



REGIONAL SERVICES COMMITTEE MEETING AGENDA

Wednesday, April 25, 2018
9:00 AM - Boardroom

1. APPROVAL OF AGENDA

2. ADOPTION OF MINUTES

M1. Regional Services Committee Meeting of March 28, 2018

Recommendation That the minutes of the Regional Services Committee meeting of March 28, 2018 be adopted.

3. BUSINESS ARISING FROM THE MINUTES

4. PUBLIC INPUT PERIOD

The purpose of the Public Input Period is to provide the public with an opportunity to comment on an agenda item before the Board / Committee / Commission considers the item. The Public Input Period Procedure Policy provides for the public input period to proceed in a timely fashion. Public Input Period items cannot include matters which are, or have been, the subject of a Public Hearing.

5. DELEGATIONS

6. CORRESPONDENCE

7. INFORMATION

8. REPORTS

R1. Report from the Senior Environmental Analyst, Environmental Services Re: Regional Airshed Protection

Recommendation For Information

R2. Report from the Manager, Parks & Trails Re: Parks and Trails Volunteer Policy

Recommendation That it be recommended to the Board that the Parks and Trails Volunteer Policy, as Attachment A to the Parks and Trails Volunteer Policy staff report to the April 25, 2018, Regional Services Committee meeting, be approved.

R3. Report from the Chief Administrative Officer Re: Proposed Drinking Water and Watershed Protection Service

Recommendation That Drinking Water and Watershed Protection Service Establishment Bylaw No. 4202 be forwarded to the Board for consideration of first three readings.

R4. Report from the Parks Planning Technician (Trails) Re: Cowichan Valley Trail – Saltair and Chemainus to Westholme Trail Connections

Recommendation That it be recommended to the Board:

1. That grant funds in the amounts of \$188,000 in 2018 and \$154,000 in 2019 from the Trans Canada

Trail Foundation be approved for completion of the Saltair Rail with Trail and the Chemainus to

Westholme sections of the Cowichan Valley Trail.

2. That up to a maximum of \$205,000 in short term borrowing for completion of the Cowichan Valley

Trail – Saltair Rail with Trail project be approved, and that the loan be paid back over five

years under the Liabilities under Agreements Section 175 of the Community Charter.

3. That donated funds received be applied to the Cowichan Valley Trail project in amounts of

\$47,500 to the Saltair Rail with Trail section and \$52,500 to the Chemainus to Westholme section.

4. That the 2018 Budget for Function 280 – Regional Parks be amended to:

1. Increase Grants – Federal Gas Tax by \$103,594;

2. Increase Grants – Provincial Conditional by \$29,716;

3. Decrease Grants – General by \$30,767;

4. Increase MFA Short Term Borrowing revenue by \$85,000;

5. Increase Surplus by \$65,000; and,

6. Increase Capital Lease Improvement expenses by \$252,543.

5. That Function 280 – Regional Parks Cowichan Valley Trail Saltair Rail with Trail project be to

proceed prior to the adoption of the 2018-2022 Five Year Financial Plan Bylaw Amendment.

R5. Report from the Manager, Development Services Re: Proposed Smoking Regulation Bylaw – Our Cowichan Communities Health Network, Anti-Smoking Strategy Task Force

Recommendation That amendments, as set out in the April 5, 2018, Regional Services Committee staff report, be prepared to Clean Indoor and Control of Smoking Regulation Bylaw No. 1672 to better harmonize it with current Provincial smoking regulations.

R6. Report from the General Manager, Community Services Re: Sport Tourism Grant Subcommittee

Recommendation That a Sport Tourism Grant Subcommittee be established, in accordance with the Community Services Department report of April 17, 2018.

R7. Report from the Parks & Trails Planner Re: Parks Planning Summer Student (2017) Results of Cowichan Valley Trail User Surveys

Recommendation For Information

R8. Report from the Senior Environmental Analyst Re: Giant Hogweed

Recommendation For Direction

9. UNFINISHED BUSINESS

10. NEW BUSINESS

11. QUESTION PERIOD

Questions shall be addressed to the Chair and must be truly questions and not statements of opinions. Questioners are not permitted to make a speech.

12. CLOSED SESSION

Motion that the meeting be closed to the public in accordance with the *Community Charter* Part 4, Division 3, Section 90, subsections as noted in accordance with each agenda item.

13. ADJOURNMENT

Minutes of the Regional Services Committee Meeting held on Wednesday, March 28, 2018 in the Board Room, 175 Ingram Street, Duncan BC at 9:33 AM.

PRESENT: Chair L. Iannidinardo <until 5:17 PM>
Director S. Acton
Director M. Clement <until 4:55 PM>
Director K. Davis
Director B. Day <until 1:05 PM>
Director M. Dorey
Director S. Jackson
Director K. Kuhn
Director J. Lefebure
Director K. Marsh
Director I. Morrison
Director A. Nicholson
Director A. Stone <until 1:05 PM>
Director T. Walker

ALSO PRESENT: B. Carruthers, Chief Administrative Officer
M. Kueber, General Manager, Corporate Services
J. Barry, Corporate Secretary
R. Blackwell, General Manager, Land Use Services
J. Elzinga, General Manager, Community Services
H. Hatami, General Manager, Engineering Services
B. Dennison, Manager, Water Management
B. Farquhar, Manager, Parks & Trails
A. Melmock, Manager, Economic Development
K. Miller, Manager, Environmental Services
T. Waraich, Manager, Recycling & Waste Management
B. Suderman, Planner III
S. Carlow, Legislative Assistant
T. Daly, Recording Secretary

ABSENT: Director M. Marcotte

APPROVAL OF AGENDA

It was moved and seconded that the agenda be approved.

MOTION CARRIED

ADOPTION OF MINUTES

M1 Regular Regional Services Committee meeting of February 28, 2018

It was moved and seconded that the minutes of the Regular Regional Services Committee meeting of February 28, 2018 be amended by replacing the entire text under the Business Arising From the Minutes section with the following text: "With regard to Item R6 – Report from the Office of the Chief Administrative Officer Re: Community Engagement – Drinking Water and Watershed Protection, Director Kuhn advised he has contacted the Regional District of Nanaimo (RDN) and confirmed that the RDN budget figures

presented during the community engagement meetings were incorrect. In addition, the information provided regarding the tax figures charged by the Comox Valley Regional District were not accurate. It was moved and seconded that a report be prepared addressing the concerns raised by Director Kuhn about incorrect financial information that was presented regarding the proposed Drinking Water and Watershed Protection service. **MOTION CARRIED**; and that the minutes, as amended, be adopted.

MOTION CARRIED

M2 Special Regional Services Committee meeting of March 14, 2018

It was moved and seconded that the minutes of the Special Regional Services Committee meeting of March 14, 2018 be adopted.

MOTION CARRIED

BUSINESS ARISING FROM THE MINUTES

Director Kuhn spoke to the minutes of the February 28, 2018 Regional Services Committee noting that the report clarifying the financial details of the proposed Drinking Water and Watershed Protection service hasn't been received yet and could affect the decision being asked for on the March 28, 2018 Regional Services Committee agenda.

The Chief Administrative Officer acknowledged and apologized for an unintentional mistake that was made with the comparison information between the Regional District of Nanaimo, Comox Valley Regional District and Cowichan Valley Regional District.

REPORTS

R1 Report from the Manager, Environmental Services Re: Proposed Water and Watershed Protection Service

It was moved and seconded that a draft Drinking Water and Watershed Protection service establishment bylaw be prepared based on Option 2 of the Manager, Environment Services' March 13, 2018 report for consideration by the Regional Services Committee.

MOTION CARRIED

It was moved and seconded that the participating areas in the Drinking Water and Watershed Protection service include all nine electoral areas and four member municipalities.

It was moved and seconded that the motion be amended by excluding Electoral Areas D, G, and I, and the City of Duncan.

Director Clement was absent at the vote.

MOTION DEFEATED

Voting resumed on the main motion.

It was moved and seconded that the participating areas in the Drinking Water and Watershed Protection service include all nine electoral areas and four member municipalities.

Director Clement was absent at the vote.

MOTION DEFEATED

11:58 AM The Committee agreed by consensus to recess for ten minutes.

12:11 PM The meeting resumed at 12:11 PM.

R2 Report from the General Manager, Corporate Services Re: Proposed Affordable Housing Service Establishment

It was moved and seconded that the draft Cowichan Housing Association Annual Financial Contribution Service Establishment Bylaw be forwarded to the April 11, 2018 Board meeting for consideration of first three readings.

Director Clement was absent at the vote.

MOTION CARRIED

R3 Report and PowerPoint Presentation from the Manager, Economic Development Re: Cowichan Tech Strategy was received for information.

1:05 PM **It was moved and seconded that the meeting adjourn to reconvene after the conclusion of the March 28, 2018 Board meeting.**

Director Clement was absent at the vote.

MOTION CARRIED

4:34 PM The meeting resumed at 4:34 PM with all Directors in attendance except Directors Day, Marcotte and Stone.

R4 Report from the Manager, Economic Development Re: Cowichan Agricultural Equipment Study was received for information.

R5 Report from the Environmental Analyst/Technician, Re: 2018 Environmental Services Budget Amendments – Functions 131 Environmental Initiatives and 540 Liquid Waste Plan – South Sector

It was moved and seconded that it be recommended to the Board:

- 1. That the 2018 Budget for Function 131 Environmental Initiatives be amended to:**
 - 1. Increase Federal Conditional Grants revenue by \$46,934;**
 - 2. Increase Provincial Conditional Grants revenue by \$42,494;**
 - 3. Decrease Transfer from Gas Tax revenue by \$3,148;**
 - 4. Increase Surplus revenue by \$35,000;**
 - 5. Decrease Regional Sustainability Plan / Climate expense by \$3,148;**

6. Increase Contract for Services expense by \$21,678;
 7. Increase Flood Plain Management expense \$67,750; and
 8. Increase Project Expenditures expense by \$35,000.
2. That the 2018 Budget for Function 540 Liquid Waste Plan – South Sector be amended to:
 1. Increase Transfer from Gas Tax revenue by \$18,353; and
 2. Increase Contract for Services expense by \$18,353.
 3. That Function 131 – Environmental Initiatives requested Contract for Services expenditures be authorized to proceed prior to approval of the 2018 Budget amendment.

MOTION CARRIED

4:55 PM Director Clement left the meeting at 4:55 PM.

R6 Report and PowerPoint Presentation from the Manager, Recycling & Waste Management Re: Solid Waste Management Plan Amendment No. 4 Project Update was received for information.

R7 Report from the Acting Manager, Public Safety Re: Agreement – Woodley Range 911 Repeater Site

It was moved and seconded that it be recommended to the Board that the 10-year co-location renewal agreement for the Woodley Range 911 repeater site between Rogers Communication Incorporated and the Cowichan Valley Regional District be approved.

MOTION CARRIED

CLOSED SESSION

5:17 PM It was moved and seconded that the meeting be closed to the public in accordance with the *Community Charter* Part 4, Division 3, Section 90, {Sub (1)(e)} Land Acquisition and Closed Session minutes.

MOTION CARRIED

5:17 PM Director Iannidinardo left the meeting at 5:17 PM and Director Marsh assumed the chair.

5:28 PM It was moved and seconded that the Committee rise without report, and return to the Open portion of the meeting.

MOTION CARRIED

ADJOURNMENT

5:28 PM It was moved and seconded that the meeting be adjourned.

MOTION CARRIED

The meeting adjourned at 5:28 p.m.

Chair

Recording Secretary

Dated: _____



STAFF REPORT TO COMMITTEE

DATE OF REPORT March 20, 2018
MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018
FROM: Environmental Services Division
Engineering Services Department
SUBJECT: Regional Airshed Protection
FILE: 5280-02-APS

PURPOSE/INTRODUCTION

The purpose of this report is to provide an update on Regional Airshed Protection activities by staff and representatives from the province.

RECOMMENDED RESOLUTION

For information.

BACKGROUND

In 2009, the province directed local governments through Bill 27 to identify the greenhouse gas (GHG) emissions profiles for their communities and to further establish reduction targets and strategies to achieve those targets. The Cowichan Valley Regional District (CVRD) through a variety of partnerships with other provincial entities undertook that analysis as the data provided in the Community Energy and Emissions Inventories was insufficient to develop appropriate strategic responses. With the support of the province, a number of emission inventories were developed including a focus on both GHG emissions affecting climate as well as public health.

Public health impacts of PM_{2.5} were identified as a growing problem affecting the quality of life in the region (Attachment A). In 2009, a strategic objective to develop a regional air quality strategy was embedded into the region's Environmental and Sustainability Strategy – Plan 12. In 2013, recognizing action on air quality needed a collaborative approach, an ad-hoc roundtable of key informants and stakeholders led by the CVRD was struck to enhance the coordination of air quality management. The roundtable group worked to develop Cowichan's Regional Airshed Protection Strategy, endorsed by the Board in 2015 (Attachment B).

The Strategy recognizes that local air quality is influenced by many activities and sources, including industry, transportation, wood smoke, road dust, natural circumstances, and commercial and residential development. Since no single jurisdiction controls all these sources, the Strategy outlines a collective approach to air quality protection. Communication of the strategy was recently the focus of a \$15,000 grant to the CVRD to develop a communications roadmap (Attachment C) which provides the group both a call to action as well as recommendation and structure for future communications work.

As part of the strategy development, the CVRD and the Ministry of Environment (MOE) conducted an Air Quality Study in 2014, which showed that air quality can be poor during the fall and winter because of fine particulate matter (PM_{2.5}) primarily from open burning and woodstove use. The sources of these emissions are distributed across multiple organizations and jurisdictions, including municipalities and CVRD electoral areas.

The CVRD continues to support action on air quality in a variety of ways that are focused on both collaboration and targeted data collection to inform public policy including:

1. *Open Burning Emissions Reduction Study*

The Recycling & Waste Management and Environmental Services divisions have completed an Open Burning Emissions Reduction Study for CVRD electoral areas based on analysis of existing spatial data sets with supportive funding of \$20,000 by the Ministry of Environment as part of a program to support emissions reductions in BC communities that have elevated levels of PM_{2.5}. (Attachment D).

The Study provided key information including:

- The determination of the potential for generation of land clearing debris within CVRD Electoral Areas and current and potential hotspots for backyard burning
- The identification of best practices for managing land clearing debris and residential yard and garden materials

2. *Neighbourhood Sensor Network*

The CVRD continues to work with the MoE, Cowichan Tribes, the Cowichan Fresh Air Team and the School District to install a PurpleAir sensor network (www.purpleair.org), to understand and communicate air quality in various neighbourhoods throughout the Cowichan Valley.

3. *Online tools for venting index*

The CVRD and Ministry of Environment have released new venting index tools available through www.cvr.bc.ca/air. The accompanying message is “If you have to burn, only burn when the venting index is Good. Not when it is Fair or Poor. Good venting disperses smoke more effectively.”

4. *Review CVRD regulations for open burning*

CVRD staff are working with partners to review CVRD regulations for open burning to identify potential inconsistencies with other applicable regulations in the region including municipal and provincial, and provide recommendations for how to address inconsistencies. In 2017, staff gathered input from partners to develop a Draft Burning Bylaw Matrix which identifies key features of applicable bylaws (Attachment E). The next phase of work to identify potential updates to CVRD bylaws is expected to be ongoing throughout 2018.

5. *Regional Airshed Roundtable*

The Regional Airshed Roundtable meets twice per year as a forum for sharing information on work being done to implement the strategy. The Roundtable is supported by three working groups: an open burning group, a communications and awareness group and a monitoring and evaluations group. Each of these working groups is working to identify and implement actions that may lead to reductions in emissions across the region. The next meeting is expected to take place in June of 2018. CVRD staff participate and lead many of these working groups.

ANALYSIS

Work to date by CVRD staff (Waste Management, Bylaw and Environmental Services) has been effective in identification of the air quality issues, drivers and needed collaboration to protect our regions health. Currently this program is addressed as a minor work plan item in 2018. A 2019 work plan to be developed this summer may identify additional needs for ongoing resourcing to support communication, programing, group facilitation and air quality monitoring.

With growing climatic conditions that result in winter inversions as well as summer fires, air quality monitoring and reductions strategies will be a ongoing consideration to our communities. Using

monitoring and communication programs will help inform our communities to ensure they are effective participants in air quality protection programs.

The purple air monitoring program and updated information on venting index are strong public information drivers for changing public action, where the public can see immediate and personally relevant information to help drive changes to individual actions.

FINANCIAL CONSIDERATIONS

Support for minor staff time is included in the 2018 fiscal budget. Program funding is provided through a variety of grants to support activities and roundtable facilitation. Regardless of grant programs, staff time and resource demands are growing to meet changing conditions.

COMMUNICATION CONSIDERATIONS

Because the impacts of poor air quality affect such a broad spectrum of the community and originate from a variety of sources, the implementation of actions will require broad and coordinated communications among many organizations including provincial government, local government, First Nations, industry, agriculture, and local stewards.

STRATEGIC/BUSINESS PLAN CONSIDERATIONS

The protection of air quality in our region supports the focus areas in the Corporate Strategic Plan to respond to climate change and to engage our communities.

Referred to (upon completion):

- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

Prepared by:




Keith Lawrence
Senior Environmental Analyst

Reviewed by:



Kate Miller, MCIP, RPP, LEED AP
Manager



Hamid Hatami, P. Eng.
General Manager

ATTACHMENTS:

- Attachment A – CVRD Emission Inventory Summary
- Attachment B – Cowichan's Regional Airshed Protection Strategy
- Attachment C - Draft Airshed Communications and Engagement Roadmap – Fold over
- Attachment D – Neighbourhood Air Quality Sensor Communication Materials
- Attachment E – Draft Burning Bylaw Matrix



LEVELTON

Emissions Inventory Compilation and Forecast for the Cowichan Valley Regional District

Prepared for:

Mr. Earle Plain
BC Ministry of Environment
Nanaimo, BC

and:

Ms. Kate Miller
Cowichan Valley Regional District
Duncan, BC

Submitted by:

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Acknowledgements

Levelton Consultants Ltd. acknowledges, and expresses its appreciation to, the following organizations and individuals for providing information and assistance during this study:

BC Ministry of Environment	Earle Plain, Air Quality Meteorologist Warren McCormick, Inventory Specialist Katherine Pearce, Environmental Protection Technician
BC Ministry of Agriculture	Jacquay Foyle, Environmental Engineer Geoff Hughes-Games, PAg, Provincial Soil Specialist – EFP Program Lead Wayne Haddow, Regional Agrologist
Cowichan Valley Regional District	Kate Miller, M.Sc., RPP, LEED AP+, Manager, Environmental Initiatives Division Keith Lawrence, Senior Environmental Analyst, Environmental Initiatives Division
Metro Vancouver	Derek Jennejohn, Senior Engineer, Air Quality Policy and Management Division Shelina Sidi, Senior Project Engineer, Air Quality Policy and Management

Levelton staff who contributed to this project include:

Hong Zhang, M.A.Sc., P.Eng
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Christie Lucas, B.Sc., EP.
Ana Booth, PhD, and
Sheryl Cumming, B.Sc, E.I.T.

Executive Summary

Background

Levelton Consultants Ltd. (Levelton) was retained by BC Ministry of Environment (MoE) to compile an emissions inventory for the Cowichan Valley Regional District (CVRD) on Vancouver Island. The main purpose of the study is to provide direction to air quality/emissions managers in the CVRD regarding which pollutants and individual sectors/subsectors are most likely to require management actions. The regional inventory was compiled for 2011 as the base year. The base year emissions have been forecast at five-year intervals for 2016, 2021, 2026 and 2031.

Scope

The CVRD regional emissions inventory was compiled for the following pollutants of interest:

- Particulate Matter (PM), including the following size fractions:
 - Particulate matter less than 2.5 microns in equivalent diameter (PM_{2.5});
 - Particulate matter less than 10 microns in equivalent diameter (PM₁₀);
 - Total particulate matter (TPM);
- Carbon Monoxide (CO);
- Sulphur Oxides (SO_x);
- Nitrogen Oxides (NO_x);
- Ammonia (NH₃); and
- Volatile Organic Compounds (VOCs).

The source categories included point sources (large industrial facilities), area sources (light industrial, residential, commercial and institutional sources, agricultural activities, miscellaneous sources), mobile sources (on-road motor vehicles and non-road sources including aircraft, marine vessels, and others such as construction and lawn and garden equipment), and road dust. A summary of the emission inventory and emission trends for point, area, and mobile sources are provided below.

Baseline Emission Summary

The 2011 baseline CVRD emissions for point, area and mobile sources are summarized in Table ES-1. Mobile sources, excluding road dust, were the largest contributor of CO and NO_x. The largest emitters for SO₂ were point sources. Majority of TPM, PM₁₀, PM_{2.5}, VOC and NH₃ emissions were from area sources.

Table ES-1 CVRD Baseline Emission Inventory by Source Sector

Emission Source	Emissions (Metric tonnes)							
	CO	NOx	TPM	PM ₁₀	PM _{2.5}	SOx	VOC	NH ₃
Point Source	1,922.7	1,084.7	637.3	406.6	256.4	2,173.0	940.6	
Area Source	5,172.7	343.1	1,700.3	1,304.9	1,164.8	21.9	1,412.3	241.4
Mobile (excluding road dust)	10,082	2,553	88	86.8	82.8	5.7	811.6	22.6
Total	17,178	3,981	2,425	1,798	1,504	2,201	3,165	264.0

Point Sources

A total of 19 facilities were identified within the CVRD area. Among them, emissions for 14 facilities were taken from the air permits database and the emissions for the remaining 5 facilities were obtained from the National Pollutant Release Inventory (NPRI). An emission summary for point sources is presented in Table ES-2.

Table ES-2 Summary of 2011 CVRD Industrial Point Source Emission Inventory by Subsector (metric tonnes)

Industry Sector	Emissions (metric tonnes)						
	CO	NOx	TPM	PM ₁₀	PM _{2.5}	SOx	VOC
Pulp and Paper	1,673.3	1,028.2	396.0	312.8	220.4	2,166	632.8
Sawmills	43.31	50.30	171.16	60.6	19.96	0.67	20.33
Wood Products	206.06	5.85	37.21	21.06	13.58	1.29	14.6
Petroleum Product Storage							272.9
Cement	0.08	0.33	7.73	2.34	0.41	4.76	
Other	0.01	0.04	25.20	9.825	2.05		
Total	1,922.7	1,084.7	637.3	406.6	256.4	2,173	940.6

The majority of industry emissions were from the pulp and paper sector, which accounted for 87% of CO, 95% of NOx, 62% of TPM, 77% of PM₁₀, 86% of PM_{2.5}, 67% of VOC, and 99.7% of SOx emissions in this sector. The petroleum product storage sector was the second largest contributor at 29% in terms of total VOC emissions.

Area Sources

The breakdown of area source CAC emissions by sub-sector is summarized in Table ES-3. Open burning was the largest contributor of CO, NOx, TPM, PM₁₀ and PM_{2.5}, VOC emissions from gasoline marketing and solvent evaporation accounted for approximately half of the total VOC emissions from area sources.

Agricultural activities were the largest source for the regional NH₃ emissions and the main contributor of SO₂ emissions is from space heating.

Table ES-3 Summary of Area Source Emission Inventory by Subsector (metric tonnes)

Emission Source	Emissions (metric tonne)							
	CO	NO _x	TPM	PM ₁₀	PM _{2.5}	SO _x	VOC	NH ₃
Space Heating	2,120.1	122.3	364.5	344.5	344.5	15.4	484.6	6.5
Agricultural Sources			72.99	26.93	5.86		47.8	149.0
Open Burning	3,049.7	219.9	1,241.5	912.2	800.9	6.5	223.8	64.7
Gasoline Marketing							108.3	
General Solvent Use							547.1	
Miscellaneous Area Sources	3.03	0.88	21.39	21.39	13.55	0.00	0.67	21.15
Total Area Sources	5,172.7	343.1	1,700.3	1,304.9	1,164.8	21.9	1,412.3	241.4

Mobile Sources

Emissions from mobile sources are summarized in Table ES-4. Data analyses indicated that emissions from on-road mobile source were the largest contributor of all CACs with exception of NO_x. The second largest emission contributor to CO, TPM, PM₁₀, PM_{2.5} and VOC emissions was non-road equipment/vehicles. CAC emissions due to aircraft activity were insignificant.

Table ES-4 Summary of Emissions from Mobile Sources* (metric tonnes)

Emissions from Mobile Source	Emissions (Metric tonnes)							
	CO	NO _x	TPM	PM ₁₀	PM _{2.5}	SO ₂	VOC	NH ₃
On-road Emissions	7,033	1,152	39.3	39.3	37.4	4.9	538.0	21.69
Non-road Emissions								
Marine	93.09	1158.72	21.22	20.37	19.52	0.53	36.36	0.61
Aircraft	8.79	0.24	0.007	0.007	0.007	0.037	0.29	0.00
Non-road Equipment	2947.68	242.72	27.17	27.17	25.89	0.29	236.93	0.31
Mobile (Total)	10,082	2,553	88	87	83	6	812	22.6

*: Road dust was excluded in the mobile sources

Emission Inventory Forecast

The base year emissions have been forecast, at five-year intervals for 2016, 2021, 2026 and 2031. Emission forecasts were based on regional statistics when these data are available and determined by assigning appropriate surrogate factors. A summary of the emission forecast for the CVRD is presented in Table ES-5. In general, emission trends for NO_x, TPM, PM₁₀, PM_{2.5}, VOC, and NH₃ exhibited an increase compared to the baseline. Regional CO emissions were forecast to decrease to the lowest level in 2021 (16,734 tonnes) before an upward trend was observed. The decrease in CO emissions was mainly attributed to lower demand for gasoline. SO₂ were predicted to remain at relatively stable emission rates at around 2,200 tonnes annually.

Table ES-5 Emission Forecast for CVRD Emissions Inventory (metric tonnes)

CVRD Inventory Forecast	Emissions (Metric tonnes)							
	CO	NO _x	TPM	PM ₁₀	PM _{2.5}	SO ₂	VOC	NH ₃
2011	17,177.8	3,981.3	2,425.3	1,798.3	1,504.1	2,200.6	3,164.5	264.0
2016	16,876.4	4,406.6	2,472.1	1,843.3	1,547.5	2,200.7	3,202.4	264.3
2021	16,733.5	4,595.9	2,513.7	1,883.2	1,586.3	2,200.3	3,253.6	265.0
2026	16,873.4	4,696.8	2,548.3	1,916.4	1,618.6	2,200.5	3,320.4	266.5
2031	17,016.1	4,805.0	2,572.2	1,939.4	1,640.6	2,200.5	3,377.0	267.9



Cowichan's Regional Airshed Protection Strategy



A partnership of: Cowichan Valley Regional District, Cowichan Tribes, Ministry of Environment, Island Health, Our Cowichan - Communities Health Network, School District 79, Catalyst Paper, University of Victoria, City of Duncan, Town of Ladysmith, Town of Lake Cowichan, Municipality of North Cowichan and Cowichan Fresh Air Team - as of November 2015.



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This strategy has been referred for comment to the following organizations and will be included in future programming for action as per the identified roles and responsibilities laid out. Each of these organizations will be invited to participate in meetings of the Cowichan Airshed Protection Round Table.

Ministry of Environment	Caycuse Volunteer Fire Department Society
Ministry of Forests, Lands & Natural Resource Operations	Cowichan Bay Fire Protection
Ministry of Transportation and Infrastructure (Victoria)	Mill Bay Fire Protection
Ministry of Agriculture	Shawnigan Lake Fire Protection
BC Transit	Thetis Island Fire Protection
Island Health	Pacific Pilotage Authority
Managed Forest Council	School District 68
Cowichan Tribes	School District 79
Ditidaht First Nation	Municipality of North Cowichan
Halalt First Nation	Town of Lake Cowichan
Lake Cowichan First Nation	Town of Ladysmith
Lyackson First Nation	City of Duncan
Malahat First Nation	Catalyst
Pauquachin First Nation	TimberWest
Pacheedaht First Nation	Island Timberlands
Penelakut First Nation	Hancock Forest Management
Stz'uminus First Nation	CVRD Engineering Services Department
First Nations Health Authority	CVRD Planning & Development Department
Our Cowichan Communities Health Network	CVRD Inspections and Enforcement Division
Cowichan Fresh Air Team	CVRD Waste and Recycling Management Division
South Island Fire Management Organization (SIFMO)	CVRD Public Safety Division

Additional organizations that are interested in participating in the proposed Regional Airshed Protection Round Table will be added to this list and invited to the meetings.



This report outlines a Regional Airshed Strategy for the Cowichan Valley Regional District (CVRD). It identifies the necessary steps to be undertaken in order to develop an effective response to growing air quality concerns in the region. This work is consistent with and taken based on direction in the CVRD Corporate Strategic Plan which specifically directs that an airshed protection strategy be developed. Given this is an area in which many players are involved the CVRD has taken the lead role in the development of the strategy in coordination with MOE, however the implementation will require a broad and coordinated response from many.

Jon Lefebure – Chair Cowichan Valley Regional District

What is the air quality problem in our Region?

In the Cowichan, the air contaminant of greatest concern is PM_{2.5}, which refers to particulate matter that is less than 2.5 microns in diameter. This is the particulate matter of greatest concern because it can travel deep into the lungs and become lodged there, causing heart and lung disease, and premature death. Fine particles that comprise PM_{2.5} are also efficient at scattering light, resulting in degradation of visibility.

A 2014 Air Quality Study for the Cowichan region indicated that there are occasional exceedances of the provincial PM_{2.5} objectives from 2009 to 2013. The Study also indicated that the exceedances were primarily due to local open burning and wood burning appliances (winter), and forest fires located in other regions (summer). An emission inventory completed in 2014 estimated that 77% of the total PM_{2.5} in the Region is coming from area sources. Open burning accounted for 53% of the total PM_{2.5} and wood burning appliances accounted for 23% of the total PM_{2.5}.

Our History

Air quality concerns in our Region are rooted in local history. The primary sources for PM_{2.5} include open burning and wood burning appliances. However, the burning of wood debris for clearing land and the use of wood stoves for residential heating has been happening for generations.



There is something about the smell of wood smoke and the warmth of heat from a fire that is comforting for people. In our region, it is part of our history of living off the land. People will say: “My parents burned wood and my grandparents burned wood, why wouldn’t I?” Today, we know about the health effects of wood smoke. And today, the technology and practices exist to do it better.

TW Paterson – local historian and author of over 26 books on BC History

Wild fires have also been contributing to air quality concerns throughout our history. In 1938, a cloud of smoke one mile high covered two-thirds of Vancouver Island and was reported as far south – 640 km – as Portland Oregon. Its fly-ash was so thick that two ships collided off Port Angeles. This was the product of Vancouver Island’s worst forest fire ever, the Great Fire (so-called) of 77 years ago which burned an area of approximately 350 square kilometers.



Image mcr020399-7 courtesy of the Museum at Campbell River



Image mcr020399-16 courtesy of the Museum at Campbell River

Why are we concerned about air quality?

There is solid scientific evidence at a national level of a strong link between air pollution levels and impacts on human health. Locally, data from Island Health indicates that **in the Cowichan Local Health Area, admissions rates for children with respiratory diseases averaged 70% higher than provincial rates** for the period 1998 to 2012. In 2012 the **proportion of persons aged 5-54 diagnosed with asthma was 14% higher** and the **prevalence of chronic respiratory illness for all persons aged 45 and over was 50% higher in Cowichan Valley Regional District than the province.**



In our region, air emissions originate from a wide range of sources including mobile vehicle emissions, stationary industrial point sources, residential or commercial area sources and natural sources. There is also a wide range of types of contaminants being emitted. For common air contaminants such as particulate matter (PM) and ground-level ozone, health impacts have been found even at low concentrations, indicating that there may be no safe level. The elderly, the young, those with lowered immunity, and/or existing heart and lung ailments are especially vulnerable.

Air pollution also affects the integrity of natural ecosystems and agricultural crops, increases greenhouse gas emissions and degrades the visibility of scenic vistas. Together with the health costs, these impacts and their consequences for tourism and other industries have implications for economic activity throughout the region.

What is an airshed?

The term “airshed” is used to describe an area where the movement of air tends to be hindered by the local geography and by weather conditions. The most obvious examples of an airshed would be the Cowichan, the Shawnigan, Chemainus Basins or even the larger Georgia Basin. Airsheds are not confined to political boundaries and they can be at multiple scales depending on a variety of variables such as geography, dominant wind patterns or weather.

During temperature inversions, a common event in our region, the cooler air near the ground is trapped by warmer air aloft. The effects and duration can be much different depending on the season. The types of emissions that accumulate in the surface layer will vary according to seasonally related activities such as summer traffic, winter home heating with woodstoves or open burning in the fall.

In contrast, when the air is well mixed and winds are moderate, pollutants are quickly dispersed. In some cases, the pollutants and their by-products may be transported long distances beyond the airshed. This is a reminder that everyone and their activities are globally interconnected and that our local conditions are to some extent affected by issues elsewhere. The region experiences impacts to air quality from a wide variety of events including fires in Europe, central BC and other areas, dust storms in Asia and the combustion of fossil fuels by mobile sources and large facilities in neighboring regions.

For the above reasons, many of our communities are prone to periods of poor air quality. As global and regional emissions increase and local ground temperatures increase as a result of global climate change, air quality is expected to continue to worsen over time.



This can have numerous impacts on the community, including adversely affecting human health, the environment and visibility. It can also limit a community's ability to attract or accommodate desirable and potential growth. Fortunately, action at the local level can be taken to reduce local consequences.

Addressing Air Quality Concerns by Airshed Planning

Local, regional and provincial governments have developed and applied various approaches to combat and control air pollution. Among these, airshed planning has emerged as an important tool for dealing with multiple pollution sources that involve numerous stakeholders and, in some cases, cross political boundaries. Airshed planning is a stakeholder-driven process to coordinate the abatement of activities affecting air quality in a defined area or airshed. It recognizes that local air quality is influenced by a myriad of activities and sources, including industry, transportation, commercial and residential development, wood smoke, road dust, and natural circumstances. Since no one jurisdiction controls all these sources, a collective approach to air quality protection is needed that engages a variety of organizations

and individuals and, where necessary, encourages partnerships with neighbouring communities in developing and implementing local solutions.

To date, all such efforts in BC have been voluntary in nature, in keeping with a shared stewardship approach. Currently, there are 14 airshed plans that have been completed for various airsheds in the province, with some variation in key areas, objectives, and mechanisms. The issues and ability of key players in the region will affect the level and speed of implementation of a regional strategy. As such it is important that the development of such a strategy include the participation of a broad range of participants working in a coordinated fashion.

Why pursue a Community Based Approach?

Because the impacts of poor air quality affect such a broad spectrum of the community and originate from a variety of sources a multi stakeholder process is necessary in order to address sources effectively. This will require that all affected organizations and entities are aligned and coordinated so that policies, actions and ongoing monitoring is effective and strategic in nature. No one entity is charged with the issue nor can any individual action address its effects in a meaningful way.

Existing programs and policies in the region are already contributing towards air quality management objectives (e.g., energy and climate action planning, transportation planning, open burning bylaws, wood burning appliance programs). As such, the emphasis of the proposed strategic process will be on supporting and expanding these existing initiatives.

The value of partnerships for airshed protection is illustrated by successes already achieved in the Region including:

- backyard burning regulations in 5 electoral areas and 4 municipalities,
- a woodstove exchange program that has supported the upgrades of 635 woodstoves
- the *clear the air cowichan* communications materials
- a series of 5 articles on wood smoke in the local newspaper
- partnership with UVIC researchers to undertake initial nephelometer study
- partnership with MOE that allowed for the technical background required to backstop this (emissions inventory, air quality study for the CVRD)
- current partnership for installation of additional regional monitoring stations across region (total now 4)

These programs were all delivered through a collaboration of several provincial government, local government, academic and stewardship organizations. If it is possible to achieve a coordinated alignment it will be possible to ensure that future planning and programming builds effectively on the overall goals and identified actions. And enforcing the philosophy of collective impact, shared interests and shared responsibility which will be a keystone for long term and stable policy development and community health objectives.

Participants

Contributions from the various organizations involved in local air quality management are key to the successful design and implementation of an Airshed protection strategy. To date a number of ongoing discussions have occurred in the region and most recently planning discussions were hosted by the MOE and the CVRD in 2014 and 2015 to bring together a focused Round Table group to develop a collaborative Airshed Protection Strategy for the region and its affected populations. Each organization has interest in moving forward on the development of a Regional Airshed Strategy as a sub component of the Regional Sustainability and Health Strategies. This strong message provided the impetus to MOE and the CVRD to partner on the development of the necessary background studies (attached as appendices A and B).

The Round Table gathered over a number of meetings in 2014 and 2015 and discussed the overall issues affecting air quality in the region. Based on the insights gathered through these discussions, the CVRD and the MOE partnered to develop additional background material and identification of specific contaminants, appropriate indicators and draft targets for the groups discussion (see appendices C and D).

Based on a structured process the group then identified specific goals, actions and the identification of key leaders and supporting organizations. The following Action Plan is the result of that work and will form the combined efforts of the collaborative in achieving *our vision*.

Our Vision

*Working together for **clean air** to support our health, our environment and our communities*



Our goals, targets and objectives

Airshed planning and implementation will be an ongoing effort of many. While a number of high priority goals have been identified, it is recognized that this will be an ongoing process of refinement over time. Short term and long term actions are summarized below then in more detailed tabular format. Key targets have also been included. The complete set of indicators and targets is provided in Appendix C.

1. **GOAL – Protecting Human Health**

We will protect and improve regional air quality so our communities are as healthy as possible.

Key Targets

- Zero exceedance of 24 hour BC AAQO for PM_{2.5} (25 ug/m³)
- Zero exceedance of annual BC AAQO for PM_{2.5} (8 ug/m³)

Objectives

- Reduce PM_{2.5} emissions from local open burning including land clearing burning and backyard burning
- Reduce PM_{2.5} emissions from wood burning appliances
- Support programs that reduce emissions from mobile and point sources¹ of all targeted pollutants (PM₁₀, PM_{2.5}, SO₂, Nox, CO and VOC)

Key Actions – High Priority

- Raise public awareness on the health impacts of wood smoke, the alternatives, the best practices and the rules.
- Develop consistent airshed wide regulatory approach for open burning
- Contribute to provincial efforts to control wood smoke through participation in wood smoke strategy discussions
- Explore options for a curbside pickup of yard and garden materials to overcome barriers to open burning alternatives.
- Develop airshed wide regulatory approach for wood burning appliances
- Develop incentives for wood burning appliance upgrades to overcome financial barriers for upgrading and replacing appliances
- Promote use of alternative energy sources and systems



Supporting Actions – Medium Priority

- Reduce vehicle idling through policies and education
- Support alternative modes of transportation
- Reduce stop and go traffic on the Trans-Canada Highway
- Reduce dust emissions in communities adjacent to dirt roads
- Compliance with federal and provincial regulatory requirements by point source emitters¹.

Participants

- Lead roles for the Ministry of Environment, Island Health, First Nations, Our Cowichan - Communities Health Network, Municipalities, the CVRD and other local governments.
- Support from all Airshed Protection Round Table participants

¹A point source emitter is a single, stationary source of pollution, such as an industrial facility, that typically operates under some kind of government authorization.

2. GOAL – *Building Strong and Collaborative Partnerships:*

We recognize that many players are critical to true partnerships and we will work towards coordinating our efforts to achieve the objectives and benefits clean air provides our community.

Key Targets

- Formation of an Airshed Protection Round Table with Terms of Reference and Annual Reporting

Objectives

- Develop Terms of Reference for the Airshed Protection Round Table
- Implement the actions in this strategy
- Annual monitoring and reporting of progress towards the goals, targets and objectives of the strategy

Key Actions – High Priority

- Develop Terms of Reference for the Airshed Protection Round Table
- Collaborative development of work plans for the actions identified in this strategy.

