering is done other than by hand-held container, hand-held hose equipped with an automatic shut-off nozzle, or by Micro-irrigation or Drip-irrigation system;

(ii) water newly planted trees, shrubs, flowers and vegetables during installation and for the following 24 hours other than by any method referred to in Section 2(1)(e)(i) of this Schedule;

(iii) water public, institutional or community playing fields other than between the hours of 1:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m., on more than one day per week unless failure to water will result in a permanent loss of plant material;

(iv) wash a Vehicle or Boat with Water other than commercial car washes using less than 57 litres of Water per Vehicle wash or using 50% recirculated Water as long as the total amount of Water, excluding recirculated Water, does not exceed 57 litres per Vehicle wash; or

(v) leave water service turned on, at the residential point of connection to the residence, home, or dwelling, when property is uninhabited for more than 30 consecutive days.

(2) As exceptions to Stage 2 restrictions,

(a) Owners or Occupiers of property who, by reason of physical or mental incapacity, are unable to water their property within the restricted days and times, and whose property is not equipped with an automatic in-ground Irrigation System, with the written approval of the General Manager given under this bylaw, shall not water their lawn or turf on more than one day per week for a maximum of 9 hours per day;

(b) no Public Authority shall:

(i) water public, institutional or community playing fields, lawns and Boulevards other than during the hours of 1:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m., on no more than one day per week if failure to water will result in a permanent loss of plant material;

(ii) water trees, shrubs, flowers and vegetable gardens other than at the times and in the manner prescribed under Section 2(1)(e)(i), and (ii) of this Schedule;

(c) owners or operators of golf courses shall not water

(i) fairways more than one day per week during prescribed lawn watering times;

(ii) trees, shrubs, flowers and vegetables grown on golf courses other than in accordance with Section 2(1)(e)(i) and (ii) of this Schedule; and

(iii) golf greens and tees on any day unless failure to water so will result in permanent loss of plant material.

3. STAGE 3 Water Restrictions

(1) During Stage 3,

(a) no person shall

(i) water a lawn, turf or Boulevard;

(ii) fill a wading pool, swimming pool, hot tub or garden pond;

(iii) operate a Public Spray Park;

(iv) operate or fill an ornamental fountain with Water;

(v) wash a Vehicle or a Boat with Water;

(vi) use Water to wash sidewalks, driveways or parking lots, exterior windows or exterior building surfaces, except as necessary for applying a surface coating, preparing a surface prior to paving or repointing bricks, or if required by law to comply with health or safety regulations;

(vii) utilize a Motion-Activated Sprinkler Device to deter animals or wildlife; or

(viii) leave water service turned on when property is uninhabited for more than 30 consecutive days.

(b) no person or Public Authority shall

(i) water trees, shrubs, flowers and vegetables on any day, except where watering only one day per week between the hours of 4:00 a.m. to 10:00 a.m. and when watering is done by hand-held container, a hand held hose equipped with an automatic shut-off nozzle, or by Micro-irrigation or Drip-irrigation systems;

(ii) water newly planted trees, shrubs, flowers and vegetables other than between the

hours of 4:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m. if watering is done by hand-held container or a hand held hose equipped with an automatic shut-off nozzle, during installation and during the following 24 hours after installation is completed;

(iii) water public, institutional or community playing fields other than between the hours of 4:00 a.m. to 10:00 a.m., on no more than one day per week, if failure to water will result in a permanent loss of plant material.

(2) As exceptions to the Stage 3 restrictions,

(a) owners or operators of golf courses shall not water

(i) fairways more than one day per week during the hours of 4:00 a.m. to 10:00 a.m. or 7:00 p.m. to 10:00 p.m.;

(ii) trees, shrubs, flowers and vegetables grown on golf courses other than in accordance with Section 3(1)(b)(i) and (ii) of this Schedule; and

(iii) golf greens and tees on any day unless failure to water will result in permanent loss of plant material;

(b) Vehicles and Boats must not be washed with Water other than at commercial car washes using less than 57 litres of Water per Vehicle wash or using 50% recirculated Water as long as the total amount of Water, excluding recirculated Water, does not exceed 57 litres per Vehicle wash.

APPENDIX B

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4499

****

A BYLAW TO AMEND BYLAW NO. 1857, CAPITAL REGIONAL DISTRICT TICKET INFORMATION AUTHORIZATION BYLAW, 1990 TO INSERT ELECTORAL AREA WATER CONSERVATION TICKET AMOUNTS

****

WHEREAS:

A. Under Bylaw No. 1857, "Capital Regional District Ticket Information Authorization Bylaw, 1990", the Regional Board established a municipal ticket information scheme for various regional district services;

B. Bylaw No. 4434 reserved Item 19 in Schedule 1, as well as Schedule 20, for future use; and

C. The Board wishes to amend Bylaw No. 1857 to insert a ticketing provision for Bylaw No. 4492, "Capital Regional District Electoral Area Water Conservation Bylaw No. 1, 2022";

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. Bylaw No. 1857, "Capital Regional District Ticket Information Authorization Bylaw, 1990" is hereby amended as follows:

   (a) Schedule 1, Item 19 is amended as follows:

	DESIGNATED BYLAW	DESIGNATED BYLAW ENFORCEMENT OFFICER
"19.	Capital Regional District Electoral Area Water Conservation Bylaw No. 1, 2022	Bylaw Enforcement Officer Police Officer Peace Officer"

   (b) Schedule 20 is replaced with Appendix 1 to this Bylaw.

2. This bylaw may be cited for all purposes as "Capital Regional District Ticket Information Authorization Bylaw, 1990, Amendment Bylaw No. 74, 2022".

READ A FIRST TIME THIS th day of 2022

READ A SECOND TIME THIS th day of 2022

READ A THIRD TIME THIS th day of 2022

ADOPTED THIS th day of 2022

CHAIR

CORPORATE OFFICER

APPENDIX 1 TO BYLAW NO. 4499

SCHEDULE 20 TO BYLAW NO. 1857

CAPITAL REGIONAL DISTRICT ELECTORAL AREAS WATER CONSERVATION BYLAW NO. 1, 2022

	WORDS OR EXPRESSIONS DESIGNATING OFFENCE	**SECTION**	**FINE**
1.	Hinder/Prevent Inspection	3	$500.00
2.	Wasting water	7.(3)	$200.00
3.	Wasting water during Stage 2	7.(3)	$300.00
4.	Wasting water during Stage 3	7.(3)	$400.00
5.	Use water contrary to bylaw	7.(4)	$200.00
6.	Stage 1 – water lawn contrary to days/times	Sch. A 1.(1)(a)	$200.00
7.	Stage 1 – water contrary to restrictions	Sch. A 1.(1)(b)	$100.00
8.	Stage 1 – operate Public Spray Park contrary to restrictions	Sch. A 1.(1)(c)	$100.00
9.	Stage 1 – Public Authority watering contrary to days/time	Sch. A 1.(2)(b)	$100.00
10.	Stage 1 – watering golf courses contrary to restrictions	Sch. A 1.(2)(c)	$200.00
11.	Stage 2 – water lawn contrary to days/times	Sch. A 2.(1)(a)	$250.00
12.	Stage 2 – wash sidewalks, driveways, parking lots, or exterior surfaces	Sch. A 2.(1)(b)(i)	$250.00
13.	Stage 2 – use motion-activated sprinkler device	Sch. A 2.(1)(b)(ii)	$250.00
14.	Stage 2 – water cemetery lawn	Sch. A 2.(1)(b)(iii)	$250.00
15.	Stage 2 - operate Public Spray Park contrary to restrictions	Sch. A 2.(1)(c)	$250.00
16.	Stage 2 – fill ornamental fountain	Sch. A 2.(1)(d)(i)	$250.00

17.	Stage 2 – operate ornamental fountain	Sch. A 2.(1)(d)(ii)	$250.00
18.	Stage 2 - water contrary to restrictions	Sch. A 2.(1)(e)	$250.00
19.	Stage 2 – Public Authority watering contrary to days/times	Sch. A 2.(2)(b)	$200.00
20.	Stage 2 – watering golf courses contrary to restrictions	Sch. A 2.(2)(c)	$250.00
21.	Stage 3 – water lawn, turf or boulevard	Sch. A 3.(1)(a)(i)	$400.00
22.	Stage 3 – fill pool, hot tub or garden pond	Sch. A 3.(1)(a)(ii)	$400.00
23.	Stage 3 – operate a Public Spray Park	Sch. A 3.(1)(a)(iii)	$400.00
24.	Stage 3 – operate or fill ornamental fountain	Sch. A 3.(1)(a)(iv)	$400.00
25.	Stage 3 – wash vehicle or boat with Water	Sch. A 3.(1)(a)(v)	$400.00
26.	Stage 3 – wash sidewalks, driveways, parking lots or exterior surfaces	Sch. A 3.(1)(a)(vi)	$400.00
27.	Stage 3 – use motion-activated sprinkler device	Sch. A 3.(1)(a)(vii)	$400.00
28.	Stage 3 – leave water service turned on	Sch. A 3.(1)(a)(viii)	$400.00
29.	Stage 3 –water contrary to restrictions	Sch. A 3.(1)(b)	$400.00
30.	Stage 3 – watering golf courses contrary to days/times	Sch. A 3.(2)(a)	$400.00
31.	Stage 3 – washing vehicle or boat contrary to restrictions	Sch. A 3.(2)(b)	$400.00

Making a difference...together

REPORT TO ENVIRONMENTAL SERVICES COMMITTEE
MEETING OF WEDNESDAY, MAY 18, 2022

SUBJECT Goose Management Update

ISSUE SUMMARY

To report back on a Goose Management Service and provide results of recent Canada goose population surveys in the capital region.

BACKGROUND

Ongoing environmental, economic, and health impacts from expanding populations of non-migratory Canada geese continue to affect municipalities, parks, farmers, businesses, health agencies and airport authorities in the capital region and across Vancouver Island.

In August 2020, the Capital Regional District (CRD) Board directed staff to provide a report on a Canada Goose Management Service.

In 2021, CRD staff established a Memorandum of Understanding with the Guardians of the Mid-Island Estuaries Society (GoMIES) to (1) provide a summary report (Appendix A) of Canada goose population estimates and trends using historical and current survey data, as well as known/suspected nesting locations and goose hotspots; and (2) develop a draft action plan that includes longer-term mitigation activities with a proposed budget (Appendix B).

The increasing population of Canada geese will continue to put significant pressure on regional and municipal resources, parks and recreational fields, beaches, estuaries and agricultural crops, if coordinated population control actions are not implemented.

ALTERNATIVES

Alternative 1

The Environmental Services Committee recommends to the Capital Regional District Board:
That staff bring back a report outlining costs for a Canada Goose Management Service.

Alternative 2

The Environmental Services Committee recommends to the Capital Regional District Board:
That staff bring a Canada Goose Management Service forward for the 2024-2028 service planning and budget cycle.

Alternative 3

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

IMPLICATIONS

Environmental & Climate Implications

The current Vancouver Island Canada goose population ranges from 10,000 to 15,000, with an estimated 3,500-7,000 birds over-wintering in the capital region (Appendix A). Data from banded birds confirms that Canada geese are moving between regions on Vancouver Island. In the capital region, the Canada goose population had an annual growth rate of 16% from 1977-1997 (Christmas bird count), while survey data from 2017-2021 indicates the population is roughly doubling every 4.3 years.

Surveys in 2020 and 2021 identified Sooke Basin, Esquimalt Lagoon, Portage Inlet and Gorge Waterway, Victoria/Oak Bay southeast shoreline and near shore islets, and the east coast of Saanich Peninsula from Sidney to Tsartlip Nation Reserve lands as key hotspots where moulting geese congregate. Nest and egg surveys conducted by GoMIES located 168 nests and addled 854 eggs in 2020 and found 241 nests and addled 1,282 eggs in 2021.

While there are a suite of tools for managing Canada goose populations, recent discussions indicate most local governments, farmers and large land owners rely on hazing techniques (using dogs, noise and lights) to deter Canada geese from their jurisdictions; very few of these groups conduct regular egg addling, while some farmers have obtained hunting permits.

Hazing is proving effective to manage the volume of goose droppings that accumulate where large flocks congregate; however, the 2020-2021 nest surveys indicate that reliance on this method is likely moving goose nesting activities to nearby quarries and off shore islands, many of which are part of the BC Parks Ecological Reserves. Hazing also does nothing to reduce goose populations over the long term.

To see a significant reduction in Canada goose populations, regionally coordinated population control measures, such as egg addling and regular goose harvests, need to be implemented. A humane harvesting program could include efforts to utilize all parts of the bird and ideally would provide a significant food source (i.e., City of Victoria Set the Table program, homeless shelters). Opportunities to support and provide training for First Nations Guardian programs to implement a regional egg addling program and to participate in repairing the goose impacts to important estuary and wetland habitats could also be explored.

The inconsistent and uncoordinated approach across the region has resulted in moving geese and their associated impacts into new areas, continued expansion of nesting and over-wintering Canada goose populations, and more significant ecological, economic, social impacts to agricultural and recreational facilities, estuaries and wetlands, large land owners and local governments.

Stewardship groups report significant and ongoing damage to native ecosystems on nearshore islands and to important estuaries, as a result of increasing goose populations, while the farming community reports significant and ongoing agricultural and economic impacts from geese.

Intergovernmental and First Nations Implications

The Regional Canada Goose Management Strategy, endorsed by the CRD Board in 2012, is being implemented in an ad hoc fashion by some key stakeholders. Coordination of roles and responsibilities between all levels of government, First Nations, Peninsula & Area Agricultural Commission (PAAC), large land holders, and community groups is required. Preliminary conversations also indicate a need for inter-regional conversations and collaborations across Vancouver Island and perhaps the Salish Sea.

In early 2022, CRD and GoMIES staff initiated conversations with local government staff, large property owners (Recreation Centres, Department of National Defence, and School Districts), other governments (some First Nations, the Province) and PAAC to discuss a regional collaborative approach and obtain funding contributions toward an egg addling program. There was general support for a more coordinated regional approach and $30,000 was obtained to contract GoMIES to conduct egg addling through April and May in key nesting hotspots around the region.

Social Implications

Public education outlining the problems associated with too many geese would be an important component of a goose management service. Under a new service, a coordinated communications strategy with an education and awareness program would be developed and implemented to help residents understand the impacts Canada goose populations are having, the need for more aggressive and coordinated population control tactics to be implemented, and to engage the community in helping to protect and restore ecological habitats that have been negatively impacted by Canada geese.

Financial Implications

The proposed Action Plan developed by GoMIES includes a regional egg addling program, regular summer and winter population surveys, development of outreach materials and establishing additional partners. The action plan does not include goose harvests. The estimated cost for a regional egg addling and population monitoring program is $120,000 annually.

A Canada Goose Management service would require additional staff resources to: establish collaborative partnerships and build alliances with other agencies, First Nations and key stakeholders within the region (and inter-regionally as necessary); facilitate the development and implementation of a communications strategy; develop educational outreach materials, manage egg addling contracts with non-profits and First Nations partners, contract manage regular population surveys, support and facilitate regional implementation of the Regional Canada Goose Management Strategy and the action plan, including regular goose harvests.

A potential service could be partially funded through municipal requisition and supplemented with direct funding from large property owners (i.e., golf course operators, PAAC, farmers, recreation centres). The estimated cost to implement a service is approximately $250,000.

Legal Implications

This service can be created by way of an "establishing bylaw". Before an establishing bylaw can be adopted, it must receive approval of the electors and the Inspector of Municipalities. The *Local Government Act (LGA)* provides three ways to obtain approval: referendum/elector assent (s. 344 LGA); Alternative Approval Process (AAP, s. 345 LGA); and consent by municipal councils on behalf of electors, and by AAP within the Electoral Areas (s. 346 LGA) – while the choice on the method of participating area approval for a regional service is made by the Board, but subject to review of the Inspector of Municipalities at the time of Inspector approval of the bylaw.