- Periodic reporting by the Round Table on progress towards meeting the objectives in the Strategy
- Determine compliance with provincial and federal objectives and standards by working with partners to implement additional short-term monitoring projects in communities throughout the CVRD.
- Periodic assessment of whether the strategy should focus on other pollutants of interest
- Develop existing and new linkages to climate change, wildfire (bc *FireSmart*), transportation and solid waste planning processes.

Participants

- All Round Table participants and other organizations that can improve air quality in the Region.

Key Actions

Goal #1: *Protecting human health*

We will protect and improve regional air quality so our communities are as healthy as possible.

The following actions related to goal #1 are considered **high priority** as they could lead to a relatively large reduction in PM_{2.5}. The tables provide details of the initiatives and tasks that will help us achieve our goals.

Emission Sources: <u>Open Burning</u> and <u>Wood Burning Appliances</u>, the 1st and 2nd largest sources of PM_{2.5}.					
Objectives:					
<ul style="list-style-type: none"> • Reduce emissions from local open burning including land clearing burning and backyard burning • Reduce emissions from wood burning appliances 					
#	Action	Initiative	Who?	Status	Proposed Future Tasks
1	Raise public awareness on the health impacts of wood smoke, the best practices, the alternatives and the rules.	Deliver a regionally coordinated public awareness campaign to educate the public on the health impacts of wood smoke, the best practices, the alternatives and the rules. Tools to include: <ul style="list-style-type: none"> • Website • Printed media (newspaper and newsletters) • Social Media • Community Outreach • Agriculture focused media and content • Community Air Quality Forums 	Our Cowichan - Communities Health Network, Island Health, MoE, UVic, the CVRD, municipalities, School District.	Initiative is in progress. <i>Tasks Completed:</i> <ul style="list-style-type: none"> • Clear the Air Cowichan website includes information on the rules and best practices (burn it smart). • Released 5 newspaper articles in the Fall of 2014 on the impacts of wood smoke. • Air quality advisories for the region are released by the MoE. 	<ul style="list-style-type: none"> • 2016 late summer/fall - Run article series again. Lead: <u>CVRD, MoE and Our Cowichan Communities Health Network.</u> • 2016 - Turn articles into series of digital info documents. Lead: <u>CVRD, MoE and Our Cowichan</u> • 2016 – Explore community air quality forums. Lead: <u>Our Cowichan, CVRD, MoE</u> • 2016 - Develop a public interface for air quality issues and alerts that can be delivered effectively using a variety of media routes. Lead: <u>MoE and CVRD and Our Cowichan.</u>

Emission Sources: Open Burning

Open Burning is the largest source of PM_{2.5}

Objective: Reduce emissions from local open burning including land clearing burning and backyard burning

#	Action	Initiative	Who?	Status	Proposed Future Tasks
2	Develop consistent airshed wide regulatory approach for open burning	2a. Develop, implement and review backyard burning bylaws across the region.	CVRD, Municipalities, Fire Improvement Districts,	<p>Initiative is in progress.</p> <p><i>Tasks Complete:</i></p> <ul style="list-style-type: none"> Open burning bylaws Implemented in the Municipality of North Cowichan, City of Duncan, Town of Ladysmith, Town of Lake Cowichan and some CVRD electoral areas 	<ul style="list-style-type: none"> Spring 2016 - Review bylaws on a rolling 3 year basis. Lead: <u>CVRD, Municipalities and Fire Improvement Districts.</u> Spring 2016 - Identify issues and barriers for adoption and enforcement of bylaws across whole of region, including improvement districts areas and additional electoral areas. Lead: <u>CVRD, Municipalities and Fire Improvement Districts.</u> Spring 2016 - Explore expansion of burning timelines to take advantage of better venting in some areas and reduce the number of days with people burning. Lead: <u>CVRD, Municipalities and Fire Improvement Districts.</u> Spring 2016 - Develop metrics to track: the # of burns that follow best practices and those that don't & the # of agricultural, forest and backyard burns. Lead: <u>CVRD and MoE.</u>
		2b. Explore an update to open	Ministry of	Initiative is pending	<ul style="list-style-type: none"> Spring 2016 - Preliminary discussion

		burning bylaw(s) in the Region to include prohibition of any open burning on zoned agricultural land and ALR land as long as it is not 'a normal farm practice'.	Agriculture, CVRD, Agricultural Community, Municipalities		with CVRD and MNC agriculture commissions. Lead: <u>MAL, CVRD, Municipalities and MoE.</u> <ul style="list-style-type: none"> • Spring 2016 - Focused stakeholder meeting with local agricultural producers. Lead: <u>MAL, CVRD, Municipalities.</u> • Spring 2016 - Develop and clarify the role of burning on agricultural properties in an educational way. Lead: <u>MAL CVRD and Agricultural Commissions.</u>
		2c. Explore complete ban on backyard burning for additional high density (urbanized) areas in the Region while maintaining alternate disposal options of yard and garden debris.	All Airshed Round Table participants	Initiative is Pending. <i>Background:</i> Backyard burning is banned in the City of Duncan, Town of Ladysmith and the Town of Lake Cowichan.	<ul style="list-style-type: none"> • Fall 2015 - Review of Official Community Plan (OCP) issues, explore area E as a starting point given the current OCP cycle and public consultation. Lead: <u>CVRD, MoE and Municipalities.</u>
3	Contribute to provincial efforts to control wood smoke	Monitor or participate in Open Burning Smoke Control Regulation (OBSCR) planning discussions and other wood smoke strategy discussions	Forest Industry, MFC, Min of Ag, Agricultural Community, Island Health, CVRD, MoE, Municipalities, Private Forest Sector	Initiative is in Progress Provincial OBSCR discussions are ongoing.	<ul style="list-style-type: none"> • Ongoing for 3 to 5 years – Participation by MoE and Island Health in OBSCR discussions. Lead: <u>MoE</u> • Spring 2016 - Report progress to Airshed Round Table on periodic basis. Lead: <u>MoE,</u>
4	Explore options for a curbside pickup of	Study the potential benefits and costs for curbside pickup of	CVRD, Municipalities,	Initiative is in Progress. CVRD has already gathered	<ul style="list-style-type: none"> • 2016 - Explore costs and benefits for a yard and garden pickup including:

	yard and garden materials to overcome financial barriers to the alternative.	yard and garden materials and options for the receiving facility (District Energy System or compost facility)	Agricultural Community,	information on costs and benefits.	<ul style="list-style-type: none"> ○ options for commercial or multi-family residential organics ○ Consider breaking up the two waste streams for more specific management objectives. <p>Lead: <u>CVRD</u></p> <p>Seek direction from the Board and Report back to task force by 2016.</p> <p>Lead: <u>CVRD</u></p> <ul style="list-style-type: none"> ● 2017 - explore the pilot use of a fee for service air curtain burner and wood chipper. <p>Lead: <u>CVRD</u></p>
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Emission Sources: Wood Burning Appliances

Wood burning appliances is the 2nd largest source of PM_{2.5}

Objective: Reduce emissions from local open burning including land clearing burning and backyard burning

#	Action	Initiative	Who?	Status	Proposed Future Tasks
5	Develop airshed wide regulatory approach for wood burning appliances	Develop and implement a model wood burning appliance bylaw to be available for the region. Explore expansion of options that have already adopted by a part of the Region to other high density (urbanized) parts of the Region that want them. These options include: <ul style="list-style-type: none"> ● During air quality advisory, 	CVRD, Municipalities, Ministry of Environment	<p>Initiative is in Progress.</p> <p><i>Tasks Complete:</i></p> <ul style="list-style-type: none"> ● Wood burning appliance bylaw already implemented in the City of Duncan 	<ul style="list-style-type: none"> ● Develop and implement a model wood burning appliance bylaw <ul style="list-style-type: none"> ○ 2016 - Estimate the number of woodstoves there are in the region by spatial locations and age. ○ 2016- Further develop an understanding of the use of woodstoves in economically challenged households. ○ 2016 – Study the neighborhood <i>PM_{2.5} levels</i> in more densely

		<p>no woodstoves may be used, except to heat homes with no other form of heating</p> <ul style="list-style-type: none"> • Upon sale of house, non-certified woodstoves must be upgraded or removed. Additional financial incentives to support these upgrades/removals would be explored. • Only certified woodstoves may be installed in new homes being constructed. 			<p>populated areas (e.g. mobile home parks)</p> <ul style="list-style-type: none"> ○ 2016 - Request an update from the province regarding the changes to legislation required for real estate transactions ○ 2017 - Expand and support the burn it right program ○ 2017 - Explore and make recommendations on the expansion of wood burning bylaws in other high density areas ○ 2017 - Legal review of woodstove ban in new homes. <p>Lead: <u>CVRD and municipalities</u></p>
6	Develop incentive programs for wood burning appliance upgrades.	Develop and implement a wood burning appliance rebate program for the region	Ministry of Environment, CVRD, Municipalities,	<p>Initiative is in Progress.</p> <p><i>Tasks Complete:</i></p> <ul style="list-style-type: none"> • Regional woodstove rebate program implemented. Rebates are for upgrades for woodstoves to certified appliances. 718 stoves exchanged between 2009 and 2015 (reduction of 44.5 tonnes of PM_{2.5}). 	<ul style="list-style-type: none"> • Ongoing - Continue wood burning appliance upgrades at a pace established in action 5 above. Lead: <u>CVRD</u> • 2016 – Explore additional incentives to overcome financial barrier of upgrades. • 2017 - Expand woodstove switch out program to include incentives for transition to alternative modes of heating. Lead: <u>CVRD</u>
7	Promote use of alternative energy	Promote alternative energy pilot programs and grant programs.	School District, Local Solar Energy	<p>Initiative is in Progress.</p> <p><i>Tasks Complete:</i></p>	2016 – Include information on alternative energy source and

	sources and systems		Stewardship Community, CVRD, Municipalities,	<ul style="list-style-type: none"> • Solar panel demonstration project being explored for the Region • Events in the community to promote clean energy forms have been coordinated by local stewards and co-ops. • Potential for exploring District Energy Systems 	<p>systems in public awareness campaign.</p> <p>Lead: <u>CVRD and Our Cowichan Communities Health Network.</u></p> <ul style="list-style-type: none"> • 2016 – Contribute air quality information to solar energy stewardship community as they engage the community. • Lead: <u>CVRD and Our Cowichan Communities Health Network</u>
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Goal #2: Building strong and collaborative partnerships

We recognize that many players are critical to true partnerships and we will work towards coordinating our efforts to achieve the objectives and benefits clean air provides our community.

The following actions are considered to be **high priority** as they support the reduction of PM_{2.5} and other targeted contaminants.

Emission Sources: <u>All</u>					
Objectives:					
<ul style="list-style-type: none"> • Develop Terms of Reference for the Airshed Protection Round Table • Implement the actions in this strategy • Annual monitoring and reporting of progress towards the goals, targets and objectives of the strategy 					
#	Action	Initiative	Who?	Status	Proposed Future Tasks
1	Formation of an Airshed Protection	Develop Terms of Reference Formation for an Airshed	All Round Table participants and	Initiative is in progress. <i>Tasks complete:</i>	<ul style="list-style-type: none"> • Strategy to be reviewed and approved in principle by partnering

	Round Table	Protection Round Table that will implement the actions in this Strategy.	other organizations that can improve air quality in the Region.	The Airshed Round Table has begun the process of building partnerships through 3 workshops from 2013 to 2015 to develop this strategy.	organizations in the Fall of 2015. Lead: <u>CVRD</u> <ul style="list-style-type: none"> TOR to be drafted by Dec 2015. Lead: <u>CVRD</u>
2	Develop Work Plans	Develop work plans for the <u>high priority actions</u> identified in this strategy. Identify supporting processes for the <u>medium priority actions</u> identified in this strategy	All Round Table participants	Initiative is in progress	<ul style="list-style-type: none"> January 2016 and ongoing - Task force to meet annually to report out and develop 2 year work plans Lead: <u>Our Cowichan Communities Health Network</u> January 2016 - Invitation to participate to be extended to additional participants (e.g. fire departments): Lead: <u>Our Cowichan</u>
3	Periodic Reporting and Monitoring	Annual reporting by the Round Table on progress towards meeting the objectives in the Strategy.	All Round Table participants	Initiative is pending	<ul style="list-style-type: none"> December 2015 - Decision and recommendations on monitoring and reporting framework to be developed Lead: <u>CVRD and Our Cowichan</u> December 2015 - Annual reporting and task force meeting and communications schedule to be discussed for recommendations Lead: <u>Our Cowichan</u>
		Periodic assessment of whether the strategy should focus on other pollutants of	All Round Table participants	Initiative is pending	<ul style="list-style-type: none"> Fall 2016 – Review whether strategy should focus on other pollutants of interest.

		interest.			<p>Lead: <u>MoE</u></p> <ul style="list-style-type: none"> Establish review cycle and process. <p>Lead: <u>MoE</u></p>
		Regional Air Quality Monitoring and Information Gathering	MoE and CVRD	Initiative is in progress	<ul style="list-style-type: none"> Spring 2016 - MOE will provide air monitoring stations and technical support via a MOU with the CVRD Lead: <u>MoE and CVRD</u> Spring 2016 – Work with partners to implement additional short term PM_{2.5} monitoring projects throughout the region. Lead: <u>MoE</u>
4	Develop existing and new linkages to climate change, transportation, wildfire and solid waste planning processes.	Participate in climate change strategy, transportation planning, wildfire (bc firesmart) and solid waste planning discussions.	All Round Table participants	Initiative is pending	<ul style="list-style-type: none"> Spring 2016 - Preliminary presentations to task force with proposed issues and linkages by invited representatives Lead: <u>Various participants</u> 2016 and 2017 - Become a FireSmart community. Lead: <u>CVRD</u>

Supporting Actions

The following actions are considered to be **medium priority** for the following reasons:

- they could lead to a relatively large reduction in targeted contaminants including Nitrogen Oxides (NOx), Carbon Monoxide (CO) and Volatile Organic Compounds (VOCs); and/or
- they could lead to a relatively small reduction in PM_{2.5}; and/or
- the actions are beyond the direct control of representatives of the Airshed Protection Round Table

Emission Sources: <u>On-Road Vehicles</u>					
<i>On-road vehicles are the second largest source of Nitrogen Oxides (NOx) and Carbon Monoxide (CO) emissions in our region.</i>					
Objective: Support programs that reduce emissions from mobile and point sources of all targeted pollutants (PM ₁₀ , PM _{2.5} , SO ₂ , NOx, CO and VOC)					
#	Action	Initiative	Who?	Timing	Proposed Future Tasks
1	Reduce vehicle Idling through policies and education	<ul style="list-style-type: none"> • Identify organizations and companies with/without policies. Extend invitations to support anti-idling policies for companies that do not have one • Provide anti-idling resources to organizations (e.g. free anti-idling signs for store parking lots) 	Stewardship Community, CVRD, Municipalities, Island Health	<p>Initiative is in progress.</p> <p><i>Tasks complete</i></p> <ul style="list-style-type: none"> • Anti-idling policy under exploration for the CVRD vehicle fleet • Municipal anti-idling bylaws have been implemented 	<ul style="list-style-type: none"> • Report to task force spring 2016 <p>Lead: <u>To be determined</u></p>
2	Support alternative modes of transportation	Support programs that overcome barriers to bicycling as a commuting option	CVRD, Municipalities, Ministry of Transportation and Highways,	Initiative is in progress.	<ul style="list-style-type: none"> • Local governments to report out issues and recommendations regarding active transportation in Summer 2016. <p>Lead: <u>CVRD and Municipalities</u></p>

			Stewardship Community, Island Health		
		Support programs that overcome barriers to electric vehicle use as a commuting option	Electric vehicle community, CVRD, Municipalities	Initiative is in progress. <i>Tasks Complete</i> 10 publicly accessible Electric Vehicle charge stations installed across 4 municipalities (Ladysmith, North Cowichan, Lake Cowichan and Duncan) and 2 electoral area (Mill Bay, and Shawnigan Lake)	<ul style="list-style-type: none"> By 2017 - Round Table participants to provide support letters to electric vehicle associations. Lead: <u>To be determined</u> By 2017 - local partners (where possible) to explore installing EVI stations in their facilities Lead: <u>To be determined</u>
		Raise awareness for public transit and promote ridership	BC Transit Municipalities All Round Table participants	Initiative is in progress. <i>Tasks Complete</i> The Cowichan Valley Future Transit Plan is complete and ridership targets are included in the plan. The plan envisions what the network should look like 25 years from now. Implementation is underway.	<ul style="list-style-type: none"> By 2017 - Task force partners to review how their organizations can support internally and externally the use of public transportation in their programs and public messaging Lead: <u>To be determined</u> By 2017 - Report to be brought back to the task force Lead: <u>To be determined</u>
		Road Improvements to improve walkability	Municipalities, Ministry of Transportation and Highways, CVRD	Initiative is in progress. <i>Tasks Complete</i> CVRD Parks and Trails Master Plans include active transportation and have	<ul style="list-style-type: none"> By 2017 - Task force members to consider how to support the collection of this information from their user groups Lead: <u>Municipalities and CVRD</u>

				<p>been developed for some electoral areas of the region. Transportation planning as part of the CVRD's Regional Integrated Strategy is underway.</p> <p>City of Duncan's active transportation plan is being developed.</p>	<ul style="list-style-type: none"> By 2017 - Local governments to review OCP's and provide recommendations on improvements. Lead: <u>CVRD and Municipalities</u>
3	Reduce Stop and go traffic on the Trans Canada Highway and other major road systems in the region	Implement the TransCanada Highway (TCH) Corridor Management Plan	Ministry of Transportation and Highways, CVRD, Municipalities and Cowichan Tribes.	<p>Initiative is in progress.</p> <p><i>Tasks Complete</i></p> <p>The Boys Rd to Beverley Rd section of the TCH corridor management plan is being implemented.</p>	<ul style="list-style-type: none"> By Dec 2016 - MOTI be invited to become a partner on the task force or strategy by December 2015. Lead: <u>Our Cowichan</u>
4	Reduce dust emissions in communities adjacent to dirt roads	Reduce Mud track out onto main roads through truck wash stations	TimberWest, CVRD, Town of Lake Cowichan, Island Health,	<p>Initiative is in progress.</p> <p><i>Tasks Complete</i></p> <p>The Youbou truck wash station has been built and is expected to be in use in the Fall of 2015.</p>	<ul style="list-style-type: none"> By Dec 2016 - MOTI be invited to become a partner on the task force or strategy by December 2015. Lead: <u>Our Cowichan</u> A representative of the Managed Forest Council to be invited to sit on as an industrial representative by December 2015. Lead: <u>Our Cowichan</u>

Emission Sources: Point Sources

Point Sources are the largest contributor of Sulphur Dioxide and Total Reduced Sulfur. And the second largest contributor of VOCs.

Objective: Support programs that reduce emissions from mobile and point sources of all targeted pollutants (PM₁₀, PM_{2.5} SO₂, NO_x, CO and VOC)

#	Action	Initiative	Who?	Timing	Proposed Future Tasks
1	Compliance with provincial and federal regulatory requirements for reporting of PM ₁₀ , PM _{2.5} , SO ₂ , CO, NO _x , VOCs and TRS.	Annual air quality monitoring and reporting	Large point source facilities. Ministry of Environment	Initiative is in progress. <i>Ongoing tasks underway</i> Many of the large facilities in our region are reporting for compliance with provincial and federal permitting requirements for facilities.	<ul style="list-style-type: none">Spring 2016 - Catalyst to provide annual data and issues identification Lead: <u>Catalyst</u>

Appendix A - Emissions Inventory for the Cowichan Region

Background

Levelton Consultants Ltd. (Levelton) was retained by BC Ministry of Environment (MoE) and for the Cowichan Valley Regional District (CVRD) to compile an emissions inventory for the region. The main purpose of the 2014 analysis was to provide background information regarding which pollutants/emission sources may be of greatest concerns and identify and individual sectors/subsectors will be key to future management actions. The regional inventory was compiled for 2011 as the base year and forecasted at five-year intervals for 2016, 2021, 2026 and 2031.

Scope

The emissions inventory was compiled for the following key pollutants of interest:

- Particulate Matter (PM), including the following size fractions:
 - Particulate matter less than 2.5 microns in equivalent diameter (PM_{2.5});
 - Particulate matter less than 10 microns in equivalent diameter (PM₁₀);
 - Total particulate matter (TPM);
- Carbon Monoxide (CO);
- Sulphur Dioxide (SO₂);
- Nitrogen Oxides (NO_x);
- Ammonia (NH₃); and
- Volatile Organic Compounds (VOCs)

No specific analysis of carbon dioxide or other Greenhouse Gasses (GHG's) was undertaken as it was outside to the parameters of this study and have been calculated as a component of the Community Energy and Emmissions Inventory (CEEI) by the Province.

The emissions inventory identified a number of source categories including: point sources (large industrial facilities), area sources (light industrial, residential, commercial and institutional sources, agricultural activities, miscellaneous sources), mobile sources (on-road motor vehicles and non-road sources including aircraft, marine vessels, and others such as construction and lawn and garden equipment), and road dust. A summary of the emission inventory is provided below.

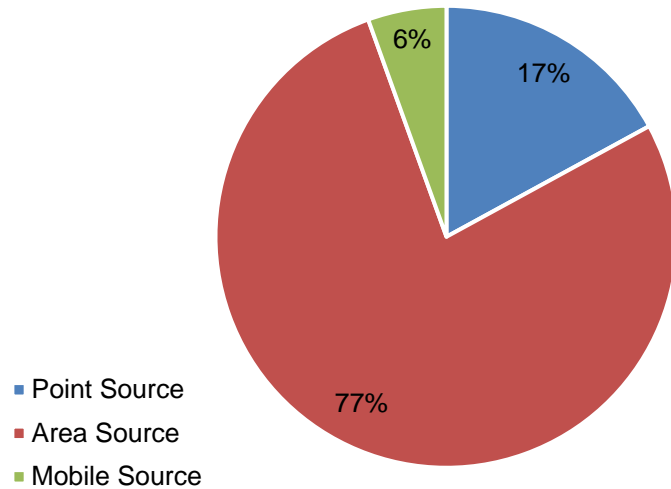
Results – where are the emissions coming from?

The majority of TPM, PM₁₀, PM_{2.5}, VOC and NH₃ emissions were from area sources. Mobile sources, excluding road dust, were the largest contributor of CO and NO_x. The largest emitters for SO₂ were point sources.

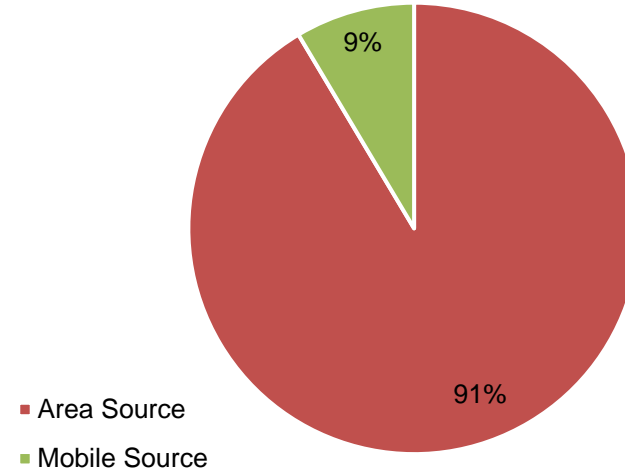
Area Sources

Overall, the majority of TPM, PM₁₀, PM_{2.5}, VOC and NH₃ emissions were from area sources. Open burning was the largest contributor of CO, NO_x, TPM, PM₁₀ and PM_{2.5}. VOC emissions from gasoline marketing including the distribution and sales of petroleum products at service stations and solvent evaporation accounted for approximately half of the total VOC emissions from area sources. Agricultural activities were the largest source for the regional NH₃ emissions. Space heating was the largest contributor of SO₂ emissions and second largest contributor of CO, NO_x, TPM, PM₁₀ and PM_{2.5} emissions.

Distribution of PM_{2.5} Emissions



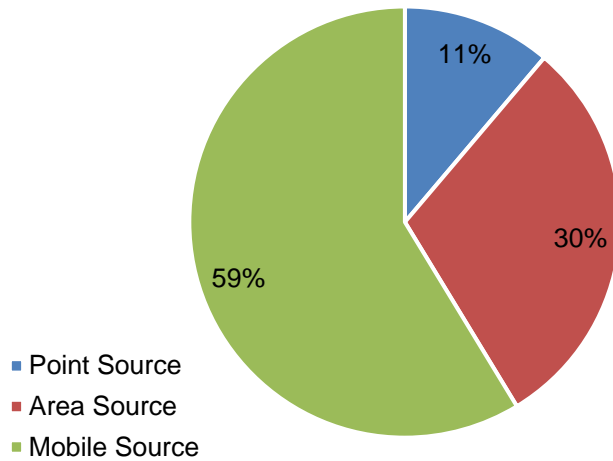
Distribution of NH₃ Emissions



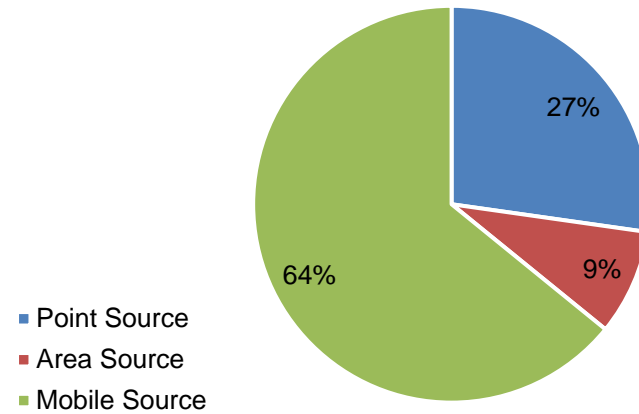
Mobile Sources

Overall, mobile sources, excluding road dust, were the largest contributor of CO and NOx. Data analyses indicated that emissions from on-road vehicles were the largest contributor of all CACs from mobile sources with the exception of NOx. Marine vessels were the largest contributor of NOx emissions from mobile sources. The second largest emission contributor to CO, TPM, PM₁₀, PM_{2.5} and VOC emissions from mobile sources was non-road equipment/vehicles. CAC emissions due to aircraft activity were insignificant.

Distribution of CO Emissions

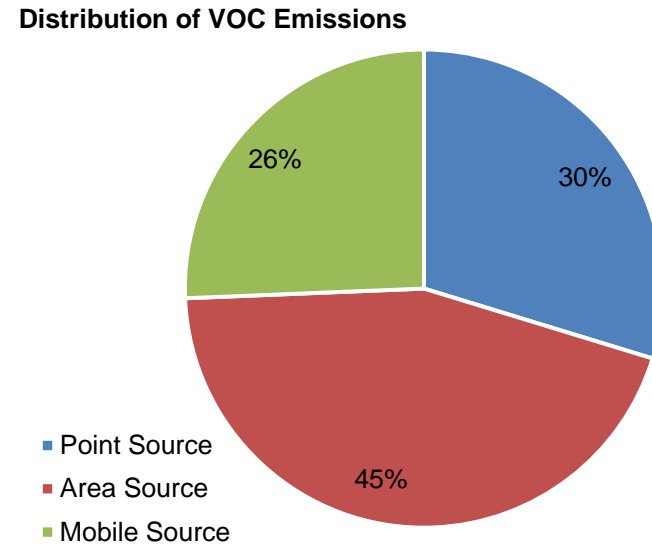
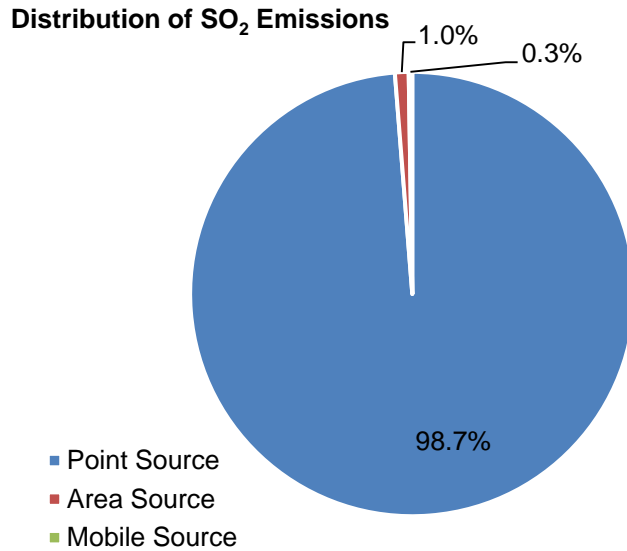


Distribution of NOx Emissions



Point Sources

Overall, the largest emitters for SO₂ were point sources. The majority of point source industry emissions were from the pulp and paper sector, which accounted for 87% of CO, 95% of NO_x, 62% of TPM, 77% of PM₁₀, 86% of PM_{2.5}, 67% of VOC, and 99.7% of SO₂ emissions from point sources. The petroleum product storage sector was the second largest contributor at 29% in terms of total VOC emissions.



For additional details on the Emissions Inventory please visit: <http://www.cvrld.bc.ca/DocumentCenter/View/65427>

Appendix B - Air Quality Study for the Cowichan Region

Background

The BC Ministry of Environment and the Cowichan Valley Regional District engaged Stantec Consulting Inc. in 2014 to analyze the meteorological and air quality datasets for the region to develop a more comprehensive analysis of the impact of emissions on air quality. The study considered the 11- year period 2003 through 2013 to consolidate the most recent air quality information in support of future airshed management efforts. Statistical summaries, graphics, and case studies were used to characterize patterns in the observed air quality conditions.

Scope

Air quality datasets from four monitoring stations in the CVRD were analyzed. These include Crofton Substation, Crofton Escarpment Way, Duncan Deykin Avenue, and Duncan Cairnsmore. The Crofton Substation and Duncan Deykin Avenue stations were operational prior to 2003. Observations at Crofton Escarpment Way and Duncan Cairnsmore stations began in October 2008 and July 2009, respectively.

The five substances that were measured and analyzed are: sulphur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter (PM), total reduced sulphur (TRS), and ozone (O₃). Particulate matter is further categorized by diameter into inhalable (PM₁₀) and respirable (PM_{2.5}) fractions. These substances are known collectively as criteria air contaminants (CACs). Air quality is determined by a comparison of the measured CAC concentrations with the national and provincial ambient air quality objectives (AAQO).



Results of baseline analysis

Respirable Particulate Matter - PM_{2.5} (particulate size is small enough to be absorbed and distributed into organs of body)

There were sporadic exceedances of the PM_{2.5} objectives (Figures 1 and 2). The study revealed that the exceedances were episodic and not systemic in nature. The Crofton Substation, Crofton Escarpment Way, and Duncan Deykin Avenue stations had very few exceedances of the 24-hour AAQO for PM_{2.5} while Duncan Cairnsmore had a greater frequency of exceedances. The diurnal (hourly) analysis showed increased PM_{2.5} concentrations in the late afternoons and evenings (Figure 3). **PM_{2.5} and meteorological data analysis revealed that most of the sporadic exceedances may be due to local burning and space heating (winter)**, The analysis also revealed that there were a few exceedances due to long range transport from forest fires located in other regions (summer).

Impact of pollutant

PM_{2.5} refers to particulate matter that is less than 2.5 microns in diameter. This is the particulate size of greatest concern because it can travel deep into the lungs, causing heart and lung disease, and even premature death. Fine particles that comprise PM_{2.5} are also efficient at scattering light, resulting in degradation in visibility.

The following figures illustrate the exceedance of PM_{2.5} objectives and the daily pattern observed at the Duncan Cairnsmore location.

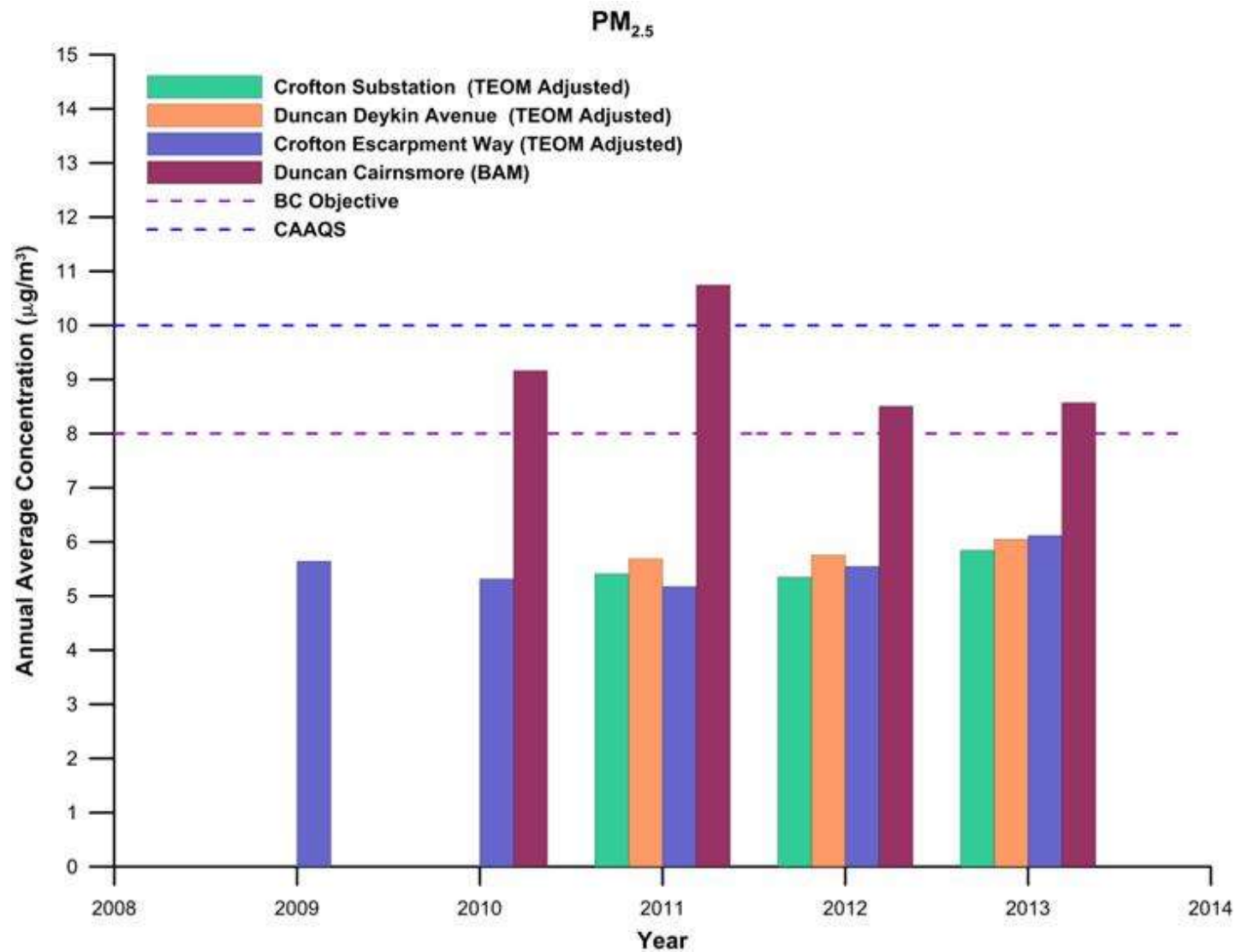


Figure 1. Annual Average PM_{2.5} Concentrations in the CVRD

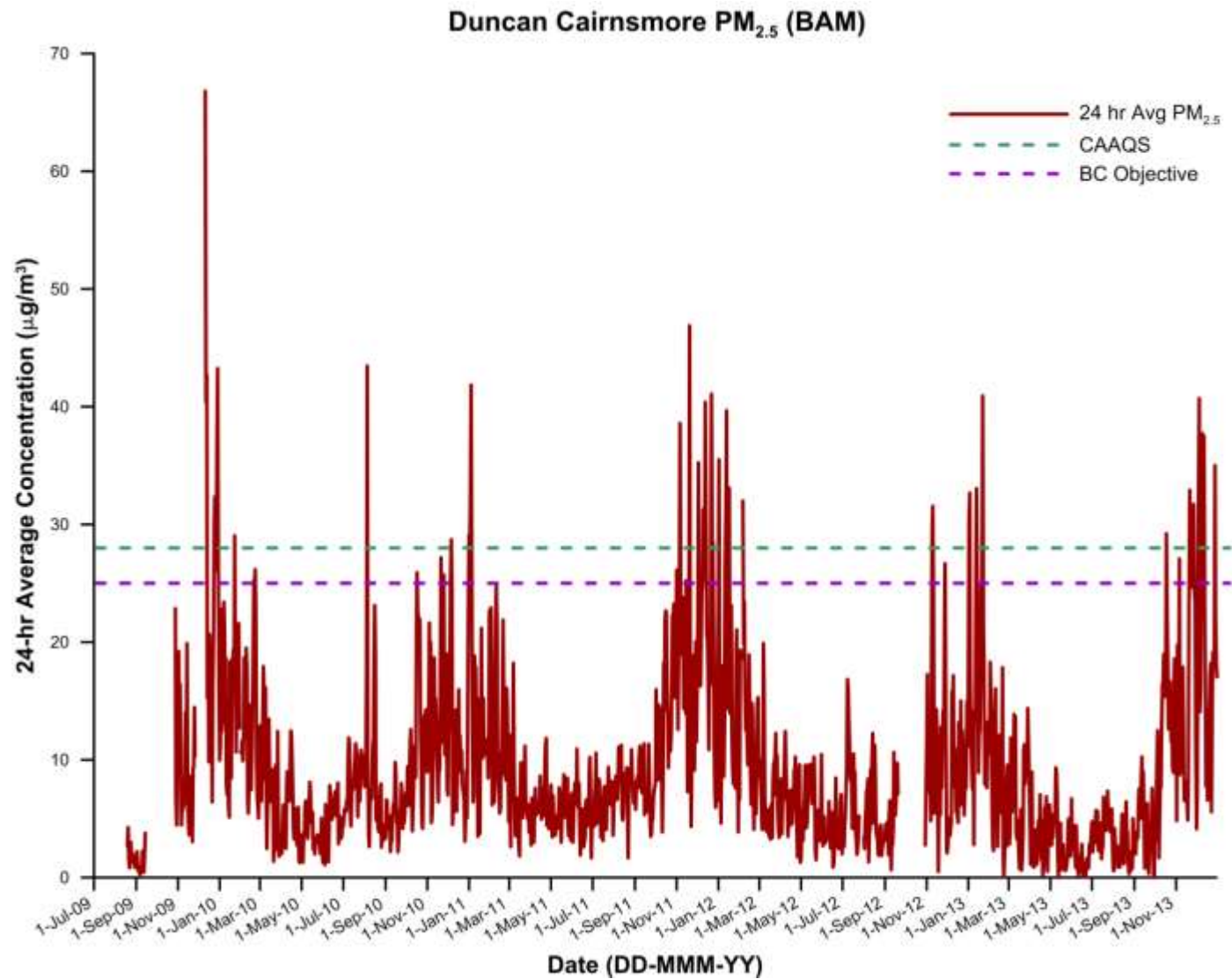


Figure 2. 24 Hour Average PM_{2.5} at Duncan Cairnsmore

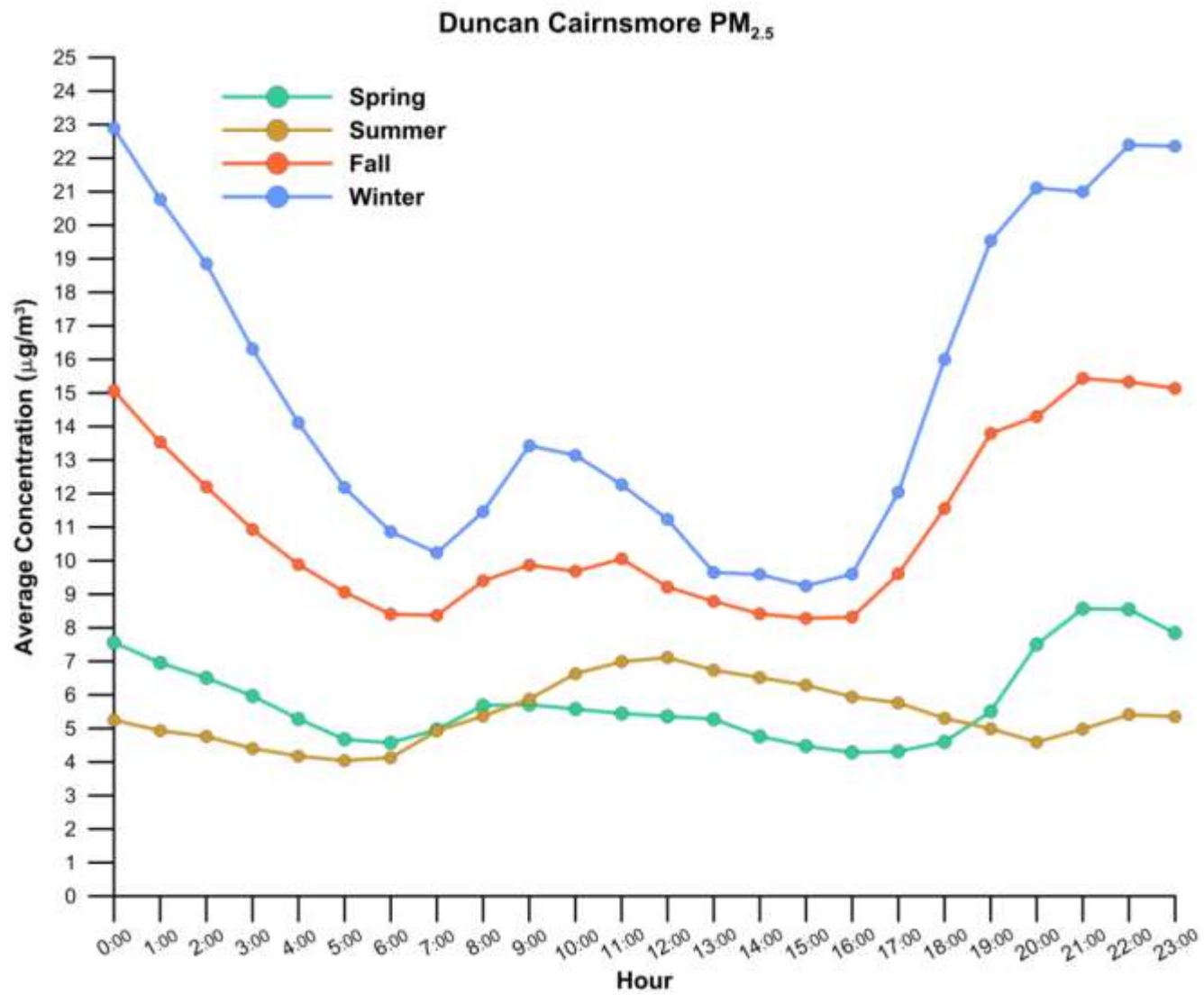


Figure 3. Diurnal Trends in PM_{2.5} Concentration at Duncan Cairnsmore by Season.