For a new regional service where participants are in agreement that it should be created, the most cost-effective form of approval is municipal consent on behalf and alternative-approval process in the electoral areas. Such approval must be unanimous. The typical process prior to drafting a service bylaw is to solicit interest in consenting by writing in advance of drafting a formal bylaw and going forward with a formal consent process. If a potential participant council disagrees with proceeding with service creation, staff can look at alternatives to a regional service, such as a sub-regional service. This process takes three to five months and costs approximately $15,000, depending on the level of support requested by municipalities and electoral areas.

CONCLUSION

Increasing populations of Canada goose in the capital region are causing significant impacts to estuary habitats, near shore islands in the ecological reserves, recreational beaches and lakes, playing fields and agricultural crops; resulting in increasing pressure on local governments to take more coordinated actions.

Effective management of Canada Geese requires regional collaboration, cooperation and coordination between land use agencies under various jurisdictions, including federal and provincial wildlife agencies, parks and recreation boards, local and regional governments, airport authorities, farmers, and owners of large properties such as golf courses.

RECOMMENDATION

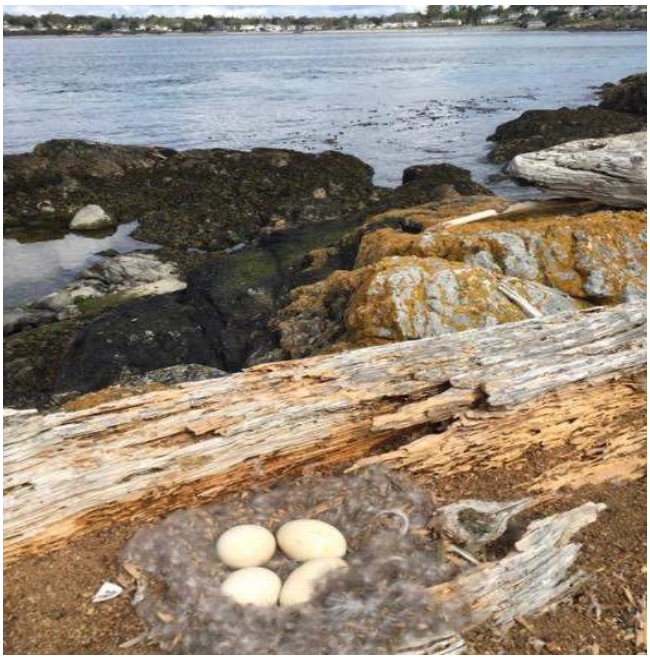
The Environmental Services Committee recommends to the Capital Regional District Board:
That staff bring back a report outlining costs for a Canada Goose Management Service.

Submitted by:	Glenn Harris, Ph.D., R.P.Bio., Senior Manager, Environmental Protection
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENTS

Appendix A: Canada Goose Mitigation and Population Monitoring (Guardians of Mid-Island Estuaries Society) – January 27, 2022
Appendix B: Capital Regional District 2022 Canada Goose Mitigation Draft Action Plan (Guardians of Mid-Island Estuaries Society) – February 14, 2022

APPENDIX A



CANADA GOOSE MITIGATION AND POPULATION MONITORING

Guardians of Mid-Island Estuaries Society

JANUARY 27, 2022

SUBMITTED TO GLENN HARRIS, SENIOR MANAGER, ENVIRONMENTAL PROTECTION
Capital Regional District

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Photo Credits: Garreth Ashley and Graeme Fowler

Introduction

In response to requests for help from landowners and some municipalities, the Guardians of Mid-Island Estuaries Society (GoMIES) has recently initiated Canada Goose (CAGO) population mitigation within the Capital Regional District (CRD). Surveys of breeding, summer moult and winter populations have been conducted since 2017. On the ground mitigation work was begun in cooperation with the Tsawout First Nation in the form of harvests of geese in 2018 and 2019. In spring of 2020 and 2021, extensive egg addling services were provided from Sooke to the Saanich Peninsula. In 2021 alone, 241 active nests containing 1,298 eggs were treated by our addling crews in CRD municipalities. Approximately half these nests were located in previously undocumented CAGO breeding "hotspots" on local agricultural properties.

GoMIES programs have yielded valuable insight into how CAGO population mitigation measures can help reduce populations of CAGO in the CRD and elsewhere. These programs have already produced quantifiable decreases in moulting and wintering CAGO populations, which are documented in this report.

Historical Abundance of Canada Geese (*Branta canadensis*) within the CRD

During the first half of the 20th century, the Canada Goose was mainly a migrant and summer visitant in most of British Columbia. One subspecies, the Vancouver Canada Goose (*Branta canadensis fulva*) was then known to breed in small numbers on northern Vancouver Island, but breeding was absent on southern Vancouver Island (Campbell et al. 1990). Beginning in the 1950s and then more intensively through the 1970s and early 1980s, Canada Geese were captured elsewhere and released in south coastal BC, including southern Vancouver Island, by government agencies attempting to establish populations of breeding geese.

On southern Vancouver Island, there is some evidence that private game farms may have released geese on southern Vancouver Island in the 1930s and 1940s and a small population was established at Quamichan Lake in the 1940s (Dawe and Stewart 2010). The first breeding record in the CRD was in 1954 from a few nesting geese at Elk Lake. Canada Geese remained very scarce in the CRD through the early 1960s (Dawe and Stewart 2010). In 1963 a number of winter waterfowl surveys found zero Canada Geese overwintering in the CRD (Hancock 1963). Populations began expanding by the late 1960s from breeding areas in Victoria, Duncan and Nanaimo. By the 1980s Canada Geese were already becoming nuisance birds at some locations (Campbell et al. 1990). By the 1990s, Canada Geese were nesting in most of southeastern Vancouver Island.

Only two species of waterbirds have shown significant increases within the Salish Sea area of BC since 1999, one of which is the Canada Goose. Population growth rates have been remarkable on southern Vancouver Island. Dawe and Stewart (2010) report a 16% annual growth rate (or a doubling of numbers every 4.3 years) in wintering populations from 1977 to 1997, then a levelling off from 1998 to 2010, with an estimated winter population of 15,000 geese. GoMIES has also estimated the wintering population to be from 12,000-15,000 in recent years. That estimate is similar to the 2010 estimate (Dawe and Stewart 2010) and is thought to have been maintained by the addling and harvest efforts of GoMIES

from 2010 to 2021. Overwintering goose populations there are estimated to have increased at an annual rate of 4.9% from 1999-2019 (Ethier et al. 2020). That rate translates to a doubling of the population every 14.3 years. Whether or not that current estimated rate of increase is true for the CRD, it supports the widely held view that Canada Goose populations on southern Vancouver Island have increased substantially in the past. The increasing trend is well shown by winter counts done on the annual Christmas Bird Count (Figure 1).

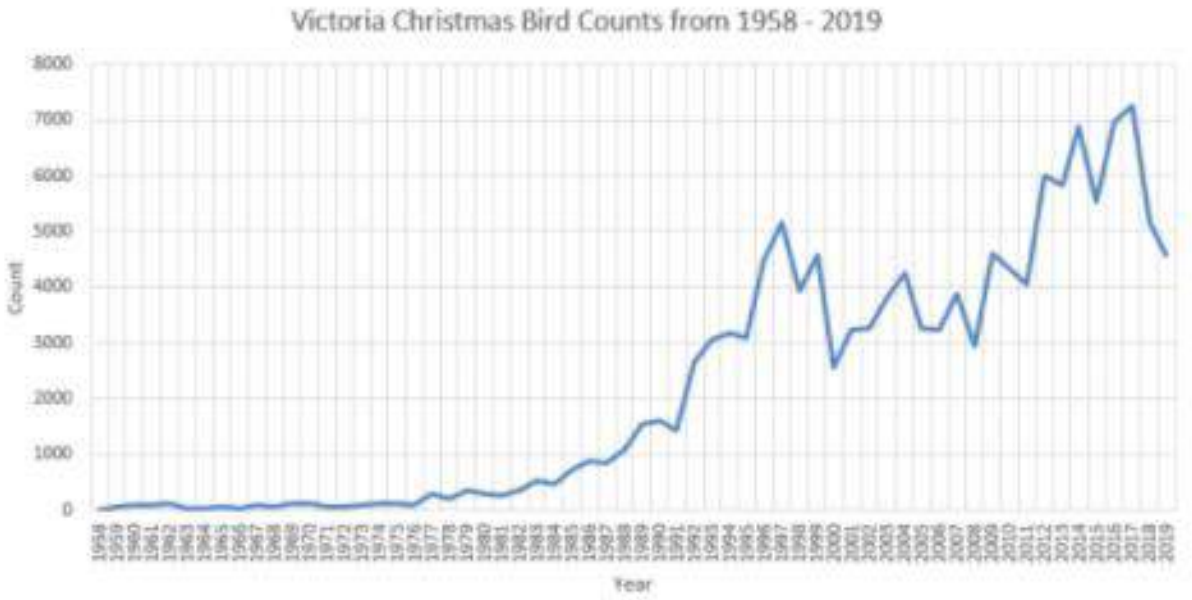


Figure 1: Historical CRD CAGO data, provided by Ann Nightingale, Rocky Point Bird Observatory.

A large percentage of the Canada Goose population on Vancouver Island remains year-round, although considerable movements of geese within the region occur. GoMIES (2015) documented the phenomena of moult migration whereby some geese that breed elsewhere on the island and the northwest USA fly to the east coast of Vancouver Island to moult in late June and early July. From their study sites at the Englishman, Little Qualicum and Campbell rivers, other seasonal movements within the region were documented. Pearce and Demers (2019) documented similar movements with birds that were captured and banded in summer in Nanaimo.

In summary Canada Goose breeding, moulting and wintering populations in the CRD have increased from zero in the 1940s to hundreds of nesting pairs and several thousands of moult and wintering geese. In 2012 the CRD commissioned a Regional Canada Goose Management Strategy which provided guiding principles for managing Canada Goose populations to reduce impacts on farmlands, parks and recreational areas. Suggested initiatives in that document remain to be implemented by the CRD.

Summer CAGO Population Surveys CRD (2017-2021)

On the 7th of July 2017, an aerial moult count survey of Canada Geese (*Branta canadensis*) was conducted along the south-eastern Vancouver Island coast and included the larger nearby lakes. During the survey 4,002 CAGO were observed from Sooke to Sidney. The highest concentrations were found in the Sooke Basin, Esquimalt Lagoon and the eastern coastline of the Saanich Peninsula (Sidney, south to Tsawout FN Reserve).

A Jet Ranger Helicopter (West Coast Helicopters) was used to perform the aerial survey. Altitude for observation was held at 100ft (30.48m) when conditions allowed and 300-500ft (90-150m) over urbanized areas. Restricted urban areas were excluded by our pilot, therefore sections such as the Gorge were bypassed. GoMIES estimates an additional 500 CAGO may have been present in these zones.

A drone survey of the CRD (Sooke to Sidney) was carried out by contractors hired by GoMIES during June of 2019. Videos taken by the drone showed 3,498 CAGO present. It is estimated that 35-40% of these were young of the year. This observation highlighted the need for an intensified addling effort within the CRD.

In late June 2020 a moult count was carried out by GoMIES staff via kayak, over three days, from Sooke, moving east to the Victoria area, and north to the Saanich Peninsula. 2,774 CAGO were counted during the survey.

In July 2021 GoMIES conducted a Canada Goose moult survey within the CRD. The purpose of this survey was to identify local “hotspots” of non-migratory populations within the CRD during the annual moulting season, which lasts approximately from mid-June to mid-July. The surveyed area included Sooke Basin and progressed east, then north-east up into the Saanich Peninsula. The count was conducted over a three-day period (see Figure 2, page 7 and table 6 in the appendix I).

GoMIES’ surveyors accessed more remote areas, that were not accessible by public road, via sea kayaks. This method was primarily deployed to survey the Sooke Basin. In areas that had public road access to shorelines, optical equipment was utilized in CAGO observation.



Photo 1: Canada Geese congregate on the shores of Sooke Basin, 2021.



Photo 2: Disrupting traffic in Victoria, 2021.



Photo 3: Graeme Fowler, GoMIES' wildlife mitigation specialist, scans for CAGO in Sooke Basin.



Photo 4: A small gaggle of Canada Geese gather on a sandy shore, Sooke Basin.



Photo 5: Garreth Ashley is approached by extremely habituated Canada Geese, Esquimalt Lagoon.

Table 1: Guardians of Mid-Island Estuaries Society, Canada Goose moult count, Capital Regional District, CAGO distribution by municipality. July 2021.

Municipality	#CAGO	Notes
Sooke	540	Primarily observed within the basin and estuary
Metchosin	27	
Colwood	615	Large groups sheltering on northern shore of the lagoon
Langford		
View Royal	25	
Esquimalt		
Victoria	127	
Oak Bay	369	These individuals likely using ecological reserves as nesting grounds.
Saanich	29	
Central Saanich	46	
Sidney	71	
North Saanich	53	
Total	**1,902**	

Survey results showed the largest concentrations of moulting CAGO located in the Esquimalt Lagoon and the Sooke Basin. The moulting group of 104 CAGO found on McNeil Bay would be those individuals who use the Trial Islands as their nesting grounds. Whereas Willows Park and Oak Bay Marina groups would most likely be nesting on Great Chain Island. The 49 individuals recorded on Victoria Golf Course would also be utilizing Great Chain Island as a breeding territory.

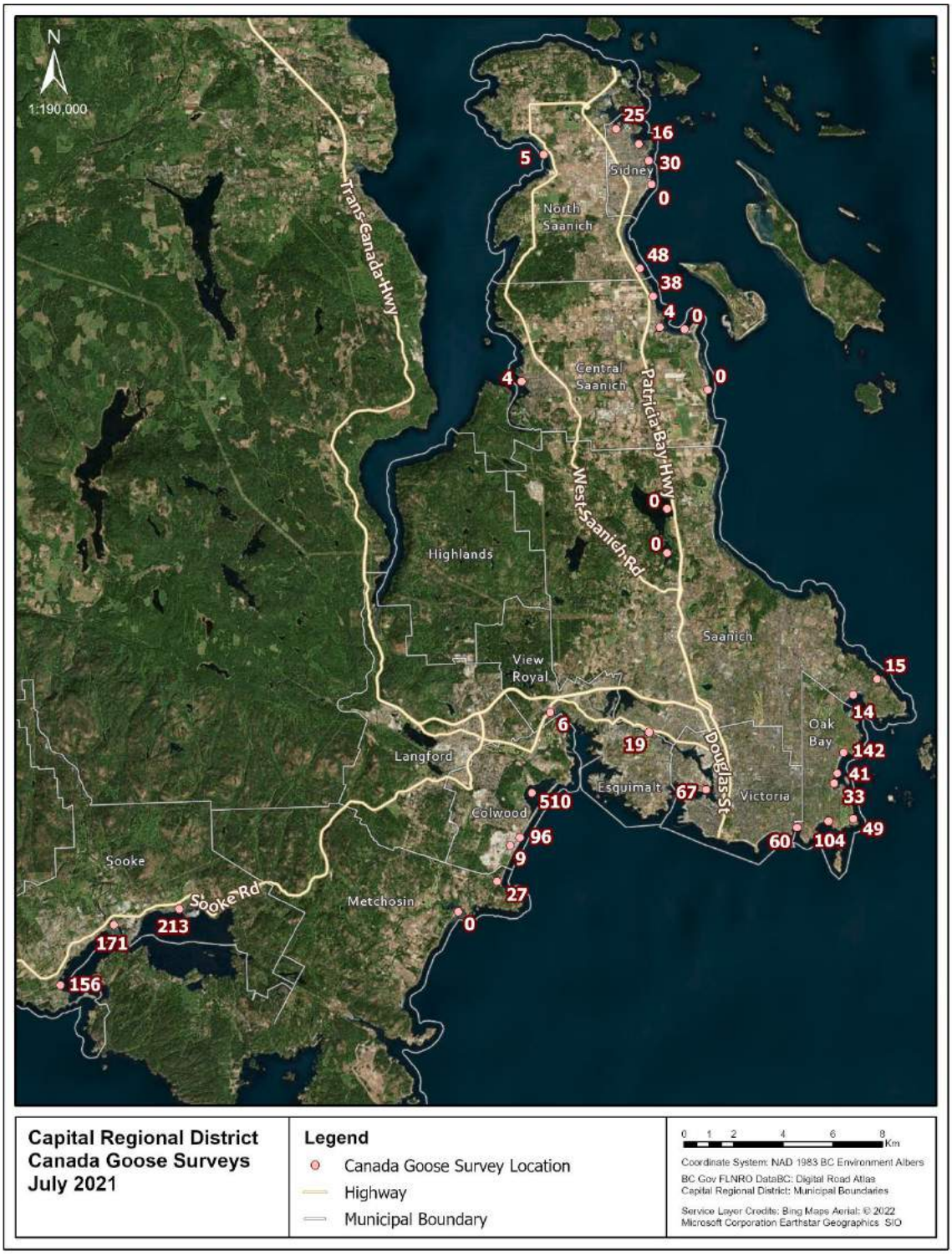


Figure 2: 2021 CRD CAGO moult count results.