Inhalable Particulate Matter – PM₁₀ (particulate size will irritate and cause coughing, become lodged in respiration system)

At Crofton Substation, there was just one day when the 24 hour average PM₁₀ concentration exceeded the BC AAQO (Figure 4). There were no exceedances of the provincial objective at Duncan Deykin Avenue from 2003 to 2010 (Figure 5). At Crofton substation, there is minimal seasonal trend with slightly higher concentrations in the spring and summer compared to the fall and winter. At Duncan Deykin Avenue, there were higher concentrations in the late fall and early winter due to activities such as space heating and open burning.

Impact of pollutant

PM₁₀ refers to particulate matter that is less than 10 microns in length. These particles can irritate the nose and throat, but do not normally penetrate deep into the lungs. Particulate matter is the main source of haze that reduces visibility. These particles can also make lakes and other sensitive areas more acidic, causing changes to the nutrient balance and harming aquatic life.

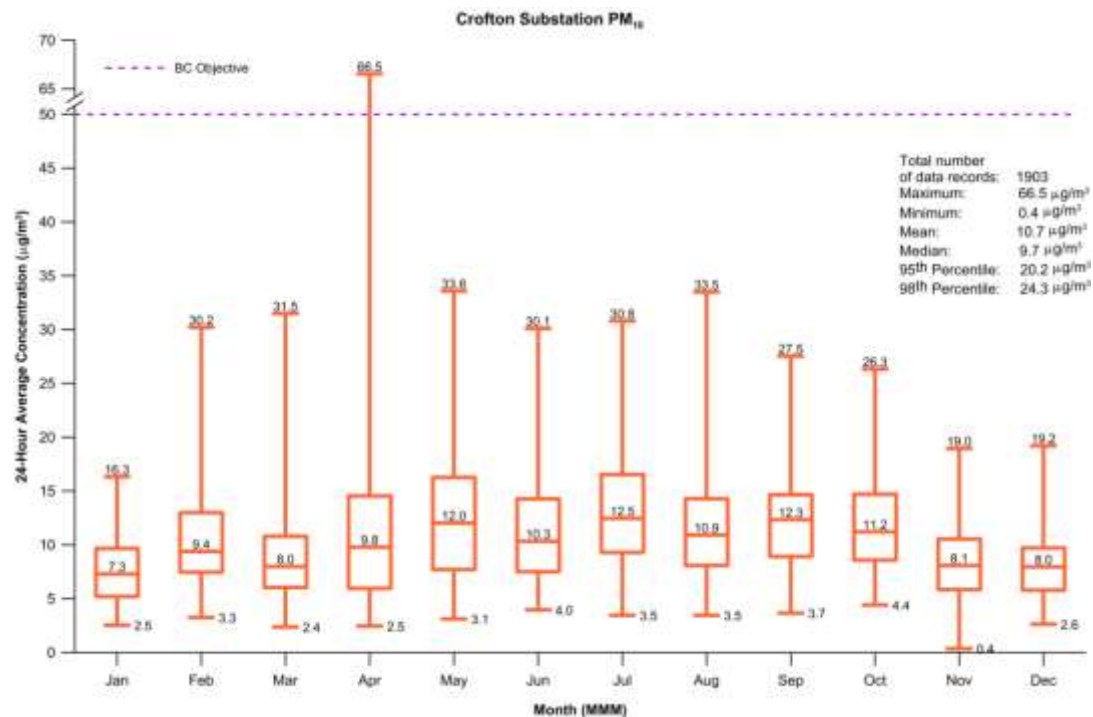


Figure 4. Monthly Variation of 24-Hour Average PM₁₀ Concentration at Crofton Substation Based on 2005–2010 Data

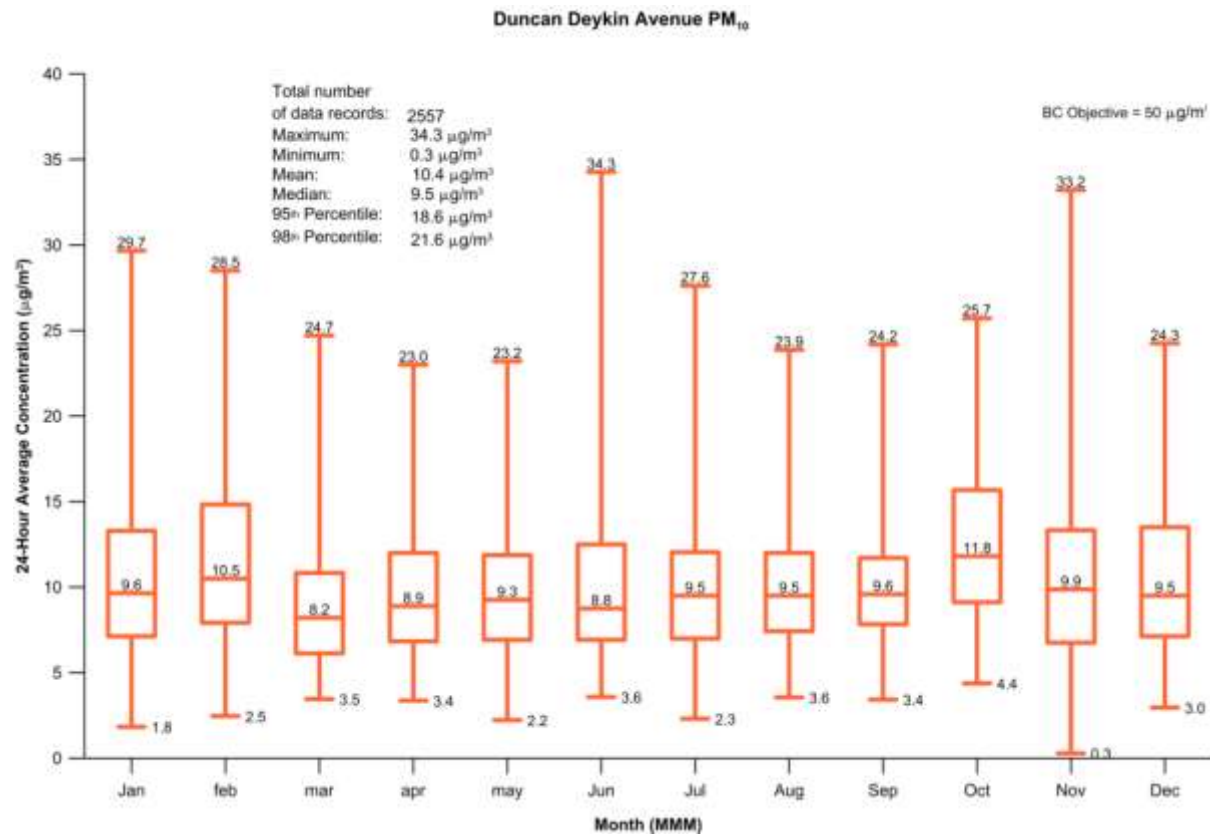


Figure 5. Monthly Variation of 24-Hour Average PM₁₀ Concentration at Duncan Deykin Avenue Based on 2003–2010 Data

Ozone

Ozone was measured at the Duncan Cairnsmore station starting in mid-2009. Ozone (O₃) is more prevalent during summertime high pressure systems, as its formation is dependent on sunlight and warm temperatures. Average monthly concentrations exhibited a springtime peak, but the highest 1-hour average concentrations occurred in August (figure 6). A well-defined daily cycle in O₃ concentration with a late afternoon maximum was observed for all seasons, indicating some local photochemical production – entirely consistent with the small urban setting (figure 7). Further analysis of two high-concentration episodes found these patterns were

associated with periods of hot, sunny weather. Analysis of O₃ into regimes suggests that transport of O₃ from the Lower Fraser Valley (or most distant sources) is not an important factor. This analysis is illustrated in the Air Quality Study Report. There were no exceedances of the national AAQO for O₃.

Impact of Pollutant

Low concentrations of ground-level ozone can irritate the eyes, nose and throat. O₃ can also irritate the lung airways, and make them red and swollen (inflammation). People with lung problems are most at risk, but even healthy people who are active outdoors can be affected when ozone levels are high. O₃ can also damage plants and trees when levels are high.

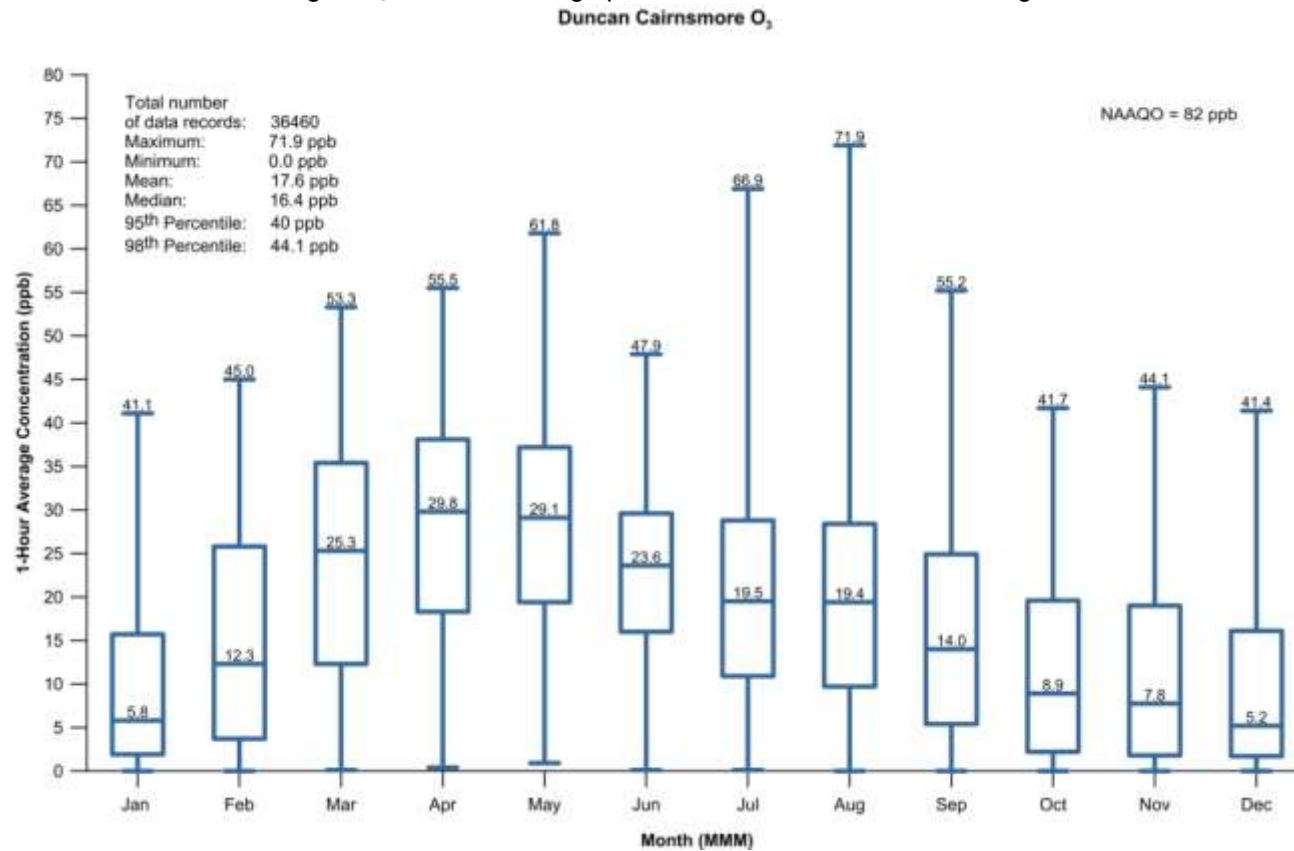


Figure 6. Monthly Variation of 1-Hour Average O₃ Concentration at Duncan Cairnsmore based on 2009–2013 Data

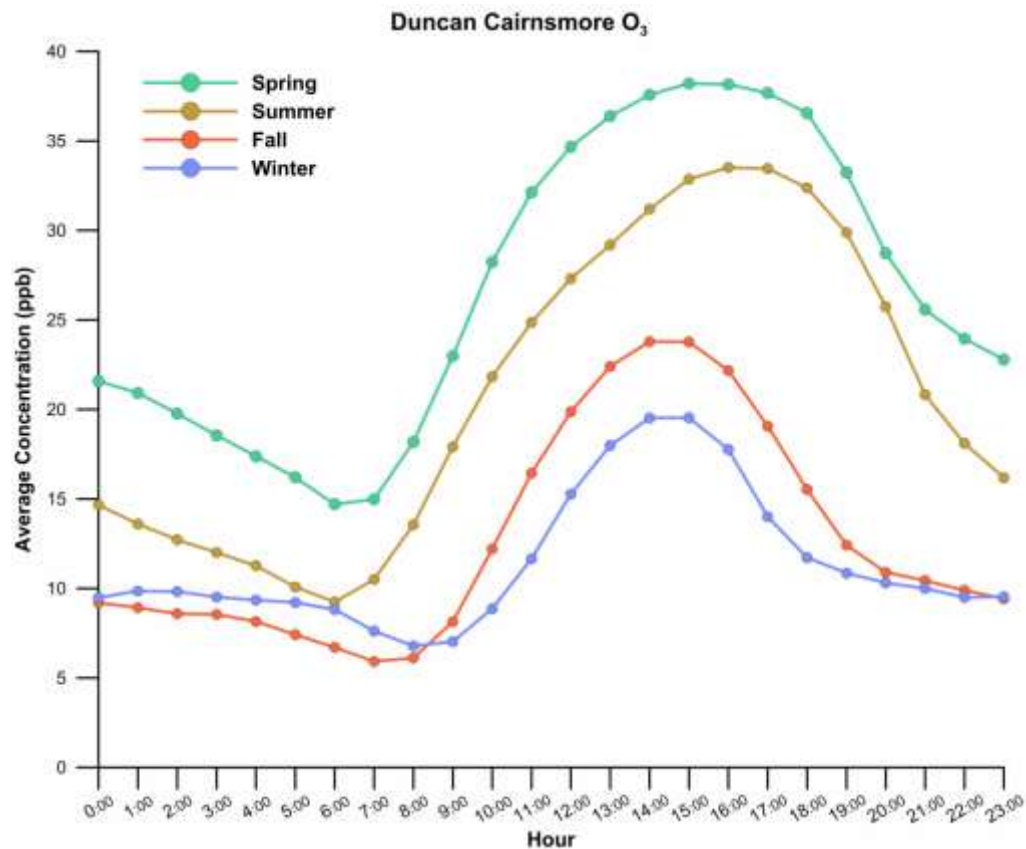


Figure 7. Diurnal trends in O3 concentration at Duncan Cairnsmore by Season

Sulphur Dioxide

A daily pattern was found for SO₂ concentrations in which average values peaked in late morning and decreased through the night. This pattern was likely due to shoreline fumigation (clearing of air) after the onset of onshore (easterly) wind flow. No day of week pattern was apparent for SO₂. There were no exceedances of national or provincial AAQO for SO₂ (Figure 8).

Impact of Pollutant

Sulphur dioxide can transform in the atmosphere to sulphuric acid, a major component of acid rain. Inhalation of high levels of sulfur dioxide is associated with increased respiratory symptoms and disease, difficulty in breathing and premature death.

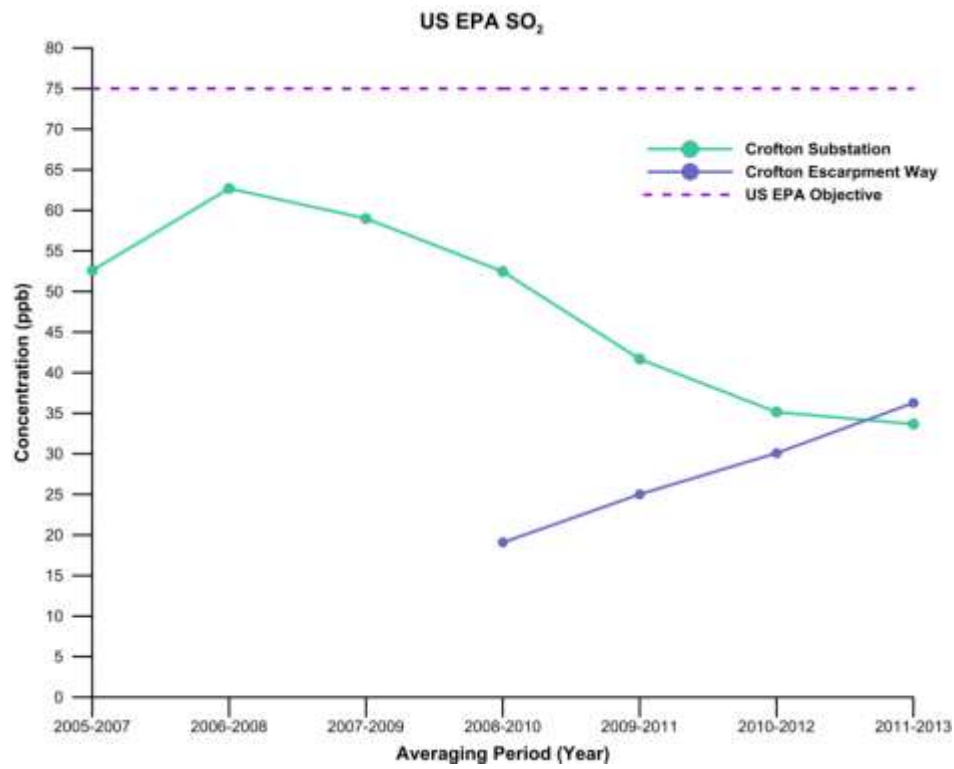


Figure 8. 1-Hour Average SO₂ Results for the US EPA Supplemental Objective at the Crofton Substation and Crofton Escarpment Way Monitoring Stations

Nitrogen Dioxide

A daily pattern was found for NO₂ concentrations as well. The pattern for NO₂ showed two peaks, one in the morning and one in the evening, corresponding to times of peak motor vehicle traffic (Figure 9). There appears to be a downward trend in the annual average NO₂ concentrations likely linked to improving combustion efficiencies in motor vehicles (Figure 10). There were no exceedances of national or provincial AAQO for NO₂.

Impact of Pollutant

High levels of Nitrogen dioxide can irritate the lungs and lower resistance to respiratory infections such as influenza. Nitrogen oxides in the air can significantly contribute to acid rain and eutrophication in coastal waters.

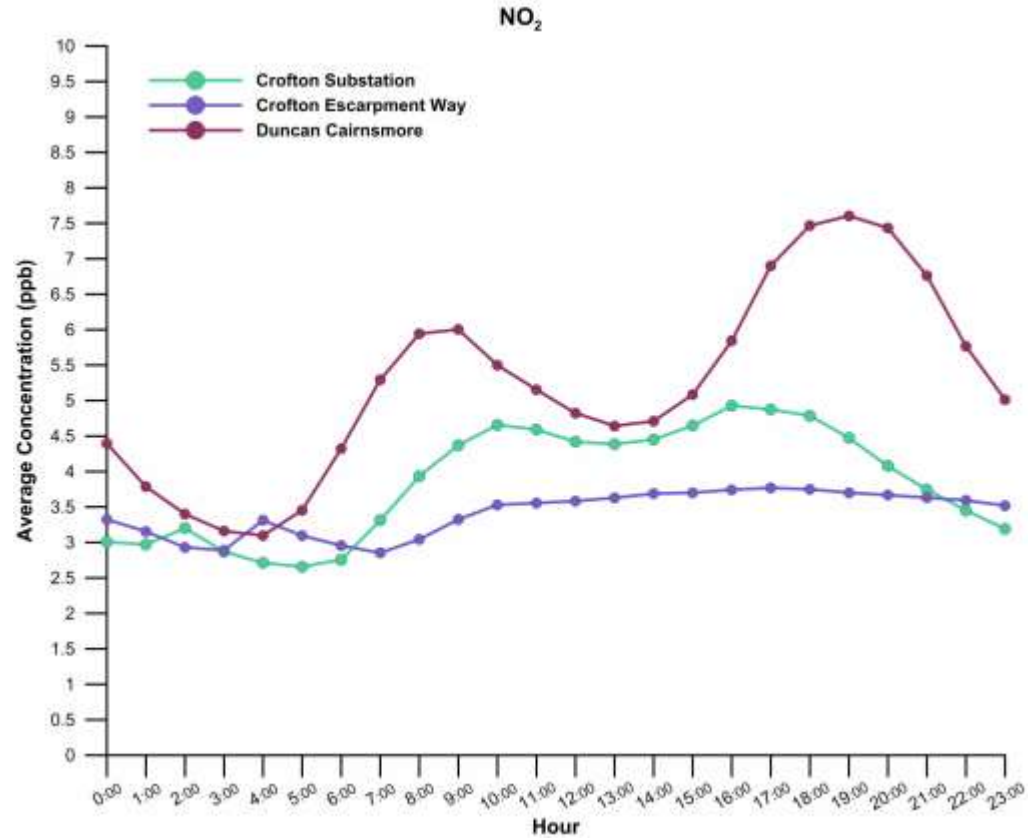


Figure 9. Diurnal Trends in NO₂ Concentration Based on all Available Hourly Data

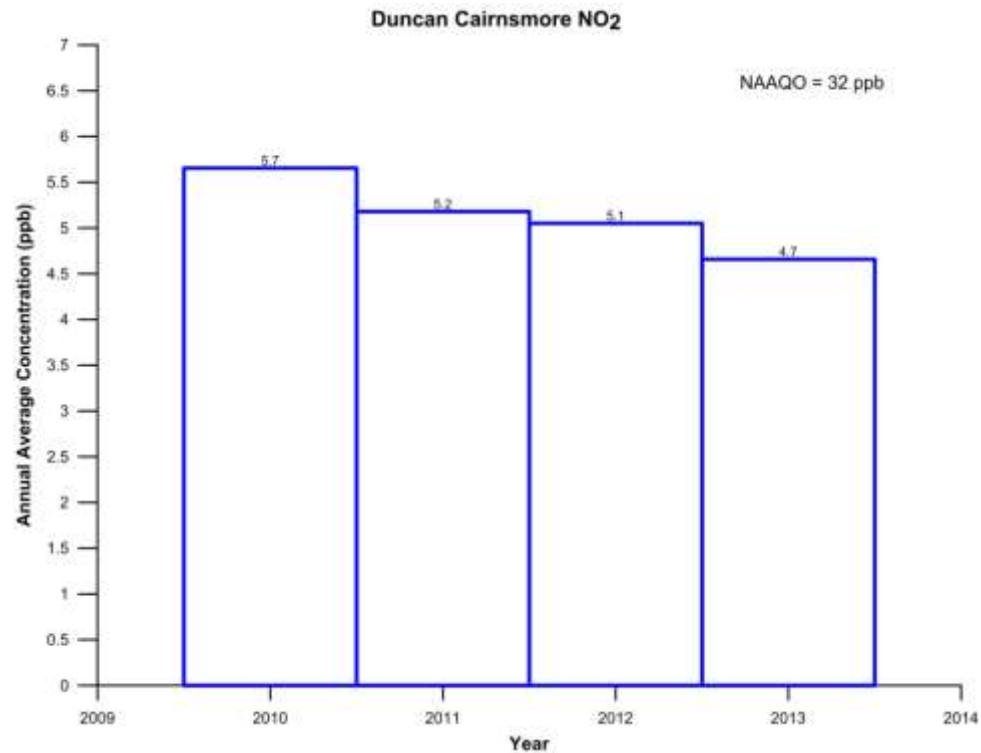


Figure 10. Annual Average NO₂ Concentrations at Duncan Cairnsmore for 2010–2013

Total Reduced Sulphur

Total reduced sulphur (TRS) exhibited low average concentrations with short-term peaks that exceeded the most stringent BC AAQO for the 1-hour and 24-hour averaging periods (Figure 11). These episodes of higher TRS concentration are most likely associated with emissions from the Pulp Mill in Crofton. Exceedance of the TRS AAQO for the 24-hour averaging period occurred up to 30% of the time on an annual basis at Crofton Substation which is 250 m south of the Pulp Mill, but only up to 1.5% of the time at Duncan Deykin Avenue which is more than 8 km away from the Pulp Mill (illustrated in the Air Quality Study Report). The meteorological data analysis revealed that these sporadic exceedances may be due to the Crofton Mill emissions.

Impact of Pollutant

TRS is a mixture of compounds including hydrogen sulphide, mercaptan, dimethyl sulphide and dimethyl disulphide. TRS compounds are not considered a health hazard at typical environmental levels. They are however, a primary cause of odours. Exposure to high concentrations of hydrogen sulfide can lead to respiratory distress or arrest.

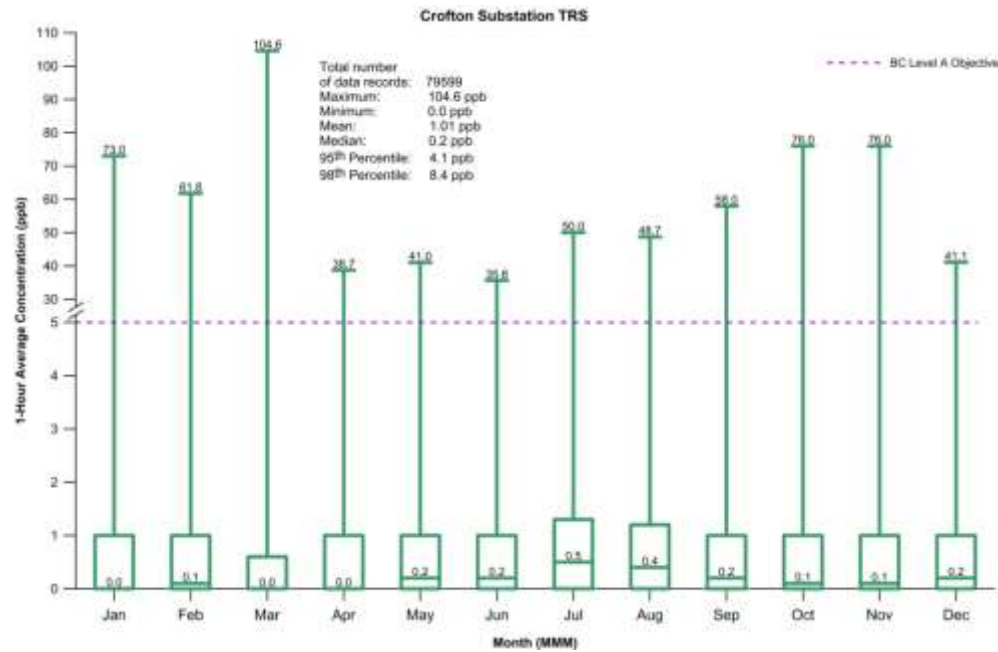


Figure 11. Monthly Variation of 1-Hour Average TRS Concentration at Crofton Substation Based on 2003–2013 Data.

For additional details on the Air Quality Study please visit: <ftp://ftp.cvrld.bc.ca/Environment/Airshed%20Protection/AirQualityStudyFinal.pdf>

Appendix C – Our Indicators and Targets

The following indicators and targets were developed to help us understand whether we are achieving our goals

Parameter	Indicator	Sources	Rationale	Targets ⇒ Denotes key target	Units	Monitoring
Health	a) Childhood respiratory illness		a) Health effects	Zero	# of people	Island Health
Population	b) Resident population c) Visitors by demographic categories		b) Measure of population growth c) Measure of tourism health	N/A	# of people	Census data
Particulate matter	a) Annual average PM _{2.5}	Open burning and wood burning appliances	Health effects (respiratory, cardiovascular), vegetation damage, visibility degradation.	⇒ a) Zero exceedance of BC AAQO (8 µg/m ³) & zero exceedance of National AAQO	µg/m ³	Yes
	b) Daily PM _{2.5}		Reduce the frequency and duration of episodes that lead to <i>air quality advisories</i> .	⇒ b) Zero exceedance of BC AAQO (25 µg/m ³) & zero exceedance of National AAQO		
NOx	a) Provincial and National objectives	industry, mobile sources, wood burning, etc.	Health effects (respiratory), vegetation damage, acidification, secondary particles, O ₃ precursor	Decreasing trend		
SO ₂	a) Provincial and National objectives guideline of 7.5 ppb	Crofton Pulp Mill; combustion of fossil fuels containing sulphur. Marine Vessels.	At high concentrations - health effects (respiratory), vegetation damage, acidification, fine particulate formation, visibility	a) WHO 24 h 7.5 ppb		
Ozone	a) Provincial and National Objectives for 1 hr and 8 hr	A secondary pollutant formed from reactions between oxides of	Health effects (respiratory and eyes), vegetation damage, visibility (photochemical smog)			

			nitrogen (NOx) and volatile organic compounds (VOCs) in the presence of sunlight			
Odour	<ul style="list-style-type: none"> a) # of odour complaints b) TRS – Provincial Level A odour objective 	Point sources Crofton pulp mill; sewage treatment; swamps, bogs and marshes.	Offensive odours	<ul style="list-style-type: none"> a) Reduction in odour complaints b) Continuous improvement in TRS 		
Visibility	<ul style="list-style-type: none"> a) Visibility b) Complaints 	Mobile sources Ozone, NOx, VOC and PM	can effect tourism, outdoor recreation and public perception	<ul style="list-style-type: none"> a) Reduction in visibility complaints b) Visibility index of good 		
Partnerships & Leadership	<ul style="list-style-type: none"> a) Good Visibility a) Annual reports b) Partnerships c) Stewardship programs d) Public Awareness Campaign 			<ul style="list-style-type: none"> ⇒ Form an Airshed Protection Round Table ⇒ Implement Actions in this Strategy 		<ul style="list-style-type: none"> - Website hits. - #of AQ pres. given to others. # of requests for info AQ planning. - # of visitors with a positive perception of air quality and environmental health.

Appendix D - Contaminant Prioritization

To focus the planning of actions on those that will have the greatest impact on our air quality, high priority pollutants have been determined based on the following criteria:

- Does the pollutant have exceedance(s) of national or provincial air quality objectives?
- Is the pollutant normally considered to be a significant hazard to human health, the environment or the economy?

Pollutant	Exceedance of AQ objective	Hazard		
		Human Health	Environmental	Economic
SO ₂		√	√	√
TRS	√			√
NO _x		√	√	√
Ozone		√	√	√
PM ₁₀		√	√	√
PM _{2.5}	√	√	√	√

Appendix E – References

1. Provincial Framework for Airshed Planning – BC Government
(http://www.bcairquality.ca/reports/pdfs/airshedplan_provframework.pdf)
2. A Review of Airshed Planning in British Columbia – BC Government - March 31, 2009
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9. Carlton, A.G., R.W. Pinder, P.V. Bhave and G.A. Pouliot. "To What Extent Can Biogenic SOA be Controlled?", Environmental Science & Technology 44:3376-3380 (2010).
10. Emissions Inventory Compilation and Forecast for the Cowichan Valley Regional District – BC Ministry of Environment and Cowichan Valley Regional District – Prepared by Levelton Consultants – June 25th, 2014
11. Air Quality Study, Cowichan Valley Regional District – BC Ministry of Environment and Cowichan Valley Regional District – Prepared by Stantec – January 29th, 2015

The Cowichan Air Quality Partnership

A collaborative project led by local and provincial government, First Nations and local air quality stewards

For more information, please visit www.cvrp.bc.ca/air

Our Accomplishments to Date



Airshed Communications and Engagement Roadmap for the Cowichan Region

Goals

Foster Behavioural Changes

- **Burn Less (or Not at All):** Adoption of alternatives to home heating with wood and open burning;
- **Burn Better:** If you must burn, follow best practices.

Engage and Collaborate: Support champions seeking to improve air quality.

Our ultimate goal: better health for residents.

These goals are consistent with the goals of Cowichan's Regional Airshed Protection Strategy.

Approach

This Roadmap follows a community-based social marketing approach to bring about behaviour change.

Steps include:

- Selecting the behavior to be promoted;
- Identifying the barriers and benefits associated with the selected behavior;
- Designing actions that use behavior-change tools to address these barriers and benefits;
- Evaluating the impact of the program once it has been implemented broadly.

The Air Quality Problem

Fine Particulate Matter (PM_{2.5}) is a health concern. These particles are smaller than 2.5 microns—20 times smaller than the width of a human hair.

Fine particles can:

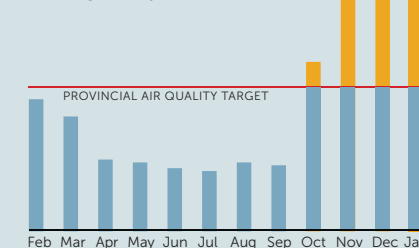
- travel deep into the lungs causing disease and contributing to earlier death
- make it harder for people to breathe
- make existing lung or heart related symptoms worse
- trigger heart attacks

Health Impacts in the Cowichan

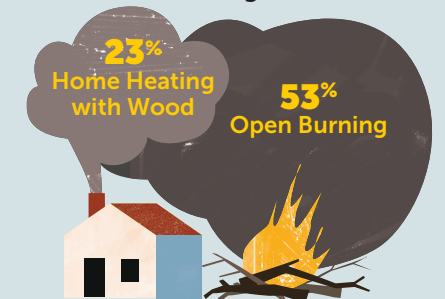
- Admission rates for children with respiratory illness: **70% higher than BC average**
- Chronic respiratory illness for folks 45 and over: **50% more common than in BC as a whole**

Month-by-Month Concentrations of PM_{2.5} in the Cowichan

(Average Daily Maximum Level)



Sources of PM_{2.5} in the Cowichan Region



Targeted Groups and Behaviour Changes

Open Burners

BEHAVIOUR GOALS
Burn Less
Burn Better



Woodstove Operators

BEHAVIOUR GOALS
Burn Less
Burn Better



Community Champions



PHASE 1 Build Capacity

BUILD RELATIONSHIPS

DEVELOP TOOLS

PHASE 2 Launch Programs

PHASE 3 Evaluate and Improve

Property Owners/Occupiers

- Developers
- Agriculture
- Forestry

New Members

- Fire departments
- Farmers institutes
- Industry associations

Regulators

Make regulation more consistent.

BURN LESS Alternatives to Open Burning

- Identify alternatives (chipping, wood material transport).
- Establish tools to support alternatives.
- Coordinate efforts.

BURN LESS & BURN BETTER Communication Tools

Develop door hanger/one-pager to support enforcement.

BURN LESS & BURN BETTER Support Enforcement

Align and enhance bylaws, licensing requirements, enforcement, partnerships and training.

BURN LESS & BURN BETTER Analyze Regional Open Burning

Understand burning practices of major players in region.

Explore Tracking Tool & Notification Network

Advise on best practices for scheduled burns, and present alternatives.

Identify and Address Gaps

Review potential gaps including enforcement, community champions and large scale burn practices.

Expand Notification Network

- For open burning license holders to receive air quality advisories, burn bans, best practices/alternatives
- Notification to impacted neighbourhoods

Heating System and Energy Retailers

Understand context of retail sales and draft ways to promote woodstove replacement.

Woodstove Exchange Program Participants

Understand barriers to choosing alternative heat sources.

Regulators

Make regulation more consistent. Focus on higher-density areas.

BURN LESS Transform Woodstove Exchange Program into a Woodstove Replacement Program

Replace woodstoves with heat pumps, pellet stoves, or propane heaters.

BURN BETTER Establish Master Burner Program

Increase knowledge of efficient operation.

- Develop 3 best-practice videos.
- Develop posters and postcards.

BURN LESS Launch Woodstove Replacement Program

Provide additional incentives for the alternatives.

BURN BETTER Launch Master Burner Program

Foster behaviour changes through awareness programs, focussing on higher-density neighbourhoods with frequent power outages.

Shift Woodstove Use to Backup instead of Primary Heating Source

Enhance Woodstove Replacement Program and Master Burner Program

Evaluate past performance to support future growth of programs.

Develop Network of Community Champions

Engage, inform and empower:

- Students
- Clinicians
- Parents
- Teachers
- Others

Neighbourhood Action Kit

Create tools and incentives to empower community champions.

Collaborative Web Portal

Highlight air quality conditions, stewardship, and behaviour change.

Work with Community Champions to Launch:

- Web Portal
- Master Burner Program
- Notification Network

Expand Neighbourhood Sensor Network

Install PurpleAir sensors in additional communities.

Expand Community Champions Network

- Analyze the successes of the program and where gaps still exist.
- Explore options to expand the program to build resilience.