Winter Counts

On 9 February 2019 an aerial survey via helicopter of the CRD was conducted by GoMIES; 2,977 individual CAGO were tallied. On 8 February 2020, 3,431 CAGO were observed by surveyors from the Rocky Point Bird Observatory. As is the case with GoMIES' CRD CAGO surveys, the counts were conducted from Sooke to Sidney (Nightingale, Ann. 2020). Before mitigation was initiated by GoMIES in 2018, we see that CAGO winter populations peaked at approximately 7,000 individuals around 2017. This is illustrated by Anne Nightingale's historical CBC graph below (Figure 2).The decline in winter numbers can possibly be attributed to harvests done in cooperation with Tsawout First Nations (2018-2019) and an increased addling effort within the CRD by GoMIES.

Table 2: Results of 2019 GoMIES aerial CAGO survey.

Location	CAGO	Comments
North Saanich	1897	Feb. 10, ground count, snowing
Central Saanich	473	Feb. 10, ground count, snowing
Esquimalt Lagoon Royal Roads	127	Feb. 19th, aerial count
Sooke	101	Feb. 19th, aerial count
Victoria Golf Club	245	Feb. 19th, aerial count
Victoria Gorge waterway	66	Feb 21, ground count
Victoria Islands (James, Piers, Coal, unnamed)	68	Feb 19th, aerial count
CRD Total	**2,977**	

Effects of Resident Canada Goose Herbivory on Local Agricultural Production

Within the CRD, the overabundant resident Canada Goose population has significant impacts on thousands of acres of vegetables, berries, grain, grass and corn crops. Impacts to the local farm crops include cash crop consumption, fouling, and plant damage and removal. Farmers have been complaining for many years and their complaints and estimated financial losses are well documented though the Peninsula & Area Agricultural Commission as well as numerous media releases. Many of the on-farm mitigation tools and strategies are unpalatable to the general public. The use of propane cannons, lasers, pyrotechnics, and animal distress calls are a cause of concern for neighbouring residents. Provincial and Federal wildlife mitigation permits have been utilized by individual farms where farm characteristics are deemed appropriate, and the lethal activities can be carried out in a safe manner. For many of the farms within the CRD these permits are not appropriate due to farm size and proximity of other residences.

Nest searches and egg addling through an organized addling program provides an immediate benefit to farmers, and others, when recruitment of young birds can be dramatically reduced. Addling programs are a widely acceptable form of population control, approved by the BCSPCA. Egg addling by trained personnel can be done quietly, with limited disturbance to the public even in densely populated areas where other mitigation measures such as hunting are not allowed.



Photo 6: A Central Saanich farm field being used as a CAGO breeding ground.

Guardians of Mid-Island Estuaries Society Egg Addling in the CRD

During the past two years, GoMIES has addled Canada Goose eggs and conducted breeding population surveys in the CRD. Results from 2020 and 2021 were astounding including hundreds of nests at many locations within the CRD (Table 3, 4). Canada Geese have expanded from traditional nesting habitats in wetlands and farmlands to offshore islets and quarries. There were 126 (2020) and 123 (2021) goose nests found on offshore islets in Oak Bay; many of which are Ecological Reserves (GoMIES 2021). No geese nested on these islands in the early 1980s. The high number of geese nesting on these islands are threatening the ecological integrity of the rare Garry Oak ecosystems there as native vegetation and rare plants are being consumed or destroyed and replaced by weedy plant species.

171 Canada Goose nests were found in quarries and farmlands in the CRD in 2021. One farm near Elk Lake held 45 nests alone (GoMIES 2021). Data from the Royal Bay development in Colwood showed 88 Canada Goose nests in 2020; we believe no addling occurred on these private lands in 2021.

Conclusions

Canada Geese continue to breed, summer and overwinter in large numbers in the CRD. These populations foul beaches, parks, playgrounds and school yards, cause extensive damage to estuary and island ecosystems, and reduce productivity of farmlands. Management actions taken by GoMIES since 2018 appear to have stabilized or reduced Canada Goose numbers in the CRD. Although some progress has been made with management of goose populations, mitigation measures will need to be continued in order to maintain populations at current levels or to reduce them.

Table 3: Total number of nests located, and eggs addled at each location by the GoMIES Field Crew in the Capital Regional District of Vancouver Island, Spring 2020.

Location	Land Management	Nests located	Total eggs addled
Farmland	Private	13	60
Jemmy Jones Island	Oak Bay Ecological Reserve	19	92
Flower Island	Oak Bay Ecological Reserve	7	25
Great Chain Island	Oak Bay Ecological Reserve	46	240
Mary Tod Island	Oak Bay Ecological Reserve	1	8
Staines Island	Oak Bay Ecological Reserve	3	13
Uplands Islets	Oak Bay Ecological Reserve	2	8
Trial Islands	*Oak Bay Ecological Reserve*	*46*	*280*
Griffin Island	*Oak Bay Ecological Reserve*	*1*	*4*
Alpha Island	*Oak Bay Ecological Reserve*	*1*	*1*
Quarries	Private	8	32
	Total	**147**	**763**

Table 4: results from addling season 2021, CRD islands.

Location	2021 nests	2021 eggs
Jemmy Jones	13	66
Flower Island	8	42
Great Chain	37	216
Mary Tod	0	0
Staines Island	3	20
Uplands Islets	3	15
Lesser Trail	38	222
Greater Trial	19	96
Alpha	1	6
Oak Institute	1	5
Total	**123**	**688**

Table 5: 2021 Farm and Quarry addling results from the CRD.

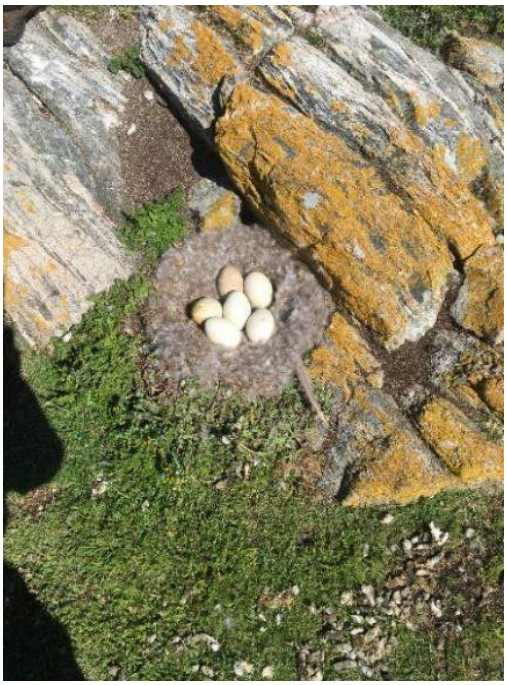
General Location (private lands)	2021 Nests	2021 eggs
Saanich	7	35
Saanich	13	64
Central Saanich	2	9
Central Saanich	14	81
Central Saanich	45	239
Sooke	4	25
Sooke	7	43
Sooke	3	15
Sooke	1	4
Metchosin	1	6
Central Saanich	21	89
Total	**118**	**610**



Photo 7: GoMIES addling crew is escorted out to Great Chain Island by Matt Fairbarns, spring 2021.



Photo 8: The rare Bear's-foot Sanicle (*Sanicula arctopoides*) on Greater Trial Island.





Photos 9 & 10: Invasive Canada Goose nests on the ecologically sensitive Greater Trial Island.

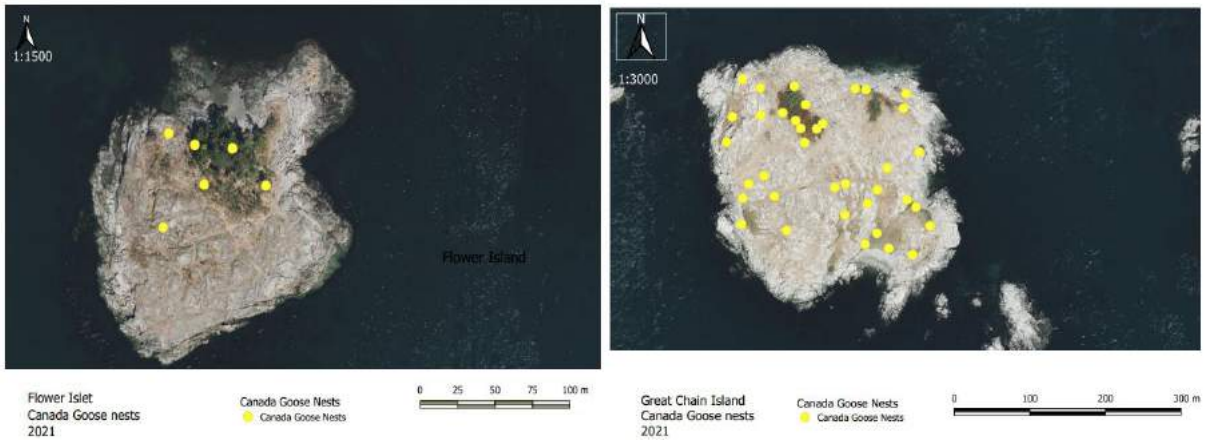


Figure 3 & 4: CAGO Nest locations on Flower Island and Great Chain Island 2021.

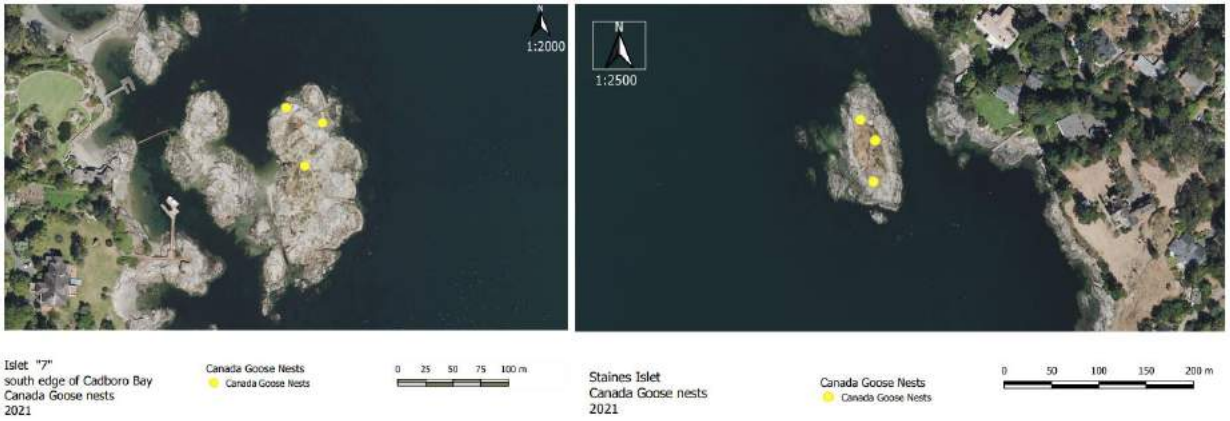


Figure 5 & 6: CAGO nest locations for "Islet 7" and Staines Islet, 2021

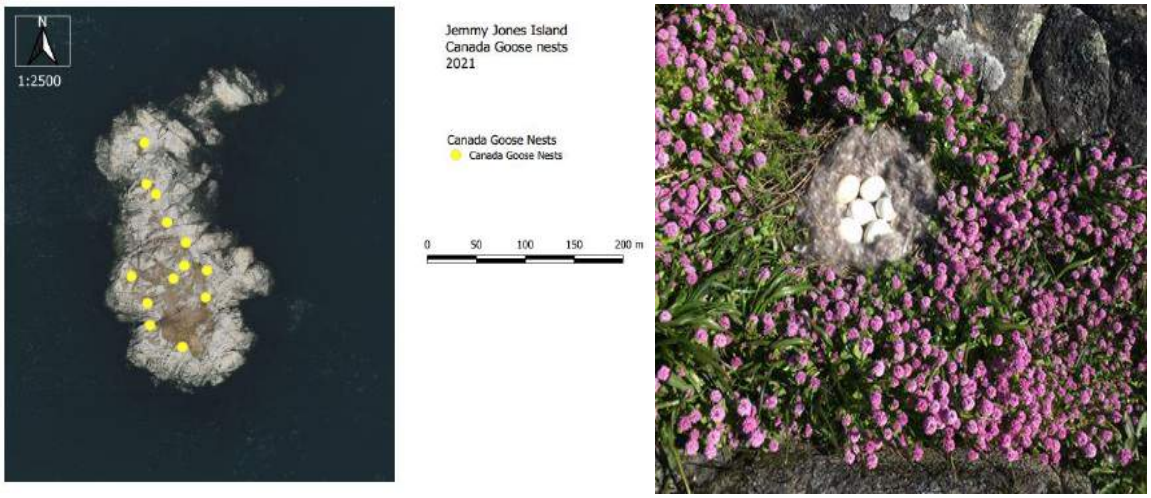


Figure 7: Jemmy Jones Island, CAGO nesting locations. Right: typical nest on Jemmy Jones Is.

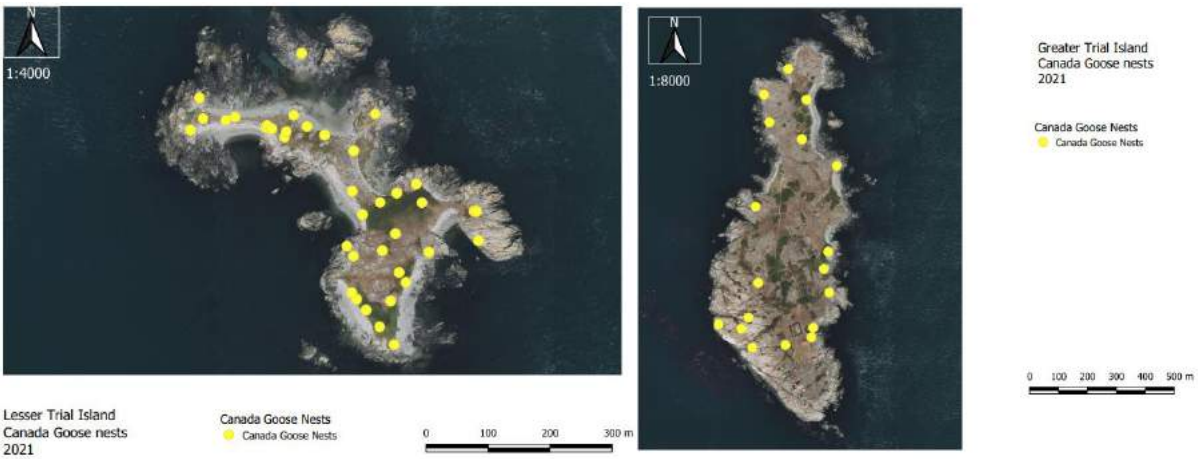
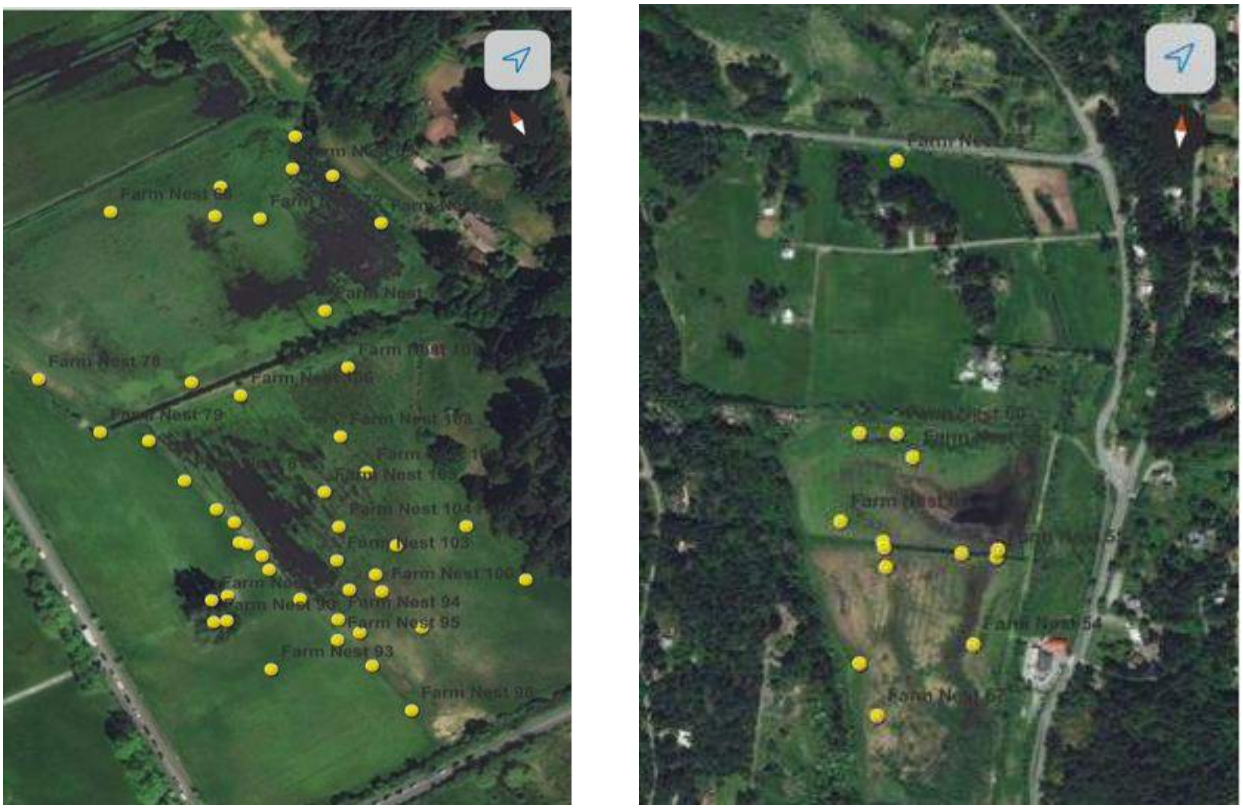


Figure 8 & 9: CAGO nest locations on Lesser and Greater Trial Island, 2021.



Figures 10 & 11: Extremely dense nesting populations discovered in farmlands in 2021, Saanich Peninsula. Specific address not given for land owner privacy.



Figure 12: Both agricultural properties and quarries are used as nesting habitat by CAGO in the CRD.



Photos 11 & 12: Left: Approximately 450 CAGO swim along the east coast of the Saanich Peninsula. Right: Hatched-out CAGO nest in a farm field, Central Saanich.



Photo 13: Hundreds of Canada Geese loafing on a Saanich Peninsula agricultural field.





Photos 14 & 15: CAGO at Royal Roads and Esquimalt Lagoon





Photos 16 & 17: Large numbers of CAGO disrupting play at Victoria Golf Club.




Photo 18 & 19: Even active quarries and construction sites are being utilized as nesting habitat by invaisive CAGO in the CRD.




Photos 20 & 21: small ponds on farmlands within the CRD are favoured nesting sites.




Photos 22 & 23: Abandoned farm property near Elk Lake with high density of CAGO nesting. Forty-six nests were located and addled on this single property. Right: red dots represent adult CAGO nesting and grazing in field.

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Nightingale, Ann. 2020. Goose Survey from Sooke to Sidney February 8, 2020, Coordinated by Ann Nightingale, Rocky Point Bird Observatory.

Appendix I

Please visit:

[Aerial Moult Count Survey of Canada Geese (parksville.ca)]

[www.estuaryguardians.org]

Table 6: Location and distribution of CRD CAGO moulting population, July 2021.

Location of Observation	#CAGO	Latitude°	Longitude°	Notes
Sooke Basin West	156	48.36312	°-123.72606°	Accessed via kayak, 6 YOY sighted
Sooke Basin East	213	48.38863°	-123.66302°	Kayaked, 2 YOY sighted
Sooke River Estuary	171	48.38439°	-123.69970°	
Witty's Lagoon	0	48.38498°	-123.51226°	
Albert Lagoon	27	48.39545°	-123.49049°	
Royal Bay Construction	9	48.40827°	-123.48274°	
Royal Beach Park	96	48.41113°	-123.47727°	
Esquimalt Lagoon	510	48.42718°	-123.47003°	
Six Mile Bridge	6	48.45616°	-123.45839°	
The Gorge	19	48.44767°	-123.40511°	
City of Victoria (Delta Waterfront)	67	48.42605°	-123.37521°	
Gonzales Bay	60	48.41105°	-123.32650°	
McNeil Bay	104	48.41294°	-123.30939°	
Victoria Golf Course	49	48.41341°	-123.29590°	
Oak Bay Marina	33	48.42654°	-123.30547°	
Oak Bay	41			
Willows Park Beach	142	48.43759°	-123.29970°	
Cadboro Bay	14	48.45850°	-123.29319°	2 YOY
Telegraph Beach	15	48.46383°	-123.27980°	
Island View Beach	0			
Tsawout Spit	0	48.592553°	-123.375336°	
Tsawout Estuary	4	48.594169°	-123.391983°	
Cascade Ave.	38	48.605737°	-123.394746°	
Amity Drive	48	48.615531°	-123.400751°	
Sidney Waterfront/Pier	0			
Sidney Marina	30			
3rd St, Sydney	16	48.660159°	-123.397552°	
Resthaven	25	48.666521°	-123.410354°	
Patricia Bay	5	48.65862°	-123.45129°	
Brentwood Bay	4	48.57668°	-123.46768°	
Beaver Lake	0			
Elk Lake	0			
Total	1902			

Appendix II:

History of the Guardians of Mid-Island Estuaries Society's CAGO Mitigation

The Guardians of Mid-Island Estuaries Society (GoMIES) started addling programs on Vancouver Island in the Cowichan Valley in 1999 in response to farmer complaints of excessive Canada Goose (CAGO) damage to local crops. These efforts expanded to the Parksville-Qualicum Beach area in 2002 when the City of Parksville and conservation organizations began to fund egg addling at three local estuaries. Their concerns were two-fold as rising breeding and summer moult CAGO populations were discovered to be destroying sedge marsh habitat critical to juvenile salmon and wildlife at an alarming rate, and tourists' complaints to local governments were constant. In 2010, GoMIES formed as a registered Society with a mandate to protect estuaries and bring more awareness to the many negative effects of locally over-abundant CAGO through science-based actions. Our 2015 "Canada Goose Management Strategy for the Mount Arrowsmith Biosphere Region" was a catalyst towards more active management throughout the Regional District of Nanaimo and remains as the most comprehensive document regarding Canada Goose management in North America. http://www.parksville.ca/cms.asp?wpID=507

Capital Regional District 2022 Canada Goose Mitigation Draft Action Plan



Prepared by:

Guardians of Mid-Island Estuaries Society

Prepared for:

Glenn Harris, Senior Manager, Environmental Protection

Capital Regional District

MOU No. EPRO2021-027

February 14, 2022

1. Purpose:

The Capital Regional District (CRD) and the Guardians of Mid Island Estuaries Society (GoMIES) are working together through a Memorandum of Understanding (MOU) to develop an action plan to address and mitigate regional Canada Goose (CAGO) population growth. GoMIES deliverables through the MOU were to conduct a Canada Goose moult survey in July 2021 to identify high population density "hot spots" for moulting geese. In addition, GoMIES were to analyze their previous population surveys from 2017 to 2021, the Victoria volunteer-based Christmas bird counts, and their 2020 and 2021 addling work in the CRD to identify known and likely nesting locations. This information was synthesized into a summary report titled "Canada Goose Mitigation and Population Monitoring within the Capital Regional District" and has been previously submitted to the CRD separately from this action plan (Appendix 1.). The data from the report was used to inform a draft CRD Canada Goose Action Plan that would identify near-term and long-term mitigation activities, key partners, and stakeholders, and include a detailed budget.

2. Issue:

Regionally over-abundant Canada Geese are an ongoing concern in the CRD as they degrade coastal ecosystems, water quality, and public health and have a negative economic effect on local businesses, farms, parks, health agencies, and airport authorities.



Figure 1: Examples of habitat types utilized by resident Canada Geese as nesting grounds.

Acknowledgements

The Guardians of Mid-Island Estuaries Society would like to thank the following Capital Regional District and municipal employees for their guidance and support in the ecological protection of southern Vancouver Island. Norm Doerksen, Superintendent of Public Works, Central Saanich, kept a small working group of community participants meeting annually to implement mitigation activities and population monitoring post 2012 Regional Canada Goose Management Strategy. Norm provided us with local intel regarding high populations and local insight into which locations would most benefit from resident Canada Goose mitigation efforts, including agricultural properties, watersheds, and private land. Jeff Weightman who graciously checked in with our crews to make sure they had the resources to successfully carry out their work. Jeff also shared valuable local knowledge leading us to nesting hotspots near Oak Bay and Esquimalt.

Mr. Mike Hicks, who has been championing the need for to control resident Canada Geese impacting sports fields, farms, and public green space in the Capital Regional District. His years of experience of working in the natural landscapes of the CRD have given him firsthand knowledge of the need for efforts in protecting its unique eco-systems. Mike ‘s involvement in Canada Goose fouling mitigation on sports and recreation fields within municipal parks has greatly contributed to addressing the public health and safety concerns of CRD citizens.

Finally, Dr. Glenn Harris for supporting GoMIES’ Canada Goose population monitoring, which is critical in providing a foundation for making future mitigation decisions. Dr. Harris has been able to tie together and coordinate the various individuals and organizations that contribute to an efficient resident Canada Goose mitigation strategy within the CRD.

Making a difference...together

Introduction

Members of the Guardians of Mid Island Estuaries Society (GoMIES) have worked to protect and restore estuaries for over 30 years and have led community-based Canada Goose mitigation activities on Vancouver Island from Saanich to Campbell River since 1998. Our science-based research approach has evolved to protect tidal sedge marsh habitats by applying eco-cultural techniques to prevent goose herbivory and degradation to critical salmon and wildlife habitat, paired with effective Canada Goose population monitoring surveys and population control measures. This work has been conducted in partnership with 6 First Nation Bands including K'omoks (Comox), Tsawout (Saanich), Snaw-naw-as (Nanoose), Snuneymuxw (Nanaimo), We Wai Kum (Campbell River), and Tla'amin (Powell River).

We have learned that when communities take part in a comprehensive spring addling program, in combination with adult population reductions through natural mortality, hunting, and First Nations harvests, then impacts associated with locally over-abundant CAGO can be significantly reduced. Recently, within the CRD our addling program expanded to cover Crown Ecological Reserves, Federal and Provincial administered conservation lands, and private lands including but not limited to farms, quarries & golf courses. GoMIES has built a high level of proficiency towards finding goose nests in a variety of habitat types and has begun training First Nation Guardians and conservation stewards in best practices to help curb juvenile recruitment. In 2021 we prevented 2188 eggs from hatching in 4 regional districts on Vancouver Island with 60% of these eggs occurring in 5 municipalities of the CRD.

The City of Parksville and the Regional District of Nanaimo have provided significant financial resources and efforts to reduce CAGO populations in their region since 2002 and after 20 years they have lowered nesting and moult populations by over 75%. In 2017, Parksville proposed a resolution at the AVICC where all municipalities signed a declaration to work together to share CAGO management responsibilities and this was formally passed at the UBCM. A MOU agreement has been endorsed by many municipalities on Vancouver Island and a key recommendation of this document will be for the municipalities of the CRD to also become active in "shared mitigation" to reduce impacts of over-abundant CAGO in most communities (Appendix 2.).

Longer Term Mitigation Activities to Manage Locally Over-Abundant Canada Geese within the CRD:

The implementation of a methodical and comprehensive egg addling program is a widely recognized tool to effectively reduce population growth. By incorporating annual CAGO population surveys within the CRD, the location of densely populated nesting sites can be determined. As a result of these surveys, strategic selection of sites with the highest nesting densities, favorable access, and or critical public or environmental safety concerns, can be addressed while achieving the greatest returns for the effort in a fiscally responsible manner.

The delivery of the addling program must be intra-jurisdictional and implemented across the landscape addressing nesting activity in diverse habitats and for the benefit of varied stakeholders. Canada geese are a very adaptable species and have a wide range of suitable and productive nesting habitats. The most favorable nesting habitats include nearshore islands, parks, grasslands, freshwater lakes and waterways,

wetlands, farmland, forest edge, and rock quarries. Within the CRD these habitats can be found on lands owned or managed by First Nations, Federal or Provincial Governments, Municipal Governments, Parks, Ecological Reserves, Bird Sanctuaries, Department of National Defence, airports, marinas, and private golf courses, farms, quarries, and other commercial developments.

GoMIES has many years of experience managing and implementing addling programs on Vancouver Island. Past experiences have revealed that the most successful addling programs are carried out by dedicated staff from municipalities, conservation organizations, First Nations, and other invested stakeholders. The aggression of nesting geese, challenging characteristics of varied habitats, and the difficulty in locating camouflaged nests discourage most participants. Volunteers can be helpful but must be supported by dedicated experienced professionals, highly skilled in nest search and addling techniques and aggressive wildlife evasion skills. Equally important and a condition of Federal permit authorization is to carry out addling techniques that maintain the highest regard for animal welfare. The turnover rate for volunteers is usually quite high and the effectiveness of the addling program depends on the familiarity of the addling crew with the specific site and landscape they are working in. Geese prefer to nest in the same location year after year so by having wildlife biologists, technicians, and land managers familiar with local hotspots with strict safety protocols in place helps improve effectiveness and reduce costs.

Municipal bylaws restricting the discharge of firearms should be reviewed and where appropriate, exemptions allowed where Canada Goose mitigation through lethal means can be safely implemented i.e., farms and quarries. Provincial Conservation Officers and the RCMP can be requested to verify the property meets the requirements for safe use of firearms for this purpose. Environment Canada Wildlife Permits are required to carry out this activity "outside of the hunting season." At least one Central Saanich farm is implementing this strategy and is successfully reducing the impacts of summer resident Canada Geese on his crops.

Strategic Partners and Stakeholders in Canada Goose Mitigation

Local First Nations:

GoMIES has a strong working relationship with the Tsawout First Nation. In 2018 and 2019 Tsawout FN graciously hosted GoMIES and several other First Nations during initial CAGO mitigation work. This work has had measurable benefits on stabilizing local invasive CAGO moulting populations. GoMIES believes that training First Nations Guardians and Stewardship Technicians to become skilled at CAGO nest searches and egg addling techniques is a key step towards sustained and efficient expansion of addling capacity on Vancouver Island. First Nations could provide addling on their traditional territories as they are already familiar with the land and the demands of its terrain. Tsartlip and Tsou-ke First Nations would also be contacted by GoMIES to gage interest in developing an addling training program in their traditional territories. Tsawout Fisheries staff have already committed to learn and assist in 2022. These First Nations have an abundance of nesting geese within their territories as identified through the data collected through 2020 and 2021 surveys. GoMIES addling training programs were very successful with K'omoks Guardians who now have 6 members skilled to lead addling in their territory. In addition, GoMIES has recently been approved for funding by the City of Campbell River to train 6 Wei Wai Kum Guardians in 2022. All First Nation Bands within the boundaries of the CRD would be considered a valued source of

knowledge regarding local CAGO populations and preferred nesting and moulting locations and should be encouraged to contribute to and participate in the CAGO population surveys within the CRD.