Burning releases harmful fine particles into the air

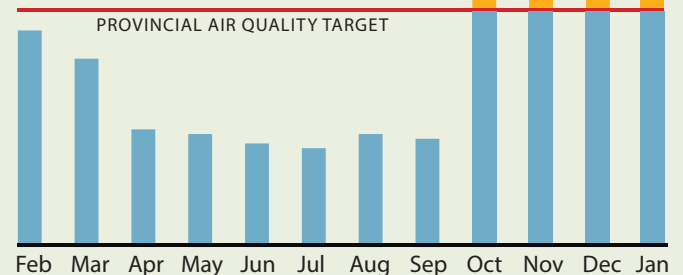
Can you improve the air in your neighbourhood?
Yes! By improving how we burn, we can improve our air at the local level.

Fine Particulate Matter (PM_{2.5}) is a Health Concern

These particles are smaller than 2.5 microns—20 times smaller than the width of a human hair. Fine particles can:

- travel deep into the lungs causing disease and contributing to earlier death
- make it harder for people to breathe
- make existing lung or heart related symptoms worse
- trigger heart attacks

Month-by-Month Concentrations of PM_{2.5} in the Cowichan (Average Daily Maximum Level)



Where Does It Come From?

23%
Home Heating with Wood

53%
Open Burning



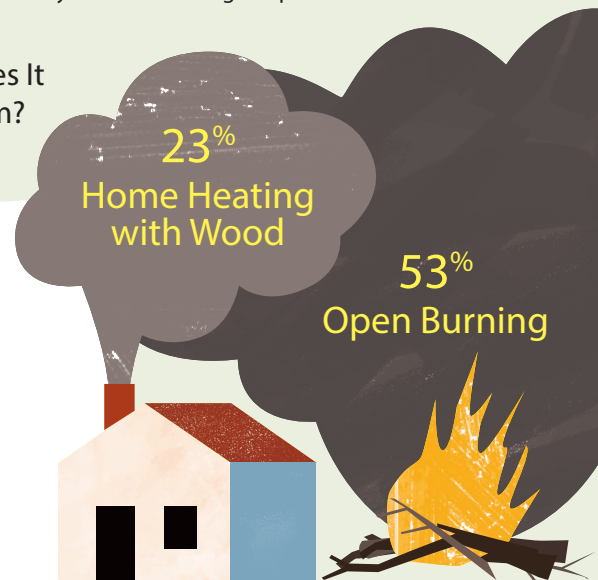
Let's work together!

Learn more at www.cvrd.bc.ca/air



Cowichan Air Quality Partnership

A collaborative project led by local and provincial government, First Nations and local air quality stewards



Burn Less, Burn Better



“There is something about the smell of wood smoke and the warmth of heat from a fire that is comforting for people. In our region, it is part of our history of living off the land.

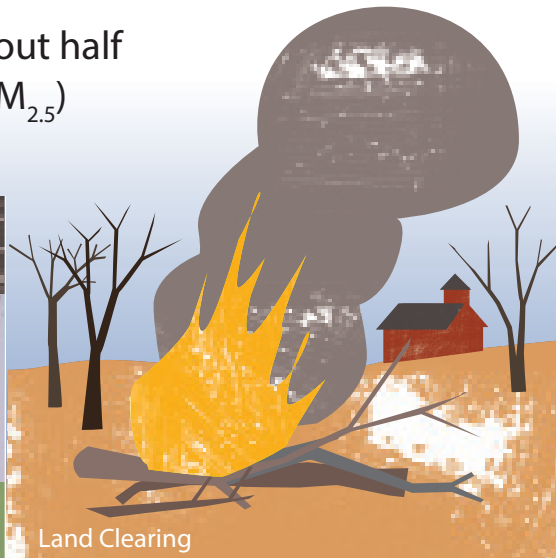
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LOCAL HISTORIAN

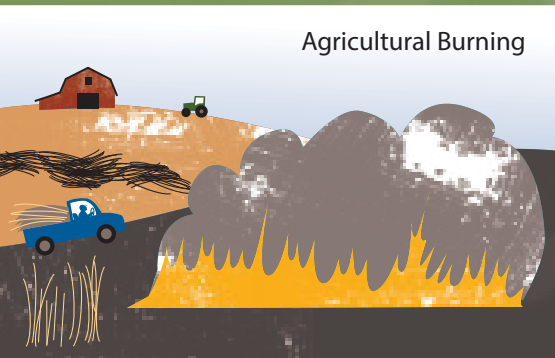
Open burning accounts for about half of the harmful fine particles (PM_{2.5}) being released in our region.



Residential Backyard Burning



Land Clearing



Agricultural Burning



Forestry Burning

How to Burn Better

BURN LESS

Recycle yard waste at CVRD dropoff locations. Start a backyard compost.

BURN CLEAN

If you need to burn, burn only dry branches and sticks. Never burn garbage.

CHECK THE VENTING INDEX

Choose a day when smoke disperses quickly.

KNOW THE RULES

Local or provincial regulations may apply—sometimes more than one!

Be air aware. Monitor your air quality and learn more at www.cvrdbc.ca/air



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Air Quality Sensors in a neighbourhood near you

NOW YOU CAN

- Check your local air quality online with the PurpleAir Map
- Find air quality hotspots in the region
- Understand patterns of fine particles (PM_{2.5}) in our air

 PurpleAir Sensors

 Provincial Sensors

Make sure to check PM_{2.5} levels each day. So you can enjoy your activities safely!



Ladysmith

Chemainus

Crofton

Maple Bay

Lake Cowichan

Honeymoon Bay

Duncan

Cowichan Bay

Cobble Hill

Shawnigan Lake

Mill Bay

What happens nearby affects **your health** the most.
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Burning releases harmful fine particles into the air

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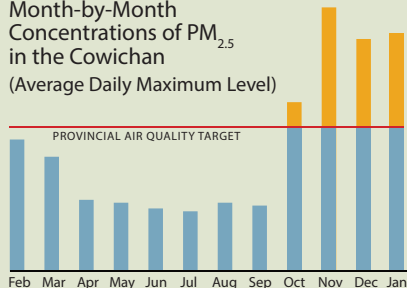
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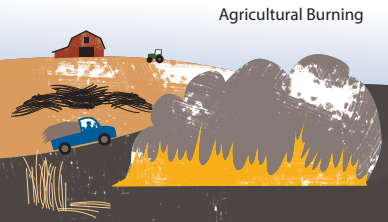
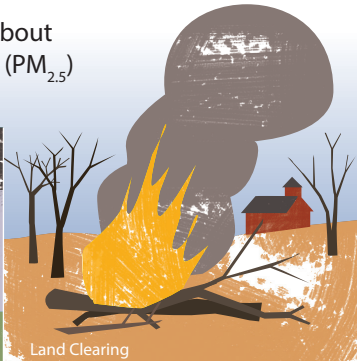
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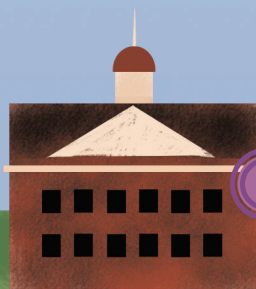
Air Quality Sensors

in a neighbourhood near you

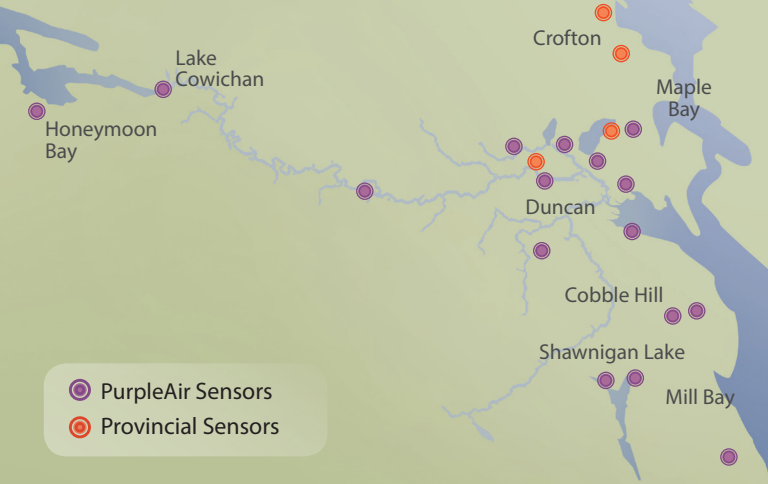
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DRAFT - Better Burning Bylaw Matrix
Burning Bylaws, Regulations and Policies in the Cowichan Valley Region

Regulation	Scope				Key Features			Additional Features								Alternatives		
	Applies to (burn category):			Applies in	Exemptions	Ban?			Burning windows	Burning Time	Permitted & Prohibited Materials	Set back or property size Requirements	Max size / pile	Supervisory Requirements	Penalties		Venting	Wood Burning Appliances
	1 Campfires	2 Backyard Burns	3 Machine piled burns (includes land clearing burns)			Campfire	Backyard burn	Machine piled burns (including land clearing burns)										
Local Government																		
Cowichan Valley Regional District Smoke Control Regulation Bylaw 3716	Yes	Yes	No	Electoral Areas A,B,C,D,E,G (exclusing Thetis Island Improvement District)	Burning on ALR land for "Normal farm practice" campfires	No	Partial burning is allowed during windows	Not Applicable	ONLY: March 15th - April 15th and October 15th - November 15th	07:00 - sunset for all materials except stumps Stumps - can burn up to 72 hours - no new material added after 17:00	Permitted Untreated natural wood, prunings, branches, tree trunks, stumps or other non-compostable items Prohibited Prohibited materials include those noted in BC's OBSCR below	burns must be at least 10m from all property line	Category 2 : no more than 2m in diameter and 2m in height, hand piled	At all times	\$250 - \$750, higher for burning prohibited materials	Must be Good	Not specified	Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden
Cowichan Valley Regional District Land Clearing Management Regulation Bylaw 2020	No	No	Yes	All Electoral Areas (exclusing Thetis Island Improvement District)	Normal farm practices, forest practice, Property class 7	Not Applicable	Not Applicable	Partial Allowed with permit	when permitted by Federal, Provincial and Local government regulations and Local fire restrictions established by the Fire Chief or authority having jurisdiction	As per Provincial regulations	Permitted Machine-piled landclearing debris (LCD) and regulated quantities of LCD including stumps, root mats, branches, brush, logs, or vegetation, Prohibited materials as noted for tBC's OBSCR below Composite Woodwaste prohibited	As per Provincial regulations: 100m from Residences / 500m from schools / hospitals	Any pile over 3m x 2m machine piled or 3 or more 3m x 2m piles	Property owner or occupier	up to \$2,000	Not specified	Not specified	Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden
Municipality of North Cowichan Fire Protection Bylaw 3340	Yes	Yes	Yes	the Municipality of North Cowichan	Right to Farm Act "Normal Farm Practices" - when it doesn't contravene Environmental Management Act	No	Partial allowed during window	Partial allowed if air curtain burner is used	Sep 15th to Nov 30th March 15th to April 15th	Daylight hours	Same as CVRD Permitted Only untreated natural wood and brush may be burned Prohibited No burning of any chemical or material including oil, tar, rubber, plastic or garbage, construction waste, treated wood, grass or leaves	Only properties outside of UCB may burn or properties larger than 2 acres. Permits required for properties greater than 2 acres in size.	Category 2 : no more than 2m in diameter and 2m in height, hand piled	Property owner or occupier	\$250 to \$1000 or \$500 for ALR land	Must be Good	no person shall use a wood burning appliance when an AQ advisory is in place , Exemptions are provided for homes where a wood burning appliance is the primary source of heating	possibilities for consideration: - chip and haul - tub grinders - air curtain burners CVRD Bing's Creek Recycling Depot and Coast Environmental in Chemainus and Duncan are closest
Town of Lake Cowichan Bylaw No. 878-2009 Outdoor Burning Regulation	Yes	Yes	Yes	Town of Lake Cowichan	can occur with with permit: - land clearing debris burned in an air curtain burner may be started at anytime: - cooking fire contained in a fire pit any time - fires started by Lake Cowichan Fire/Rescue for training and prevention	Partial allowed by permit (\$100) for special occasions or ceremonial fire	Yes	Partial allowed with permit (\$100) to use registered air curtain burner	The dates on which an outdoor fire may burn shall be stated on the permit.	Not specified	Permitted Only land clearing debris (waste from brush or tree clearing operations) can be burned in an air curtain burner Prohibited tires, oil, tar, asphalt, shingles, batteries, plastic and other substances which produce heavy black smoke, noxious odours or toxic residue when burned	Land clearing debris fires may only take place on parcels of land at least 6 acres in size	class 3 firest are limited to 16 cubic feet in volume	Fires must have adequate supervision	\$100 to \$500	Not specified	Not specified	Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden CVRD Meade Creek or Bing's Creek Recycling Depot are the closest.
Town of Ladysmith Fire Prevention Bylaw 1815	Yes	Yes	Yes	the Town of Ladysmith	Silviculture / FLNRO, ecosystem management, fire hazard reduction, forest fuel management, Fire Dept. training, Right to Farm, campfires or otherwise permitted	Partial allowed for special occasions approved by officer	Yes	Partial allowed with permit for land clearing - removal of a fire hazard or agricultural pruning	when permitted must not contravene OBSCR 145/93 - permitted burning will only take place on Mon-Fri of any week	Not specified	Only well dried and cured products are to be burned	Based on EMA requirements	Class 1 limited to 0.5 meters in diameter Class 3 limited to 0.5 cubic meters in volume	Adequate supervision and the capability of extinguishing the fire	up to \$2,000 (in accordance with the Offence Act)	Good at start of fire and fair for the second day, when applicable	Not specified	Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden CVRD Peerless Road Drop-Off Recycling Depot is the closest

DRAFT - Better Burning Bylaw Matrix

Burning Bylaws, Regulations and Policies in the Cowichan Valley Region

Regulation	Scope					Key Features			Additional Features								Alternatives		
	Applies to (burn category):			Applies in	Exemptions	Ban?			Burning windows	Burning Time	Permitted & Prohibited Materials	Set back or property size Requirements	Max size / pile	Supervisory Requirements	Penalties	Venting		Wood Burning Appliances	
	1 Campfires	2 Backyard Burns	3 Machine piled burns (includes land clearing burns)			Campfire	Backyard burn	Machine piled burns (including land clearing burns)											
City of Duncan	Yes	Yes	Yes	the City of Duncan	None	Yes	Yes	Yes	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Bylaw 3089 - some requirements include: - No person shall install a Wood Burning or Pellet Stove Appliance unless the appliance is certified to Canadian or US standard. - No person shall use a Wood Burning or Pellet Stove Appliance when an Air Quality Advisory is in effect, except to heat premises that are equipped with no other heating appliance - Prior to the completion of a sale or transfer of property on or after January 1, 2014 all existing non-certified Wood Burning or Pellet Stove Appliances on the property shall be replaced/removed.	Curbside pickup of yard and garden debris Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden Bing's Creek and Coast Environmental in Duncan are the closest.
Thetis Island Improvement District Regulation	Yes	Yes	Yes	Thetis Island	Category 1, 2 and 3 allowed with permit during periods of low fire hazard rating. Category 1 fires allowed with permit during periods of moderate fire hazard	Partial allowed by permit	Partial allowed by permit	Partial allowed by permit + FD site inspection + venting authorization	No permit required from Nov. 1st to March 31st. Permit required from April 1st to October 31st.	Not specified	Permitted Brush, Slash, Trees or other woody debris Prohibited Tires, Plastics, Drywall Demolition waste Domestic waste Paint & Paint products Treated Lumber Asphalt & Asphalt Products Rubber, Fuel & Lubricant containers Biomedical waste Tar Paper, Railway Ties Manure	must be at least 3m (10 ft.) from any grass, shrubbery, trees, or wooden fences and at least 6m (20 ft.) from any building	hand piled must not exceed 2 meters in height and 3 meters in diameter.	HIGH Risk Activities such as mowing, chainsawing etc. may take place in the morning hours (when humidity is highest) with safety precautions (water/extinguisher ready) in place and must be followed by a 2 hour fire watch after activity ceases at 11 a.m.	the Offence Act limits penalty to a maximum of \$2,000.	at least a "good" and a "fair" day in succession. It is illegal to burn in poor venting conditions	Not specified	Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden CVRD Peerless Road Drop-Off Recycling Depot and Coast Environmental in Chemainus are closest	
Shawnigan Improvement District Regulation	Yes	Yes	Yes	Shawnigan Improvement District	No permit is required	No	No	Not specified	No window	Not specified	Permitted The refuse is to be clean and dry, and in a condition that provides for safe and proper combustion. Prohibited Construction waste, stumps, demolition material, and rubber or plastic	Not specified	Not specified	Campfires may not be left unattended	the Offence Act limits penalty to a maximum of \$2,000.	Not specified	Not specified	Free yard and garden drop off at 6 facilities in the Cowichan Region noted at: https://www.cvrld.bc.ca/2647/Yard-Garden Fisher Road Recycling is the closest	
Provincial																			
BC Wildfire Regulation	Yes	Yes	Yes & also covers high risk activities within 1 km of forest land	Across British Columbia	exemptions must be delivered in writing to the exempted person	Partial allowed when coastal fire zone bans are not in effect	Partial allowed when coastal fire zone bans are not in effect	Partial allowed when coastal fire zone bans are not in effect	Exercised within the wildfire Danger Class rating system / burns are required for hazard abatement and forest protection / fire prevention	Not applicable	Not applicable	Not applicable	Not applicable	the fire is watched and patrolled by a person to prevent the escape of fire	\$1150 + cost to protect / \$70,000 (fire during summer ban is upwards of \$100,000 to \$1 million and 1 year jail sentence)	Good (in theory)	Not applicable		
BC Open Burning Smoke Control Regulation	No	No	Yes. Including: Land Clearing, silviculture, forestry, wildlife habitat enhancement, and domestic range improvement	Across British Columbia when not in local government jurisdiction	When burning leaves, foliage, weeds, crops, or stubble for domestic or agricultural purposes, or in Weed Control Act and Forest Practices Code compliance	Not Applicable	Not Applicable	Partial allowed by permit	Smoke may be released during open burning on a parcel of land on no more than four separate occasions during a calendar year	The smoke-release period for each parcel of land must not be greater than 72 consecutive hours	Permitted Leaves / grass / foliage exempt Prohibited fires, treated lumber plastics, railway ties drywall, manure demolition, waste rubber domestic waste asphalt paint asphalt products hazardous waste fuel and lubricant containers tar paper biomedical waste	The open burning of debris must be carried out at least (a) 100 metres from neighbouring residences and businesses, and (b) 500 metres from schools in session, hospitals and facilities	Category material at the same time in three or more piles each not exceeding 2 metres in height and 3 metres in width; or material in one or more piles each exceeding 2 metres in height or 3 metres in width; or one or more	adequate equipment and staff must be available to ensure the regulatory limits are met;	a fine of not more than \$200 000	Good on day of burn and Good or Fair forecast for the following day	Not applicable		

DRAFT - Better Burning Bylaw Matrix

Burning Bylaws, Regulations and Policies in the Cowichan Valley Region

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	Applies to (burn category):			Applies in	Exemptions	Ban?			Burning windows	Burning Time	Permitted & Prohibited Materials	Set back or property size Requirements	Max size / pile	Supervisory Requirements	Penalties		Venting	Wood Burning Appliances
	1 Campfires	2 Backyard Burns	3 Machine piled burns (includes land clearing burns)			Campfire	Backyard burn	Machine piled burns (including land clearing burns)										
Solid Fuel Burning Domestic Appliance Regulation	NA - Applies to retailers and manufacturers of wood burning appliances			Across British Columbia unless a more restrictive local bylaw in place	The new regulation does not affect existing wood stoves or fireplaces.	Not Applicable	Not Applicable	Not Applicable	Not applicable	Not applicable	Permitted 1) Untreated, seasoned wood/wood products: cordwood, wood chips, lumber ends 2) Wood pellets, pelletized biomass fuels 3) Manufactured fire logs 4) Corn kernels, seed hulls Prohibited 1) Garbage 2) Plastics 3) Treated or painted wood 4) Demolition debris 5) Rubber 6) Unseasoned wood products	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	all solid fuel burning appliances sold in BC need to be certified to meet particulate matter emission standards set by the EPA or the CSA.	

DRAFT - Better Burning Bylaw Matrix Bylaws of Neighbouring Local Governments

Regulation	Scope					Key Features			Additional Features								Alternatives	
	Applies to (burn category):			Applies in	Exemptions	Ban?			Burning windows	Burning Time	Permitted & Prohibited Materials	Setback or property size Requirements:	Max size / pile	Supervisory Requirements	Penalties	Venting		Wood Burning Appliances
	1 Campfires	2 Backyard Burns	3 Land Clearing Burns			Campfire	Backyard burn	land clearing burn										
City of Port Alberni Outdoor Burning Regulations - Bylaw 4906	yes	yes	yes	all	campfires open burning authorized by the fire chief	No campfires allowed throughout the year	Yes	Yes	Not applicable	A campfire is permitted throughout the year between dawn and 22:00 Hours local time with conditions:	Permitted Dry firewood, branches and stems Prohibited No manufactured material, including dimensional lumber. No compostable organic material such as but not limited to grass cuttings, leaves or vegetable matter No land clearing debris, o construction and/or demolition debris	The fire must be at least 3 meters (10 feet) from any grass, shrubbery, wooden fence or any other combustible material. Burning must take place at least 4 meters (13 feet) from any building.	small contained outdoor fire, not exceeding 0.5 meters (1.5 feet) in height and 0.5 meters (1.5 feet) in width	At all times	\$200	Not specified	Solid Fuel Burning Bylaw 4802: No person shall install, or allow to be installed, either indoors or outdoors, a solid-fuel burning appliance, furnace or boiler which is used for the space heating of a building, the heating of water or other such purpose unless it meets the emissions standards of CAN/CSA-B415.1	
City of Courtenay Fire Protective Services Bylaw 2556 s50	yes	yes	yes	Municipality and Fire Protection Areas	Normal farm practices, forest practice, Property class 7	Partial campfire allowed with permit	No allowed all year (allowed with permit from April 1 to October 31)	Partial Allowed with permit	Hand Piles and Burning Barrels (permit required from April 1 – October 31) Land Clearing (permit required year-round)	specified in burning permit	Permitted specified in burning permit Prohibited No burning of Trade Waste, tires, animal carcasses, oil, tar, asphalt, shingles, battery boxes, plastic materials, or any similar material which may produce heavy black smoke, on or in any fire Burning of land clearing slash is prohibited	specified in burning permit	specified in burning permit	Property owner or occupier	\$100	Not specified	No requirements identified other than permit requirement under Bylaw No. 2323 for the construction of a masonry fireplace or the installation of a wood burning appliance	year-round, curb side unlimited yard waste pick-up on the same day as regular garbage collection
Regional District of Nanaimo Bylaw 922	yes	yes	yes	Parksville Fire Protection Service Area	agriculture a permit for an agricultural clearing waste fire cooking fires 1 square meter in diameter fire started by the Fire Department	Partial Cooking fires allowed	Partial Allowed during window	yes	Oct 15th to Dec 15th Feb 15th to April 15th		Permitted agricultural clearing waste allowed by permit Prohibited No burning of noxious materials	no backyard burning within ten (10) meters of any building, structure, overhead wiring or highway;	not exceed 2 square meters in area	person 16 or older must be present at all times.	up to \$2,000	Not specified	No requirements identified	
Capital Regional District bylaw 3452	yes	yes	yes	Services Area of the Regional District	burning allowed with permit	Partial campfire allowed with permit all year	No Allowed all year. Permit required from April 1st to October 31st.	Partial Allowed with permit	October 1st to June 30th		Prohibited No burning of tires, plastic, drywall, paint and paint products, treated lumber, asphalt, asphalt products, rubber, fuel, solvents, metals and lubricant containers, tar paper, railway ties, demolition waste, garbage, biomedical waste or manure.	No backyard burning within 10 metres of any building, structure, fence, tree or hedge. No campfires within 7.5 meters of any building, structure, fence, tree or hedge.	NA	All fires must be continuously controlled and supervised by a competent person	\$50 to \$2000	Not specified	No requirements identified other than Bylaw No. 3741 which requires a permit for installation of solid fuel burning appliance	Land clearing receiving centers
Comox Valley Regional District Rural Cumberland Fire Protection Service Establishing Bylaw No. 192, 2011	yes	yes	yes	Rural Cumberland Fire Protection Service Establishing Bylaw	burning allowed with permit	Partial campfire allowed with permit	Partial burning allowed with permit	Partial burning allowed with permit. Permit for landclearing burns costs \$500.	October 15th to April 30th		Prohibited No garbage, animal waste, rubber, tires, oil, tar, asphalt shingles, battery boxes, plastic material, or any other materials which produce heavy black smoke or create a noxious odour No materials specified in the OBSCR	specified in burning permit	specified in burning permit	person 16 or older must be present at all times.	up to \$2,000	Not specified	No requirements identified	
District of Saanich Fire Prevention Bylaw 8807	yes	yes	yes	District of Saanich	leaves and grass and clippings	Partial burning allowed with permit	Partial burning allowed with permit	Partial burning allowed with permit	None specified	specified in burning permit	Prohibited (1) treated wood, (2) plastic or rubber products, (3) animal organic waste or vegetable or food waste, (4) asphaltic products, (5) waste petroleum products, paints, (7) paper products, other than to start a fire, (8) materials generally referred to as garbage or refuse.	must be: - located only on properties outside of the Urban Containment Boundary; - located at least 7.6 m (25 feet) from any building, wooden fence or property line;	less than 1 m in diameter	person 19 or older must be present at all times.	\$100 to \$2000	Not specified	No requirements identified other than Bylaw No. 8627 which requires a permit for installation of solid fuel burning appliance	



STAFF REPORT TO COMMITTEE

DATE OF REPORT April 11, 2018
MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018
FROM: Parks & Trails Division
Land Use Services Department
SUBJECT: Parks and Trails Volunteer Policy
FILE:

PURPOSE/INTRODUCTION

The purpose of this report is to summarize feedback received through referral of the draft Parks and Trails Volunteer Policy to CVRD's Advisory Parks Commissions.

RECOMMENDED RESOLUTION

That it be recommended to the Board that the Parks and Trails Volunteer Policy, as Attachment A to the Parks and Trails Volunteer Policy staff report to the April 25, 2018, Regional Services Committee meeting, be approved.

BACKGROUND

The Regional Services Committee previously directed that the draft Parks and Trails Volunteer Policy be referred to the Advisory Parks Commissions for review and feedback. The draft policy was circulated to the Advisory Parks Commissions in early December 2017, and Commissions have undertaken to review and provide feedback on the draft policy.

ANALYSIS

The feedback received from the Advisory Parks Commissions on the proposed Parks and Trails Volunteer Policy is summarized below, with inclusion of staff comments and suggested recommendations for consideration by the Committee for adoption of the policy.

General overall feedback on the proposed policy from several Commissions include:

"The policy seems to cover all potential volunteers, their activities, and what supervision is needed. It appeared to be comprehensive and allows for flexibility."

"The overall consensus is this document contains far too much unnecessary regulation of parks volunteers, and the effect of this will be to eradicate any easily form of community volunteerism."

"Generally supportive of volunteer policy, but suggest that the "Principles" section should include more on what volunteers can expect from the CVRD."

"Policy Principles 1, 2, 5, 6 & 7 are fair and reasonable."

Waiver Form for Volunteers

The following comment was received from one Parks Commission:

"Age of Consent for volunteers: 19 years is too old, suggest age 16 or 17 more appropriate."

The minimum age to sign a waiver consent form in British Columbia is 19 years of age. Individuals signing a waiver form under the age of 19 do not have legal status to waive such rights; therefore, a parent or legal guardian 19 years of age or older is required to sign on their behalf. The CVRD cannot arbitrarily amend this provincial legal requirement; therefore, until such time as the Province amends the age of consent, the policy will need to adhere to the established provincial age limit for signing of release waivers.

Volunteer Registration and Authorization

The following comments were received:

“Item 3 on cancellation of a volunteer(s) registration “for any reason” is too broad a statement, a specific reason should be required.”

To be more specific, it is suggested the policy be amended to reference the CVRD Standards of Conduct Policy as the basis for terminating volunteer participation where a breach of the Standards of Conduct Policy occurs. A copy of the Standards of Conduct Policy is attached for reference. Amendment of the Parks and Trails Volunteer Policy Principle #3 is recommended as follows:

The CVRD is not obliged to accept any person’s application to act as a CVRD Volunteer. The CVRD may at any time cancel a person’s registration as a CVRD Volunteer where such volunteer is in breach of the CVRD Standards of Conduct Policy.

“Ensure that the process for application and authorization are not onerous, otherwise volunteers will be discouraged.”

Staff certainly concur with this statement and will ensure the process for volunteer applications and authorization is straightforward and clear. There are a number of examples with other agencies with volunteer programs from which to draw upon in developing a volunteer registration form that will be intended to be available on-line for both filling out and submission.

“Who is authorized representative for activities? How long will authorization take?”

The authorized representative would be a CVRD employee as assigned through the Parks and Trails Division, given the variety of potential volunteer activities provides for involvement of various staff with different skillsets. The authorization timeframe for a proposed volunteer activity will vary, dependent upon a number of factors inclusive, but not limited to, complexity of the proposed volunteer activity, availability of funding and/or resources, layout and design work and approval(s) by third parties (i.e. for works in and about a stream course or environmentally sensitive area). A key objective will be working with Advisory Parks Commissions to annually identify community parks work plans, inclusive of potential in-park volunteer activities so that appropriate pre-planning and scheduling can be done to accommodate proposed volunteer activities.

Volunteer Orientation

The following comment was received from one Parks Commission:

“Item 4 requirement of a formal orientation before “any volunteer opportunity” is overkill for small projects. A sign in sheet and brief overview of the project works well.”

The purpose of an orientation at the commencement of a volunteer activity is to ensure that all who are participating understand the expectations, instructions are clear and safety-related matters have been dealt with. This is to ensure the outcome of the volunteer activity is both a positive and safe experience for participants as well as the deliverables of the volunteer activity meet the objectives of the CVRD and its partner(s). Staff certainly concur the type and degree of orientation would be commensurate with the volunteer activity, inclusive of signing in and brief

overview for small, low-key projects. A minor rewording of Policy Principle #4 is recommended to better acknowledge such range of volunteer activities, as follows:

Volunteers will be provided a pre-activity orientation before commencement of any volunteer activity and must be provided with the necessary training and equipment to undertake tasks in a safe and legal manner. Volunteers must follow all reasonable directions by CVRD staff.

Volunteer Activities Direction

The following comments were received:

“Concerns expressed re: staff oversight of volunteer activities (particular for small projects) and the cost of staff oversight on weekends when more community members are likely to be able to participate.”

The CVRD has the ability to vary the workweek of employees to accommodate weekend work at no additional cost and this has been done on a number of occasions over the years to undertake volunteer activities, inclusive of volunteer trail building and environmental enhancement projects. It is recognized that the availability of many community members for volunteer activities are limited to weekends and so continued development of the Parks and Trails Volunteer Program will certainly provide for these opportunities. The involvement of staff with volunteer activities provides for ensuring that volunteers are provided appropriate support and direction in achieving the activity tasks, both for the benefit of volunteers and ultimately for the use and/or enjoyment of park visitors.

“Staff member only to supervise volunteer activities when formerly it was the Regional Director or Alternate Director?”

As previously shared with the Committee, development of the Parks and Trails Volunteer Policy is but one component of the clarification of organizational roles and responsibilities, inclusive of elected officials, advisory commissions, employees and volunteers. Supervision of volunteers by CVRD employees is consistent with the role of employees to undertake the delivery of the organization’s services and activities on behalf of and under the policy direction of the Board.

“Allow for appropriately qualified and certified volunteers to undertake ‘high risk activities’.”

The CVRD currently lacks in-house resources and expertise to appropriately assess, monitor and regulate the certification, training and qualifications of volunteers for undertaking “high risk activities” which are otherwise contracted out (i.e. use of chainsaws/tree falling) to qualified contractors regulated through WorkSafe BC.

“As for acting ‘in accordance with CVRD policies...’ this should be the responsibility of those supervising the volunteers.”

This certainly is the expectation of those supervising parks and trails volunteers, as well as with conducting any and all activities on behalf of the Regional District.

“Substitute the word ‘guidelines’ for the phrase ‘standardized direction’ in order to acknowledge the necessity of flexibility in the policy.”

The purpose of the Parks and Trails Volunteer Policy is to provide clear and concise conditions and expectations for engagement of volunteers, both for those volunteering as well as for CVRD employees. The use of the word “guidelines” would imply informality with application of the policy, which is not the understanding of the current objectives to provide for better clarity and certainty of roles and responsibilities. This wording amendment is therefore not recommended to the Parks and Trails Volunteer Policy.

FINANCIAL CONSIDERATIONS

N/A

COMMUNICATION CONSIDERATIONS

The engagement and retention of volunteers under the proposed Parks and Trails Volunteer Policy would include an active awareness and recruitment strategy inclusive of advertising through various media of both general volunteer opportunities as well as specific volunteer activities where and when identified for specific parks or trails (i.e. use of social media, CVRD website, newsprint ads, etc.)

STRATEGIC/BUSINESS PLAN CONSIDERATIONS

Referred to (upon completion):

- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services


Prepared by:



Brian Farquhar
Manager

Reviewed by:

Not Applicable
Not Applicable



Ross Blackwell, MCIP, RPP, A.Ag.
General Manager

ATTACHMENTS:

- Attachment A – Proposed Amended Draft Parks and Trails Volunteer Policy
- Attachment B – Current Draft Parks and Trails Volunteer Policy
- Attachment C – CVRD Standards of Conduct Policy

(Proposed Amended Draft Policy as of April 25, 2018)

PARKS AND TRAILS VOLUNTEER POLICY

Applicability: Parks & Trails Effective Date:

PURPOSE:

To establish a policy to support volunteer opportunities in Electoral Area Community and Regional CVRD Parks and Trails.

DEFINITIONS:

Parks and Trails Volunteer

This policy applies to any individual, 16 years of age or older, who offers time, energy and skills of their own free will and without compensation for the benefit of the CVRD, and who signs a CVRD Volunteer Application, and whose application to become a CVRD Volunteer is accepted.

An individual who is less than 19 years of age may apply to become a CVRD Volunteer with the consent of their parent or legal guardian.

An individual who is 15 or younger may act as a CVRD Volunteer however they must be accompanied by their parent or legal guardian at all times.

Unless the person has signed a formal CVRD Volunteer Application and received a signed copy back from a CVRD Parks and Trails staff person, that person is not a "CVRD Volunteer" and is not authorized to participate in the CVRD Parks and Trails volunteer program.

Volunteer Application Form

The Volunteer Application prepared by the CVRD must be signed by the CVRD Volunteer and an authorized representative of the CVRD, in order for a person to become a CVRD Volunteer.

Volunteer Activities

Volunteer activities will be consistent with relevant CVRD Parks and Trails Master Plans and operational standards and will take into account the impact of activities on natural and built parks and trail features.

Volunteer activities can be identified by the CVRD Parks and Trails Division or Volunteers. Volunteer activities proposed by individual volunteers or volunteer groups must be submitted as a detailed plan of scheduled works and activities for approval by the CVRD Parks and Trails Division.

No volunteer activities may be undertaken without the advance written approval of an authorized representative of the CVRD Parks and Trails Division.

CVRD will schedule, coordinate and supervise all approved CVRD Parks and Trails volunteer activities. Activities may include and are not limited to invasive plant removal, habitat restoration planting, garbage pickup, and trail building.

POLICY:

Declaration

The objective of the CVRD Parks and Trails Volunteer Policy is to provide standardized direction on the engagement and management of volunteers to ensure that:

- a safe working environment is provided for volunteers;
- volunteers are treated fairly, with respect and are valued and recognized for their contribution to the work of the CVRD;
- the management of volunteers and volunteer activities is consistent with CVRD policies, standards and bylaws such as but not limited to work safety, purchasing, and privacy; and
- opportunities are provided for people to become active supporters and promoters of parks and trails initiatives that complement the work of CVRD staff.

Principles

In providing opportunities for community volunteering in CVRD Parks and Trails the following principles will be adhered to:

1. Volunteers will not be used for work that would normally require the employment of a paid public sector employee.
2. Volunteers will not be used for any role or activity that has an enforcement or regulatory basis or are considered high risk activities.
3. The CVRD is not obliged to accept any person's application to act as a CVRD Volunteer. The CVRD may at any time cancel a person's registration as a CVRD Volunteer where such volunteer is in breach of CVRD's Standard of Conduct Policy.
4. Volunteers will be provided a pre-activity orientation before commencement of any volunteer opportunity and must be provided with the necessary training and equipment to undertake tasks in a safe and legal manner. Volunteers must follow all reasonable directions by CVRD staff.
5. Individuals who are engaged as volunteers by third party organizations or contractors working on CVRD Parks and Trails projects do not act in the capacity of a CVRD Volunteer. In such circumstances the CVRD is not responsible to supervise the activities of those individuals, and the contractor or organization that engages the individual is responsible for supervision, and for ensuring the safety of the individuals engaged.
6. Volunteers will be issued with the appropriate personal protective equipment (PPE) and safety clothing appropriate to the volunteer tasks they are assigned to.
7. Volunteers are required to act in accordance with CVRD policies regulating conduct, including Confidentiality Policy, Health and Safety Policy, Respectful Workplace Policy, and the Standard of Conduct Policy. Without limiting the foregoing, CVRD Volunteers are expected to:
 - act lawfully;
 - be free from undue influence and not act, or appear to act, in order to gain financial or other benefits for themselves, family, friends or business interests;
 - follow the letter and spirit of CVRD policies and procedures; and
 - treat people with courtesy and respect.

Responsibilities

- Volunteers will actively participate in assigned activities under the oversight of the CVRD.
- Volunteers must comply with all applicable CVRD policies and procedures and are required to carry out any work they volunteer to perform under the direction of the CVRD Parks and Trails Division.
- Volunteers make a commitment to the CVRD and will contribute in ways that support the CVRD corporate strategic plan.

Volunteering Benefits

- The CVRD recognizes and supports the activities and contributions of volunteers.
- Volunteers support the evolution of parks and trails in the community.
- Volunteering provides for participation in the CVRD's delivery of a valued community service.
- Volunteers have the opportunity to gain knowledge and experience associated with parks and trails
- Volunteering provides for connecting with the community through networking and social interaction.
- Volunteering supports individual and community mental and physical wellness.

Approved by: Approval date:

CVRD Parks and Trails Volunteer Policy

(Draft Policy as Reviewed at November 29, 2017 Regional Services Committee Meeting)

PARKS AND TRAILS VOLUNTEER POLICY

Applicability: Parks & Trails Effective Date:

PURPOSE:

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DEFINITIONS:

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Volunteer activities can be identified by the CVRD Parks and Trails Division or Volunteers. Volunteer activities proposed by individual volunteers or volunteer groups must be submitted as a detailed plan of scheduled works and activities for approval by the CVRD Parks and Trails Division.

No volunteer activities may be undertaken without the advance written approval of an authorized representative of the CVRD Parks and Trails Division.

CVRD will schedule, coordinate and supervise all approved CVRD Parks and Trails volunteer activities. Activities may include and are not limited to invasive plant removal, habitat restoration planting, garbage pickup, and trail building.

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The objective of the CVRD Parks and Trails Volunteer Policy is to provide standardized direction on the engagement and management of volunteers to ensure that:

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- opportunities are provided for people to become active supporters and promoters of parks and trails initiatives that complement the work of CVRD staff.

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In providing opportunities for community volunteering in CVRD Parks and Trails the following principles will be adhered to:

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2. Volunteers will not be used for any role or activity that has an enforcement or regulatory basis or are considered high risk activities.
3. The CVRD is not obliged to accept any person's application to act as a CVRD Volunteer. The CVRD may at any time cancel a person's registration as a CVRD Volunteer, for any reason.
4. Volunteers are to undertake a formal orientation before commencement of any volunteer opportunity and must be provided with the necessary training and equipment to undertake tasks in a safe and legal manner. Volunteers must follow all reasonable directions by CVRD staff.
5. Individuals who are engaged as volunteers by third party organizations or contractors working on CVRD Parks and Trails projects do not act in the capacity of a CVRD Volunteer. In such circumstances the CVRD is not responsible to supervise the activities of those individuals, and the contractor or organization that engages the individual is responsible for supervision, and for ensuring the safety of the individuals engaged.
6. Volunteers will be issued with the appropriate personal protective equipment (PPE) and safety clothing appropriate to the volunteer tasks they are assigned to.
7. Volunteers are required to act in accordance with CVRD policies regulating conduct, including Confidentiality Policy, Health and Safety Policy, Respectful Workplace Policy, and the Standard of Conduct Policy. Without limiting the foregoing, CVRD Volunteers are expected to:
 - act lawfully;
 - be free from undue influence and not act, or appear to act, in order to gain financial or other benefits for themselves, family, friends or business interests;
 - follow the letter and spirit of CVRD policies and procedures; and
 - treat people with courtesy and respect.

Responsibilities

- Volunteers will actively participate in assigned activities under the oversight of the CVRD.
- Volunteers must comply with all applicable CVRD policies and procedures and are required to carry out any work they volunteer to perform under the direction of the CVRD Parks and Trails Division.
- Volunteers make a commitment to the CVRD and will contribute in ways that support the CVRD corporate strategic plan.

Approved by: Approval date:

CVRD Parks and Trails Volunteer Policy



STANDARDS OF CONDUCT POLICY

Applicability: All CVRD

Effective Date: March 1, 2012

PURPOSE:

To establish a policy regarding standards of conduct.

POLICY:

In the performance of their work responsibilities, all employees must comply with applicable CVRD policies, local bylaws, and laws of British Columbia, Canada, and any other jurisdiction in which they are conducting the CVRD's business. Employees must avoid situations which violate CVRD policies or result in a public perception that a violation has occurred. Employees who find themselves in such a situation must disclose the matter through normal supervisory channels and remedy it.

We strive to provide a positive work environment in which all employees can achieve maximum productivity and job satisfaction. This is possible only when all employees remain focused on fulfilling the CVRD's Mission and Values every day.

To maintain the high standards of workplace behaviour that our employees have already helped to set, we expect you to:

1. conduct your daily business in a friendly, courteous, and professional manner with all co-workers and the public;
2. maintain the highest ethical standards in carrying out your work, and refrain from gossip;
3. be a team player, contribute to the best of your abilities, and offer your assistance wherever required, even if it's not within the normal duties of your job;
4. do your part to ensure the smooth operation of our business, and maintain the high standards of service to our customers;
5. consider whether you can do something yourself before asking for help;
6. be honest, trustworthy, reliable, and dependable;
7. take direction from, and work co-operatively with, your Supervisor or Manager; and
8. co-operate with your co-workers - *together* we get the job done!

Inappropriate language interferes with a respectful and harmonious working environment. It has no place at the CVRD and it will not be tolerated. Some examples are swearing, excessive sarcasm, name calling, or language that is mocking, vulgar, obscene, insulting, threatening, or abusive.

You are responsible for complying with this policy during working hours and at work-related functions that take place after hours.

Approved by: CAO Approval date: March 1, 2012
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STAFF REPORT TO COMMITTEE

DATE OF REPORT April 10, 2018
MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018
FROM: Office of the CAO
SUBJECT: Proposed Drinking Water and Watershed Protection Service
FILE: Bylaw No. 4202

PURPOSE/INTRODUCTION

The purpose of this report is to introduce Drinking Water and Watershed Protection Service Establishment Bylaw No. 4202.

RECOMMENDED RESOLUTION

That Drinking Water and Watershed Protection Service Establishment Bylaw No. 4202 be forwarded to the Board for consideration of first three readings.

BACKGROUND

At the March 28, 2018 Regional Services Committee Meeting, staff were directed to prepare a draft bylaw to establish a Drinking Water and Watershed Protection service.

ANALYSIS

Bylaw No. 4202 cannot receive approval from the Inspector of Municipalities prior to August 7 (due to referendum legislation). Community engagement will occur between third reading of Bylaw No. 4202 and the end of July. The reasons for the proposed new service will be communicated to the electors throughout the boundaries of the regional district. Opportunities will be established whereby the electors will be able to communicate whether or not they support the proposal.

Following approval of Bylaw No. 4202 by the Inspector of Municipalities, the Board will consider whether or not to proceed based on the public feedback received during the community engagement period. The Board may choose to abandon the proposal or to obtain public approval through a referendum on October 20.

FINANCIAL CONSIDERATIONS

The recommendations contained in this report will have no impact on requisition levels for 2018. Funding for public consultation and the outreach associated with a possible referendum has been identified within General Government budgets. Impacts on future requisition will be subject to future work plans and budgets approved by the Board within the bylaw maximums.

COMMUNICATION CONSIDERATIONS

Bylaw No. 4202 includes an enhanced level of detail than is normally provided. Bylaw No. 4202 and community engagement materials will be utilized to characterize the service during the consultation phase which will assist the public in understanding both the benefits of the program as well as its limitations.

Following third reading of Bylaw No. 4202, staff will begin to prepare supporting program documentation and materials as well as strategies for the public consultation period. At the request of the Board, consultation to date has focused on the question "What would the public like to have within the proposed service?". Now that the Board has provided direction on the scope of the

proposed service, the communication will shift to what is covered under the service and the benefits and costs of undertaking the works.

STRATEGIC/BUSINESS PLAN CONSIDERATIONS

Addresses the Board's Strategic Focus Areas #4 Protection of Water Resources and #2 Climate Change.

Referred to (upon completion):

- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

Prepared by:

Reviewed by:



Brian Carruthers
Chief Administrative Officer

Not Applicable
Not Applicable

Not Applicable
Not Applicable

ATTACHMENTS:

Attachment A – Bylaw 4202 A Bylaw to Establish a Service for Drinking Water and Watershed Protection



COWICHAN VALLEY REGIONAL DISTRICT

BYLAW No. 4202

A Bylaw to Establish a Service for Drinking Water and Watershed Protection

WHEREAS pursuant to Sections 332 and 338 of the *Local Government Act*, a Regional District may, by bylaw, establish and operate any service that the Board considers necessary or desirable for all or part of the Regional District;

AND WHEREAS the Board of the Cowichan Valley Regional District wishes to establish a service for the purpose of drinking water and watershed protection within the Cowichan Valley Regional District;

AND WHEREAS the Board of the Cowichan Valley Regional District has obtained the approval of the service area electors in accordance with the *Local Government Act* and the *Community Charter*;

NOW THEREFORE the Board of Directors of the Cowichan Valley Regional District, in open meeting assembled, enacts as follows:

1. CITATION

This bylaw may be cited for all purposes as "**CVRD Bylaw No. 4202 – Drinking Water and Watershed Protection Service Establishment Bylaw, 2018**".

2. SERVICE BEING ESTABLISHED

The service being established under the authority of this bylaw is a service for the purpose of protecting drinking water and watersheds by:

- a) Increasing the level of knowledge regarding drinking water sources to support the long term sustainability of the water resource;
- b) Coordinating the efforts of provincial and local governments and non-governmental organizations with respect to drinking water source protection;
- c) Increasing the level of public awareness regarding drinking water and watershed protection requirements and strategies;
- d) Obtaining and holding water licenses;
- e) Promoting and undertaking water conservation initiatives and programs;
- f) Developing and implementing water management plans;
- g) Entering into agreements as needed to accomplish the objectives of this service;
- h) Assessing needs and planning for infrastructure and natural system improvements to maintain or enhance water quality or water supply; and
- i) Providing grants and financial support to entities approved by the Board for the purpose of water and watershed protection.

The service shall be known as the "Drinking Water and Watershed Protection Service".

3. **SERVICE AREA BOUNDARIES**

The boundaries of the service area are the boundaries of the whole of the Cowichan Valley Regional District.

4. **PARTICIPATING AREA**

The participating area for this service is the whole of the Cowichan Valley Regional District comprised of the City of Duncan; District Municipality of North Cowichan; Town of Lake Cowichan; Town of Ladysmith; and Electoral Areas: A – Mill Bay/Malahat; B – Shawnigan Lake; C – Cobble Hill; D – Cowichan Bay; E – Cowichan Station/Sahtlam/Glenora; F – Cowichan Lake South/Skutz Falls; G – Saltair/Gulf Islands; H – North Oyster/Diamond; and I – Youbou/Meade Creek.

5. **METHOD OF COST RECOVERY**

The annual cost of providing this service shall be recovered by one or more of the following:

- a) property value taxes requisitioned and collected on the basis of the net taxable value of land and improvements within the service area;
- b) revenues raised by other means authorized by the *Local Government Act*, or any other Act.

6. **MAXIMUM REQUISITION**

The maximum amount of money that may be requisitioned annually in support of this service shall be the greater of \$1,400,000 or an amount equal to the amount that could be raised by a property value tax of \$0.00706 per \$1,000 of net taxable value of land and improvements within the service area.

READ A FIRST TIME this _____ day of _____, 2018.

READ A SECOND TIME this _____ day of _____, 2018.

READ A THIRD TIME this _____ day of _____, 2018.

I hereby certify this to be a true and correct copy of Bylaw No. 4202 as given Third Reading on the _____ day of _____, 2018.

Corporate Secretary

Date

APPROVED BY THE INSPECTOR OF MUNICIPALITIES this _____ day of _____ 2018.

ADOPTED this _____ day of _____, 2018.

Chairperson

Corporate Secretary



STAFF REPORT TO COMMITTEE

DATE OF REPORT April 12, 2018
MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018
FROM: Parks & Trails Division
Land Use Services Department
SUBJECT: CVT – Saltair and Chemainus to Westholme Trail Connections
FILE:

PURPOSE/INTRODUCTION

The purpose of this report is to provide an update on funding requirements and approvals for construction of sections of the Cowichan Valley Trail through Saltair and between Chemainus and Westholme.

RECOMMENDED RESOLUTION

That it be recommended to the Board:

1. That grant funds in the amounts of \$188,000 in 2018 and \$154,000 in 2019 from the Trans Canada Trail Foundation be approved for completion of the Saltair Rail with Trail and the Chemainus to Westholme sections of the Cowichan Valley Trail.
2. That up to a maximum of \$205,000 in short term borrowing for completion of the Cowichan Valley Trail – Saltair Rail with Trail project be approved, and that the loan be paid back over five years under the Liabilities under Agreements Section 175 of the Community Charter.
3. That donated funds received be applied to the Cowichan Valley Trail project in amounts of \$47,500 to the Saltair Rail with Trail section and \$52,500 to the Chemainus to Westholme section.
4. That the 2018 Budget for Function 280 – Regional Parks be amended to:
 1. Increase Grants – Federal Gas Tax by \$103,594;
 2. Increase Grants – Provincial Conditional by \$29,716;
 3. Decrease Grants – General by \$30,767;
 4. Increase MFA Short Term Borrowing revenue by \$85,000;
 5. Increase Surplus by \$65,000; and,
 6. Increase Capital Lease Improvement expenses by \$252,543.
5. That Function 280 – Regional Parks Cowichan Valley Trail Saltair Rail with Trail project be authorized to proceed prior to the adoption of the 2018–2022 Five Year Financial Plan Bylaw Amendment.

BACKGROUND

The Cowichan Valley Trail has two remaining trail gaps along its 120 kilometre route, a 4.3 kilometre stretch between Saltair's Stocking Creek Park and Garner Street in Chemainus and a 12.8 kilometre section between Crozier Road in Chemainus and Johnston Road near Highway 18. Completion of the trail on these sections includes development of rail with trail within the E&N

railway corridor, new trail construction within the Catalyst waterline right-of-way, and separated roadside pathway.

In 2016, two provincial grant applications were submitted for funding specific to construction of the rail with trail between Saltair and Chemainus (Saltair Rail with Trail Connection). Both applications were approved, with the CVRD receiving \$500,000 from the BC Rural Dividend Fund and \$511,274 from BikeBC. Due to requirements of each grant program, funding approved cannot be leveraged against each other on the same project. Therefore, through endorsement of the grant funders, the scope of the Cowichan Valley Trail project was expanded to include additional rail with trail construction south of Chemainus through to the Westholme area.

For 2018, the Cowichan Valley Trail completion project is focused on the 4.3 kilometre Saltair Rail with Trail Connection section due to grant funding timeline requirements of the BC Rural Dividend Fund, which is contributing to this section of trail construction. The detailed design work for this section of rail with trail is complete and a tender for construction was issued in early April for the first phase of work. Additional tenders for the remaining rail with trail segments are planned for issuance later this spring to coincide with approval requirements from the Agricultural Land Commission and environmental conditions for creek crossings.

The Chemainus to Westholme Rail with Trail section proposes completion of approximately 4.2 kilometres of the Cowichan Valley Trail continuing south from Crozier Road in Chemainus to Westholme Road, with portions of the trail located adjacent both Stz'uminus First Nation and Halalt First Nation reserves. Further trail design and community engagement work is proceeding through 2018, inclusive of continued consultation with Halalt and Stz'uminus First Nations regarding the proposed trail alignment adjacent their reserve lands. Timing for trail construction would commence at the beginning of 2019 at earliest, upon completion of design and community engagement.

The construction of these two sections of the Cowichan Valley Trail will establish a continuous trail route of just over 20 km from Ladysmith to the Westholme area. Only nine kilometres remain in the gap between Westholme and Highway 18, inclusive of connection to the Cowichan Exhibition site. This will complete the 120 kilometre Cowichan Valley Trail route from the Regional District of Nanaimo boundary west of the airport through to the trail's connection to the Capital Regional District atop the Malahat in south Shawnigan Lake. Timing to undertake this last gap in the trail will be dependent upon securing additional funding, with a current project cost estimate of \$3.1 million (Class C estimate). There is the ability to work on this last gap in smaller sections to complete, which could accelerate trail connection of the Cowichan Exhibition grounds to the Duncan area, with work then focused on the last piece through to Westholme. This last gap in the overall 120 km has been recognized as one of the more challenging sections to complete due to terrain and construction access challenges involving low lying areas along the E&N Railway corridor and accessibility along the east side of the Trans Canada Highway just north of Mays Road.

ANALYSIS

The following table outlines the estimated costs based on detailed work done to date to complete both the 4.3 kilometre Saltair Rail with Trail and the 4.2 kilometre Chemainus to Westholme section. The higher cost estimate for the Saltair Rail with Trail section is due to a major water crossing required over Stocking Creek.

The table also provides a breakdown of secured and proposed funding to complete the two sections of trail in 2018 and 2019 as noted:

	Funding Amount	CVT Project Section	
		2018	2019
		Saltair RWT Connection	Chemainus RWT South
<i>Estimated Total Project Value</i>		\$1,698,810	\$1,053,347
Funding Source			
BikeBC - Provincial	\$511,274	\$129,716	\$381,558.00
BC Rural Dividend Fund	\$500,000	\$500,000	
Northern Completion Gas Tax	\$103,594	\$103,594	
2018 Regional Parks Capital - Borrowing	\$205,000	\$205,000	
2017 Regional Parks Capital - Surplus	\$150,000	\$150,000	
2017/18 CW Regional Gas Tax	\$225,000	\$225,000	
2018 Regional Parks Capital	\$150,000	\$150,000	
2019 Regional Parks Capital	\$200,000		\$200,000
ICET Funding	\$100,477		\$100,477
Donation	\$100,000	\$47,500	\$52,500
TCT Foundation - Saltair	\$188,000	\$188,000	
<i>TCT Foundation - Chemainus</i>	<i>\$154,000</i>		<i>\$154,000</i>
TOTAL	\$2,587,345	\$1,698,810	\$888,535
<i>Project Estimate vs Funding</i>		\$0	<i>-\$164,812</i>

The Board previously endorsed provision of matching funds of \$500,000 from the Regional Parks budget over a three-year period (2017–2019), as was required for approval of the two provincial grants allocated to the Cowichan Valley Trail project (Bike BC and BC Rural Dividend Fund). The 2018 budget includes a \$150,000 capital surplus carried forward from 2017 and \$150,000 in capital funds through requisition in 2018. The balance of the \$500,000 required was previously identified for the 2019 budget (\$200,000) to complete the grant funding matching requirements.

Community Works Gas Tax Funding in the amount of \$225,000 was also previously approved for the project by the Board, in addition to remaining Round One Federal Gas Tax Funds of \$103,594 previously approved for the Cowichan Valley Trail Northern Completion. There is also \$100,477 from prior ICET funding allocated to this trail completion project and the Trans Canada Trail Foundation has approved \$188,000 in 2018 for the Saltair Rail with Trail section of the Cowichan Valley Trail. A separate application is being considered by the Trans Canada Foundation for an additional \$154,000 in grant funds for the Chemainus to Westholme section of trail construction in 2019. Notification on approval of these funds will not be known until later this year or early 2019.

The Board has also previously approved Short Term Borrowing of up to \$450,000 for completion of the Cowichan Valley Trail, of which \$245,000 has been borrowed to date for the Cowichan Valley Trail – Malahat Connection project that was completed in 2017. The 2018 Regional Parks budget includes \$120,000 in Short Term Borrowing for the Saltair Rail with Trail capital project; however, the estimated costs to complete this project will require up to the balance of short term borrowing previously approved for the trail project, that being \$205,000 (\$450,000 – \$245,000 already borrowed/expended in 2017). The 2018 Regional Parks budget includes the

interest/principle payment for borrowing of \$205,000, as well as the annual repayment on the \$255,000 borrowing in 2017.

For 2019, it is recognized that the projected costs for the Chemainus to Westholme section of the trail construction currently exceeds the identified available funds. The work in 2018 to complete the Saltair Rail with Trail section of the trail project will be aimed at controlling costs, with the objective to reallocate project cost savings to the Chemainus to Westholme trail section, along with continued sourcing of additional funds for the project and refinement of the trail layout and design to ensure the project funds available achieve the overall trail construction objectives.

FINANCIAL CONSIDERATIONS

Adjustments to the 2018 Regional Parks budget are required to include confirmed funds and funding considered for approval by the Committee/Board as summarized in table above. The following amendments to the Function 280 – Regional Parks budget are therefore required to align with the funds outlined in the table:

1. Increase Grants – Federal Gas Tax by \$103,594;
2. Increase Grants – Provincial Conditional by \$29,716;
3. Decrease Grants – General by \$30,767;
4. Increase MFA Short Term Borrowing revenue by \$85,000;
5. Increase Surplus by \$65,000; and,
6. Increase Capital Lease Improvement expenses by \$252,543.

A portion of previously approved Short Term MFA Borrowing in the amount of \$450,000 is identified for application to this project. \$245,000 was applied to the CVT Malahat Connector Project, with the remaining \$205,000 required to complete the Saltair Rail with Trail Connector.

The 4.1 kilometre new section of the Cowichan Valley Trail in Saltair/Chemainus will be maintained under the Regional Parks Program, with an estimated annual operation/maintenance cost of \$5,500. This will include regular maintenance/litter collection, seasonal mowing along trail edges, and minor incidental repairs/upkeep inclusive of brush/tree-limbing as required. These costs will be included in Function 280 – Regional Parks budget for 2019, with a minor adjustment to the requisition proposed to account for the operational increase.

COMMUNICATION CONSIDERATIONS

N/A

STRATEGIC/BUSINESS PLAN CONSIDERATIONS

N/A

Referred to (upon completion):

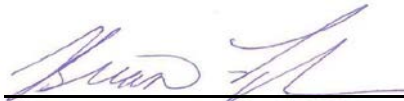
- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

Prepared by:



Dan Brown
Parks Planning Technician (Trails)

Reviewed by:



Brian Farquhar
Manager



Ross Blackwell, MCIP, RPP, A.Ag.
General Manager

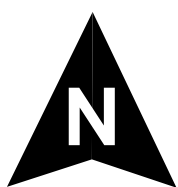
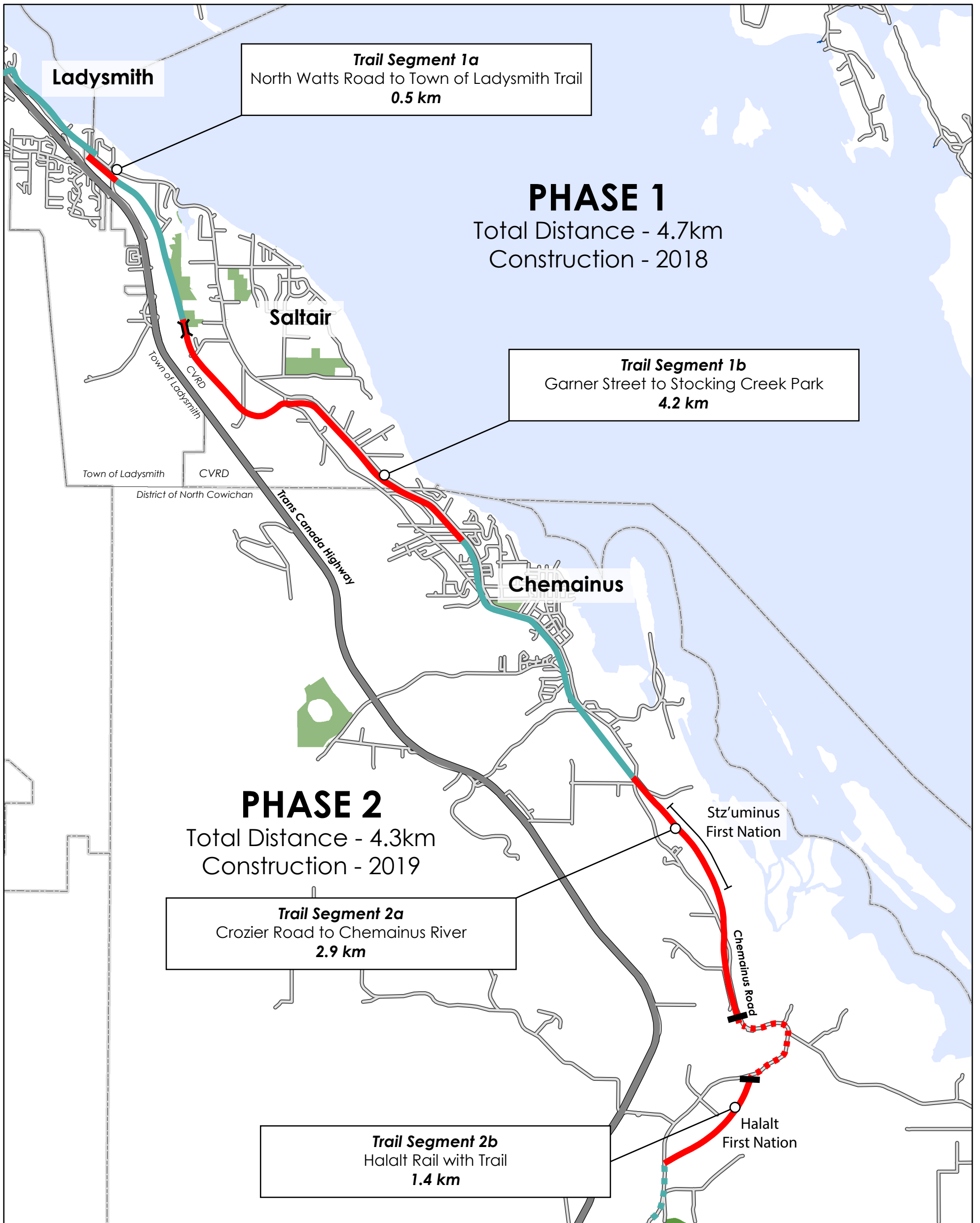
ATTACHMENTS:

Attachment A – Project Overview Map



Cowichan Valley Trail

Ladysmith to Chemainus Rail Trail Connector



- Proposed Trail
- Temporary Roadside Route
- Existing Trail
- Roadside Trail



STAFF REPORT TO COMMITTEE

DATE OF REPORT April 5, 2018

MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018

FROM: Inspection & Enforcement Division
Land Use Services Department

SUBJECT: Proposed Smoking Regulation Bylaw – Our Cowichan Communities
Health Network, Anti-Smoking Strategy Task Force

FILE:

PURPOSE/INTRODUCTION

The purpose of this report is to provide staff comment on a Smoking Regulation Bylaw proposed by the Our Cowichan Communities Health Network Anti-Smoking Strategy Task Force.

RECOMMENDED RESOLUTION

That amendments, as set out in the April 5, 2018, Regional Services Committee staff report, be prepared to Clean Indoor and Control of Smoking Regulation Bylaw No. 1672 to better harmonize it with current Provincial smoking regulations.

BACKGROUND

At the November 9, 2016, regular meeting of the CVRD Board, a delegation from Our Cowichan Communities Health Network (OCC Health Network) presented regarding the negative health impacts associated with smoking and requested that a CVRD representative be appointed to participate on a regional task force looking into a comprehensive approach to regulating smoking through a consistent smoking bylaw for all local governments within the Region. The request from OCC Health Network was referred by the Board to staff for a report.

Much time has passed since the OCC Health Network presented to the Board and it has since proceeded with its Anti-Smoking Task Force. The Task Force has prepared a draft smoking bylaw (Attachment A) and is seeking input from local governments in the Region on its draft bylaw and is requesting that the CVRD and other local governments in the region move forward with adopting a consistent smoking bylaw.

This report assesses the rationale for a CVRD smoking regulation bylaw and identifies some of the considerations and implications of the proposed bylaw.

ANALYSIS

Jurisdiction:

Health and health protection is largely a provincial jurisdiction. The *Tobacco and Vapour Products Control Act* is the primary legislation that regulates the use, sale and display of tobacco products in the Province of BC. The *Act* is administered by the Ministry of Health and primarily enforced by the Regional Health Authorities.

Section 304 of the *Local Government Act* authorizes Regional District Boards, subject to the *Public Health Act*, to, “regulate and prohibit for the purpose of maintaining, promoting or preserving public health and maintaining sanitary conditions and undertake any other measures it considers necessary for those purposes”. The authority under Section 304 must be exercised by bylaw, and such a bylaw cannot be adopted unless first deposited with the Ministry of Health and consultation has occurred with the Medical Health Officer. Regional District Boards can adopt bylaws that

regulate or prohibit smoking, provided procedural requirements set-out in the applicable legislation are followed and the bylaws are authorized by the Ministry of Health.

CVRD Extended Service (Control of Smoking) Establishment Bylaw No. 1507, 1993, established a service for the purpose of controlling and regulating smoking. In 1995 the CVRD Board adopted *Clean Indoor Air and Control of Smoking Regulation Bylaw No. 1672* (see Attachment B) which regulated smoking in workplaces, businesses, taxi cabs, public places and places of public assembly. Bylaw No. 1672 applies to the CVRD's 9 electoral areas and 4 municipalities. The City of Duncan has its own smoking bylaw, which it adopted in 2012 (*Smoking Regulation Bylaw No. 3064*).

CVRD Parks Bylaw No. 738 prohibits all forms of smoking and the use of electronic cigarettes in CVRD parks, trails, community halls, recreational facilities and other lands and facilities owned or operated by the CVRD.

Regulatory Best Practices:

Local governments and communities have a variety of regulatory and non-regulatory tools and approaches for addressing issues and implementing public policy. In order to achieve the most efficient and effective approach, it is best practice to first define the problem clearly and then select the approach that is most likely to lead to the desired outcome with the available resources. Local government regulation is one of the available options. Others include regulation by other levels of government, monitoring, dialogue, public education, self regulation and deregulation.

Health authorities and various levels of government have recognized the health impacts associated with smoking for a number of decades and to a large extent public health policy and regulation has evolved to address it. Indoor smoking, with the exception of smoking in private homes, is essentially banned in BC and outdoor smoking is banned on most publicly owned land. Social practices, public attitudes, and improved understandings of health risks associated with smoke have also evolved, resulting in declining rates of smoking and reduced acceptance of smoking in public and quasi-public areas. Given the progress that has been made by society in recent times to address smoking impacts and the array of regulation that is already in place, it is debateable if additional anti-smoking regulation would be effective in further protecting citizens from the impacts of second hand smoke. Prior to implementing new smoking regulation, it is appropriate for the Board to consider if there is a problem that existing legislation, regulations and non-regulatory options are not addressing and if the proposed regulation would be effective in addressing that problem.

Bylaw Enforcement Considerations:

Smoking bylaws and other regulations directed at changing public behaviour are sometimes proposed as means of informing and educating the public. While bylaws do have an educational component, public confidence in bylaws and the CVRD's bylaw enforcement program can be eroded if bylaws are not enforced or not enforced consistently.

The CVRD presently has two enforcement officers tasked with enforcing CVRD bylaws and regulations. As one of the CVRD's enforcement officer positions is jointly funded exclusively by the CVRD parks and solid waste functions, there is only one dedicated enforcement officer available for enforcing and administering CVRD bylaws not directly related to the parks and solid waste functions. With currently available resources, any efforts directed enforcing a new smoking regulations will shift enforcement resources away from other enforcement priorities.

Bylaw No. 1672 – CVRD Clean Indoor Air and Control of Smoking Regulation Bylaw (Current)

Bylaw No. 1672 prohibits indoor smoking in workplaces, places of business, in public places and places of public assembly, and in taxicabs except with the unanimous consent of all occupants.

The bylaw does permit indoor smoking in designated areas if signage specified in the bylaw is posted.

Bylaw No. 1672 is now largely inapplicable because the *Tobacco and Vapour Products Control Act* broadly prohibits indoor and outdoor smoking on school property and health board property, in any building, structure or vehicle that is used by the public or is a workplace. Designated smoking areas are no longer permitted in indoor work places and public spaces.

Smoking Regulation Bylaw (Proposed):

The purpose of the OCC Health Network's Anti Smoking Task Force is to better educate and inform citizens about the impacts of smoking on health and to improve health outcomes in the Cowichan Region. Part of the Task Force's strategy is to better align smoking regulation bylaws across the Cowichan Region so that there is a consistent approach across local government jurisdictions in the Region. Staff support this objective and agree that consistent smoking regulations are more likely to achieve voluntary compliance. CVRD Clean Indoor Air and Control of Smoking Regulation No. 1672, does in fact apply to all Electoral Areas and Municipalities in the CVRD, so in principle there already is a consistent smoking regulation for the Region even if it is out of date and in need of revision, replacement or repeal.

With respect to the content of the proposed Smoking Regulation Bylaw:

- Smoking on land or facilities owned or operated by the CVRD, including parks, trails, recreational facilities, etc., is currently regulated by CVRD Parks Bylaw No. 738. Municipalities in the Region have similar bylaws that regulate smoking and other activities on land and facilities they own and operate. Smoking on CVRD land or in CVRD facilities should be regulated by Bylaw 738 or a general Smoking Regulation Bylaw, but not both.
- "Smoking" should be a defined term in the bylaw and should include marijuana smoke and vapour from e-cigarettes.
- A general prohibition on smoking where prohibited by the *Tobacco and Vapour Products Control Act* is favoured over specific prohibitions. Most of the locations where smoking is prohibited in the proposed Smoking Regulation Bylaw are already smoking prohibited areas in the T&VPC Act or other applicable regulations. The exceptions is outdoor workplaces.
- The rationale for prohibiting smoking in outdoor workplaces (e.g. construction sites) is not obvious. This aspect of the bylaw could have significant resourcing implications.
- Institutions and organizations that administer land and facilities already regulate and enforce smoking policy on land that they control and are generally in a better position to do so than local government;
- Aspects of the bylaw such as the definitions of "designated public space" and "public facility" should be more precise to assist with application and enforcement.

Staff Comments:

Health regulation, including the regulation of smoking, is primarily the responsibility of the Province and Regional Health Authorities. While there is some authority in the *Local Government Act* for local governments to regulate or prohibit activities that impact public health, this has not traditionally been a service that the CVRD or most other local governments in the Region have actively provided. Local government smoking regulation may complement and re-enforce provincial regulation, but Provincial legislation is the primary instrument for regulating smoking in the Province of BC. If consistent smoking regulations across local government jurisdictions is an

objective, that could be accomplished effectively by either relying on Provincial regulation and not having local smoking regulations or by harmonizing local smoke regulation bylaws with Provincial regulations.

Smoking can create a “negative externality” whereby the cost of smoking, in the form of potential health risk and nuisance, is imposed on non-smokers without their consent. Regulation that prevents the unauthorized cost of second hand smoke in public spaces and locations where it cannot reasonably be avoided is justifiable from a public policy perspective. Regulation that attempts to control health and lifestyle choices of individuals without a clear nexus to negative impacts imposed on others is less defensible and should be considered cautiously, if at all. Staff recommend that the scope of any CVRD smoking regulation be limited primarily to locations frequented by the public, where there is a clear public interest justification.

The CVRD presently has a smoking bylaw that has been rendered largely obsolete by provincial legislation and by workplace policies implemented by Workplace BC, employers and others. Bylaw enforcement staff advise that no complaints related to smoking regulation violations have been received in recent memory. As the CVRD’s current smoking regulation - Bylaw No. 1672 - no longer seems to be relevant or applicable, staff recommend that it be amended or repealed. If it is amended, staff recommend that its scope be limited primarily to what is already prohibited or regulated by the *Tobacco and Vapour Products Control Act* other applicable regulation. This is a “belt and suspenders” approach to regulation and enforcement that would re-enforce existing smoking regulation and allow CVRD bylaw enforcement officers to take action on smoking violations if other agencies responsible for Provincial smoking regulations do not. Staff recommend that aspects of the draft bylaw proposed by the OCC Health Network be included in an update to Bylaw No. 1672, but that the scope of the amended bylaw be narrower than what has been proposed.

Options:

Option 1:

That amendments, as set out in the April 5, 2018, Regional Services Committee staff report, be prepared to Clean Indoor and Control of Smoking Regulation Bylaw No. 1672 to better harmonize it with current Provincial smoking regulations.

Option 2:

That amendments be prepared to Clean Indoor and Control of Smoking Regulation Bylaw No. 1672 to implement the draft smoking regulations proposed by Our Cowichan Communities Health Network.

Option 3:

That no action be taken at this time with respect to amending, replacing or repealing Clean Indoor and Control of Smoking Regulation Bylaw No. 1672.

Option 4:

That Clean Indoor and Control of Smoking Regulation Bylaw No. 1672 be repealed.

Option 1 is recommended.

FINANCIAL CONSIDERATIONS

There currently is no regional budget for funding the administration and enforcement of smoking regulations.

COMMUNICATION CONSIDERATIONS

Changes to the CVRD smoking regulations should be publicized prior to implementation. Information regarding a communication strategy will be provided in a future report should the Board decide to proceed with a bylaw amendments.

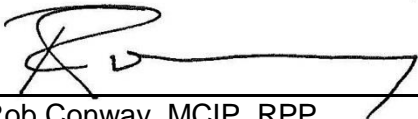
STRATEGIC/BUSINESS PLAN CONSIDERATIONS

N/A

Referred to (upon completion):

- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

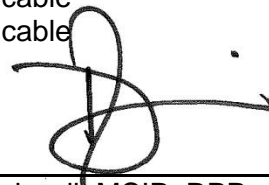
Prepared by:



Rob Conway, MCIP, RPP
Manager

Reviewed by:

Not Applicable
Not Applicable



Ross Blackwell, MCIP, RPP, A.Ag.
General Manager

ATTACHMENTS:

Attachment A – Draft Smoking Regulation Bylaw – Anti-Smoking Task Force

Attachment B – CVRD Clean Indoor Air and Control of Smoking Regulation Bylaw No. 1672

THE CITY/ TOWN/VILLAGE OF ABCDEFG

SMOKING REGULATION BYLAW No. xxx, year

A Bylaw to Regulate Smoking in the (City/Town/Village/ Regional District of ABCD)

WHEREAS it has been determined that Environmental Smoke whether from tobacco, marijuana, heated vapour or the burning of other substances can contain Class A carcinogens similar to benzene and asbestos, contain fine particles that can be inhaled deep into the lungs causing harm both locally and in other parts of the body, and is a health hazard and a nuisance to the inhabitants of the (CITY/TOWN/VILLAGE/REGIONAL DISTRICT);

AND WHEREAS it is generally recognized by scientific and medical communities that there is no safe level of smoke or vapour exposure and that whether the smoking occurs indoors or outdoors exposure to significant levels of Environmental Smoke can occur;

AND WHEREAS the (CITY/TOWN/VILLAGE/REGIONAL DISTRICT) has satisfied the preconditions to adopting this Bylaw set out in the *Public Health Bylaws Regulation, B.C. Reg.42/2004*;

AND WHEREAS it is desirable for the purposes of maintaining, promoting and preserving the public health in the (CITY/TOWN/VILLAGE/REGIONAL DISTRICT) to prohibit, regulate and impose requirements in relation to smoking in (CITY/TOWN/VILLAGE/REGIONAL DISTRICT);

NOW THEREFORE, the (CITY/TOWN/VILLAGE/REGIONAL DISTRICT), in public meeting assembled HERBY ENACTS AS FOLLOWS:

**SECTION 1
INTERPRETATION**

Name of Bylaw

- 1.1 This Bylaw may be known and cited for all purposes as the “Smoking Regulation Bylaw No. xxxx, year”.

Definitions (Variable) As applicable by City/Town/Village/Regional District

- 1.2 In this Bylaw:
“Building Inspector” as appointed by the CITY/ TOWN/VILLAGE/REGIONAL DISTRICT

“burn” or “burning” means to produce smoke, vapour or other substances that can be inhaled;

"bus stop" means a place on a bus route marked by a sign at which buses stop to pick up and drop off passengers and may include a transit shelter; "customer service area" means a partially enclosed or unenclosed area, including a balcony, patio, yard or side walk, that is part of or connected to or associated with a business or use in a building or premises that includes the service of food or alcoholic drinks to customers or other persons for consumption on site;

"City" means The Corporation of CITY/ TOWN/VILLAGE/REGIONAL DISTRICT

"Council" shall mean the Council of CITY/ TOWN/VILLAGE/REGIONAL DISTRICT

"designated public space" includes but is not limited to public playing fields, public playgrounds, public squares, and outdoor public places where individuals are required to queue for the receipt of any service;

(Next definition specific to Duncan)

"City Square" shall mean the area immediately surrounding City Hall, including all benches, the stage, sidewalks and brickwork areas East of Craig Street, South of Ingram, and west of the Canada Avenue sidewalk and during public or private events shall include Craig Street and any adjacent sidewalks when closed for event purposes.

"Peace Officer" means any person defined as a Peace Officer by the Interpretation Act R.S.B.C. 1996, Chap. 238 and includes a Bylaw Enforcement Officer including Commissionaires appointed by of CITY/ TOWN/VILLAGE/REGIONAL DISTRICT

"park" means any real property or property subject to a right of occupation by the CITY/TOWN/VILLAGE/REGIONAL DISTRICT for the purpose of pleasure, recreation or community uses of the public, including parks, playgrounds, sport courts, natural and landscaped areas, sports fields, trails, walkways and other public places and all improvements and may include beaches, and other public places adjacent to lakes or streams including foreshore or land covered by water; but does not include the travelled portion of a highway.

"Person" shall mean and include persons of either sex, association, partnerships, corporations, whether acting by himself or herself or by a servant, agent or employee.

"responsible person" means a person who owns, controls, manages, supervises or operates common public areas;

or

who controls, governs or directs the activity carried on within the building, place or premises referred to in this bylaw and includes the person actually in charge thereof

“outdoor workplace” means any outdoor place used in conjunction with the workplace, including but not limited to construction and marine sites as well as sites with flag persons;

Severability

- 1.2 A decision by a court of competent jurisdiction that any part of this Bylaw is illegal, void or unenforceable severs that part from this Bylaw and is not to affect the balance of this Bylaw.

Enforcement

- 1.3 The Bylaw Enforcement Officers or the Building Inspector of the CITY/TOWN/VILLAGE/REGIONAL DISTRICT shall be responsible for administration of this Bylaw.