Municipal Staff:

Staff from the individual municipalities within the CRD would be valuable partners to the CRD CAGO mitigation program. Their working knowledge of the landscape would be a valued asset. Staff members working in Parks would be prime candidates as they likely have prior knowledge of CAGO nesting locations in their specific jurisdictions. Addling training could be provided and renewed by a GoMIES staff member annually to account for turnover in staff experienced by municipalities.

Federal Government of Canada:

Canada Geese are protected under the Migratory Birds Convention Act (1994); therefore, federal approval permits are required prior to the initiation of CAGO mitigation operations. Guardians of Mid-Island Estuaries Society has a productive working relationship with Canadian Wildlife Service (CWS). This federal entity is responsible for issuing all appropriate permits for CAGO addling and First Nation harvests. CWS is branch of the Department of Environment and Climate Change Canada.

CWS also manages three Migratory Bird Sanctuaries within the CRD (Shoal Harbour MBS 144 ha, Victoria Harbour MBS 1840 ha, and Esquimalt Lagoon MBS 134 ha). Originally established to control hunting, these three regional Migratory Bird Sanctuaries provide important habitat for migrating, nesting, and moulting birds. However, CAGO have become year-round resident birds that have displaced many native nesting birds and caused severe habitat degradation (removal of eel grass and tidal marshes) within these "Sanctuaries". A 2020 CAGO survey of the Esquimalt Lagoon revealed extensive shoreline habitat degradation and loss of estuary Carex sedge marsh habitats and similar concerns have been raised by members of the Rocky Point Bird Observatory along Gorge Harbour.

Department of National Defence:

GoMIES has worked in co-operation with the Department of National Defence and have helped them fill the gaps in their addling program in and around the Winchelsea Islands Canadian Forces Maritime and Experimental Test Range, in Nanoose Bay. Sharing data and terrain approach information with the DND has increased the efficiency of the CAGO addling program in the Mid-Island Region. Continuing this equally beneficial relationship with the DND in areas around the Maritime Forces Headquarters/Joint Task Force Pacific Headquarters will increase scope on the broader picture of CAGO mitigation within the CRD. DND did have representation on the CRD CAGO Working Group.

BC Parks:

In 2021 GoMIES were grateful to establish a working relationship with the BC Parks volunteer Ecological Wardens. This partnership has proved invaluable in monitoring and now preventing the degradation of the ecological health of the protected islands on the southern coast of Vancouver Island. These volunteers alerted us to the need for professional addling services required on the Ecological Reserves of Great Chain Island, Trial Islands, Jemmy Jones, and several others.

BC Parks, Habitat Ecologist (Erica McLaren) should be approached to participate in the CAGO Working Group along with a representative of the Garry Oak Ecosystem Recovery Team (GOERT).

Private Development Sector:

Local large scale urban developers are eager to form coalitions in Canada Goose mitigation. Royal Bay developers have shown interest in working cooperatively with other stakeholders to increase CAGO mitigation opportunities on their development lands within the CRD. Royal Roads University may also be interested in participating in CAGO mitigation as their lands border the Esquimalt Lagoon Bird Sanctuary and their grounds are fouled by CAGO year-round. Nesting has been reported on active construction sites in the CRD which can interfere with daily operations and is a cause for concern to public safety.

Golf Courses:

Local businesses that utilize grass based and aquatic landscapes in the CRD, most specifically golf courses, are also negatively affected by resident CAGO. One prominent golf course has exhausted the majority of legal CAGO mitigation options and is eager to work cooperatively with other stakeholders on a much broader scale to reduce CAGO impacts to their course and surrounding environment, on behalf of their members. Other golf courses within the CRD in areas of high CAGO nesting concentrations should be encouraged to participate and support CAGO mitigation activities.

Natural Resource Sector:

Active gravel quarries in the CRD have also been found to support high concentrations of nesting CAGO pairs. CAGO utilize the small, vegetated ponds found in quarries to provide protection for goslings from terrestrial predators. These CAGO populations cause disruptions to daily operations, create water quality concerns, and impose employee health and safety concerns. Having worked effectively and safely in a busy quarry in Central Saanich for the past several years, GoMIES has formed a valuable partnership that has resulted in the management group having much interest in working cooperatively at the other two pits located in Sooke and Duncan. Their cooperation is appreciated as 2 of the three pits are situated adjacent to prime agricultural lands where the geese move to forage on summer cash crops.

Agricultural Sector:

Resident Canada Goose populations are threatening the economic viability of farming on Vancouver Island. Within the CRD, the overabundant resident Canada Goose population has significant impacts on 1000's of acres of vegetables, berries, grain, grass and corn crops. Impacts to the local farm crops include cash crop consumption, fouling, and plant damage. Farmers have been complaining for many years and their complaints and estimated financial losses are well documented though the Peninsula & Area Agricultural Commission. Through our recent work in the Saanich area, we were introduced to a farmer who had abandoned his farming opportunities many years ago due to the constant presence and foraging pressure of resident geese. His 25-acre property has become a Canada Geese nesting and rearing area for the last 10+ years. He has lost his farm status and his very productive land remains unfarmed. Observations in the area reveal similar situations on surrounding properties. Agricultural producer associations and individual farmers are increasingly willing to advocate, support and participate in a large scale, region wide CAGO mitigation program.

Community Stewardship Organizations:

There are many groups dedicated to the preservation of sensitive ecosystems, land, habitat, and wildlife conservation values. GOERT, Rocky Point Bird Observatory, The Victoria Naturalists just to name a few. These organizations and many others are recognizing the importance of minimizing the impacts to the

natural flora and fauna because of the constant foraging pressure of the introduced over-abundant CAGO within the CRD. Many of these organizations have come forward to provide valuable historical knowledge of the increasing population accounts and increased impacts to the ecosystem. Many groups have provided staff and other resources to implement and support important CAGO surveillance and mitigation activities. A comprehensive list of the many conservation organizations active within the CRD should be generated as part of the in-depth action plan process and sharing knowledge and information with these groups will build strong community support for a well-structured CAGO mitigation program.

Establish and Maintain Processes and Protocols for Information Sharing and Decision Making

Issues and Recommendations:

The CRD developed a Canada Goose Management Strategy in 2012 but has not actively worked to implement key mitigation activities in recent years. A web site is hosted by the CRD as part of the Regional Goose Management Strategy and provides a good place for more information to be uploaded to this site to better inform the public of recent and on-going initiatives. GoMIES has a proven track record in working with communications and parks staff in Parksville and Powell River. We have learned what is most effective in terms of one point of contact. GoMIES would play an important role in ensuring public access to general and scientific information regarding the impacts the locally over-abundant CAGO population has on the natural environment and share the story of their origin and the distinct difference between this population and the native migratory population. This information could be posted onto the CRD website. Such information could include key partnerships and progress made in other Island communities and touch on the widespread economic impacts these introduced geese have across the landscape. While each individual municipality may have differing impacts from the year-round presence of Canada Geese the CRD as a whole has suffered public health and safety risks, water quality issues, fish and wildlife habitat destruction, crop depredation losses to farms, and municipal sports and recreation impacts. This awareness will help to inform the public and provide the background information in support of the proposed comprehensive CAGO Mitigation Action Plan.

The CAGO impacts to rare, threatened, or red-listed flora and fauna within nearshore Oak Bay Islands is urgent and needs to be addressed as these Garry Oak Ecosystems are converting to invasive plant and CAGO nesting hotspots which could affect their Ecological Reserve protection status.

The CRD should participate in the Vancouver Island CAGO Working Group (VICAGOWG) to share information, techniques, program successes and lessons learned (Appendix 2 – MOU). The City of Parksville has led this group since 2015 with other members being representatives of Campbell River, Comox Valley Regional District, Regional District of Nanaimo, Qualicum Beach, Powell River (including the Tla'min First Nation), and Nanaimo. Members of the CRD CAGO Working Group have attended several meetings but have not formally signed the MOU. These municipalities have actively supported or implemented addling programs, CAGO banding and re-sight studies, population surveys, management and mitigation plans, and First Nations harvests at a cost of over $400,000 since 2015. GoMIES has conducted the most complete CAGO population surveys of any region in BC for the entire east coast of Vancouver Island (including Gulf Islands, Central Coast, and Powell River) funded mostly by the Ministry of Agriculture and Fisheries. The CRD has greatly benefited by these CAGO mitigation and population assessments but as the region of Vancouver Island with the highest year-round populations with no formal

comprehensive addling program; unabated juvenile recruitment has detrimentally affected all CRD municipalities and communities in the mid and upper Vancouver Island.

Annual public information sessions along with more frequent stakeholder engagement sessions would help to educate interested parties as to "why" these mitigation activities are necessary and how important it is they show support for these efforts. The CRD or Municipal offices can provide the venue to reduce the cost of hosting such events.

Development of a CRD CAGO Mitigation Steering Committee to ensure the program is operating within the mandate of the CRD and to provide frequent updates to the CRD regarding the activities and progress of the mitigation program.

This mitigation plan should be thought of as a long-term plan with costs expected to lesson as sustained activities lower CAGO populations (as realized by the RDN, City of Parksville, and Powell River).

Annual Monitoring of the CAGO population is important and can be achieved effectively by empowering First Nation, Community Stakeholders and Naturalist groups to work cooperatively with the CAGO Mitigation Program Team. Ground counts are recommended but periodically (every few years) a more intensive aerial count will help to reveal the thorough effectiveness of the actions taken by the CRD towards CAGO mitigation and may be funded in combination with other Vancouver Island communities.

Table 1: 2022-23 CRD Canada Goose Action Plan

Activities	Descriptions	Expected Results	Start Date	End Date
Addling permits from ECCC: Canadian Wildlife Service and BC Crown Lands Officer accompanied with Management Plans	• Prepare addling permit to CWS with all landowner forms signed and list all individuals participating in addling including Tsawout First Nation representatives	• 30 + private farms and large commercial landowners throughout the CRD and Provincial approval for all Crown Islands in Oak Bay/Victoria • Obtain landowner permissions from all private and public landowners or managers	February 2022	March 15, 2022
Implement a comprehensive addling program throughout known and expected hotspots within all municipalities in the CRD	• Focus on private farms, golf courses, large land developments, quarry, Crown islands and estuaries. CRD and municipal parks could be included if nests reported, and we have Parks Manager permission letter.	• Locate approximately 300 Canada Goose nests and addle all eggs found. • Map all locations and record data during at least 2 site visits to each nest • Identify new sites for future years and count all adult birds and juveniles observed	March 28, 2022	May 20, 2022

Conduct a summer moult count at all known hotspots along marine waterways and larger lake and wetlands both on public and private lands but predominately waterfront Crown or urban parks.	• Ground counts and kayaks will be used over a two-week period. • Volunteer naturalists could assist along with local First Nations during their marine based activities.	• All Canada Geese observed will be counted and recorded on a GPS system for future mapping. Most groups will be photographed. Populations will be recorded and reported out as within each municipality and as a total for the CRD. Surveys started in early June will be able to determine adult populations and juvenile young of the year to measure success of addling and help determine location gaps in our addling efforts.	June 1, 2022	June 17, 2022
Partnership Building and Community Outreach	• Golf courses, PAAC, Royal Bay Development, First Nations, Ministry of Agriculture, BC Parks, GOERT, CWS, DND, Victoria Airport, Parks Canada, Rocky Point Bird Observatory, Naturalists, etc.	• More organizations, First Nations, all CRD municipalities, and volunteer groups sharing the responsibilities of CAGO mitigation to protect ecological, social, recreational, health, commercial and agricultural values. • Outreach presentations both in-person and through Zoom if necessary	On-going	On-going
Addling Summary	• Data compiled and mapped within each municipality.	• Summary Table submitted	June	August 31, 2022
Moult Count Summary	• Data compiled and mapped within each municipality.	• Summary Table submitted along with GPS locations to CRD GIS department for mapping	August	September 29, 2022
Year End Reporting	• Overview of all activities above with recommendations and budget revisions	• Draft Report for CRD Review		November 30, 2022

Table 2: 2022-23 CRD Canada Goose Population Management and Mitigation Program Budget

ACTIVITY	DESCRIPTION	LABOUR DESCRIPTION	TIMELINE	BUDGET
Applications for Addling permits from ECCC & Writing Supporting Management Plans	• Writing specific regional management plans based on population surveys, ecological & economic impacts, landowner, and stakeholder partnerships, proposed mitigation activities, and submit wildlife permit application(s)	• Generating maps, population survey accounts, historic impact accounts and mitigation activities, proposed mitigation activities and rationale, obtaining landowner authorizations • First time Landowner Authorizations usually done in person & onsite and usually incur travel expenses	Jan to Mid-March	$15,000.00
Addling Plan & Implementation	• Strategically implement a comprehensive addling program within municipalities encompassed by the CRD • Target Municipal Parks and Recreation Lands, Oak Bay Islands, Private Quarries, Golf Courses, Farms • Nest Search, Geo-reference site, addle & document # eggs, visit up to 3 times per season in prime habitats	• Three crews of 2 people minimum • Vehicle Expenses, Boat Expenses • Meals & Accommodation Expenses • Municipal Staff & First Nation Training & Involvement • Approximately 300 nests per season	Mar 28 to May 20, 2022	$45,000.00
Summer Moult Population Survey	• Comprehensive survey of adult & young geese throughout the CRD • Reveals nesting success and identifies future priority areas • Data compiled and mapped within each municipality. • Include community groups where possible i.e., Naturalists	• Two crews of 2 people • Focus on freshwater lakes and coastal marine habitats • Vehicle Expenses, Boat Expenses • Meals & Accommodation Expenses • Honorarium for Community Group participation (km or lunch)	June 1 - 17, 2022	$12,000.00
Partnership Building	• Educate stakeholders and potential partners about all aspects of CAGO environmental and economic impacts that pertain to their	• In person and onsite discussions • Encourage participation and or financial support for CAGO mitigation activities within the CRD	Ongoing	$12,500.00

	organization – estuaries, farms, sensitive ecosystems, recreational lands, and lakes etc. • Golf courses, PAAC, Royal Bay Development, First Nations, Ministry of Agriculture, BC Parks, GOERT, CWS, DND, Victoria Airport, Parks Canada, Rocky Point Bird Observatory, Naturalists, etc.	• Attend potential partner organization meetings or activities • Engage approximately 20 potential partnership organizations per year • Develop a PowerPoint presentation that can be used for community outreach		
Addling Summary	• Data compiled and mapped within each municipality.	• Reporting information includes nesting habitat types, landownership, location/municipality, # of adult geese on site, photos, comparisons to previous years data if a revisited site • Work with CRD GIS department to build maps showing nests within all municipalities	June - August	$5,000.00
Moult Count Summary	• Data compiled and mapped within each municipality.	• Reporting information includes moult location habitat types, landownership, municipality, # of adult and YOY geese on site, photos, comparisons to previous years data if a revisited site • Work with CRD GIS department to build maps showing moulting populations within all municipalities	August - Sept	$5,000.00
Year End Reporting & *CRD Municipal Committee Presentation*	• Overview of all activities above with recommendations and budget revisions	• Draft Report and circulate for CRD Review and revise for Final Submission • Outline success/pitfalls, and strategy for next year's program	November 30	$5,000.00
Administration	• Office Incidentals • Bookkeeper	• 5%		$5000.00
VICAGOWG Report & Presentation	• Report CRD Involvement & Program Success	• Outline expansive and intensive approach CRD has taken	Annual	In Kind
			TOTAL	**$104,500.00**

APPENDIX 1 – Summary Report

APPENDIX 2 – VICAGOWG MOU

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REPORT TO GOVERNANCE COMMITTEE
MEETING OF WEDNESDAY, JUNE 01, 2022

SUBJECT **Updates to the Election and Voting Procedures Bylaw**

ISSUE SUMMARY

Bylaw 3543, the *Capital Regional District Election and Voting Procedures Bylaw, 2008* (the Elections Bylaw) must be amended to reflect changes to the *Local Government Act* (*LGA*). Updates to the Elections Bylaw, intended to be in effect for the 2022 General Local Election, must be adopted by the Board no later than July 4, 2022.