SECTION 2

DUTY OF ADMINISTRATION

- 2.1 The intent of this Bylaw is to set standards in the general public interest, and not to impose a duty on the City/TOWN/VILLAGE/REGIONAL DISTRICT, its employees, Building Inspector or Bylaw Enforcement Officers to enforce its provisions and:
- (a) a failure to administer or enforce its provisions or the incomplete or inadequate administration or enforcement of its provisions is not to give rise to a cause of action in favour of any person; and
 - (b) the grant of any approval or permission or issuance of any permit is not a representation, warranty or statement of compliance with the Bylaw and the issuance thereof in error is not to give rise to a cause of action.

SECTION 3

HEALTH REGULATIONS

Prohibition of Smoking

- 3.1 No person shall smoke in, at, on or within 7 metres of any of the following:
- a. any part of a park within the District of (CITY/ TOWN/VILLAGE/REGIONAL DISTRICT);
 - b. a bus stop;
 - c. a customer service area;
 - d. any designated public space;
 - e. any outdoor workplace;
 - f. in common areas of apartments buildings, condominiums and dormitories;
 - g. on any public and private k-12 school grounds;
 - h. in motor vehicles when youth under 16 years of age are present;
 - i. in any public facility

Enforcement of Ban on Smoking

- 3.2
- (a) Section 3.1 does not apply to a ceremonial use of tobacco in relation to a traditional aboriginal cultural activity.
 - (b) No person shall smoke in any place where prohibited by the *Tobacco and Vapour Products Control Act* and Regulation.
 - (c) It does not include the smoking by actors as a part of a stage or theatrical performance
 - (d) A responsible person must not suffer or allow a person to smoke in any of the areas specified in section 2.1 (a) through (i)

SECTION 4 VIOLATIONS AND PENALTIES

Offences Under Bylaw

- 4.1 A person who:
- a. violates any provision of this Bylaw or does any act or thing which violates any provision of this Bylaw or allows or permits any other person to do any act or thing which violates any provision of this Bylaw;
 - b. neglects to do or refrains from doing anything required to be done by any provision of this Bylaw; or
 - c. fails to comply or allows another person to fail to comply, with an order or direction given under any provision of this Bylaw;

is guilty of an offence against this Bylaw, and liable to the penalties imposed under this Bylaw Section 3.

Fine for offence

4.2 “Every person who commits an offence against this Bylaw is punishable on conviction and shall be liable to a fine or penalty as provided by the *Offence Act*. Each day that an offence against this Bylaw continues or exists shall be deemed to be a separate offence.”

“fines and penalties for tickets issued for offences against this bylaw shall be in accordance with Schedule “A”, attached hereto and forming part of this Bylaw.

or

Pursuant to section 264(4) of the *Community Charter*, the words or expressions set out in Column 1 of Schedule “A” designate the offence committed under the bylaw section appearing in Column 2 opposite the respective words of expressions.

Pursuant to section 265(1)(a) of the *Community Charter*, the amounts appearing under Column 3 of Schedule “A” are the fines set for the corresponding offences designated in Column 1 of each Schedule.”

4.3 Every person who commits an offence against this Bylaw is punishable on conviction by a fine of not less than (\$250) and not more than (\$2,000) for each offence. Each day that an offence against this Bylaw continues or exists shall be deemed to be a separate offence.

SECTION 5 ENACTMENT

Force and Effect

5.1 This Bylaw comes into force and takes effect upon adoption.

PREPARED IN CONSULTATION WITH THE MEDICAL HEALTH OFFICER OF ISLAND HEALTH PRIOR TO ADOPTION.

DEPOSITED WITH THE PROVINCIAL MINISTRY OF HEALTH the x day of MONTH, YEAR.

READ A FIRST TIME THIS

day of (month), (year)

READ A SECOND TIME THIS

day of (month), (year)

READ A THIRD TIME THIS

day of (month), (year)

DEPOSITED WITH THE MINISTER OF HEALTH THIS

day of (month), (year)

ADOPTED THIS

day of (month), (year)

“Signed Mayor”

“Signed Other”

DRAFT

COWICHAN VALLEY REGIONAL DISTRICT**BYLAW NO. 1672**

A Bylaw for the purpose of prohibiting and/or regulating smoking within the Whole of the Cowichan Valley Regional District.

WHEREAS the Board of Directors of the Cowichan Valley Regional District has, by supplementary Letters Patent, dated September 25, 1969 (OIC No. 3072) been granted the function of "Health Regulations";

AND WHEREAS, on October 16, 1992, under authority of B.C. Regulation 210/91 (OIC No. 1595) the Cowichan Valley Regional District was granted the additional power of Health Regulation under Section 692(1) of the "Municipal Act" with respect to the control of smoking within all of the region's Electoral Areas and Municipalities, as an extended service;

AND WHEREAS, under authority of CVRD Bylaw No. 1507 cited as "**CVRD - Extended Service (Control of Smoking) Establishment Bylaw No. 6, 1993**" established an Extended Service for the purpose of controlling and regulating smoking with all Electoral Areas and Municipalities participating;

AND WHEREAS, the Regional Board is desirous of regulating persons, their premises, and their activities, to further the care, protection, promotion and preservation of the health of the inhabitants of the Regional District;

AND WHEREAS, it has been determined that tobacco smoke is a health hazard and/or discomfort for many inhabitants of the Regional District;

AND WHEREAS, it is deemed desirable and expedient for the health, safety and welfare of the Region's inhabitants to prohibit or regulate smoking or both in the Regional District;

AND WHEREAS, the approval of the Minister of Health has been obtained, pursuant to the provisions of Section 692(4) of the Municipal Act as aforesaid;

NOW THEREFORE, the Regional Board of the Cowichan Valley Regional District, in open meeting assembled, enacts as follows:

1. **Citation**

This Bylaw may be cited for all purposes as "**CVRD - Clean Indoor Air and Control of Smoking Regulation Bylaw, 1995**".

2. **Interpretation**

In this bylaw the words and phrases hereinafter listed shall have the meanings and applications as stated:

"**bingo hall**" means a business carrying on the business of a bingo hall;

"**bowling alley**" means a business carrying on the business of a bowling alley;

"**business place**" means any premises or part thereof to which the public has access for the purpose of purchasing goods or services and includes, without limiting the generality of the foregoing, a hospital, licenced premises, a personal service establishment, restaurant, pool hall, bingo hall and bowling alley;

"**designated smoking area**" means an area or areas designated under Section 3 of this bylaw;

"**employee**" a person who:

- (a) performs any work for or supplies any services to an employer, or
- (b) receives any instruction or training in the activity, business, work, trade, occupation or profession of the employer;

"**hospital**" means a hospital as defined in the Hospital Act, RSBC, 1979, C. 176 and a community care facility as defined in the Community Care Facility Act, RSBC, 1979, C. 57;

"**licenced premises**" means an establishment licenced or required to be licenced under the Liquor Control and Licencing Act, RSBC, 1979, C. 237 and includes premises covered by a temporary licence issued under the aforesaid Act;

"**personal service establishment**" means an establishment in which a person provides a service to or on the body of another person and, without limiting the generality of the foregoing, includes a barber shop, beauty parlour, health spa, massage parlour, tattoo shop, sauna and steam bath;

"**place of employment**" means any indoor place of work other than:

- (a) a private home which also serves as a place of work, or
- (b) a workplace occupied solely by an independent contractor or only by the partners to a partnership, and includes any parts of a retail shop used exclusively by the employer of such premises, but does not include a reception area.

"**place of public assembly**" means premises where members of the public assemble for the purposes of worship, entertainment, education, government, amusement or .../3

sport, and without limiting the generality of the foregoing, includes a trade show, but does not include a workplace or a business place;

"**pool hall**" means a business carrying on the business of a pool hall;

"**post**" means the act of keeping continuously displayed;

"**premises**" means:

- i) a room,
- ii) a shop,
- iii) a building,
- iv) an enclosed structure, or
- v) an area within a building or enclosed structure.

"**private function**" means a special event for which an entire room or hall has been solely reserved and at which attendance is limited to people who have been individually invited;

"**proprietor**" means the person who controls, governs or directs the activity carried on within the building, place or premises referred to in this bylaw and includes the person actually in charge thereof.

"**public place**" means any building or portion thereof where the public is invited or has access and includes reception areas, buses operated within the Cowichan Valley Regional District by or on behalf of any school district and buses operated within the Cowichan Valley Regional District by or on behalf of the Cowichan Valley Regional District in cooperation with B.C. Transit, but does not include a workplace, business place or place of public assembly;

"**reception area**" means the area of an office or establishment used solely for the purposes of receiving or greeting customers, clients or other persons dealing with the office or establishment;

"**resident or patient care**" means any and all areas of a medical care facility or hospital frequented by residents or patients but does not include a room occupied by a resident or patient for his exclusive use.

"**restaurant**" means a public premises in which prepared food is served to the public in exchange for money or services, or to which the public has access for the purposes of purchasing prepared food for consumption on the premises;

"**smoke**" or "**smoking**" means the inhaling of or exhaling of the smoke from tobacco or other organic substance or the carrying of a burning cigarette, cigar or any device in which tobacco or any other organic substance is burning;

"workplace" means any building or portions of a building where the public is not invited or does not have access and in which a person or people are employed;

3. Prohibition

No person shall smoke:

- a) in a workplace;
- b) in a business place;
- c) in a place of public assembly;
- d) in a public place;
- e) in a taxicab except with the unanimous consent of all occupants thereof.

4. Designated Smoking Areas

Notwithstanding the provisions of Section 3:

- a) a proprietor of any workplace or business place may designate all or any portion or portions of such workplace or business place as a designated smoking area or areas;
- b) a proprietor of a place of public assembly may create a designated smoking area in such place of public assembly provided that such area is constructed so that it is separated from the remaining area of the place of public assembly and is enclosed by walls, has a closing door, and has a ventilation system which exhausts to the outside atmosphere;
- c) a proprietor of any place of public assembly within which an entire room or hall has been solely reserved for the holding of a private function, may designate for the term of any such reservation, all or a portion of such room or hall as a designated smoking area;
- d) a person may smoke in a designated smoking area.

5. Signs

- a) Upon deciding whether to create a designated smoking area pursuant to Section 4 hereof, the proprietor of a workplace, business place or place of public assembly, shall post at the entrances to such workplace, business place or place of public assembly, a notice in one of the following forms:

- i) "No Smoking On These Premises"; or
 - ii) "Smoking Permitted On These Premises"; or
 - iii) "Smoking Is Permitted Only in Designated Smoking Areas"; or
 - iv) A graphic symbol shown in Schedule "A" attached hereto and forming part and parcel of this Bylaw.
- b) If in any building or structure there is more than one workplace, business place or place of public assembly, all proprietors in such building or structure may, by unanimous consent, cause to be located at or near to all entrances to such building or structure, a notice in one of the following forms:
- i) "No Smoking In This Building"; or
 - ii) "Smoking Permitted In This Building"; or
 - iii) "Smoking Is Permitted Only In Designated Smoking Areas"; or
 - iv) A graphic symbol shown in Schedule "A" attached hereto and forming part and parcel of this Bylaw;

and if such notice is posted, no notice in an individual workplace, business place or place of public assembly within the building, need be posted, as required under Section 4(a) hereof.

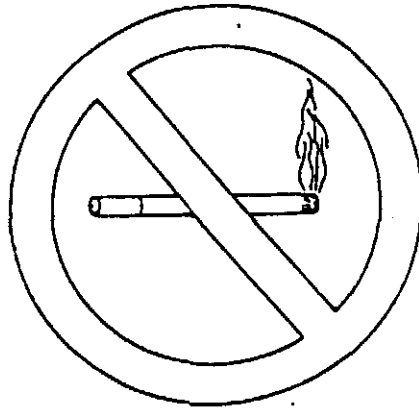
- c) A proprietor of any workplace, business place or place of public assembly, who has created a designated smoking area, must identify such designated smoking area by a sign or signs bearing the text "Smoking Permitted In This Area", or a graphic symbol shown in Schedule "A" attached hereto and forming part and parcel of this Bylaw.
- d) A proprietor of a public place or places shall post within such public place or places a sign bearing the text "No Smoking Permitted" except and unless there is posted at the street entrance or entrances to the premises in which such public place or places are located a sign or signs bearing the text "No Smoking In This Building" or "No Smoking On These Premises" or "Smoking Only In Designated Smoking Areas" or a graphic symbol shown in Schedule "A" attached hereto and forming part and parcel of this Bylaw.

6. Enforcement

The Bylaw Enforcement Officer, or an accredited representative, shall have the right of entry and may enter on to any land or into any building at all reasonable hours in order to inspect the same and ascertain whether the provisions of this Bylaw are being or have been carried out. Any person interfering with or obstructing the entry of any such official or employee of the Cowichan Valley Regional District on to any such

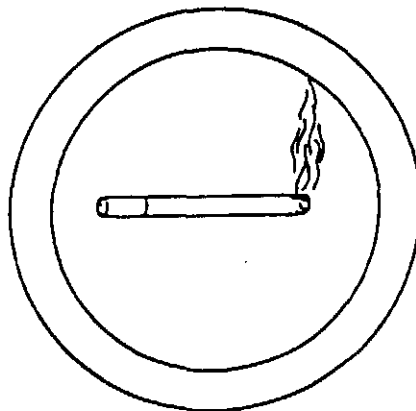
**SCHEDULE "A"
TO BYLAW NO. 1672**

1. The following graphic symbol is prescribed for the purpose of Section 4 to indicate "NO SMOKING":



The symbol shall be on a white background with a circle and interdictory streak in red, with a cigarette, cigar, pipe or other lighted smoking equipment in black.

2. The following graphic symbol is prescribed for the purpose of Section 4 to indicate "SMOKING IS PERMITTED":



The symbol shall be on a white background with a circle in green and cigarette, cigar, pipe or other lighted smoking equipment in black.

land or into any such building to which said entry is made or attempted pursuant to the provisions of this section of this Bylaw, shall be deemed to be guilty of an infraction of this Bylaw and liable to a fine of not more than \$500.00.

7. Penalties

(a) Any person who commits an offense against this Bylaw shall be liable upon conviction to a maximum fine of Five Hundred Dollars (\$500.00).

(b) Any proprietor or person who fails or neglects to perform any duty imposed by this Bylaw shall be guilty of an offence and liable to a fine of not more than \$500.00.

8. Severability

In the event that any section, subsection, sentence, clause or phrase of this bylaw is for any reason held to be invalid by the decision of any court, such section, subsection, sentence, clause or phrase may be severed from the remaining portion of this bylaw.

9. Applicability

This Bylaw applies to the whole of the Cowichan Valley Regional District comprised of the City of Duncan, Town of Ladysmith, Village of Lake Cowichan, District of North Cowichan and Electoral Areas A, B, C, D, E, F, G, H and I.

READ A FIRST TIME this 11th day of January, 1995.

READ A SECOND TIME this 11th day of January, 1995.

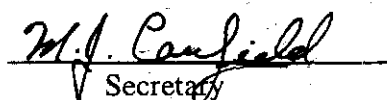
READ A THIRD TIME this 22nd day of March, 1995.

I hereby certify the foregoing to be a true and correct copy of Bylaw No. as given Third Reading on day of , 1995.

Approved by the Minister of Health pursuant to the provisions of Section 692(4) of the Municipal Act, this 5th day of May , 1995.

ADOPTED this 24th day of May, 1995.


Chairperson


Secretary



STAFF REPORT TO COMMITTEE

DATE OF REPORT April 17, 2018
MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018
FROM: General Manager
Community Services Department
SUBJECT: Sport Tourism Grant Subcommittee
FILE:

PURPOSE/INTRODUCTION

The purpose of this report is to establish a Sport Tourism Grant Subcommittee and determine the subcommittee membership.

RECOMMENDED RESOLUTION

That a Sport Tourism Grant Subcommittee be established, in accordance with the Community Services Department report of April 17, 2018.

BACKGROUND

The Board considered providing tournament incentives to local sport organizations at the meeting of September 21, 2017, and passed the following recommendations:

1. **That up to \$30,000 be included in the preparation of the sport tourism section of the Economic Development budget for 2018.**
2. **That a set of criteria be developed to evaluate appropriate financial incentives for hosting provincial, regional, national, or international events.**

The 2018 budget includes \$30,000 for tournament incentives.

ANALYSIS

The recently adopted Arts and Culture function establishment bylaw allows for a grant committee to consider and distribute arts and culture funding to organizations based on criteria established by the Board. There is no similar authority for sport tourism grants.

Staff propose forming a Sport Tourism Grant Subcommittee of the Regional Services Committee, with the mandate to develop criteria for appropriate financial incentives for hosting provincial, regional, national, or international events. The recommended criteria would come to the Regional Services Committee for consideration, and the Board for approval.

The Sport Tourism Grant Subcommittee would adjudicate applications for funding, and make recommendations to the Regional Services Committee.

Sport Tourism Grant Subcommittee membership would be comprised of one representative from each of the following five commissions/committees:

1. Kerry Park Recreation Centre Commission
2. Cowichan Lake Recreation Commission
3. Island Savings Centre Commission
4. North Cowichan Parks and Recreation Committee
5. Ladysmith Parks and Recreation Committee

For 2018, the Regional Services Committee will consider and make appointments to the subcommittee at a future meeting.

In the future, a recommendation to establish a formal committee by bylaw will be brought forward to the Board.

Further Analysis

The Island Savings Centre Commission currently adjudicates applications for the annual Cowichan Valley Arts and Sports Scholarships, financed from an ongoing fund created as a legacy of the 1991 BC Winter Games. Two \$500 Arts, and two \$500 Sports scholarships are awarded annually. It is proposed that the Arts and Culture Grant Committee adjudicate the arts scholarships beginning in the year 2019. This Sport Tourism Grant Subcommittee could adjudicate the two sports scholarships.

FINANCIAL CONSIDERATIONS

The 2018 budget includes \$30,000 for sport grants.

COMMUNICATION CONSIDERATIONS

The outlined recreation commissions/committees would be advised to recommend a representative for appointment to the Sport Tourism Grant Subcommittee.

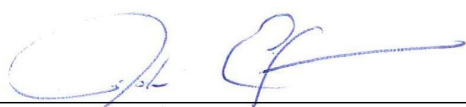
STRATEGIC/BUSINESS PLAN CONSIDERATIONS

N/A

Referred to (upon completion):

- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

Prepared by:



John Elzinga
General Manager

Reviewed by:

Not Applicable
Not Applicable

Not Applicable
Not Applicable



STAFF REPORT TO COMMITTEE

DATE OF REPORT April 11, 2018

MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018

FROM: Parks & Trails Division
Land Use Services Department

SUBJECT: Parks Planning Summer Student (2017) Results of Cowichan Valley Trail User Surveys

FILE:

PURPOSE/INTRODUCTION

The purpose of this report is to provide a summary of the 204 trail user surveys completed for the Cowichan Valley Trail in the summer of 2017.

RECOMMENDED RESOLUTION

For information.

BACKGROUND

One of the many jobs the 2017 CVRD parks planning summer student had was to spend time on the Cowichan Valley Trail (CVT), in three different locations, conducting surveys with trail users. The locations that were targeted were the Sherman Road trail entrance, the Kinsol Trestle, and the Tansor Road trail parking lot. In addition to the CVT, Stoney Hill Regional Park was also surveyed although only 20 surveys were completed. As this number is inadequate for a full analysis, the 2018 parks planning summer student will collect more survey data this summer and a full analysis will be completed for reporting back to the Regional Services Committee by the end of 2018.

The objectives of the trail and park user surveys are to determine user profiles, activities engaged in, their satisfaction levels, and any suggestions for improvements. This data is useful with establishing ongoing operations/maintenance priorities in future planning for new park and trail amenities.

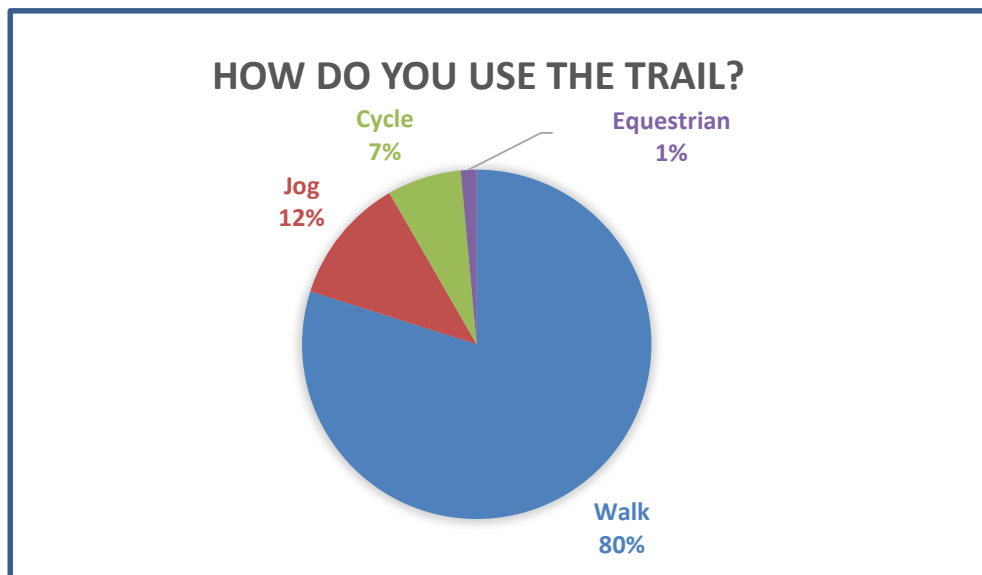
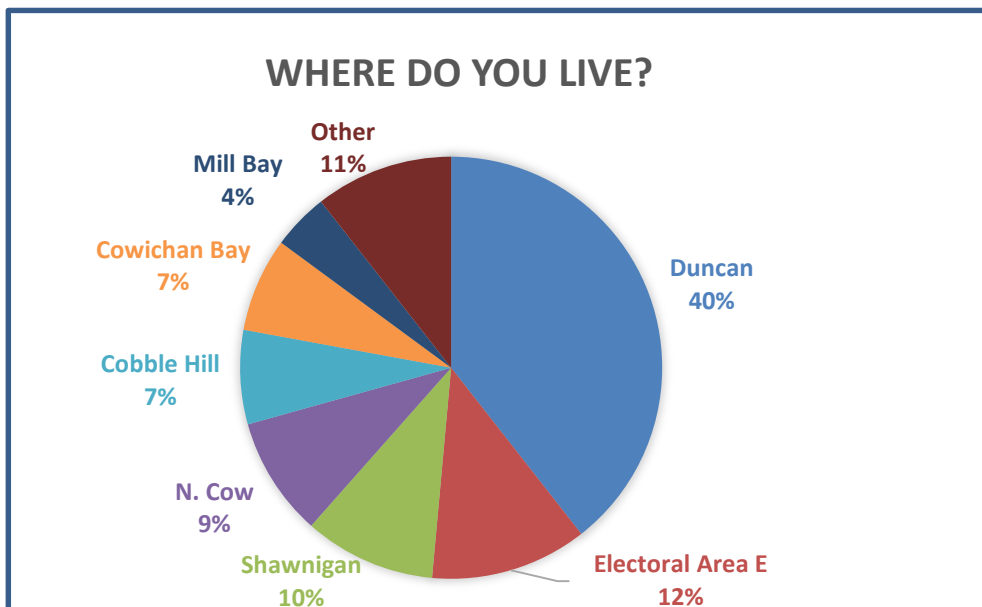
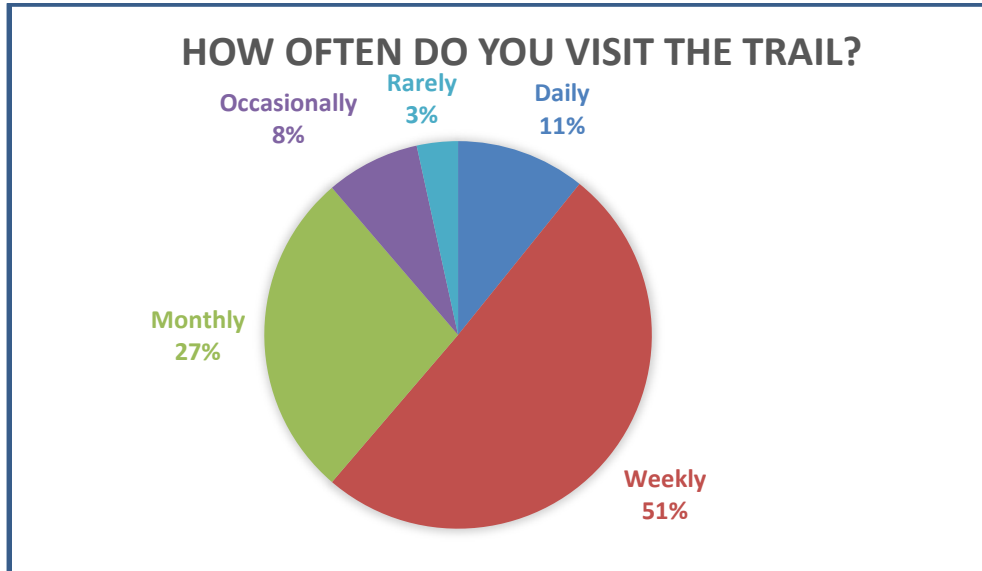
ANALYSIS

There were 204 user surveys completed on the Cowichan Valley Trail (56% of trail visitors were male and 44% were female). There were three locations surveyed; Sherman Road trail entrance, the Kinsol Trestle, and the Tansor Road parking lot. All three locations were accessed equally by trail users. There were 13 questions asked in the survey and the summary of the key questions are listed here.

Q. What was your level of satisfaction of the overall condition of the trail? 98% were satisfied to very satisfied.

Q. What type of additions, if any, would you like to see along the trail? Flush Toilets at the trestle parking lot, additional community trail connections to the CVT, dog bag dispensers at the trestle and trail access points and a horse tie up at the trestle.

Q. How many people had a dog and of those were they on leash? 28% of people visiting had a dog with them and of those 77% of the dogs were on leash.





It is not surprising that the trail use feedback reports users are very happy with the Cowichan Valley Trail experience as this is what Parks and Trails Division staff regularly hear, and that the majority of people (61%) enjoy using it either daily or weekly. Two of the trailheads surveyed are located in North Cowichan and Sahtlam, which correlate with the results for “where the majority of people live” noting those living in the vicinity of Duncan and Electoral Area E as the highest users of the trail. This also coincides with the higher number of people who use the trail daily or weekly, as this section of the Cowichan Valley Trail from Sherman Road to Tansor Road is heavily used by walkers on a daily basis. Based on information collected it would appear the Kinsol Trestle is likely visited on more of a sporadic basis by people from across the entire Regional District, as well as tourists, as it is more of a regional destination experience.

An interesting note to the survey results is that there were not as many dog walkers on the Cowichan Valley Trail as expected and the majority of the dogs were leashed. This may indicate that trail users are more compliant of the dogs on leash bylaw and respectful of other trail users when using busier sections of the trail. There were a few comments about adding dog bag dispensers at the Kinsol Trestle and at some of the trailheads, as well as adding a horse tie-up area at the Kinsol Trestle.

In terms of additional amenities that were desired for the Cowichan Valley Trail experience, a new public washroom at the Kinsol Trestle parking lot on Glen Eagles Road was mentioned the most. Trail users also indicated they would like to see more local area community pathways constructed connecting to the Cowichan Valley Trail, so as to provide a means of accessing the trail without having to walk on busy roads.

FINANCIAL CONSIDERATIONS

N/A

COMMUNICATION CONSIDERATIONS

N/A

STRATEGIC/BUSINESS PLAN CONSIDERATIONS

N/A

Referred to (upon completion):

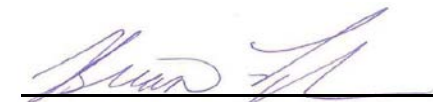
- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

Prepared by:


Reviewed by:



Tanya Soroka, MCIP, RPP
Parks & Trails Planner



Brian Farquhar
Manager



Ross Blackwell, MCIP, RPP, A.Ag.
General Manager

ATTACHMENTS:

- Attachment A – Map of trail user survey Tansor Road and Sherman Road
- Attachment B – Map of trail user survey – Kinsol Trestle



This map is compiled from various sources for internal use and is designed for reference purposes only.

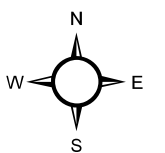
The Regional District does not warrant the accuracy.

All persons making use of this compilation are advised that amendments have been consolidated for convenience purposes only and that boundaries are representational.

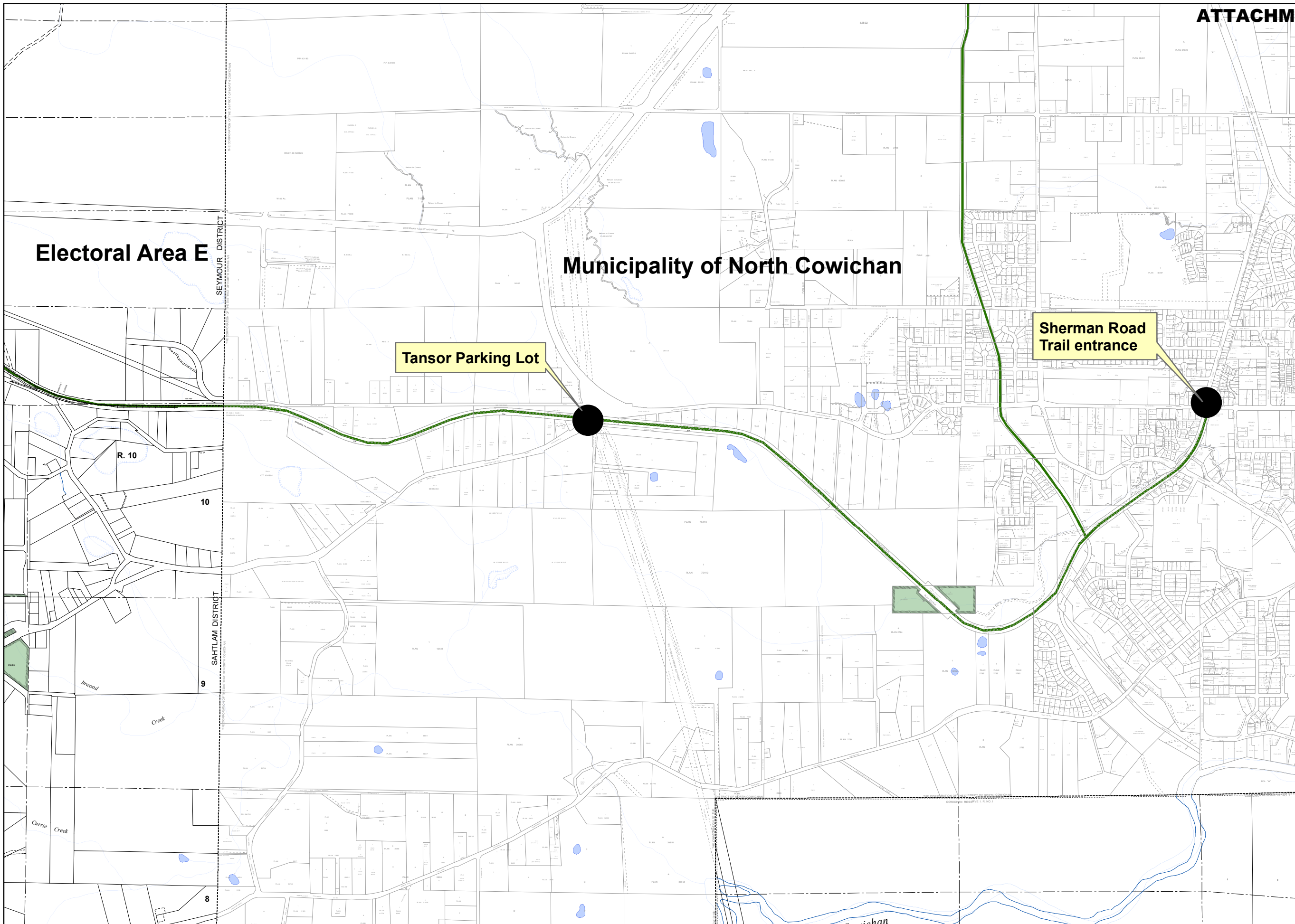
The original Bylaws should be consulted for all purposes of interpretation and application of the Bylaws.

Printed: March 6, 2018

**Cowichan Valley
Trail User survey
locations
2017**



Scale: 1:15,053





This map is compiled from various sources for internal use and is designed for reference purposes only.

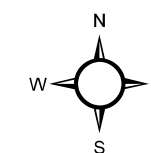
The Regional District does not warrant the accuracy.

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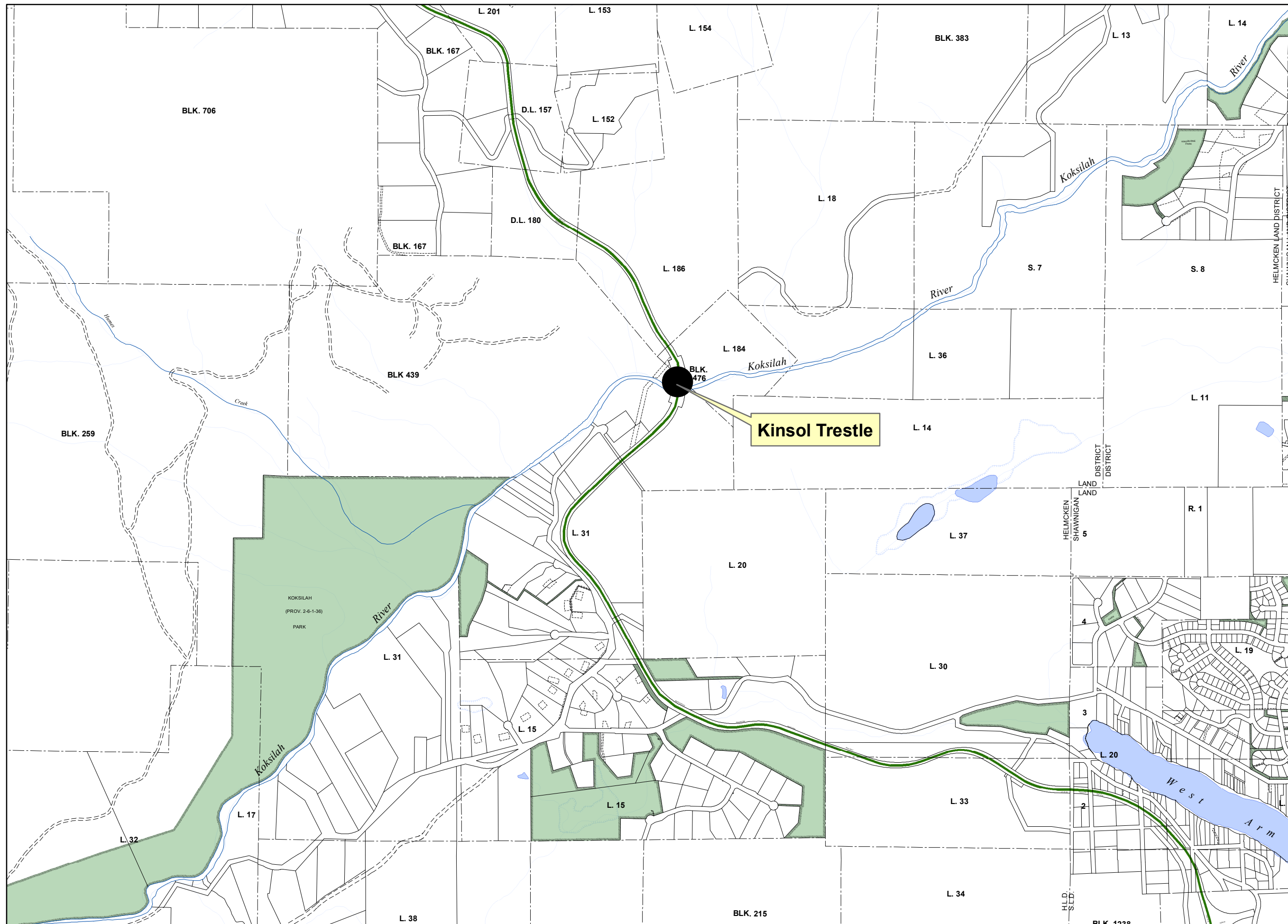
The original Bylaws should be consulted for all purposes of interpretation and application of the Bylaws.

Printed: March 6, 2018

Cowichan Valley
Trail User survey
location
Kinsol Trestle
2017



Scale: 1:15,857





STAFF REPORT TO COMMITTEE

DATE OF REPORT March 27, 2018
MEETING TYPE & DATE Regional Services Committee Meeting of April 25, 2018
FROM: Environmental Services Division
Engineering Services Department
SUBJECT: Giant Hogweed
FILE: 5280-01-INV

PURPOSE/INTRODUCTION

The purpose of this report is to provide information on the progress of the Cowichan Valley Regional District (CVRD) Noxious Weed Control Bylaw, the giant hogweed monitoring program and the prioritization of invasive plants.

RECOMMENDED RESOLUTION

For direction.

BACKGROUND

In 2014, the CVRD developed a regional strategy (Attachment A) for invasive plant management including a bylaw, inventory, removal of key species, and a community awareness campaign. On February 11, 2016, the Board adopted CVRD Bylaw No. 3966 - Noxious Weeds Control Bylaw, 2016. The bylaw is now in effect in all electoral areas to prohibit the growth of specified invasive plants. Currently, only giant hogweed is included in the scope of the bylaw before other plants are considered for inclusion. Giant hogweed is currently included because of the high public health impacts. The strategy utilized a risk assessment process based on human health, ecological health and economic impacts to identify and rank species on the regions overall health, for management consideration.

Currently, the only tool available to control invasive plants outside of the bylaw, is the use of development permits during land development. This is not a particularly useful mechanism on its own, as it does not allow for the required ongoing maintenance and control of infestations. The phased bylaw process gave an opportunity to identify and begin controlling invasive plants within their own holdings, identify issues in management of residual plant materials in the waste or composting streams and begin to build public awareness.

Parks staff, with funding support of the Board, have identified and are now managing invasive plants in a number of community parks, enhancing the opportunities for public communication and internal knowledge of control tactics.

Education and Awareness

In spring of 2016, staff began an education and community awareness campaign focused on key messages:

- Giant hogweed is an invasive plant that needs to be controlled. Touching the plant can cause skin to become severely irritated or burned.
- There is a new bylaw requiring property owners and occupiers to ensure their property is cleared of giant hogweed. The bylaw is intended to protect the public and prevent the spreading of the plant.

- More information about giant hogweed is available at:
<https://www.cvrld.bc.ca/2283/Invasive-Species>.

Communication tools were developed and used for delivering key messages to the community and for targeted notification to property owners and neighborhoods affected by giant hogweed.

In 2017, staff continued communication of key messages by leveraging the materials that were developed in 2016. Staff worked with partners to carry out the following activities in 2017:

- Targeted notification to property owners and monitoring of sites for presence of giant hogweed
- Removal of giant hogweed at sites confirmed to have the plant by the Coastal Invasive Species Committee on behalf of the CVRD
- Releasing an advertisement in the CVRD recreation guide
- Maintaining the website and hotline for giant hogweed information

Giant Hogweed Monitoring and Compliance Update

In April 2017, staff identified 30 properties with a reported sighting of giant hogweed within the CVRD. Thirteen giant hogweed sites are on residential properties. In June 2017, the Coastal Invasive Species Committee, on behalf of the CVRD, notified owners of residential properties with potential giant hogweed infestations and conducted follow-up monitoring. The non-residential sites are on Ministry of Transportation and Infrastructure (BC MoT) lands. BC MoT conducted monitoring and treatment of the sites on their lands where necessary. Monitoring of all giant hogweed sites has indicated that:

- 100% of the sites are under control
- 15 of the 30 sites were identified as having giant hogweed in 2017 and were treated in 2017
- 15 sites did not have any evidence of giant hogweed based on their most recent site visit

Feedback from property owners known to have giant hogweed indicates a willingness to manage infestations of the plant. In 2017, there were two calls of service to the Inspections and Enforcement Division for giant hogweed. In each case there was full compliance from the owners/representatives for treatment.