BACKGROUND

The Elections Bylaw was last updated prior to the 2018 election. Staff have reviewed the bylaw and have identified the need for only one substantive change for 2022 to align the bylaw with the change to section 110 of the *LGA* which allows for expanded use of mail ballots. Staff have also taken this opportunity to make some minor housekeeping changes.

ALTERNATIVES

Alternative 1
The Governance Committee recommends to the Capital Regional District Board:

1. That Bylaw 4486, the "Capital Regional District Election and Voting Procedures Bylaw, 2008, Amendment Bylaw No. 3, 2022" be introduced, read a first, second, and third time;
2. The Bylaw 4486 be adopted.

Alternative 2
That Bylaw 4486 be amended as directed.

IMPLICATIONS

Recent changes have been made to Section 110 of the *LGA* to expand the use of the mail ballots. Previously, electors had to meet conditions to qualify for a mail ballot, including: a physical disability, illness or injury that prevented them from voting at a polling opportunity; or, being absent from the jurisdiction on advance and general voting days. Those conditions have been removed from section 110. With this change, any voter may request a mail ballot without specifying a reason. Bylaw 4486, attached at Appendix A, includes amendments to reflect the changes to the *LGA*.

CRD is not required to offer mail ballot voting to electors, however, given that our bylaw allows for mail ballot voting, it must be made available to all voters to comply with the new legislation. Failing to adopt the proposed amendments that remove the conditions that previously applied to mail ballot voting is not an option for the Board.

CRD has offered mail ballot voting in the past two elections with minimal uptake. In 2018, only 15 electors voted by mail ballot. The expanded availability of mail ballots may increase the number of electors who request a mail ballot package, which may in turn increase the workload for staff,

as the process for verifying electors and preparing mail ballot packages is time-consuming. That said, increased availability of mail ballots may also have benefits for CRD by allowing a reduction in the number of polling stations at some remote locations where historically fewer ballots are cast. For example, in 2018 CRD had 6 polling locations where less than 50 ballots were cast. At 3 of those locations, less than 15 ballots were cast. Staff are currently undertaking a review of 2018 voting statistics and may promote the use of mail ballot voting instead of in person voting for remote areas with lower elector turnout.

CONCLUSION

The Elections Bylaw requires updates to align with changes made to the *Local Government Act* since 2018, specifically to remove the conditions previously applicable to electors wishing to vote by mail ballot and to enact other minor housekeeping changes. July 4th is the last day the Board may adopt any changes to the Election Bylaw if it is to apply to the 2022 General Local Election.

RECOMMENDATION

The Governance Committee recommends to the Capital Regional District Board:

1. That Bylaw 4486, the "Capital Regional District Election and Voting Procedures Bylaw, 2008, Amendment Bylaw No. 3, 2022" be introduced, read a first, second, and third time;
2. The Bylaw 4486 be adopted.

Submitted by:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: Bylaw 4486, "Capital Regional District Election and Voting Procedures Bylaw, 2008, Amendment Bylaw No. 3, 2022"
Appendix B: Redlined version of amendments to Bylaw 3543, "Capital Regional District Election and Voting Procedures Bylaw, 2008"

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4486

****

A BYLAW TO AMEND THE ELECTION AND VOTING PROCEDURES BYLAW (BYLAW NO. 3543)

****

WHEREAS:

A. Under Bylaw No. 3543, "Capital Regional District Election and Voting Procedures Bylaw, 2008", the Regional Board provided for the conduct of local government elections and other voting in the Capital Regional District; and

B. The Board wishes to update this bylaw in preparation for the 2022 election to reflect changes to the *Local Government Act*, RSBC 2015 c 13;

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. Bylaw No. 3543, "Capital Regional District Election and Voting Procedures Bylaw, 2008", is hereby amended as follows:
    (a) In section 8.2, inserting the words "no later than" before "52 days";

    (b) In section 11.1, replacing the words "Vote tabulating units shall be used" with "Vote tabulating units may be used";

    (c) In section 11.3(c), after the word "headquarters", inserting the following: ", as soon as reasonably possible.";

    (d) In section 15.2, deleting section 15.2 and renumbering the following section 15.3 as 15.2;

    (e) In section 16.2, replacing 16.2(a) and 16.2(a)(i) and (ii) with the following:

        (a) make available to the applicant, a mail ballot package as specified in section 110(7) of the Local Government Act, together with, where required, an elector registration application;

2. This bylaw may be cited for all purposes as "Capital Regional District Election and Voting Procedures Bylaw, 2008, Amendment Bylaw No. 3, 2022".

READ A FIRST TIME THIS	th	day of	20__
READ A SECOND TIME THIS	th	day of	20__
READ A THIRD TIME THIS	th	day of	20__
ADOPTED THIS	th	day of	20__

CHAIR

CORPORATE OFFICER

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BYLAW NO. 3543

A BYLAW TO UPDATE THE ELECTION PROCEDURES BYLAW PROVISIONS FOR THE CONDUCT OF LOCAL GOVERNMENT ELECTIONS AND OTHER VOTING IN THE CAPITAL REGIONAL DISTRICT, INCLUDING THE USE OF AUTOMATED VOTING MACHINES

Consolidated for Public Convenience
(This bylaw is for reference purposes only)

ORIGINALLY ADOPTED JULY 9, 2008
(Consolidated with Amending Bylaws 3959, ~~and~~ 4250, and 4486)

For reference to original bylaws or further details, please contact the Capital Regional District,
Legislative Services Department, 625 Fisgard St., PO Box 1000, Victoria BC V8W 2S6
T: (250) 360-3127, F: (250) 360-3130, Email: legserv@crd.bc.ca, Web: www.crd.bc.ca

CAPITAL REGIONAL DISTRICT

BYLAW NO. 3543

****

A BYLAW TO UPDATE THE ELECTION PROCEDURES BYLAW PROVISIONS FOR THE CONDUCT OF LOCAL GOVERNMENT ELECTIONS AND OTHER VOTING IN THE CAPITAL REGIONAL DISTRICT, INCLUDING THE USE OF AUTOMATED VOTING MACHINES

****

WHEREAS under the *Local Government Act*, the Board may, by bylaw, determine various procedures and requirements to be applied in the conduct of local government elections and other voting;

AND WHEREAS, pursuant to Section -112 of the *Local Government Act*, the Board is empowered to provide, by bylaw, for the use of automated voting machines, voting recorders, or other devices for voting in an election;

(Bylaw 4250)

AND WHEREAS, the Board wishes to establish various procedures and requirements under that authority;

NOW THEREFORE, the Board of the Capital Regional District, in open meeting assembled, enacts as follows:

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(Bylaw 4250)

PART 1 – INTRODUCTION

1. Definitions and Interpretations

1.1. If no meaning is given in section 1.1 for a word or expression in this Bylaw, that word or expression has the meaning given in the *Local Government Act.*

In this Bylaw:

"Acceptable mark" means a completed oval that:
(a) the vote tabulating unit is able to identify, and
(b) has been made by an elector in the space provided on the ballot opposite the name of any candidate or opposite either 'yes' or 'no' on any other voting question;

"Automated vote counting system" means a system that counts and records votes and processes and stores election results, and is comprised of the following equipment having the functions indicated:
(a) a number of ballot- scanning vote tabulating units, each of which rests on a ballot box; and
(b) a number of portable ballot boxes into which voted ballots are deposited, if a vote tabulating unit is not functioning or being used, for counting after the close of voting on general voting day;

"Ballot" means a single automated ballot card designed for use in an automated vote counting system, which shows:
(a) the names of all of the candidates for each of the offices of Electoral Area Director and for each office of Local Trustee as defined under the *Islands Trust Act*, and School Trustee, if applicable;
(b) all of the choices on all of the bylaws or other matters on which the opinion or assent of the electors is sought;

"Ballot return override procedure" means the use, by an election official, of a device on a vote tabulating unit that causes the unit to accept a returned ballot;

"Board" means the Board of the Capital Regional District;

"Chief election officer" means the person appointed under section 58(1) of the *Local Government Act*;

(Bylaw 4250)

"Deputy chief election officer" means the person appointed under section 8(1) of the *Local Government Act*

(Bylaw 4250)

"Election" means an election for the number of persons required to fill a local government office;

"Election officials" means the persons appointed by the chief election officer to assist with the administration and conduct of the election or other voting proceedings;

“General local election” means the elections held for the electoral area directors of the regional district which must be held in 2018 and every fourth year after that;

(Bylaw 4250)

"General voting day" means,

(a) for a general local election, the third Saturday in October in the year of the election and includes other voting to be conducted on that date;

(b) for other elections or other voting, the date set under the provisions of the *Local Government Act;*

(Bylaw 4250)

"Jurisdiction" means, in relation to an election, or other voting, the regional district electoral area for which the election or other voting, is being held;

"Local government" means the Board;

"Memory card" means the storage device that stores all the permanent results for the vote tabulating unit;

"Portable ballot box" means a ballot box that is used as a voting place in the election where a vote tabulating unit is not being used or is not functioning;

"Other voting" means voting on a matter referred to in section 170 of the *Local Government Act;*

(Bylaw 4250)

"Regional District Website" means the information resource found at an internet address provided by the Capital Regional District.

"Register tape" means the printed record generated from a vote tabulating unit at the close of voting on general voting day, that shows the number of votes:

(a) for each candidate for each of the offices of Electoral Area Director, and for each office of Local Trustee, and School Trustee, if applicable;

(b) for the number of votes for and against each bylaw or other matter on which the assent of the electors is sought;

"Returned ballot" means a voted ballot which was inserted by an elector into the vote tabulating unit that is not accepted and is returned by the unit to the elector with an explanation of the ballot marking error that caused the ballot to be unacceptable;

"Secrecy sleeve" means an open-ended folder or envelope used to cover ballots to conceal the choices made by each elector;

"Vote tabulating unit" means the device into which voted ballots are inserted and that scans each ballot and records the number of votes for each candidate and for and against each other voting question.

PART 2 – CONDUCT OF ELECTIONS AND OTHER VOTING

2. Appointment of Election Officers

2.1. The Board must appoint a Chief Election Officer and a Deputy Chief Election Officer under the *Local Government Act.*

3. Required Additional Advance Voting Opportunity

3.1. As authorized under section 107(1)(b) of the *Local Government Act*, an additional advance voting opportunity will be held on the third day before general voting day.

(Bylaw 4250)

4. Further Advance Voting Opportunities

4.1. As authorized under section 108 of the *Local Government Act*, the Board authorizes the chief election officer to establish additional advance voting opportunities for each election, or other voting, to be held in advance of general voting day and to designate the voting places, establish the date and the voting hours for these voting opportunities.

(Bylaw 4250)

5. Voting Place for an Additional General Voting Opportunity Outside the Boundaries of the Jurisdiction

5.1. As authorized under sections 106 and 111 of the *Local Government Act*, the Board authorizes the chief election officer to establish an additional voting place for general voting day outside the boundaries of the jurisdiction, and to designate the voting place for this voting opportunity.

(Bylaw 4250)

6. Resolution of Tie Votes after Judicial Recount

6.1. In the event of a tie vote after a judicial recount, the tie vote will be resolved by conducting a lot in accordance with section 151 of the *Local Government Act*.

Bylaw 4250

7. Public Access to Nomination Documents by Posting on Website

7.1. In accordance with section 89 of the *Local Government Act* the Capital Regional District may provide for public access to nomination documents from the time of delivery until 30 days after the declaration of election results under section 146 of the *Local Government Act* by posting them on the regional district website.

(Bylaw 4250)

8. Use of Provincial List of Voters as the Register of Resident Electors"

8.1. As authorized under section 76 of the Local Government Act, the most current list of voters prepared under the Election Act existing at the time an election or other voting is to be held is the register of resident electors for the Capital Regional District."

(Bylaws 3959 & 4250)

8.2. The Provincial list of voters becomes the register of resident electors no later than 52 days before general voting day for each election or other voting for the Capital Regional District."

(Bylaws 3959 & 4486)

PART 3 – AUTOMATED VOTING

9. Use of Voting Machines

9.1. Voting may be conducted in a general local election and other voting for or in respect of one or more jurisdictions using an automated vote counting system.

10. Automated Vote Counting System Procedures

10.1. The chief election officer may decide to conduct any local government election or other voting for or in respect of one or more jurisdictions using an automated vote counting system.

(Bylaw 4250)

10.2. Where the chief election officer conducts a local government election or other voting using an automated voting counting system, the procedures outlined in sections 10.3 to 10.14 will apply within that jurisdiction.

(Bylaw 4250)

10.3. The presiding election official for each voting place and at each advance voting opportunity must, as soon as the elector enters the voting place and before a ballot is issued to the elector, offer and if requested, direct an election official to provide a demonstration to an elector of the method for voting by using an automated vote counting system, including the use of a secrecy sleeve.

(Bylaw 4250)

10.4. Upon completion of the voting demonstration, if any, the elector must proceed as instructed, to the election official responsible for issuing ballots, who:

(a) shall ensure that the elector:
  (i) is qualified to vote in the election or other voting; and
  (ii) is voting in the correct jurisdiction; and
  (iii) completes the voting book as required by the *Local Government Act*; and

(b) upon fulfilment of the requirements of subsection (a), shall provide a ballot to the elector, a secrecy sleeve if requested by the elector, and any further instructions the elector requests.

(Bylaw 4250)

10.5. Upon receiving a ballot, and secrecy sleeve if so requested, the elector shall immediately proceed to a voting compartment to vote.

(Bylaw 4250)

10.6. The elector may vote only by making an acceptable mark on the ballot:

(a) beside the name of the candidate of choice; and
(b) beside either ‘yes’ or ‘no’ in the case of each bylaw or other matter on which the assent or opinion of the electors is sought.

(Bylaw 4250)

10.7. Once the elector has finished marking the ballot, the elector must place the ballot into the secrecy sleeve, if applicable, proceed to the vote tabulating unit and under the supervision of the election official in attendance, insert the ballot directly from the secrecy sleeve, if applicable, into the vote tabulating unit without the acceptable marks on the ballot being exposed.

(Bylaw 4250)

10.8. If, before inserting the ballot into the vote tabulating unit, an elector determines that he or she has made a mistake when marking a ballot or if the ballot is returned by the vote tabulating unit, the elector may request a replacement ballot by advising the election official in attendance.

(Bylaw 4250)

10.9. Upon being advised of the replacement ballot request, the presiding election official or alternate presiding election official shall issue a replacement ballot to the elector and mark the returned ballot "spoiled" and shall retain all such spoiled ballots separately from all other ballots and they shall not be counted in the election.

(Bylaw 4250)

10.10. If the elector declines the opportunity to obtain a replacement ballot and has not damaged the ballot to the extent that it cannot be reinserted into the vote tabulating unit, the election official shall, using the ballot return override procedure, reinsert the returned ballot into the vote tabulating unit to count any acceptable marks which have been made correctly.

(Bylaw 4250)

10.11. Any ballot counted by the vote tabulating unit is valid and any acceptable marks contained on such ballots will be counted in the election subject to any determination made under a judicial recount.

(Bylaw 4250)

10.12. Once the ballot has been inserted into the vote tabulating unit and the unit indicates that the ballot has been accepted, the elector must immediately leave the voting place.