Work to date by CVRD staff (Waste Management, Parks and Trails, Bylaw and Environmental Services) has demonstrated successful management of giant hogweed. However, infestations of giant hogweed are resilient as its seed can persist in the soil for several years. It is estimated that sites may require three to six years of follow-up treatment. Staff are planning the following activities for 2018:

- Conducting targeted notification to neighborhoods affected by reported infestations
- Maintaining the website and hotline for giant hogweed information
- Monitoring of sites for presence of giant hogweed

ANALYSIS

2019 Invasive Plant Work Plan

Currently the invasive plants program is addressed as a minor work plan item in 2018. A 2019 work plan to be developed this summer may identify additional need for ongoing resourcing to support:

- Identification of additional priority plants for potential inclusion in the bylaw. Evaluation criteria for including a plant in the bylaw include the relative ranking in the CVRD Invasive

Plants Prioritization (Attachment B) and the recommended action noted in the Coastal Invasive Species Committee 2017 Priority Invasive Plant List (Attachment C).

- Priority invasive plants monitoring and education. Warmer temperatures will enhance the potential for invasive species to spread across the region and compromise native species, our agricultural lands and threaten our health. Monitoring and education programs will help inform our communities to ensure they are effective participants in addressing the invasive plants problem.
- Build capacity through collaboration with community partners. Invasive plants affect many jurisdictions throughout the region. To have an effective response to the priority invasive plants noted in the progress update (Attachment B), it is necessary to coordinate actions and share information between partners.

FINANCIAL CONSIDERATIONS

Funding of \$1,000 to continue outreach, education and monitoring is included in the 2018 budget. Staff time and resource demands are growing as the threats from invasive plants has increased in recent years.

COMMUNICATION CONSIDERATIONS

Staff will continue to engage with affected neighborhoods, property owners, and key organizations to control infestations of the plant.

STRATEGIC/BUSINESS PLAN CONSIDERATIONS

The control of priority invasive species in our region supports the focus areas in the Corporate Strategic Plan to respond to climate change, develop watershed management strategies and to engage our communities.

Referred to (upon completion):

- Community Services (*Island Savings Centre, Cowichan Lake Recreation, South Cowichan Recreation, Arts & Culture, Public Safety, Facilities & Transit*)
- Corporate Services (*Finance, Human Resources, Legislative Services, Information Technology, Procurement*)
- Engineering Services (*Environmental Services, Recycling & Waste Management, Water Management*)
- Land Use Services (*Community Planning, Development Services, Inspection & Enforcement, Economic Development, Parks & Trails*)
- Strategic Services

Prepared by:

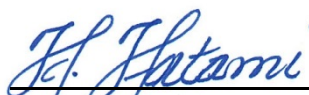


Keith Lawrence
Senior Environmental Analyst

Reviewed by:



Kate Miller, MCIP, RPP, LEED AP
Manager



Hamid Hatami, P. Eng.
General Manager

ATTACHMENTS:

Attachment A – Invasive Plants Strategy for the CVRD - 2014

Attachment B – CVRD Invasive Plants Progress Report – April 2018

Attachment C – Coastal Invasive Species Committee's Priority Invasive Plants List for the CVRD –
July 2017

Invasive Plant Species Strategy



Executive Summary

Background

The rapid spread of invasive species is gaining global recognition as a serious threat due to their impact on human health, ecological systems and the economy. In response to this growing problem, provincial, national, and international regulations have been developed to address this issue. Here in the Cowichan Region, there is increasing concern from the local residents and elected officials regarding the spread of invasive plant species in our region. Fortunately, steps can be taken to address invasive plant issues, and local governments can play a key role in process and thereby reduce their impact on local communities.

Prioritization

This report provides an assessment of the risks posed by invasive plant species to human health, ecological systems and economic interests. The nine plant species needing priority attention identified consist of Giant Hogweed, Yellow Iris, Daphne/Spurge Laurel, Blessed Milk Thistle, Knotweed, Carpet Burweed, Tansy Ragwort, Poison Hemlock and Scotch Broom.

Regional Conservation Strategy

The development of an invasive plant species strategy is one of the key components of a proposed regional conservation strategy. The conservation strategy includes:

1. Identification of key ecological attributes requiring regional conservation support
2. Development of an invasive plant species strategy
3. Development of a species at risk strategy
4. Development of an overarching conservation strategy to inform land use planning and public land management

The regional conservation strategy is to be developed in coordination with the strategies of other organizations including First Nations, the provincial government, agriculture and industry.

Management Approach Options

This report outlines the four regulatory and three non-regulatory options for managing invasive plant species within the region comprised of the following:

Non-Regulatory

1. Develop a public outreach and education campaign;
2. Develop a social marketing approach to invasive plant management;
3. Develop a CVRD properties master plan which identifies the occurrence of invasive species, volume and impacts and prioritizes their management; and
4. Continue to work with provincial and regional partners on the Coastal Invasive Species Committee.

Regulatory

1. Develop a bylaw under the *Weed Control Act*;
2. Develop a bylaw under the *Local Government Act*, and
3. Establish invasive species management requirements in development permits.

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Overview – Local Government and the Invasive Plant Problem

In 1998, the World Conservation Union declared invasive species as the second highest threat to biodiversity world-wide, second to habitat loss. Invasive species includes a range of plants, animals, amphibians, insects and viral species. In coastal BC, invasive plant infestations are recorded in the tens of thousands (IAPP database 2012). The focus of this strategy is on the management and control of plant species only, this is not to imply that other species are not of concern however their management and control requires a species specific approach.

Vancouver Island and the surrounding coastal communities possess some of the world's most diverse and rare ecosystems that support many rare and endangered species. This region has numerous pathways of invasion and countless methods for invasive plant spread. Many high traffic areas already suffering from intense use are becoming increasingly vulnerable to the exposure of invasive alien plants.

Invasive plants are brought to Canada, either accidentally or intentionally, and include species such as Purple loosestrife, Japanese knotweed, and Scotch broom. These plants have the ability to establish quickly and are highly competitive. Because they arrive in Canada without their natural predators to keep them in balance, they can spread rapidly, forming dense patches over large areas, often displacing native plants.

Since animals rarely eat these plant species or can be excluded from their habitats by them, infestations can impact wildlife habitat and high value conservation areas. Invasive plants can have huge economic impacts by competing with desirable agricultural crops and forest plantations. They can also pose significant threats to human health and safety by causing skin irritation or burns. While some of these plants have high economic and social values to the community, many had substantial and adverse effects which will necessitate management. Some have direct health impacts on the public or on community infrastructure either destroying it or impacting its ability to function effectively for its intended use and causing additional management maintenance costs.

Globally as invasive species management becomes more widespread some species are being identified as extreme risks (hogweed and knotweed for example) that required special management and disposal.

Regional Conservation Strategy

The development of this invasive plant species strategy is one of the key components of a proposed regional conservation strategy. The conservation strategy includes:

1. Identification of key ecological attributes requiring regional conservation support
2. Development of an invasive plant species strategy
3. Development of a species at risk strategy
4. Development of an overarching conservation strategy to inform land use planning and public land management

The regional conservation strategy is to be developed in coordination with the strategies of other organizations including First Nations, the provincial government, agriculture and industry.

Top 10 Reasons for Local Governments to Get Involved

The rapid spread of invasive species is gaining global recognition as a serious threat due to their impact on human health, ecological systems and the economy. In response to this growing problem, provincial, national, and international regulations have been developed to address this issue. Here in the Cowichan Region, there is increasing concern from the local residents and elected officials regarding the spread of invasive plant species in our region. Fortunately, steps can be taken to address invasive plant issues, and local governments can play a key role in process and thereby reduce their impact on local communities. The top 10 reasons for local government to get involved in addressing invasive plant management (IPCBC 2010) include:

1. **Property Values** – Invasive plant species can reduce property value by leaving properties unsightly and damaging foundations (e.g. Japanese Knotweed).
2. **Recreation** – Invasive plant species can reduce the recreational value of parks by inhibiting access to trails, rivers and lakes, puncturing tires (e.g. Himalayan blackberry) and impact aesthetic values. In the Cowichan region this has meant reducing the environmental value of our parks as well as the risk to public health (e.g. carpet burweed).
3. **Human Health and Safety** – Invasive plant species can pose health and safety risks to humans (Giant Hogweed) and/or livestock (e.g. Tansy Ragwort). As the infestations increase we can expect to see public health impacts become more apparent.
4. **Range, Agriculture and Forestry** – Invasive plant species can outcompete tree seedlings, reduce yields and introduce pests and diseases into crops. Our large forestry and agricultural landowners have already identified substantial economic and management impacts to their properties which have impacted their ability to be competitive.
5. **Economic Impacts** – In BC, the economic impact of seven invasive plant species, in the absence of any management, was estimated to be at minimum \$65 million in 2008, and is forecasted to rise to \$139 million by 2020. Locally, the forestry, agriculture and recreation industries are projected to remain an important part of the regional economy. As a result, there will be growing adverse economic impacts of invasive plants on these natural resource based industries.
6. **Biodiversity** – In 1998, the World Conservation Union declared invasive species to be the second largest threat to biodiversity on the planet, second to habitat loss. In the Cowichan region this means major effects in our rare and fragile ecological coastal zones and along our riparian corridors.
7. **Fire Hazard** – Some invasive plant species are extremely flammable (e.g. Scotch broom and gorse) due to the high oil content. In the CVRD this could affect communities as well as regional infrastructure particularly if urban forest interfaces increase.
8. **Rapid Spread** – Invasive plant species will generally increase their distribution area an average of 14% annually. This means control at a early stage is of utmost importance.
9. **Compliance with Regulation** – Uncontrolled invasive plant infestations may place local governments in contravention of other provincial and federal laws. Invasive plants are regulated under the *BC Weed Control Act* (associated Regulated Noxious Weed List), *Integrated Pest Management Act* and the *Forest and Range Practices Act*. It is important that a focused, systematic approach is taken and communications, regulations and follow up is coordinated.
10. **Good Neighbour** – Since “invasive plants know no boundaries” collaboration and consistent invasive plant management between neighbouring jurisdictions is an effective and critical approach.

Given the ten reasons above, many local governments are now recognizing the importance of action in these areas. This includes a range of communications and support tools as well as a systematic and regulatory framework. This should not be seen as punitive – but rather as protecting the overall values of the community, its ecological function and recreational and economic base.

Invasive Plant Management Options for the CVRD

Integrated invasive plant management is a realistic and achievable approach to invasive plant species and makes efficient use of available resources while minimizing the negative impacts that invasive plants have on social, economic and environmental imperatives. Collaboration, education, outreach and regulation play a key role in a successful program. Components in an integrated invasive plant management (IPCBC 2010) include:

1. Inventory and Data Management – To identify invasive plant species and sites of concern, particularly on public lands under the CVRD control.
2. Prioritizing and Planning – To assess which invasive species to address, and when, where and how.
3. Public Outreach – To raise awareness about invasive plants and their impacts.
4. Prevention – To prevent new infestations of invasive plants and spread of existing ones.
5. Landowner and Land Manager Incentives – To provide incentives for landowners to encourage invasive plant management.
6. Early Detection, Rapid Response – To detect and eradicate invasive species that are new invader “alert” species.
7. Treatment, Disposal, and Monitoring – To contain or control existing infestations using mechanical, biological, cultural, and/or chemical control methods; and to evaluate the effectiveness of invasive plant management activities and adjust as necessary.
8. Regulation – To regulate and enforce activities to control the introduction and spread of invasive plants.

This report recommends specific approaches to address all the components of an integrated invasive plant management program but places specific focus on the importance of inventory, prioritization and planning to ensure a strategic, high level approach is undertaken that can be monitored for its effectiveness.

Importance of Inventory and Ongoing Data Management

Development of an inventory of invasive plant species in our Region is a critical step in the integrated invasive plant management process as it supports the following:

- Determination of priority invasive plant species on which to focus management efforts
- Identification of priority invasive plants
- Identification of sites of concern to allow focused efforts on areas which create a higher risk of exposure to humans, riparian areas and ecologically sensitive areas.
- Tracking the treatment of sites to ensure appropriate follow-up
- Early detection and rapid response to invasive plant species which are new to the Region.

The Invasive Alien Plant Program (IAPP) Application is the database for invasive plant data in BC. It shares information generated by various agencies and non-government organizations involved in invasive plant management. The application allows the entry, editing and querying of invasive plant information including: site details; invasive plant inventory information; planning; treatment methods and data; and, monitoring data.

Locally, we are able to extract information from the IAPP database about the invasive plants in our Region. Ongoing effort and resources from CISC, local government and stewardship groups is required to keep the information in the IAPP database current. This invasive plant species strategy suggests that the reporting of occurrences of listed priority species be supported by relevant organizational units and by the public through reporting tools such as the report a weed application for smart phones.

Prioritization

The Coastal Invasive Species Committee (CISC), of which the CVRD is a founding member, maintains a priority invasive species plant list. This evolving document is reviewed on an ongoing basis and updated at least once a year by the CISC Board of Directors and its membership. This document was drafted following an extensive inventory process to determine plants of concern across both the Coastal region and the CVRD specifically.

Priority Action Level Categories

Prioritizing the multitude of invasive plants that exist in an area or region is important due to the limited resources available. The action levels for different species are as follows:

Prevent - Species not known to occur in region, but likely to establish if introduced. Eradicate if found. Typically short in duration and costs. *Newly introduced species or species bordering region, are 'prevent' species.*

Eradicate - Species known to occur in limited distribution and low density. Eradicate if found. Typically short in duration and costs.

Contain - Established infestations found in portions of the region. Contain existing infestations and prevent spread to un-infested areas or focus containment in key areas, for example: knotweed and thistle.

Control - Established infestations common and widespread throughout the Coastal ISC region. Focus control in high value conservation areas. Use biological control, if available, on a landscape scale. (for example: Broom adjacent to buildings, on sewage disposal fields, in gravel pits or in ecologically sensitive areas).

CVRD Priority Plants

In 2013 CISC prepared a CVRD invasive plant data summary, which indicates that 68 recorded varieties of invasive plant species exist within the CVRD. Lands where invasive species are found including residential properties as well as a wide range of non-residential areas including BC Hydro, BC Rail, Fortis BC, CN Rail, CP Rail, First Nations Reserves, Mining Companies, Ministry of Environment, Ministry of Forests, Lands and Natural Resource Operations, Ministry of Transportation, Provincial Parks, municipal, and the CVRD properties. The CVRD invasive plant data summary indicated that 29 priority invasive plants are recorded on private, municipal and regional district lands in the CVRD. If these species are to be properly managed and controlled, a coordinated approach amongst property owners and agencies will be required.

To prioritize the invasive plant species in the CVRD region, the invasive plants were assessed based on their potential impact on human health, ecological areas and economic interests. These risks were assigned values of low, medium or high and an overall risk assessment was

made based on the risk levels assigned to each respective area. The individual risk and impact assessments undertaken (ecological, human health, economic) and can be found at the end of this document. Table 1 summary ranks each based on a weighted scale.

Table 1

Species	Management Category	Classification under Weed Control Act	Total Area (ha) ¹ – All CVRD jurisdictions	Ecological Risk ²	Human Health Risk ²	Economic Risk ²	Overall Risk Score ³	Overall Assessment
Giant Hogweed	Eradicate	BC Noxious	1.1235	High	High	High	6	BC Noxious weed and high priority in the CVRD
Yellow Iris	Contain	BC Noxious	34.4461	Medium	High	High	5	
Daphne / Spurge Laurel	Contain	BC Noxious	7.7093	Medium	High	High	5	
Blessed Milk Thistle	Eradicate	BC Noxious	0.0150	Medium	Medium	High	4	
Knotweed Species	Eradicate	BC Noxious	38.0153	High	Low	Medium	3	
Carpet Burweed	Eradicate	BC Noxious	0.0200	Medium	Medium	Medium	3	
Tansy Ragwort	Control	BC Noxious	28.5786	Medium	Medium	Medium	3	
Poison Hemlock	Contain		0.0005	High	High	High	6	High priority in the CVRD
Scotch Broom	Control		404.1394	Medium	Medium	High	4	
Scotch Thistle	Eradicate	BC Noxious	7.3601	Medium	Low	Medium	2	BC Noxious Weed
Gorse	Eradicate	BC Noxious	2.0759	Medium	Low	Medium	2	
Spotted Knapweed	Control	BC Noxious	3.3762	High	Low	Low	2	
Kudzu	Prevent		0	Low	Low	High	2	CISC priority
Butterfly Bush	Eradicate		0.0127	Medium	Low	Low	1	
Spartina	Eradicate		0	Low	Low	Low	0	
Garlic Mustard	Eradicate		0	Low	Low	Low	0	

Table 1. Overall Risk Assessment ¹Total Area (ha) is the area coverage recorded in the BC Invasive Alien Plant Program (IAPP) database for all lands in the CVRD boundary (Private, Municipal, Regional District, BC Hydro, BC Rail, Fortis BC, CN Rail, CP Rail, First Nations Reserves, Mining Companies, MoE, FLNRO, MoT and BC Parks) and reported in the CISC's Invasive Plant Summary – Cowichan Valley Regional District (September 2013)²Overall risk is assessed by scoring each of the risk components as follows: High = 2 points, Medium = 1 point and Low = 0 points. Each of the individual risk component scores are added together to determine the overall risk score. Priority CVRD plants (> 3 points) are shaded gray.

Planning

Need for a Systems Approach

A systems approach is necessary for effective invasive plant management to be realized. Setting priorities for eradication of specific invasive plant species across a region ensures everyone is working towards managing the same priority species, with some exceptions made for a few regionally specific priorities. At this time it is unclear what the CVRD's role is when it comes to invasive plant species management.

Outreach and education by the CVRD is sporadic based on external resourcing and funding. Direct management is also diffuse and sporadic based on parks or facilities staff ability to manage issues on an ad-hoc basis. Recently one electoral area parks commission requested that invasive species management be undertaken in that electoral area's parks. This provided the CVRD with an opportunity to assess what staff and financial resources were needed to undertake such an effort, in addition to examining the impact of this initiative. It is clear that the systematic and focused effects of the initial invasive species management process were successful, which will allow for ongoing management of invasive plant species in the years ahead to occur at a lower cost and with modest resources.

In determining the extent to which it wishes to become involved in invasive species management, the CVRD has the option of providing public information and support without a regulatory role, or it may choose to develop a regulatory framework now or at some time in the future. With either choice it is clear, based on other jurisdictions experience with this issue that the land use and waste stream implications will continue to have ongoing impacts.

Invasive Species Management Approach Options

The identification of priority CVRD invasive plants is the first step in the creation of an invasive plant species management plan. The next step is to identify management approaches for identified highly ranked priority species in the region.

Partnerships can be a successful method for delivering invasive plant management in terms of funding, expertise, resources, and services. A plan to collaborate with other organizations such as stewardship groups and the CISC underlies each of the options noted below. In particular, support can be obtained from the CISC in delivering invasive plant best management practices, training to CVRD parks and trails staff, providing on-the-ground treatment (by contract work) and linking to established pools of funding and other partnerships.

The following regulatory and non-regulatory options are suggested as a coordinated response to the variety of species in our region as well as the limited resources currently available to manage those species on the ground. The approach involves a variety of partners across the region as an effective and coordinated mechanism to share the resourcing needs that will be required.

Non-regulatory options

1. Public outreach and education campaign.
 - Could apply to a customized list of species of concern in the region.
 - Could apply to all lands within the CVRD boundary.
 - Pro: potentially high impact.
 - Pro: flexible in scope of delivery.
 - Con: resourcing and staffing support required
2. Develop a social marketing approach to invasive plant management.
 - Could apply to a customized list of species of concern in the region.
 - Could apply to all lands with the boundary.
 - Pro: potentially high impact.
 - Pro: flexible in scope of delivery.
 - Con: Requires staffing and communications support
3. Develop a CVRD properties master plan which identifies the occurrence of invasive species, volume and impacts and prioritizes their management.
 - Could apply to a customized list of species of concern in the region.
 - Could apply to all CVRD properties.
 - Pro: potentially high impact.
 - Pro: flexible in scope of delivery.
 - Pro: demonstration of leadership
 - Con: comes with concurrent management costs.
 - Con: Requires staffing support
4. Continue to work with provincial and regional partners as well as represent the interests of the CVRD on the Coastal Invasive Species Committee.
 - Could apply to all priority invasive species.
 - Could apply to all CVRD properties.
 - Con: Requires staff time
 - Pro: develop awareness of emerging issues and emerging invasive species.

Regulatory options

1. Develop a bylaw under the BC *Weed Control Act*.
 - Applies only to species listed in the act which is focused primarily on the interior rangelands but was updated recently to reflect growing concern over coastal infestations.
 - Applies to all lands within the jurisdiction under the bylaw.
 - Pro: potentially high impact.
 - Pro: a mechanism for notices and enforcement is already outlined in the *Weed Control Act*.
 - Pro: local governments administering an invasive plant management program for all lands within their regional/municipal boundaries may be eligible for an annual grant from the Ministry of Forest, Lands & Natural Resource Operations to offset program costs.
 - Con: comes with concurrent management costs.

2. Develop a bylaw under the *Local Government Act*.
 - A bylaw under the *Local Government Act* could apply to a “made in Cowichan” list of species and could include an increasing list of actions.
 - Applies to all lands within the jurisdiction under the bylaw.
 - Pro: potentially high impact.
 - Pro: depending on the species and timing this mechanism could also be updated more easily to reflect changing regional conditions and concerns.
 - Con: with concurrent management costs.
3. Establish requirements through development permits.
 - A development permit requirement could apply to a customized list of species.
 - Applies to lands under development application.
 - Pro: more limited level of effort to implement.
 - Pro: can be used in combination with a bylaw for greater impact
 - Con: limited in the scope of lands to which it applies and it is in effect for a limited period of time.

Disposal of Invasive Plants

Often overlooked in the invasive plant management process, disposal is an important issue; improper disposal is a vector for spread and should be carefully considered. While the Recycling & Solid Waste Management Division as well as the local private composting facilities have had some training in the proper identification and disposal of invasive species, a more systematic approach is necessary to ensure that species are not reintroduced to the region via composting systems (or dumping) or introduced to the waste stream where they can substantially damage landfill integrity.

Disposal selection is determined by invasive plant characteristics, site location and disposal methods available. Invasive plants cannot be disposed of in the same way as other plants and health and safety concerns associated with some plants should be recognized prior to handling and burning.

Responsible disposal starts with treating plants before seed set, ideally before flowering to reduce seed dispersal. Handling biomass as little as possible reduces spread. Plants and seeds should be either landfilled or burned. In some instances, in-vessel composting can kill viable seeds; each composting facility process should be evaluated individually for effectiveness. Backyard or outdoor hot or cold composts are not effective at killing seeds or in some instances stems and roots of some invasive plants.

Plant characteristics including toxicity and mechanism of plant spread inform the disposal option. Trained contractor or field staff are knowledgeable to make those decisions in the field. At the same time, CVRD can play a role in preventing the further spread of invasive plants by ensuring disposal option processes available to the community are effective in killing viable seed and plant parts. This means the issue needs to be addressed via a range of mechanisms including education, support to the public as well as a regulatory framework to manage key species. The following options are available for managing the disposal of invasive plants:

Landfill

1. Plant biomass should be left on site, while the reproductive parts of the plant are taken off-site and landfilled, not placed in the garden waste disposal stream.

- Scope: this approach is suitable for plants which spread through seed dispersion only.
 - Pro: requires bagging and secure transportation of a lower volume of plant material than disposal of whole plants.
 - Pro: if land is available, potentially lower capital cost for process setup than incineration.
 - Con: not all invasive plants can be processed through this approach.
2. All plant parts should be taken off-site and landfilled not placed in garden waste disposal.
- Scope: this approach is suited for plants which can spread from any part of the plant (e.g. Knotweed, Yellow Iris or Scotch Broom) or plants with higher toxicity (e.g. Hogweed)
 - Pro: if land is available, potentially lower capital cost for process setup.

Incineration

3. Plant biomass should be left on site, while the reproductive parts of the plant are taken off-site and incinerated.
- Scope: this approach is suited for plants which spread through seed dispersion only.
 - Pro: requires bagging and secure transportation of a lower volume of plant material than disposal of whole plants.
 - Con: not all invasive plants can be processed through this approach.
 - Con: higher capital cost for setup than landfill.
4. All plant parts should be taken off-site and incinerated.
- Scope: this approach is suited for plants which can spread from any part of the plant (e.g. Knotweed, Yellow Iris or Scotch Broom) or plants with higher toxicity (e.g. Hogweed).
 - Pro: lower handling requirements than disposing of plant in a landfill.
 - Con: higher capital cost for setup than landfill.

The determination of whether it is most economical to apply landfill disposal options (#1 and #2 above) or incinerator disposal options (#3 and #4 above) would depend on a life cycle cost analysis of each option which considers the initial capital expenditures and the ongoing operating costs.

To implement a combination options #1 and #2, invasive plant species should be exempt from restrictions of garden waste going in the landfill waste stream. Plant parts should be placed in bags labelled “invasive species.”

To implement a combination of options #3 and #4 above, plant parts should be placed in bags labelled “invasive species.” Partnerships should be explored as an option to gain access to an incinerator and potentially reduce the overall cost of the incineration option.

The incineration of invasive plant material at pulp mills is a common practice for the disposal of some plant species however this may not be a long term option due to the limitations of the plant types that can be accepted. The use of a curtain burner at a select CVRD waste facility is recommended as a potential disposal option that could substantially increase the success of non-regulatory and regulatory options.

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How does the BC EDRR program work?, BC Inter-Ministry Invasive Species Working Group, January 2013

Inquiry with Rachele McElroy, Coastal Invasive Species Council, September 2013.

Appendix A

Table 2: Human Health Risk Assessment

Species	CISC Priority Action Level Category	Toxicity Mechanism	Adverse effects resulting from contact	Adverse effects resulting from ingestion	Human Health Risk ¹
Kudzu	Prevent	No info. available	No info. available	No info. available	Low
Blessed Milk Thistle	Eradicate	No info. available	No info. available	Yes	Medium
Giant Hogweed	Eradicate	Sap on exposed skin causes hypersensitivity to sunlight	Yes – Blistering, Irritation, Dermatitis, , Scarring, Blindness	Yes	High
Spartina	Eradicate	No info. available	No info. available	No info. available	Low
Garlic Mustard	Eradicate	No info. available	No info. available	No info. available	Low
Scotch Thistle	Eradicate	No info. available	No info. available	No info. available	Low
Knotweed Species	Eradicate	None identified	None identified	None identified	Low
Carpet Burweed	Eradicate	Seed spine is sharp	Yes - Seed spine can puncture the skin on humans	No info. available	Medium
Gorse	Eradicate	No info. available	No info. available	No info. available	Low
Butterfly Bush	Eradicate	No info. available	No info. available	No info. available	Low
Poison Hemlock	Contain	All parts of plant are toxic	Yes - Sensitive people may experience contact dermatitis	Yes – can be mistaken for edible plants such as parsley	High
Yellow Iris	Contain	Resin contains a toxin	Yes - Irritation	Yes	High
Daphne/Spurge Laurel	Contain	Seeds and leaves contain a toxin; Sap is an irritant	Yes - Irritation	Yes	High
Scotch Broom	Control	Plant contains a toxin	None identified	Yes	Medium
Spotted Knapweed	Control	No info. available	No info. available	No info. available	Low
Tansy Ragwort	Control	All parts of plant contain a toxic alkaloid	No info. available	Yes – toxin can accumulate in milk and honey in trace amounts	Medium

¹ Human Risk is assessed by:

- a. Scoring the parameters as follows: Adverse effects resulting from contact?: Yes = 1 point, Adverse effects resulting from ingestion?: Yes = 1 point.
- b. Adding up the scores for each parameter
- c. Assigning a risk level according to the scale: 2 points = High, 1 point = Medium, 0 points = Low

Table 3: Ecological Risk Assessment

Species	Management Category	Ecological Impact	Affects riparian areas or sensitive ecosystems	Toxic to other plants (contains phytotoxin)	Total Area (ha) ¹	Ecological Risk ²
Kudzu	Prevent	Displaces native grass and forbs, kills existing trees and shrubs and competes with new tree seedlings. Grows in abandoned fields and urban lots, roadsides, forest edges, fields, croplands and pastures.	No info. available	No info. available	0	Low
Blessed Milk Thistle	Eradicate	Full sun to part shade; does best in disturbed soils. Moist to dry roadsides, ditches and disturbed waste places.	No info. available	No info. available	0.0150	Medium
Giant Hogweed	Eradicate	Strongly competitive plant; dense stands of very, tall plants outcompete native species in riparian areas. Roots are shallow compared to mixed native communities, which may increase erosion risks in riparian areas	Yes	Yes	1.1235	High
Spartina	Eradicate	Competes with native flora of upper tidal marshes reducing habitat for wildlife and fish. Invasion of mudflats and channel edges of marshes eliminates foraging habitats for waterfowl	Yes	No info. available	0	Low
Garlic Mustard	Eradicate	Invades and dominates understory of forested areas.	No info. available	Yes	0	Low
Scotch Thistle	Eradicate	It is often successful in moist areas that are adjacent to riparian or areas along stream courses	Yes	No info. available	7.3601	Medium
Knotweed Species	Eradicate	Dense stands may compete with and replace native vegetation in a variety of habitats, including dry roadsides and moist stream banks	Yes	Yes	38.0153	High
Carpet Burweed	Eradicate	Out-competes tenced grasses	No info. available	No info. available	0.02	Medium
Gorse	Eradicate	Out competes native vegetation	No info. available	No info. available	2.0759	Medium
Butterfly Bush	Eradicate	Displaces native plants, causing loss of habitat for butterflies. Occupies disturbed sites in riparian zones, river banks and gravel beds, roadsides, pastures, logged areas and rocky slopes	Yes	No info. available	0.0127	Medium
Poison Hemlock	Contain	Gradually invades native riparian and lowland communities.	Yes	Yes	0.0005	High
Yellow Iris	Contain	When introduced into natural habitats e.g. (ponds, marshes and other wetlands), they can form dense thickets and displace native species.	Yes	No info. available	34.4461	Medium
Daphne/Spurge Laurel	Contain	Can form dense stands in understory of Douglas-fir forests.	No info. available	Yes	7.7093	Medium
Scotch Broom	Control	Invades roadsides and ecologically sensitive areas	Yes	No info. available	404.1394	Medium
Spotted Knapweed	Control	impacts wildlife and sensitive ecosystems, forming monocultures that displace native plants and reduce biodiversity, further threatening already rare and endangered species	Yes	Yes	3.3762	High
Tansy Ragwort	Control	Invades pastures, woodlands and waste areas	No info. available	Yes	28.5786	Medium

¹ Total Area (ha) is the area coverage recorded in the BC Invasive Alien Plant Program (IAPP) database for private, municipal and regional district lands in the CVRD and reported in the CISC's Invasive Plant Summary – Cowichan Valley Regional District (September 2013) ² Ecological Risk is assessed by: Scoring the following parameters as follows: A. Affects riparian areas or sensitive ecosystems?: Yes = 1 point. B. Toxic to other plants (contains phytotoxin)? Yes = 1 point. C. Total Area (ha): > 0 = 2 points. Risk assessment of high = 3 or more points, Medium = 2 points, Low = 1 point. Adding up the scores for each parameter b. Assigning a risk level according to the scale: 3 - 4 points = High, 2 points = Medium, 0 - 1 points = Low

Table 4: Economic Risk Assessment

Species	Management Category	Animal Health Hazard	Potential adverse property value effect	Threat to Crop productivity	Threat to forest Productivity	Adverse recreational effect	Crowds out forage species for livestock	Economic Risk ¹
Kudzu	Prevent	None identified	Yes	Yes	Yes	Yes – limits recreational access	No information available	High
Blessed Milk Thistle	Eradicate	Yes - Can cause nitrate poisoning in sheep and cattle	Yes	Yes- Infests pastures and rangelands	No info. available	None identified	Yes	High
Giant Hogweed	Eradicate	Yes	Yes	Yes	No info. available	Yes – limits recreational access	Yes	High
Spartina	Eradicate	No info. available	Yes	No	No	Yes – can interfere with recreational activities	No	Low
Garlic Mustard	Eradicate	No info. available	Yes	No info. available	No info. available	No info. available	No info. available	Low
Scotch Thistle	Eradicate	No info. available	Yes	No info. available	No info. available	Yes	Yes	Medium
Knotweed Species	Eradicate	No info. available	Yes	No info. available	Yes	Yes – limits recreational access	No info. available	Medium
Carpet Burweed	Eradicate	Yes – can puncture the skin on animals	Yes	No info. available	No information available	Yes – threatens open areas in parks, golf courses and RV parks	Yes	Medium
Gorse	Eradicate	No info. available	Yes	No info. available	Yes	Yes – reduces access for recreation	No info. available	Medium
Butterfly Bush	Eradicate	No info. available	Yes	No info. available	Yes	No info. available	No info. available	Low
Poison Hemlock	Contain	Yes	Yes	Yes	No info. available	Yes	Yes	High
Yellow Iris	Contain	Yes	Yes	No info. available	No info. available	Yes	Yes	High
Daphne/Spurge Laurel	Contain	Yes	Yes	No info. available	No info. available	Yes	Yes	High
Scotch Broom	Control	Yes – contains toxins which can sicken livestock	Yes	No info. available	Yes – threat to conifer seedlings	No info. available	Yes	High
Spotted Knapweed	Control	No info. available	Yes	No info. available	No info. available	No info. available	Yes	Low
Tansy Ragwort	Control	Yes – causes liver dysfunction, photosensitivity and /or death in livestock	Yes	No info. available	No info. available	No info. available	Yes	Medium

¹ Economic Risk is assessed by:

a. Scoring the parameters as follows: A. Animal Health Hazard? Yes = 1 point. B. Potential adverse property value effect?: Yes = 1 point. C. Threat to Crop productivity? Yes = 1 point. D. Threat to forest Productivity? Yes = 1 point. E. Adverse recreational effect? Yes = 1 point. F. Crowds out forage species for livestock? Yes = 1 point.

b. Adding up the scores for each parameter

Assigning a risk level according to the scale: 4 - 6 points = High, 3 - 4 points = Medium, 0 - 2 points



CVRD Invasive Plants Management Progress Update

April 2018

Background

Introduction

In recent years, the rapid spread of invasive species has gained global recognition as a serious threat due to their impact on human health, ecological systems and the economy. In response to this growing problem, provincial, national, and international regulations have been developed to address this issue. Here in the Cowichan Region, there has been increasing concern from the local residents and elected officials regarding the spread of invasive plant species in our region. In response, the CVRD has been working with partners to take steps to address invasive plant issues and thereby reduce their impact on local communities. This report provides:

- an updated prioritization of invasive plants found in the CVRD;
- a progress update on actions underway; and
- recommended actions for addressing priority plants

Regional Conservation Strategy

In 2009, an objective to develop a regional conservation strategy was included in the region's Environmental and Sustainability Strategy – Plan 12. The development of an invasive plant species strategy is one of the key components of a proposed regional conservation strategy. The conservation strategy includes:

1. Identification of key ecological attributes requiring regional conservation support
2. Development of an invasive plant species strategy
3. Development of a species at risk strategy
4. Development of an overarching conservation strategy to inform land use planning and public land management

The regional conservation strategy is to be developed in coordination with the strategies of other organizations including First Nations, the provincial government, agriculture and industry.

CVRD Invasive Plants Strategy

In 2014, the CVRD developed a strategy for invasive plant management including a bylaw, inventory, removal of key species, and a community awareness campaign. The strategy outlines an integrated invasive plant management approach to make efficient use of available resources while minimizing the negative impacts that invasive plants have on social, economic and environmental imperatives. Collaboration, education, outreach and regulation play a key role in a successful program.

Monitoring and evaluation of strategic activities are also a critical step in the invasive plants management program. This reports presents a summary of actions since the strategy was implemented, an update on the prioritization of plant species and an identification of additional plant species for inclusion within the scope of a bylaw.

Prioritization

The 2014 strategy prioritized invasive plants based on a weighted scale assessment. Since the strategy was developed new plants have emerged and additional information is available on the impacts of the plants. This progress report provides an updated 2018 prioritization of plants based on their potential impacts to human health, ecological areas and economic interests and their ability to spread (invasiveness). 82 invasive plants have been reported in the CVRD, representing

an increase of 15 plants since 2013. For this report, individual impact assessments were undertaken based on ecological, human health and safety, economic and invasiveness attributes for each invasive plant reported in the CVRD. Details on the methodology and results of this assessment can be found in Appendix A. The following table summarizes the impact assessment of the top 15 plants.

Impact Assessment Summary

Species	CISC Management Category ¹	2018 Total Area (ha) ²	2013 Total Area (ha) ²	Health & Safety Impact	Ecological Impact	Economic Impact	Impact Assessment Score ³
Giant Hogweed	Eradicate	0.0122	0.8705	High	High	High	23.0
Poison Hemlock	Eradicate	0.97	0	High	High	High	19.0
Yellow Iris	Contain	32.8076	32.3798	High	High	High	16.1
Daphne/ Spurge Laurel	Control	7.9957	7.7093	High	Medium	High	15.0
Milk Thistle	Eradicate	0.002	0.015	High	Medium	High	14.0
Knotweed Species	Contain	23.9495	28.5372	Medium	High	High	13.3
Scotch Broom	Control	399.404	389.4621	High	Medium	High	13.1
Eurasian watermilfoil	Control	118	0	Medium	High	High	13.0
Parrot feather	Contain	2.7511	0	Medium	High	High	13.0
English ivy	Control	21.2414	19.822	High	Medium	Medium	12.6
Tansy Ragwort	Control	36.8534	21.8446	High	Medium	Medium	12.1
Leafy spurge	Unassigned	0.0002	0.0002	Medium	High	Medium	12.0
English holly	Control	0.6919	0.398	Medium	Medium	Low	10.0
Garden yellow loosestrife	Eradicate	0.0697	0.0985	High	Low	Low	8.7
Gorse	Contain	2.0902	1.8249	Medium	Medium	Medium	8.2

¹CISC Management Categories were assigned through a 2017 invasive plant prioritization project led by the CISC. The categories include:

Prevent: These species are not known to occur in the region, but are likely to establish if introduced. Plants noted in the prevent category include those noted in Appendix B
Action → Eradicate if found.

Eradicate: These species are known to occur in limited distribution and low density
Action → Eradicate if found

Contain: These species have established infestation in portions of the region
Action → Contain existing infestation and prevent spread to un-infested areas.

Control: Established infestations common and widespread throughout the Coastal ISC region.
Action → Focus control in high value conservation areas. Use biological control, if available, on a landscape scale.

²Total Area (ha) is the area coverage recorded in the BC Invasive Alien Plant Program (IAPP) database for all lands in the CVRD boundary (Private, Municipal, Regional District, BC Hydro, BC Rail, Fortis BC, CN Rail, CP Rail, First Nations Reserves, Mining Companies, MoE, FLNRO, MoT and BC Parks)

³Impact Assessment Score is based the impact attributes (human health and safety, ecological, economic and invasiveness). Each of the attribute scores are added together to determine the impact assessment score.

Progress Update

Regulation

On February 11, 2016, the Board adopted the Noxious Weeds Control Bylaw 3966. The bylaw is now in effect in all Electoral Areas to prohibit the growth of specified invasive plants. Currently, one plant, Giant Hogweed, is included in the scope of the bylaw because of the high impacts of

this plant and the opportunity it gives us to test the capability of our region's resources and processes to control invasive plants.