(Bylaw 4250)

10.13. During any period that a vote tabulating unit is not functioning, the election official supervising the unit shall insert all ballots delivered by the electors during this time, into a portable ballot box, provided that if the vote tabulating unit:

(a) becomes operational, or

(b) is replaced with another vote tabulating unit,

the ballots in the portable ballot box shall, as soon as reasonably possible, be removed by an election official and under the supervision of the presiding election official be inserted into the vote tabulating unit to be counted.

(Bylaw 4250)

10.14. Any ballots which were temporarily stored in a portable ballot box which are returned by the vote tabulating unit when being counted shall, through the use of the ballot return override procedure and under the supervision of the presiding election official, be reinserted into the vote tabulating unit to ensure that any acceptable marks are counted.

(Bylaw 4250)

11. Advance Voting Opportunity Procedures

11.1. Vote tabulating units may be used ~~Vote tabulating units shall be used~~ to conduct the vote at all advance voting opportunities and voting procedures at the advance voting opportunities shall follow as closely as possible those described in Section 10 of this Bylaw.

(Bylaw 4486)

11.2. At the close of voting at each advance voting opportunity the presiding election official in each case shall ensure that:

(a) no additional ballots are inserted in the vote tabulating unit;
(b) the portable ballot box is sealed to prevent insertion of any ballots;
(c) the register tapes in the vote tabulating unit are not generated; and
(d) the memory card of the vote tabulating unit is secured.

11.3. At the close of voting at the final advance voting opportunity the presiding election official shall:

(a) ensure that any remaining ballots in the portable ballot box are inserted into the vote tabulating unit;
(b) secure the vote tabulating unit so that no more ballots can be inserted; and
(c) deliver the vote tabulating unit together with the memory card and all other materials used in the election to the chief election officer at election headquarters, as soon as reasonably possible.

(Bylaw 4486)

12. Special Voting Opportunity Procedures

12.1. Unless the chief election officer determines it is practical to use a vote tabulating unit, a portable ballot box shall be used for all special voting opportunities. The presiding election official appointed to attend at each special voting opportunity shall proceed in accordance with Section 10 of this Bylaw so far as applicable, except that the voted ballots shall be deposited into the portable ballot box supplied by the presiding election official.

12.2. The presiding election official at a special voting opportunity shall ensure that the portable ballot box is secured when not in use and at the close of voting at the final special voting opportunity, the presiding election official shall seal the portable ballot box and return it together with all other election materials to the custody of the chief election officer.

12.3. If a vote tabulating unit is in use at a special voting opportunity, the presiding election official appointed to attend the special voting opportunity shall follow the procedures outlined in Section 11 of this Bylaw as if it were an advance voting opportunity.

13. Procedures After Close of Voting on General Voting Day

13.1. After the close of voting on general voting day at voting opportunities where a vote tabulating unit was used in the election, but excluding advance and special voting opportunities,

(a) each presiding election official shall:

(i) ensure that any remaining ballots in the portable ballot box are inserted into the vote tabulating unit;
(ii) secure the vote tabulating unit so that no more ballots can be inserted;
(iii) generate three copies of the register tape from the vote tabulating unit; and
(iv) deliver one copy of the register tape along with the vote tabulating unit to the chief election officer at election headquarters; and

(b) each alternate presiding election official shall:

(i) account for the unused, spoiled and voted ballots and place them, packaged and sealed separately, into the election materials transfer box along with one copy of the register tape;
(ii) complete the ballot account and place the duplicate copy in the election materials transfer box;
(iii) seal the election materials transfer box;
(iv) place the voting books, the original copy of the ballot account, one copy of the register tape, completed registration cards (if applicable), keys and all completed administrative forms into the chief election officer portfolio; and
(v) transport all equipment and materials to election headquarters.

13.2. At the close of voting on general voting day the chief election officer shall direct the presiding election official for the advance voting opportunity and any special voting opportunities where vote tabulating units were used, to proceed in accordance with Section 13.1 of this Bylaw.

13.3. At the close of voting on general voting day all portable ballot boxes used in the election will be opened under the direction of the chief election officer and all ballots shall be removed and inserted into a vote tabulating unit to be counted, after which the provisions of Sections 13.1, so far as applicable, shall apply.

14. Recount Procedure

14.1. If a recount is required it shall be conducted under the direction of the chief election officer using the automated vote counting system and generally in accordance with the following procedure:

(a) the memory cards of all vote tabulating units will be cleared;
(b) vote tabulating units will be designated for each voting place;
(c) all ballots will be removed from the sealed ballot boxes; and
(d) all ballots, except spoiled ballots, will be reinserted in the appropriate vote tabulating units under the supervision of the chief election officer.

PART 4 – MAIL BALLOT VOTING

15. Mail Ballot Voting and Registration Authorized

15.1. Voting by mail ballot and elector registration by mail in conjunction with mail ballot voting are authorized.

(Bylaw 3959)

~~15.2. In accordance with the provisions of section 110(3) of the *Local Government Act* the only electors who may vote by mail ballot are:~~

~~(a) persons who have a physical disability, illness or injury that affects their ability to vote at another voting opportunity, and~~
~~(b) persons who expect to be absent from the regional district on general voting day and at the times of all advance voting opportunities.~~

~~*(Bylaws 3959 & 4250)*~~

~~15.3~~ 15.2. Once a mail ballot package has been accepted by the chief election officer, that voter may only vote by mail ballot.

(Bylaws 3959 & 4486)

16. Application Procedure for Mail Ballot

16.1. A person wishing to vote by mail ballot must apply by providing their name and address to the chief election officer or to an election official designated by the chief election officer for such purposes, using the form required by the chief election officer, within the time limits required by the chief election officer, which time limits the Board authorizes the chief election officer to establish.

(Bylaw 3959)

16.2. Upon receipt of a request for a mail ballot, the chief election officer or designated election official must, within the time limits established by the chief election officer:

(a) make available to the applicant a mail ballot package as specified in section 100(7) of the *Local Government Act* together with, where required, an elector registration application;

(Bylaw 4486)

~~(a) make available to the applicant, a mail ballot package as specified in section 110(7) of the *Local Government Act*, together with:~~
~~(i) a statement advising the elector that the elector must meet one or more of the mail ballot requirements specified in Section 15.2 of this bylaw, and that they must attest to such fact; and~~
~~(ii) where required, an elector registration application;~~

(b) immediately record and, upon request, make available for inspection:
(i) the name and address of the person to whom the mail ballot package was issued; and
(ii) information as to whether or not the person is registered as an elector.

(Bylaws 3959 & 4250)

17. Voting Procedure for Mail Ballot

17.1. In order to vote using a mail ballot, the elector must mark the ballot in accordance with the instructions contained in the mail ballot package provided by the chief election officer.

(Bylaw 3959)

17.2. After marking the mail ballot, the elector must:

(a) place the mail ballot in the secrecy envelope provided, and seal the secrecy envelope;
(b) place the secrecy envelope in the certification envelope, and complete and sign the certification printed on such envelope, and then seal the certification envelope;
(c) place the certification envelope, together with a completed elector registration application, if required, in the outer envelope, and then seal the outer envelope; and

(d) mail, or have delivered, the outer envelope and its contents to the chief election officer at the address specified so that it is received no later than the close of voting on general voting day.

(Bylaw 3959)

18. Mail Ballot Acceptance or Rejection

18.1. Until 4:00 p.m. on the Thursday two days before general voting day, upon receipt of the outer envelope and its contents, the chief election officer or designated election official must immediately record the date of such receipt and must then open the outer envelope and remove and examine the certification envelope and the completed elector registration application, if applicable, and if satisfied as to:

(a) the identity and entitlement to vote of the elector whose mail ballot is enclosed; and
(b) the completeness of the certification; and
(c) the fulfillment of the requirements of section 70 of the *Local Government Act* in the case of a person who is registering as a new elector;

the chief election officer or designated election official must mark the certification envelope as "accepted", and must retain all such certification envelopes in custody to deal with any challenges made in accordance with Section 19 of this bylaw.

(Bylaws 3959 & 4250)

18.2. The unopened certification envelopes must remain in the secure custody of the chief election officer or designated election official until 4:00 p.m. on the Thursday two days before general voting day, at which time the certification envelopes containing the secrecy envelopes must be opened in the presence of at least one other person, including any scrutineers present.

(Bylaw 3959)

18.3. At 4:00 p.m. on the Thursday two days before general voting day, the chief election officer or designated election official must place all secrecy envelopes received up until that time into a ballot box specified for such purpose, where such secrecy envelopes were received from persons whose right to vote using a mail ballot has not been challenged, or where such challenge has been resolved and the challenged person permitted to vote.

(Bylaw 3959)

18.4. Where an outer envelope and its contents are received by the chief election officer or designated election official between 4:00 p.m. on the Thursday two days before general voting day and the close of voting on general voting day, the provisions of Section 18.1 of this bylaw with regard to ballot acceptance apply and the chief election officer or designated election official must retain such envelope in custody until the close of voting and at that time must open such certification envelopes in the presence of at least one other person, including any scrutineers present, and place the secrecy envelopes containing the ballot into the ballot box containing the other unopened secrecy envelopes.

(Bylaw 3959)

18.5. After all of the secrecy envelopes have been placed in the ballot box designated for that purpose, and following the close of voting on general voting day, the following procedures must be followed:

(a) under the direction of the chief election officer or designated election official the ballot box containing the secrecy envelopes must be opened;
(b) in the presence of at least one other person including any scrutineers present, the secrecy envelopes must be removed and opened and the ballots contained in those envelopes inserted for counting into a vote tabulating unit or portable ballot box; and
(c) after the procedures set out in paragraphs (a) and (b), the procedures set out in Sections 10 and 13 of this bylaw must be followed to the extent that they are applicable.

(Bylaw 3959)

18.6. Where:

(a) upon receipt of an outer envelope, the chief election officer is not satisfied as to the identity of the elector whose mail ballot is enclosed; or
(b) in the case of a person required to complete an application for registration as an elector, the chief election officer is not satisfied that the person registering as a new elector has fulfilled the requirements of section 70 of the *Local Government Act*; or
(c) the outer envelope is received by the chief election officer or designated election official after the close of voting on general voting day,

the certification envelope must remain unopened, and the chief election officer or designated election official must mark such envelope as "rejected", and must note his or her reasons for doing so, and the mail ballot contained in such envelope must not be counted in the election.

(Bylaws 3959 & 4250)

18.7. Any certification envelopes and their contents rejected in accordance with Section 18.6 of this bylaw must remain unopened and are subject to the provisions of section 160 of the *Local Government* Act with regard to their destruction.

(Bylaws 3959 & 4250)

19. Challenge of Elector

19.1. A person exercising the right to vote by mail ballot may be challenged in accordance with, and on the grounds specified in section 126 of the *Local Government Act until* 4:00 p.m. on the Thursday two days before general voting day.

(Bylaws 3959 & 4250)

19.2. The provisions of section 126(2) and (5) of the *Local Government Act* apply, so far as applicable, where a challenge of an elector voting by mail ballot has been made.

(Bylaws 3959 & 4250)

20. Elector's Name Already Used

20.1. Where, upon receiving a request for a mail ballot, the chief election officer or designated election official determines that another person has voted or has already been issued a mail ballot in that elector's name, the provisions of section 127 of the *Local Government Act* apply, so far as applicable.

(Bylaws 3959 & 4250)

Replacement of Spoiled Ballot

20.2. Where an elector

(a) unintentionally spoils a mail ballot before returning it to the chief election officer or designated election official; and
(b) gives the spoiled ballot package in its entirety to the chief election officer or designated election official;

the elector may request a replacement ballot.

(Bylaw 3959)

20.3. The chief election officer must, upon receipt of the spoiled ballot package, record such fact, and must proceed to issue a replacement mail ballot in accordance with Section 16.2 of this bylaw."

(Bylaw 3959)

PART 5 – GENERAL

(Bylaw 3959)

21. Validity of Election

21.1. Nothing in this Bylaw is intended to require the setting aside of the results of an election or other voting because of the failure of the chief election officer, deputy chief election officer or an election officer to comply with the provisions of this Bylaw or because an election is not conducted in accordance with this Bylaw.

(Bylaw 3959)

22. Repeal

22.1. Bylaw No. 2162, "Capital Regional District Election and Other Voting Procedures Bylaw, 1993" is hereby repealed.

(Bylaw 3959)

23. Citation

23.1. This Bylaw may be cited as "Capital Regional District Election and Voting Procedures Bylaw, 2008"

(Bylaw 3959)

READ A FIRST TIME THIS	11th	day of	June	2008
READ A SECOND TIME THIS	11th	day of	June	2008
READ A THIRD TIME THIS	11th	day of	June	2008
ADOPTED THIS	9th	day of	July	2008

Making a difference...together

REPORT TO GOVERNANCE COMMITTEE
MEETING OF WEDNESDAY, JUNE 01, 2022

SUBJECT **Victoria Family Court Committee – Central Saanich Withdrawal Request**

ISSUE SUMMARY

The District of Central Saanich has requested to withdraw from the Victoria Family Court and Youth Justice Committee (the "Committee").

BACKGROUND

The District of Central Saanich has asked to withdraw from the Victoria Family Court and Youth Justice Committee and its associated funding and operations service, operated under Bylaw No. 2560, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997" (the "Service").

In 1998, Central Saanich, North Saanich, and Sidney joined the Committee and the Service. Until 2010, participation on a family court committee was mandatory for local governments in areas whose municipalities or electoral areas were served by family courts. It is no longer mandatory.

Committee and service participants include all regional municipalities and the Juan de Fuca Electoral Area. Salt Spring and the Southern Gulf Islands Electoral Areas are not participants in the Committee or the Service.

ALTERNATIVES

Alternative 1
The Governance Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4493, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997, Amendment Bylaw No. 4, 2022", be introduced, and read a first, second, and third time;
2. That Bylaw No. 4493 be referred to the participants for consent on behalf of the electors, and if successful, forwarded to the Inspector of Municipalities for approval.
3. That Bylaw No. 4494, "Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022, Amendment Bylaw No. 1, 2022", be introduced, read a first, second, and third time.

Alternative 2
That this report be referred back to staff for additional information.

IMPLICATIONS

Service Delivery Implications
Withdrawal of a participant will leave the Committee with a gap in its region-wide focus, however, the Committee existed from the late 1960s until 1998 without the inclusion of Central Saanich and its operations can continue uninterrupted. Withdrawal from the service means that Central

Saanich-based grant applicants and projects would be ineligible to access funding from the Committee. This may create a gap where an individual or organization, such as a student or indigenous organization, may apply for a grant for a project within Central Saanich's municipal boundaries and be ineligible for funding from the Committee.

Participating Area Approval and Amendment Process
Withdrawal from the funding and operations service requires an amendment to Bylaw No. 2560, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997". Amendment to an establishing bylaw requires both participating area approval and ministerial consent.

While the Board has an option in selecting the elector approval process, the most expedient and affordable option is to seek municipal consent to the bylaw amendment. Two-thirds of participants must be in favour of the amendment to permit Central Saanich to withdraw from the service. The municipal participants may consent on behalf of their electors at the council level, while the Juan de Fuca Electoral Area may consent by the EA Director approving the amendment in writing. If two-thirds do not consent, Central Saanich may initiate a formal service review under the *Local Government Act*, triggering a dispute resolution process, which may result in the Province permitting withdrawal from the service in any event.

An amendment to the Commission bylaw is also required for a formal withdrawal and removal of the Central Saanich representative from the Committee. Such an amendment may be read and adopted by the CRD Board without participant or ministerial approval.

Financial Impacts
Central Saanich's contribution to the service is about $700 each year, which would be shared among the remaining participants on the basis of population. The Committee's current maximum requisition is $15,000 per year, $1,500 of which goes to the Capital Region Action Team, or CRAT, an unincorporated group that operates as a sub-committee of the Committee and provides programming in schools to educate youth on prostitution. The remainder is utilized for administration, web-hosting, community grants, honoraria, and events.

Establishing Bylaw Amendments
In addition to removing Central Saanich as a participant, Bylaw No. 2560 requires additional amendments and updates to receive Provincial approval that are unrelated to the withdrawal, including insertion of an alternative form of calculation of maximum requisition; clarifying that apportionment is half on the basis of population and half on the basis of assessed land and improvements amongst the participants; and removing reference to the Sooke and Langford Electoral Areas and replacing these with a reference to the Juan de Fuca Electoral Area. At the same time, it is advisable to clarify that the Committee's grant power may be used for family court initiatives as well as youth justice initiatives, given the purposes of the committee, the original intention of the grant power, and actual practice.

CONCLUSION

The District of Central Saanich has requested withdrawal from the Victoria Family Court and Youth Justice Committee and the funding and operations service established under Bylaw No. 2560, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997". This can be accomplished by two-thirds consent of participants and Provincial approval of an amending bylaw, as well as an amendment to the relevant commission bylaw.

RECOMMENDATION

The Governance Committee recommends to the Capital Regional District Board:

1. That Bylaw No. 4493, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997, Amendment Bylaw No. 4, 2022", be introduced, read a first, second, and third time; and
2. That Bylaw No. 4493 be referred to the participants for consent on behalf of the electors, and if successful, forwarded to the Inspector of Municipalities for approval.
3. That Bylaw No. 4494, "Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022, Amendment Bylaw No. 1, 2022", be introduced, read a first, second, and third time.

Submitted by:	Steven Carey, B.Sc, J.D., Senior Manager, Legal Services & Risk Management
Concurrence:	Kristen Morley, J.D., General Manager, Corporate Services & Corporate Officer
Concurrence:	Nelson Chan, MBA, CPA, CMA, Chief Financial Officer
Concurrence:	Robert Lapham, MCIP, RPP, Chief Administrative Officer

ATTACHMENT(S)

Appendix A: March 11, 2022 Central Saanich Letter to Capital Regional District
Appendix B: Bylaw 4493, Family Court Committee Extended Service Establishment Bylaw No. 1, 1997, Amendment Bylaw No. 4, 2022
Appendix C: Bylaw 4494, Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022, Amendment Bylaw No. 1, 2022
Appendix D: Bylaw 2560 (Unofficial Consolidation) – Redlined

Central Saanich

March 11, 2022 File No. 0400-60/22

CRD Board
c/o Kristen Morley
Corporate Officer/General Manager, Corporate Services
625 Fisgard Street
Victoria, BC V8W 2S6

Via email: kmorley@crd.bc.ca
crdboard@crd.bc.ca

Re: Withdrawal from Victoria Family Court and Youth Justice Committee and Service

At the Council meeting of February 28, 2022, the District of Central Saanich passed the following motion:

> *Therefore Be It Resolved that Central Saanich seek approval of the Capital Regional District Board to withdraw from the Victoria Family Court and Youth Justice Committee and Service.*

Should you have any questions with respect to the above, please do not hesitate to contact the undersigned by phone at 250-544-4202 or by email at Emilie.Gorman@csaanich.ca.

Regards,

Emilie Gorman
Director of Corporate Services/Corporate Officer

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4493

****

A BYLAW TO AMEND THE MEMBERSHIP AND PARTICIPANTS IN THE VICTORIA FAMILY COURT AND YOUTH JUSTICE COMMITTEE SERVICE (BYLAW NO. 2560)

****

WHEREAS:

A. Under Bylaw No. 2560, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997", the Capital Regional District ("CRD") continued a service to operate, participate in and fund a *Provincial Court Act* family court committee created for the capital region, as well as to provide funding to approved youth justice initiative involved third parties (the "Service");

B. The District of Central Saanich has been a member of the service since 1998 and requests to no longer participate; and

C. The Board wishes to amend Bylaw No. 2560 to remove Central Saanich and to update other matters as required by the *Local Government*, in addition to clarifying the scope of granting authority;

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. Bylaw No. 2560, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997" is hereby amended as follows:
   (a) By replacing Section 2, Boundaries, in its entirety, with the following:

   BOUNDARIES
   2. The boundaries of the service shall be coterminous with the boundaries of the City of Victoria, the District of Saanich, the District of Oak Bay, the Township of Esquimalt, the City of Colwood, the District of Metchosin, the Town of View Royal, the District of Langford, the District of Highlands, the District of Sooke, the District of North Saanich, the Township of Sidney, and the Juan de Fuca Electoral Area.

   (b) By replacing section 3, Participating Areas, in its entirety with:

   PARTICIPATING AREAS
   3. The City of Victoria, the District of Saanich, the District of Oak Bay, the Township of Esquimalt, the City of Colwood, the District of Metchosin, the Town of View Royal, the District of Langford, the District of Highlands, the District of Sooke, the District of North Saanich, the Township of Sidney, and the Juan de Fuca Electoral Area are the participating areas for this service.

   (c) By replacing section 4, Cost Recovery, in its entirety with:

   COST RECOVERY
   4. As provided in Section 378 of the *Local Government Act*, the annual costs of providing the Service may be recovered by one or more of the following:

   a. property value taxes imposed in accordance with Division 3 *[Requisition and Tax Collection]*, Part 11 of the *Local Government Act*; and
   b. revenues received by agreement, enterprise, gift, grant or otherwise.

(d) By replacing section 5, Maximum Requisition, in its entirety with:

MAXIMUM REQUISITION

5. In accordance with section 339(1)(e) of the *Local Government Act*, the maximum amount that may be requisitioned annually for the cost of the service is the greater of:

(a) Fifteen Thousand Dollars ($15,000); or

(b) An amount equal to the amount that could be raised by a property value tax rate of $0.0001024 per One Thousand Dollars ($1,000) that, when applied to the net taxable value of land and improvements in the Service Area, will yield the maximum amount that may be requisitioned for the Service.

(e) By replacing section 6, Cost Apportionment, in its entirety with:

COST APPORTIONMENT

6. The annual net cost attributable to this service shall be apportioned among the municipalities and electoral areas participating in this service on the basis of:

(a) 50% of the cost shall be apportioned on the converted basis of land and improvements in the participating areas as set out in section 380(2)(a) of the *Local Government Act*; and

(b) 50% of the cost shall be apportioned on the basis of the population, where population for the purpose of this section is the population estimate as determined annually by the Regional Planning department of the Capital Regional District.

(f) By revising section 7, Powers, sections 7(b) and (c), as follows:

i. by replacing item 7(b) with “on behalf of the Juan de Fuca Electoral Area, appoint a member to serve on the *Provincial Court Act* Family Court Committee; and”

ii. by replacing item 7(c), “to provide funding for Board approved committees whose purpose is related to juvenile justice issues”, with 7(c), “to provide funding, in the form of grants or sponsorships, to individuals and organizations whose projects or purposes relate to juvenile justice and family court issues.”.

2. This bylaw may be cited for all purposes as “Family Court Committee Extended Service Establishment Bylaw No. 1, 1997, Amendment Bylaw No. 4, 2022".

READ A FIRST TIME THIS	th	day of	20__
READ A SECOND TIME THIS	th	day of	20__
READ A THIRD TIME THIS	th	day of	20__
APPROVED BY TWO-THIRDS OF PARTICIPANTS THIS	th	day of	20__
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	th	day of	20__
ADOPTED THIS	th	day of	20__

CHAIR

CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT
BYLAW NO. 4494

****

A BYLAW TO AMEND THE MEMBERSHIP OF THE VICTORIA FAMILY COURT AND YOUTH JUSTICE COMMITTEE COMMISSION (BYLAW NO. 4494)

****

WHEREAS:

A. Under Bylaw No. 4453, "Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022", the Regional Board and the Victoria Family Court and Youth Justice Committee continued the operations and funding of the *Provincial Court Act* family court committee created for the capital region as a delegated commission of the Capital Regional District consistent with Bylaw No. 2560, "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997";

B. The District of Central Saanich has withdrawn from the service established by Bylaw No. 2560 and no longer wishes to participate on the Committee; and

C. The Board wishes to amend Bylaw No. 4494 to comply with the request of Central Saanich;

NOW THEREFORE, the Capital Regional District Board in open meeting assembled hereby enacts as follows:

1. Bylaw No. 4453, "Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022" is hereby amended as follows:
   (a) By amending section 3, Composition and Eligibility, as follows:
      i. replacing the words "a total of 23" with "a total of 22";
      ii. in 3(b), replacing "thirteen" with "twelve"; and
   (b) By amending section 8, Municipal Representatives, to replace "13" with "12 representatives".

2. This bylaw may be cited for all purposes as "Victoria Family Court and Youth Justice Committee Commission Bylaw No. 1, 2022, Amendment Bylaw No. 1, 2022".

READ A FIRST TIME THIS th day of 20__

READ A SECOND TIME THIS th day of 20__

READ A THIRD TIME THIS th day of 20__

ADOPTED THIS th day of 20__

CHAIR

CORPORATE OFFICER

CAPITAL REGIONAL DISTRICT
BYLAW NO. 2560

****

A BYLAW TO CONVERT THE AUTHORITY FOR A FAMILY COURT COMMITTEE TO AN EXTENDED SERVICE FOR A PORTION OF THE REGIONAL DISTRICT

****

WHEREAS by Letters Patent, Division VI dated 16th day of March, 1967, the Capital Regional District was granted the function of constructing, reconstructing, maintaining, furnishing and equipping a Family and Children's Court Building;

AND WHEREAS by an amendment to the said Letters Patent dated the 10th day of September 1987, the Capital Regional District was granted the authority to fund the operation of a Family Court Committee as appointed under the *Provincial Court Act*;

AND WHEREAS the Corporation of the City of Victoria, the Corporation of the District of Saanich, the Corporation of the District of Oak Bay, the Corporation of the Township of Esquimalt, the City of Colwood, the District of Metchosin, and the Electoral Areas of Sooke, Langford and View Royal were participants in the function;

AND WHEREAS since the granting of the Letters Patent the Town of View Royal, the District of Langford and the District of Highlands have been incorporated as municipalities;

AND WHEREAS the Board of the Regional District wishes to exercise the function granted to it by Division VI of its Letters Patent in accordance with Part 24 of the *Municipal Act*, subject to all the terms and conditions contained in the Letters Patent, and including all the powers granted by the Letters Patent;

AND WHEREAS the Board of the Regional District wishes under Section 775 of the *Municipal Act* to convert the portion of the service pertaining to the funding of the operation of the Family Court Committee to an extended service operated under the authority of a bylaw under section 775(4) and 806 of the *Municipal Act*;

AND WHEREAS the Board of the Regional District has obtained the consent of at least two-thirds of the participants under section 813 of the *Municipal Act*;

NOW THEREFORE the Regional Board of the Capital Regional District in open meeting assembled enacts as follows:

EXTENDED SERVICE

1. The funding of the operation of a Family Court Committee, as appointed under the *Provincial Court Act*, is established as an extended service.

BOUNDARIES

2. The boundaries of the service shall be coterminous with the boundaries of the City of Victoria, the District of Saanich, the District of Oak Bay, the Township of Esquimalt, the City of Colwood, the District of Metchosin, the Town of View Royal, the District of Langford, the District of Highlands, the District of Sooke, the District of North Saanich, the Township of Sidney, and the Juan de Fuca Electoral Area.

~~2. The boundaries of the extended service shall be coterminous with the boundaries of the City of Victoria, the District of Saanich, the District of Oak Bay, the Township of Esquimalt, the City of Colwood, the District of Metchosin, the Town of View Royal, the District of Langford, the District of~~

~~Highlands, Langford Electoral Area and Sooke Electoral Area and the Town of Sidney, the District of Central Saanich and the District of North Saanich.~~

[BL 2590, BL 4493]

PARTICIPATING AREAS

3. The City of Victoria, the District of Saanich, the District of Oak Bay, the Township of Esquimalt, the City of Colwood, the District of Metchosin, the Town of View Royal, the District of Langford, the District of Highlands, the District of Sooke, the District of North Saanich, the Township of Sidney, and the Juan de Fuca Electoral Area are the participating areas for this service.~~The City of Victoria, the District of Saanich, the District of Oak Bay, the Township of Esquimalt, the City of Colwood, the District of Metchosin, the Town of View Royal, the District of Langford, the District of Highlands, the Town of Sidney, the District of Central Saanich and the District of North Saanich, the Langford Electoral Area and Sooke Electoral Area include the participating areas for this extended service.~~

[BL 2590, 4493]

COST RECOVERY

4. As provided in Section 378 of the *Local Government Act*, the annual costs of providing the Service may be recovered by one or more of the following:

    (a) property value taxes imposed in accordance with Division 3 *[Requisition and Tax Collection]*, Part 11 of the *Local Government Act*; and
    (b) revenues received by agreement, enterprise, gift, grant or otherwise.

[BL 4493]

~~4. The annual operating cost shall be recovered:~~

    ~~(a) by the requisition of money under section 822 and 823 of the *Municipal Act* to be collected by a property value tax levied and collected under section 824 and 825 of the *Municipal Act*.~~

MAXIMUM REQUISITION

5. In accordance with section 339(1)(e) of the *Local Government Act*, the maximum amount that may be requisitioned annually for the cost of the service is the greater of:
    (a) Fifteen Thousand Dollars ($15,000); or
    (b) An amount equal to the amount that could be raised by a property value tax rate of $0.0001024 per One Thousand Dollars ($1,000) that, when applied to the net taxable value of land and improvements in the Service Area, will yield the maximum amount that may be requisitioned for the Service.

~~5. The maximum amount that may be requisitioned under section 803 of the *Local Government Act* shall be $15,000.00.~~

[BL 3048, 4493]

COST APPORTIONMENT

6. The annual net cost attributable to this service shall be apportioned among the municipalities and electoral areas participating in this service on the basis of:
    (a) 50% of the cost shall be apportioned on the converted basis of land and improvements in the participating areas as set out in section 380(2)(a) of the *Local Government Act*; and
    (b) 50% of the cost shall be apportioned on the basis of the population, where population for the purpose of this section is the population estimate as determined annually by the Regional Planning department of the Capital Regional District.

[BL 4493]

~~6. The annual net cost attributable to this service shall be apportioned among the municipalities and electoral areas participating in this service on the basis of:~~

    ~~(a) 50% of the cost shall be apportioned on the basis of Section 820(1) of the *Municipal Act* in the immediately preceding year in each participating municipality and electoral area.~~

~~(b) 50% of the cost shall be apportioned on the basis of the population of each participating municipality and electoral area based on the last census established by Census Canada prior to the year of apportionment.~~

POWERS

7. In providing the extended service established by this bylaw, the Regional District shall without limiting the generality of Section 1:
   (a) participate in and share in the cost of a Family Court Committee under this bylaw;
   (b) on behalf of the Juan de Fuca Electoral Area, appoint a member to serve on the *Provincial Court Act* Family Court Committee; and~~on behalf of the electoral areas of Sooke and Langford appoint a member from each of the electoral areas to serve on the Family Court Committee appointed under Section 4 of the *Provincial Court Act*~~.
   (c) to provide funding, in the form of grants or sponsorships, to individuals and organizations whose projects or purposes relate to juvenile justice and family court issues.~~to provide funding for Board approved committees whose purpose is related to juvenile justice issues.~~

[BL 2795, 4493]

REPEAL

8. Upon adoption of this bylaw, sections 4 through 7 of Division VI – Family and Children's Court granted by Letters Patent issued the 16th day of March 1967 as amended the 10th day of September 1987 will cease to have effect.

CITATION

9. This Bylaw may be cited as the "Family Court Committee Extended Service Establishment Bylaw No. 1, 1997."

READ A FIRST TIME THIS	29th	day of	October	1997
READ A SECOND TIME THIS	29th	day of	October	1997
READ A THIRD TIME THIS	29th	day of	October	1997
APPROVED BY THE INSPECTOR OF MUNICIPALITIES THIS	6th	day of	January	1998
ADOPTED THIS	28th	day of	January	1998

CHAIR CORPORATE OFFICER

Filed with the Inspector of Municipalities this 3rd day of February 1998.