Giant Hogweed Community Awareness

In spring of 2016, staff began an education and community awareness campaign focused on key messages:

- Giant Hogweed is an invasive plant that needs to be controlled. Touching the plant can cause skin to become severely irritated or burned.
- There is a new CVRD bylaw prohibiting Giant Hogweed. This is to protect the public and prevent the spreading of the plant.
- More information about Giant Hogweed is available at cvr.bc.ca/invasives.

Communication tools were developed and used for delivering key messages to the community and for targeted notification to property owners and neighborhoods affected by Giant Hogweed.

In 2017, staff continued communication of key messages by leveraging the materials that were developed in 2016. CVRD staff carried out the following activities in 2017:

- Targeted notification to property owners and monitoring of sites for presence of Giant Hogweed
- Removal of Giant Hogweed at sites confirmed to have the plant by the Coastal Invasive Species Committee on behalf of the CVRD
- Releasing an advert in the CVRD recreation guide
- Maintaining the website and hotline for Giant Hogweed information

Giant Hogweed Monitoring and Compliance Update

In April 2017, staff identified 30 properties with a reported sighting of Giant Hogweed within the CVRD. 13 Giant Hogweed sites are on residential properties. In June 2017, the Coastal Invasive Species Committee, on behalf of the CVRD, notified owners of residential properties with potential Giant Hogweed infestations and conducted follow-up monitoring. The non-residential sites are on Ministry of Transportation and Infrastructure (MoTI) lands. MoTI conducted monitoring and treatment, where necessary, of the sites on their lands. Monitoring has indicated that:

- 100% of the sites are under control
- 15 of the 30 sites had Giant Hogweed in 2017 and were treated in 2017
- 15 sites did not have any evidence of Giant Hogweed based on most recent monitoring

Feedback from property owners known to have Giant Hogweed indicates a willingness to manage infestations of the plant. In 2017, there were two calls of service to the CVRD Inspections and Enforcement Division for Giant Hogweed. In each case, there was full compliance from the owners/representatives for treatment.

Recommended activities for 2018

2018 Giant Hogweed activities

Infestations of Giant Hogweed are resilient as its seed can persist in the soil for several years. It is estimated that sites may require three to six years of follow-up treatment. CVRD staff are planning the following activities for 2018:

- Conducting targeted notification to neighborhoods affected by reported infestations

- Maintaining the website and hotline for Giant Hogweed information
- Monitoring of sites for presence of Giant Hogweed

2019 Invasive Plants Work Plan

Currently the Invasive Plants program is addressed as a minor work plan item in 2018. A 2019 work plan to be developed this summer may identify additional needs for ongoing resourcing to support:

- Identification of additional priority plants for potential inclusion in the bylaw. Evaluation criteria for including a plant in the bylaw include the relative ranking in the CVRD Invasive Plants prioritization (above) and the recommended action noted in the Coastal Invasive Species Committee's 2017 Priority Invasive Plant List.
- Priority invasive plants monitoring and education. Warmer temperatures will enhance the potential for invasive species to spread across the region and compromise native species, our agricultural lands and threaten our health. Monitoring and education programs will help inform our communities to ensure they are effective participants in addressing the invasive plants problem.
- Build capacity through collaboration with community partners. Invasive Plants affect many jurisdictions through the region including CVRD parks, Municipal parks, Cowichan Tribes lands, Ministry of Transportation and Infrastructure right of ways, provincial parks, agriculture and forestry. To have an effective response to the priority invasive plants noted in the attached progress update, it is necessary to coordinate actions and share information between partners.

Appendix A – Impact Assessment

Estimated Area of Invasive Plants

The estimated area of all invasive plants has increased from 2013 to 2018 by 25% according to IAPP. The increase in area which is attributed to the reporting of new plants is 21%.

The analysis of estimated area change supports the impact assessment by identifying new plants.

Table 2. Estimated Area Invasive Plants in the CVRD.

Invasive Plant	2018 Estimated Area	2013 Estimated Area	2013 to 2018 Change in Area (%)
Annual sow thistle (SONC OLE)	0.00	0.00	0
Bigleaf periwinkle / large periwinkle (VINC MAJ)	1.61	1.60	0
Black knapweed (CENT NIG)	0.00	0.00	New Plant
Blueweed (ECHI VUL)	0.00	0.45	-100
Bull thistle (CIRS VUL)	78.39	79.58	-1
Bur chervil (ANTH CAU)	0.00	0.00	380
Burdock species (ARCT SPP)	2.95	2.95	0
Butterfly bush (BUDD DAV)	0.01	0.01	0
Canada thistle (CIRS ARV)	74.38	73.62	1
Caraway (CARU CAR)	1.55	1.55	0
Carpet burweed (SOLI SES)	0.02	0.02	0
Cherry laurel (PRUN LAU)	0.04	0.00	8560
Chicory (CICH INT)	0.61	0.60	1
Chilean tarweed (MADI SAT)	0.00	0.00	New Plant
Common tansy (TANA VUL)	30.84	30.76	0
Creeping buttercup (RANU REP)	0.20	0.00	New Plant
Curled dock (RUME CRI)	27.82	24.78	12
Curly leaf pondweed (POTA CRI)	3.15	0.00	New Plant
Cutleaf blackberry (RUBU LAC)	0.08	0.04	97
Dalmatian toadflax (LINA DAL)	-0.18	-0.19	-5
Daphne / spurge laurel (DAPH LAU)	8.00	7.71	4
Diffuse knapweed (CENT DIF)	0.00	0.00	1 site - no area noted
English holly (ILEX AQU)	0.69	0.40	74
English ivy (HEDE HEL)	21.24	19.82	7
Eurasian watermilfoil (MYRI SPI)	118.00	0.00	New Plant
European waterlily (NYMP ALB)	18.90	0.00	New Plant
False brome (BRAC SYL)	62.88	0.00	New Plant
Field bindweed (CONV ARV)	-0.90	-0.92	-2
Field scabious (KNAU ARV)	0.06	0.00	New Plant
Flat pea / flat peavine (LATH SYL)	0.01	0.01	0
Fragrant water lily (NYMP ODO)	23.00	0.00	New Plant
Garden yellow loosestrife (LYSI VUL)	0.07	0.10	-29
Giant hogweed (HERA MAN)	0.01	0.87	-99
Giant mannagrass / reed sweetgrass (GLYC MAX)	0.03	0.00	New Plant
Gorse (ULEX EUR)	2.09	1.82	15

Groundsel (SENE VUL)	7.66	7.66	0
Hairy cat's-ear (HYPO RAD)	7.33	7.33	0
Herb robert (GERA ROB)	0.03	0.03	0
Himalayan blackberry (RUBU ARM)	120.61	112.48	7
Hoary cress (CARD DRA)	0.00	0.00	-100
Hound's-tongue (CYNO OFF)	0.00	0.00	0
Jointed goatgrass (AEGI CYL)	0.00	0.04	-100
Knapweed species (CENT SPP)	0.00	0.00	0
Knotweed species	23.95	28.54	-16
Lady's-thumb (POLY PER)	1.79	1.79	0
Leafy spurge (EUPH ESU)	0.00	0.00	0
Marsh plume thistle/Marsh thistle (CIRS PAL)	0.00	0.00	0
Meadow knapweed (CENT DEB)	0.75	0.99	-24
Milk thistle (SILY MAR)	0.00	0.02	-87
Mullein (VERB THA)	0.01	0.01	14
Orange hawkweed (HIER AUR)	0.04	0.03	32
Oxeye daisy (LEUC VUL)	146.00	141.66	3
Parrot feather (MYRI AQU)	2.75	0.00	New Plant
Perennial sow thistle (SONC ARV)	0.02	0.02	0
Poison hemlock (CONI MAC)	0.97	0.00	New Plant
Policeman's helmet / himalayan balsam (IMPA GLA)	0.00	0.01	-50
Purple loosestrife (LYTH SAL)	0.05	0.08	-34
Queen anne's lace / wild carrot (DAUC CAR)	0.18	0.18	0
Scentless chamomile (MATR PER)	-0.61	-0.61	0
Scotch broom (CYTI SCO)	399.40	389.46	3
Scotch thistle (ONOP ACA)	7.36	7.36	0
Sheep sorrel (RUME ACE)	3.19	3.19	0
Sowthistle species (SONC SPP)	1.50	1.50	0
Spotted knapweed (CENT BIE)	0.31	0.76	-59
St. John's wort/Saint John's wort/ Goatweed (HYPE PER)	90.86	88.87	2
Sulphur cinquefoil (POTE REC)	0.03	1.31	-98
Sweet fennel (FOEN VUL)	0.00	0.00	New Plant
Tansy ragwort (SENE JAC)	36.85	21.84	69
Teasel (DIPS FUL)	0.02	0.01	38
Tree of heaven (AILA ALT)	0.00	0.00	New Plant
Western goat's-beard (TRAG DUB)	0.00	0.00	0
Wild buckwheat (POLY CON)	0.03	0.03	0
Wild chervil (ANTH SYL)	2.62	0.00	New Plant
Yellow archangel (LAMI GAL)	0.52	0.02	2041
Yellow hawkweed species (HIER SPP)	0.16	0.16	0
Yellow iris (IRIS PSE)	32.81	32.38	1
Yellow/common toadflax (LINA VUL)	0.14	0.14	0
Total	1362.90	1092.91	25
Total change due to new plants	232.56	0	21

Site Count and Invasiveness Score

The number of all invasive plant sites has increased from 2013 to 2018 by 20% according to IAPP. The increase in site count which is attributed to the reporting of new plants is 2%.

The invasiveness score is calculated as: change in site count from 2018 to 2013 / 2013 site count. The invasiveness score has a maximum value of 2.0. New Plants are assigned an invasiveness score of 2.0. The invasiveness score contributes approximately 8% to the overall impact assessment.

Table 3. Site Count and Invasiveness Scores of Invasive Plants in the CVRD.

Invasive Plant	2018 Site Count	2013 Site Count	% Change in site count	Invasiveness Score
Annual sow thistle (SONC OLE)	3	3	0	0.0
Bigleaf periwinkle / large periwinkle (VINC MAJ)	3	1	200	2.0
Black knapweed (CENT NIG)	4	0	New Plant	2.0
Blueweed (ECHI VUL)	4	2	100	1.0
Bull thistle (CIRS VUL)	386	352	10	0.1
Bur chervil (ANTH CAU)	3	1	200	2.0
Burdock species (ARCT SPP)	48	45	7	0.1
Butterfly bush (BUDD DAV)	2	2	0	0.0
Canada thistle (CIRS ARV)	660	599	10	0.1
Caraway (CARU CAR)	5	5	0	0.0
Carpet burweed (SOLI SES)	1	1	0	0.0
Cherry laurel (PRUN LAU)	13	1	1200	2.0
Chicory (CICH INT)	35	31	13	0.1
Chilean tarweed (MADI SAT)	1	0	New Plant	2.0
Common tansy (TANA VUL)	270	254	6	0.1
Creeping buttercup (RANU REP)	29	0	New Plant	2.0
Curled dock (RUME CRI)	163	132	23	0.2
Curly leaf pondweed (POTA CRI)	2	0	New Plant	2.0
Cutleaf blackberry (RUBU LAC)	31	8	288	2.0
Dalmatian toadflax (LINA DAL)	44	42	5	0.0
Daphne / spurge laurel (DAPH LAU)	51	16	219	2.0
Diffuse knapweed (CENT DIF)	1	1	0	0.0
English holly (ILEX AQU)	89	29	207	2.0
English ivy (HEDE HEL)	109	68	60	0.6
Eurasian watermilfoil (MYRI SPI)	2	0	New Plant	2.0
European waterlily (NYMP ALB)	2	0	New Plant	2.0
False brome (BRAC SYL)	33	0	New Plant	2.0
Field bindweed (CONV ARV)	26	12	117	1.2
Field scabious (KNAU ARV)	1	0	New Plant	2.0
Flat pea / flat peavine (LATH SYL)	5	5	0	0.0
Fragrant water lily (NYMP ODO)	1	0	New Plant	2.0
Garden yellow loosestrife (LYSI VUL)	5	3	67	0.7
Giant hogweed (HERA MAN)	43	22	95	1.0
Giant mannagrass / reed sweetgrass (GLYC MAX)	1	0	New Plant	2.0
Gorse (ULEX EUR)	32	26	23	0.2

Groundsel (SENE VUL)	32	32	0	0.0
Hairy cat's-ear (HYPO RAD)	92	92	0	0.0
Herb robert (GERA ROB)	5	5	0	0.0
Himalayan blackberry (RUBU ARM)	623	499	25	0.2
Hoary cress (CARD DRA)	1	1	0	0.0
Hound's-tongue (CYNO OFF)	1	1	0	0.0
Jointed goatgrass (AEGI CYL)	1	1	0	0.0
Knapweed species (CENT SPP)	2	2	0	0.0
Knotweed species	475	376	26	0.3
Lady's-thumb (POLY PER)	21	21	0	0.0
Leafy spurge (EUPH ESU)	1	1	0	0.0
Marsh plume thistle/Marsh thistle (CIRS PAL)	1	1	0	0.0
Meadow knapweed (CENT DEB)	13	13	0	0.0
Milk thistle (SILY MAR)	2	1	100	1.0
Mullein (VERB THA)	12	6	100	1.0
Orange hawkweed (HIER AUR)	11	9	22	0.2
Oxeye daisy (LEUC VUL)	442	389	14	0.1
Parrot feather (MYRI AQU)	3	0	New Plant	2.0
Perennial sow thistle (SONC ARV)	5	5	0	0.0
Poison hemlock (CONI MAC)	16	0	New Plant	2.0
Policeman's helmet / himalayan balsam (IMPA GLA)	6	4	50	0.5
Purple loosestrife (LYTH SAL)	14	9	56	0.6
Queen anne's lace / wild carrot (DAUC CAR)	8	8	0	0.0
Scentless chamomile (MATR PER)	4	4	0	0.0
Scotch broom (CYTI SCO)	1048	945	11	0.1
Scotch thistle (ONOP ACA)	6	5	20	0.2
Sheep sorrel (RUME ACE)	21	21	0	0.0
Sowthistle species (SONC SPP)	10	10	0	0.0
Spotted knapweed (CENT BIE)	14	13	8	0.1
St. John's wort/Saint John's wort/ Goatweed (HYPE PER)	452	405	12	0.1
Sulphur cinquefoil (POTE REC)	13	13	0	0.0
Sweet fennel (FOEN VUL)	2	0	New Plant	2.0
Tansy ragwort (SENE JAC)	186	173	8	0.1
Teasel (DIPS FUL)	9	6	50	0.5
Tree of heaven (AILA ALT)	1	0	New Plant	2.0
Western goat's-beard (TRAG DUB)	1	1	0	0.0
Wild buckwheat (POLY CON)	3	3	0	0.0
Wild chervil (ANTH SYL)	25	0	New Plant	2.0
Yellow archangel (LAMI GAL)	3	2	50	0.5
Yellow hawkweed species (HIER SPP)	18	18	0	0.0
Yellow iris (IRIS PSE)	199	187	6	0.1
Yellow/common toadflax (LINA VUL)	8	8	0	0.0
Total	5918	4951	20	
Total change due to new plants	123	0	2	

Human Health and Safety Impact

Human Health and Safety impact contributes 46% to the overall impact assessment. Human Health and Safety Impact is assessed by:

- a. Scoring the parameters as follows: Adverse effects resulting from contact?: Yes = 2 points, Adverse effects resulting from ingestion?: Yes = 2 points
- b. Adding the scores by plant
- c. Assigning an impact level according to the scale: High = 4 or more points, Medium = 2 points, Low = 0 points

Table 4. Human Health and Safety Impact Assessment

Species	Adverse effects resulting from contact	Adverse effects resulting from ingestion	Other health and safety hazard (allergenic, swimming hazard or high flammability)	Human Health & Safety Impact Score	Human Health & Safety Impact
Annual Sow Thistle	No info. available	No info. available	No info. available	0	Low
Bigleaf periwinkle	No info. available	No info. available	No info. available	0	Low
Black knapweed	No info. available	No info. available	No info. available	0	Low
Blueweed	No info. available	No info. available	No info. available	0	Low
Bull Thistle	No info. available	No info. available	Yes - Allergenic	2	Medium
Bur Chervil	No info. available	No info. available	No info. available	0	Low
Burdock Species	No info. available	No info. available	No info. available	0	Low
Butterfly Bush	No info. available	No info. available	No info. available	0	Low
Canada Thistle	No info. available	No info. available	No info. available	0	Low
Caraway	No info. available	No info. available	No info. available	0	Low
Carpet Burweed	Yes - Seed spine can puncture the skin on humans	No info. available	No info. available	2	Medium
Cherry laurel	No info. available	No info. available	No info. available	0	Low
Chicory	Yes	No info. available	No info. available	2	Medium
Chilean tarweed	No info. available	No info. available	No info. available	0	Low
Common tansy	No info. available	Yes	No info. available	2	Medium
Creeping buttercup	No info. available	No info. available	No info. available	0	Low
Curled dock	No info. available	No info. available	No info. available	0	Low
Curly leaf pondweed	No info. available	No info. available	No info. available	0	Low
Cutleaf blackberry	No info. available	No info. available	No info. available	0	Low
Dalmatian toadflax	No info. available	No info. available	No info. available	0	Low
Daphne/Spurge Laurel	Yes - Irritation	Yes	No info. available	4	High
Diffuse knapweed	No info. available	No info. available	No info. available	0	Low
English holly	No info. available	Yes	No info. available	2	Medium
English ivy	Yes	Yes	No info. available	4	High
Eurasian watermilfoil	No info. available	No info. available	Yes - Swimming hazard	2	Medium
European waterlily	No info. available	No info. available	No info. available	0	Low
False brome	No info. available	No info. available	No info. available	0	Low
Field bindweed	No info. available	No info. available	No info. available	0	Low
Field scabious	No info. available	No info. available	No info. available	0	Low

Flat pea / flat peavine	No info. available	No info. available	No info. available	0	Low
Fragrant water lily	No info. available	No info. available	No info. available	0	Low
Garden yellow loosestrife	Yes - may cause skin irritation	No info. available	Yes - Allergenic	4	High
Giant Hogweed	Yes – Blistering, Irritation, Dermatitis, , Scarring, Blindness	Yes	Yes - Allergenic	6	High
Giant mannagrass / reed sweetgrass	No info. available	No info. available	No info. available	0	Low
Gorse	No info. available	No info. available	Yes - increased fire hazard from volatile oils in plant	2	Medium
Groundsel	No info. available	No info. available	No info. available	0	Low
Hairy Cat's Ear	No info. available	Yes	No info. available	2	Medium
Herb Robert	No info. available	No info. available	No info. available	0	Low
Himalayan Blackberry	No info. available	No info. available	No info. available	0	Low
Hoary Cress	No info. available	No info. available	No info. available	0	Low
Hounds Tongue	No info. available	Yes	No info. available	2	Medium
Jointed goatgrass	No info. available	No info. available	No info. available	0	Low
Knapweed species	No info. available	No info. available	No info. available	0	Low
Knotweed Species	None identified	None identified	Yes - Allergenic	2	Medium
Lady's-thumb	No info. available	No info. available	No info. available	0	Low
Leafy spurge	Yes	No info. available	No info. available	2	Medium
Marsh plume thistle/Marsh thistle	No info. available	No info. available	No info. available	0	Low
Meadow knapweed	No info. available	No info. available	No info. available	0	Low
Milk Thistle	Yes	No info. available	Yes - Allergenic	4	High
Mullein	No info. available	No info. available	No info. available	0	Low
Orange hawkweed	No info. available	No info. available	No info. available	0	Low
Oxeye daisy	No info. available	No info. available	No info. available	0	Low
Parrot feather	No info. available	No info. available	Yes - Swimming hazard	2	Medium
Perennial sow thistle	No info. available	No info. available	No info. available	0	Low
Poison Hemlock	Yes - Sensitive people may experience contact dermatitis	Yes – can be mistaken for edible plants such as parsley	No info. available	4	High
Policeman's helmet / himalayan balsam	No info. available	No info. available	No info. available	0	Low
Purple loosestrife	No info. available	No info. available	No info. available	0	Low
Queen anne's lace / wild carrot	No info. available	No info. available	No info. available	0	Low
Scentless chamomile	No info. available	No info. available	No info. available	0	Low
Scotch Broom	None identified	Yes	Yes - increased fire hazard from volatile oils in plant	4	High
Scotch Thistle	No info. available	No info. available	No info. available	0	Low
Sheep sorrel	No info. available	No info. available	No info. available	0	Low
Sowthistle species	No info. available	No info. available	No info. available	0	Low
Spotted Knapweed	No info. available	No info. available	No info. available	0	Low
St. John's wort/Saint John's wort/ Goatweed	No info. available	No info. available	No info. available	0	Low
Sulphur cinquefoil	No info. available	No info. available	No info. available	0	Low
Sweet fennel	No info. available	No info. available	No info. available	0	Low
Tansy Ragwort	No info. available	Yes	Yes - Allergenic	4	High

Teasel	No info. available	No info. available	No info. available	0	Low
Tree of heaven	No info. available	No info. available	No info. available	0	Low
Western goat's-beard	No info. available	No info. available	No info. available	0	Low
Wild buckwheat	No info. available	No info. available	No info. available	0	Low
Wild chervil	No info. available	No info. available	No info. available	0	Low
Yellow archangel	No info. available	No info. available	No info. available	0	Low
Yellow hawkweed species	No info. available	No info. available	No info. available	0	Low
Yellow Iris	Yes - Irritation	Yes	No info. available	4	High
Yellow/common toadflax	No info. available	No info. available	No info. available	0	Low

Ecological Impact

Ecological impact contributes 23% to the overall impact assessment. Ecological impact is assessed by:

- Scoring the parameters as follows: Affects riparian areas or sensitive ecosystems?: Yes = 2 points. Can reproduce by floating plant fragments? Yes = 2 points. Toxic to other plants (contains phytotoxin)? Yes = 2 points.
- Adding the scores by plant
- Assigning an impact level according to the scale: High = 4 or more points, Medium = 2 points, Low = 0 points

Table 5. Ecological Impact Assessment

Species	Affects riparian areas or sensitive ecosystems	Can reproduce by floating plant fragments?	Toxic to other plants (contains phytotoxin)	Ecological Impact Score	Ecological Impact
Annual Sow Thistle	yes - riparian areas	No info. available	No info. available	2	Medium
Bigleaf periwinkle	No info. available	No info. available	No info. available	0	Low
Black Kanpweed	No info. available	No info. available	No info. available	0	Low
Blueweed	No info. available	No info. available	No info. available	0	Low
Bull Thistle	No info. available	No info. available	No info. available	0	Low
Bur Chervil	No info. available	No info. available	No info. available	0	Low
Burdock Species	No info. available	No info. available	No info. available	0	Low
Butterfly Bush	yes - riparian areas	No info. available	No info. available	2	Medium
Canada Thistle	yes - riparian areas	No info. available	No info. available	2	Medium
Caraway	No info. available	No info. available	No info. available	0	Low
Carpet Burweed	Yes - Garry Oak reserves, coastal bluffs, outcrops	No info. available	No info. available	2	Medium
Cherry laurel	No info. available	No info. available	No info. available	0	Low
Chicory	No info. available	No info. available	No info. available	0	Low
Chilean tarweed	No info. available	No info. available	No info. available	0	Low
Common tansy	yes - riparian areas	No info. available	No info. available	2	Medium

Creeping buttercup	yes - riparian areas	No info. available	No info. available	2	Medium
Curled dock	yes - riparian areas	No info. available	No info. available	2	Medium
Curly leaf pondweed	No info. available	No info. available	No info. available	0	Low
Cutleaf blackberry	No info. available	No info. available	No info. available	0	Low
Dalmatian toadflax	No info. available	No info. available	Yes	2	Medium
Daphne/Spurge Laurel	No info. available	No info. available	Yes	2	Medium
Diffuse knapweed	No info. available	No info. available	No info. available	0	Low
English holly	Yes - Garry Oak ecosystems	No info. available	No info. available	2	Medium
English ivy	Yes - Riparian and Garry Oak ecosystems	No info. available	No info. available	2	Medium
Eurasian watermilfoil	Yes - water bodies	Yes	No info. available	4	High
European waterlily	Yes - water bodies	No info. available	No info. available	2	Medium
False brome	yes - riparian areas	Yes	No info. available	4	High
Field bindweed	No info. available	No info. available	No info. available	0	Low
Field scabious	No info. available	No info. available	No info. available	0	Low
Flat pea / flat peavine	No info. available	No info. available	No info. available	0	Low
Fragrant water lily	No info. available	No info. available	No info. available	0	Low
Garden yellow loosestrife	No info. available	No info. available	No info. available	0	Low
Giant Hogweed	yes - riparian areas	Yes – Viable seeds float on water	Yes	4	High
Giant mannagrass / reed sweetgrass	No info. available	No info. available	No info. available	0	Low
Gorse	No info. available	Yes - Seeds float readily on water	No info. available	2	Medium
Groundsel	No info. available	No info. available	No info. available	0	Low
Hairy Cat's Ear	yes - riparian areas	No info. available	No info. available	2	Medium
Herb Robert	No info. available	No info. available	No info. available	0	Low
Himalayan Blackberry	yes - riparian areas	No info. available	No info. available	2	Medium
Hoary Cress	No info. available	No info. available	No info. available	0	Low
Hounds Tongue	No info. available	No info. available	No info. available	0	Low
Jointed goatgrass	No info. available	No info. available	No info. available	0	Low
Knapweed species	No info. available	No info. available	No info. available	0	Low
Knotweed Species	yes - riparian areas	Yes	Yes	6	High
Lady's-thumb	yes - riparian areas	No info. available	No info. available	4	Medium
Leafy spurge	yes - riparian areas	No info. available	Yes	6	High
Marsh plume thistle/Marsh thistle	yes - riparian areas	No info. available	No info. available	4	Medium
Meadow knapweed	No info. available	No info. available	No info. available	0	Low
Milk Thistle	No info. available	Yes	No info. available	2	Medium

Mullein	No info. available	No info. available	No info. available	0	Low
Orange hawkweed	No info. available	No info. available	No info. available	0	Low
Oxeye daisy	No info. available	No info. available	No info. available	0	Low
Parrot feather	Yes - water bodies	No info. available	Yes	4	High
Perennial sow thistle	yes - riparian areas	Yes	No info. available	4	High
Poison Hemlock	yes - riparian areas	Yes - seed can transport by water	Yes	6	High
Policeman's helmet / himalayan balsam	No info. available	No info. available	No info. available	0	Low
Purple loosestrife	yes - riparian areas	No info. available	Yes	4	High
Queen anne's lace / wild carrot	No info. available	No info. available	No info. available	0	Low
Scentless chamomile	yes - riparian areas	Yes - Seeds float readily on water	No info. available	4	High
Scotch Broom	yes - riparian areas	No info. available	No info. available	2	Medium
Scotch Thistle	yes - riparian areas	No info. available	No info. available	2	Medium
Sheep sorrel	No info. available	No info. available	No info. available	0	Low
Sowthistle species	No info. available	No info. available	No info. available		Low
Spotted Knapweed	yes - riparian areas	No info. available	Yes	4	High
St. John's wort/Saint John's wort/ Goatweed	No info. available	No info. available	No info. available	0	Low
Sulphur cinquefoil	No info. available	No info. available	No info. available	0	Low
Sweet fennel	No info. available	No info. available	No info. available	0	Low
Tansy Ragwort	No info. available	No info. available	Yes	2	Medium
Teasel	No info. available	No info. available	No info. available	0	Low
Tree of heaven	No info. available	No info. available	No info. available	0	Low
Western goat's-beard	No info. available	No info. available	No info. available	0	Low
Wild buckwheat	No info. available	No info. available	No info. available	0	Low
Wild chervil	yes - riparian areas	Yes - Seeds float readily on water	No info. available	4	High
Yellow archangel	yes - riparian areas	No info. available	No info. available	2	Medium
Yellow hawkweed species	No info. available	No info. available	No info. available	0	Low
Yellow Iris	yes - riparian areas	Yes - Seeds float readily on water	No info. available	4	High
Yellow/common toadflax	No info. available	No info. available	No info. available	0	Low

Economic Impact

Economic impact contributes 23% to the overall impact assessment. Economic impact is assessed by:

- a. Scoring the parameters as follows: Animal Health Hazard? Yes = 1 point. B. Potential to physically impact infrastructure or buildings?: Yes = 1 point. C. Threat to Crop productivity? Yes = 1 point. D. Threat to forest Productivity? Yes = 1 point. E. Adverse recreational effect? Yes = 1 point. F. Crowds out forage species for livestock? Yes = 1 point.
- b. Adding the scores by plant
- c. Assigning a risk level according to the scale: High = 3 – 6 points, Medium = 1 or 2 points, Low = 0 points

Table 6. Economic Impact Assessment Results

Species	Animal Health Hazard	Threat to Crop productivity	Threat to forest Productivity	Adverse recreational effect	Crowds out forage species for livestock	Potential to physically impact infrastructure or buildings	Economic Impact Score	Economic Impact
Annual Sow Thistle	No info. available	Yes	No info. available	No info. available	No info. available	No info. available	1	Low
Bigleaf Periwinkle	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Black Knapweed	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Blueweed	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Bull Thistle	No info. available	Yes	Yes	No info. available	No info. available	No info. available	2	Medium
Bur Chervil	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Burdock Species	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Butterfly Bush	No info. available	No info. available	Yes	No info. available	No info. available	No info. available	1	Medium
Canada Thistle	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Caraway	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Carpet Burweed	Yes – can puncture the skin on animals	No info. available	No information available	Yes – threatens open areas in parks, golf courses and RV parks	Yes	No info. available	2	Medium
Cherry laurel	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Chicory	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Chilean tarweed	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Common tansy	Yes - toxic to livestock	No info. available	No info. available	No info. available	Yes	No info. available	2	Medium
Creeping buttercup	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium

Curled dock	Yes - seeds are toxic to poultry and cattle	Yes	No info. available	No info. available	No info. available	No info. available	2	Medium
Curly leaf pondweed	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Cutleaf blackberry	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Dalmatian toadflax	Yes	Yes	No info. available	No info. available	Yes	No info. available	3	Medium
Daphne/Spurge Laurel	Yes	No info. available	No info. available	Yes	Yes	No info. available	3	High
Diffuse knapweed	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
English holly	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	2	Low
English ivy	No info. available	No info. available	Yes	No info. available	No info. available	Yes - can damage infrastructure	2	Medium
Eurasian watermilfoil	Yes - likely impact to native fish	No info. available	No info. available	Yes - boating, swimming and fishing	No	Yes- EWM can clog water intakes	3	High
European waterlily	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
False brome	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Field bindweed	No info. available	Yes	No info. available	No info. available	No info. available	No info. available	1	Medium
Field scabious	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Flat pea / flat peavine	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Fragrant water lily	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Garden yellow loosestrife	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Giant Hogweed	Yes	Yes	No info. available	Yes – limits recreational access	Yes	No info. available	4	High
Giant mannagrass / reed sweetgrass	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Gorse	No info. available	No info. available	Yes	Yes – reduces access for recreation	No info. available	No info. available	2	Medium
Groundsel	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Hairy Cat's Ear	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Herb Robert	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Himalayan Blackberry	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Hoary Cress	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium

Hounds Tongue	Yes - can cause poisoning or eye irritation in livestock	Yes	No info. available	No info. available	Yes	No info. available	3	High
Jointed goatgrass	No info. available	Yes	No info. available	No info. available	No info. available	No info. available	2	Medium
Knapweed species	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Knotweed Species	No info. available	No info. available	Yes	Yes – limits recreational access	No info. available	Yes	3	High
Lady's-thumb	No info. available	Yes	No info. available	No info. available	No information available	No information available	1	Medium
Leafy spurge	Yes - poisonous to livestock	Yes	No info. available	No info. available	No information available	No information available	2	Medium
Marsh plume thistle/Marsh thistle	No info. available	No info. available	No info. available	No info. available	Yes	No information available	1	Medium
Meadow knapweed	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Milk Thistle	Yes - Can cause nitrate poisoning in sheep and cattle	Yes- Infests pastures and rangelands	No info. available	None identified	Yes	No info. available	3	High
Mullein	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Orange hawkweed	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Oxeye daisy	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Parrot feather	Yes - likely impact to native fish	No info. available	No info. available	Yes - boating, swimming and fishing	No	Yes- PF can clog water intakes	3	High
Perennial sow thistle	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Poison Hemlock	Yes - poisonous to livestock	Yes	No info. available	No info. available	Yes	No info. available	3	High
Policeman's helmet / himalayan balsam	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available		Low
Purple loosestrife	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available		Low
Queen anne's lace / wild carrot	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available		Low
Scentless chamomile	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Scotch Broom	Yes – contains toxins which can sicken livestock	No info. available	Yes – threat to conifer seedlings	No info. available	Yes	No info. available	3	High
Scotch Thistle	No info. available	No info. available	No info. available	Yes	Yes	No info. available	2	Medium
Sheep sorrel	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium

Sowthistle species	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Spotted Knapweed	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
St. John's wort/Saint John's wort/ Goatweed	Yes - causes blistering in light colored livestock	No info. available	No info. available	No info. available	Yes	No info. available	2	Medium
Sulphur cinquefoil	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Sweet fennel	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Tansy Ragwort	Yes – causes liver dysfunction, photosensitivity and /or death in livestock	No info. available	No info. available	No info. available	Yes		2	Medium
Teasel	No info. available	No info. available	No info. available	No info. available	Yes	No info. available	1	Medium
Tree of heaven	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Western goat's-beard	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Wild buckwheat	No info. available	No info. available	No info. available	No info. available	No info. available	No info. available	0	Low
Wild chervil	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Yellow archangel	No info. available	Yes	No info. available	No info. available	No info. available	No info. available	1	Medium
Yellow hawkweed species	No info. available	Yes	No info. available	No info. available	Yes	No info. available	2	Medium
Yellow Iris	Yes	No info. available	No info. available	Yes	Yes	Yes- can clog up ditches	4	High
Yellow/common toadflax	Yes - poisonous to cattle	No info. available	No info. available	No info. available	Yes	No info. available	2	Medium

Impact Assessment Summary

The scores from each of the impact attributes are combined into an overall impact assessment score.

Species	2018 Total Area (ha)	2013 Total Area (ha)	Health & Safety	Ecology	Economic	Combined Impact Assessment Score
Giant Hogweed	0.0122	0.8705	High	High	High	23.0
Poison Hemlock	0.97	0	High	High	High	19.0
Yellow Iris	32.8076	32.3798	High	High	High	16.1
Daphne/Spurge Laurel	7.9957	7.7093	High	Medium	High	15.0
Milk Thistle	0.002	0.015	High	Medium	High	14.0
Knotweed Species	23.9495	28.5372	Medium	High	High	13.3
Scotch Broom	399.404	389.4621	High	Medium	High	13.1
Eurasian watermilfoil	118	0	Medium	High	High	13.0
Parrot feather	2.7511	0	Medium	High	High	13.0
English ivy	21.2414	19.822	High	Medium	Medium	12.6
Tansy Ragwort	36.8534	21.8446	High	Medium	Medium	12.1
Leafy spurge	0.0002	0.0002	Medium	High	Medium	12.0
English holly	0.6919	0.398	Medium	Medium	Low	10.0
Garden yellow loosestrife	0.0697	0.0985	High	Low	Low	8.7
Gorse	2.0902	1.8249	Medium	Medium	Medium	8.2
Common tansy	30.8395	30.7646	Medium	Medium	Medium	8.1
Carpet Burweed	0.02	0.02	Medium	Medium	Medium	8.0
Wild chervil	2.6246	0	Low	High	Medium	8.0
Hounds Tongue	0.0001	0.0001	Medium	Low	High	7.0
Bull Thistle	78.3888	79.5801	Medium	Low	Low	6.1
Creeping buttercup	0.198	0	Low	Medium	Medium	6.0
False brome	62.8822	0	Low	High	Low	6.0
Hairy Cat's Ear	7.3276	7.3276	Medium	Medium	Low	6.0
Perennial sow thistle	0.0228	0.0228	Low	High	Medium	6.0
Scentless chamomile	-0.6132	-0.6132	Low	High	Medium	6.0
Chicory	0.6072	0.6039	Medium	Low	Medium	5.1
Spotted Knapweed	0.3107	0.7557	Low	High	Medium	5.1
Dalmatian toadflax	-0.1823	-0.1924	Low	Medium	Medium	5.0
Lady's-thumb	1.7874	1.7874	Low	Medium	Medium	5.0
Marsh plume thistle/Marsh thistle	0.0002	0.0002	Low	Medium	Medium	5.0
Purple loosestrife	0.0541	0.0816	Low	High	Low	4.6
Curled dock	27.8168	24.7805	Low	Medium	Medium	4.2
Scotch Thistle	7.3601	7.3601	Low	Medium	Medium	4.2
Canada Thistle	74.379	73.6238	Low	Medium	Medium	4.1
European waterlily	18.9	0	Low	Medium	Low	4.0
Field scabious	0.06	0	Low	Low	Medium	4.0
Yellow archangel	0.5245	0.0245	Low	Medium	Medium	3.5
Annual Sow Thistle	0.0035	0.0035	Low	Medium	Low	3.0
Butterfly Bush	0.0127	0.0127	Low	Medium	Medium	3.0
Himalayan Blackberry	120.6113	112.4826	Low	Medium	Low	2.2
Field bindweed	-0.9048	-0.921	Low	Low	Medium	2.2

St. John's wort/Saint John's wort/ Goatweed	90.8554	88.8692	Low	Low	Medium	2.1
Bigleaf periwinkle	1.6051	1.6	Low	Low	Low	2.0
Black knapweed	0.0032	0	Low	Low	Low	2.0
Blueweed	0.0004	0.4508	Low	Low	Medium	2.0
Bur Chervil	0.0048	0.001	Low	Low	Low	2.0
Cherry laurel	0.0433	0.0005	Low	Low	Low	2.0
Chilean tarweed	0.0001	0	Low	Low	Low	2.0
Curly leaf pondweed	3.15	0	Low	Low	Low	2.0
Cutleaf blackberry	0.0767	0.0389	Low	Low	Low	2.0
Fragrant water lily	23	0	Low	Low	Low	2.0
Giant mannagrass / reed sweetgrass	0.025	0	Low	Low	Low	2.0
Jointed goatgrass	0	0.04	Low	Low	Medium	2.0
Meadow knapweed	0.7536	0.9918	Low	Low	Medium	2.0
Sweet fennel	0.001	0	Low	Low	Low	2.0
Tree of heaven	0.0005	0	Low	Low	Low	2.0
Yellow hawkweed species	0.16	0.16	Low	Low	Medium	2.0
Yellow/common toadflax	0.1351	0.1351	Low	Low	Medium	2.0
Teasel	0.0175	0.0127	Low	Low	Medium	1.5
Orange hawkweed	0.042	0.0319	Low	Low	Medium	1.2
Oxeye daisy	145.9953	141.664	Low	Low	Medium	1.1
Caraway	1.55	1.55	Low	Low	Medium	1.0
Diffuse knapweed	0	0	Low	Low	Medium	1.0
Hoary Cress	0	0.0003	Low	Low	Medium	1.0
Knapweed species	0.004	0.004	Low	Low	Medium	1.0
Mullein	0.0136	0.0119	Low	Low	Low	1.0
Sheep sorrel	3.1885	3.1885	Low	Low	Medium	1.0
Sulphur cinquefoil	0.031	1.3133	Low	Low	Medium	1.0
Policeman's helmet / himalayan balsam	0.0025	0.005	Low	Low	Low	0.5
Burdock Species	2.9542	2.9523	Low	Low	Low	0.1
Flat pea / flat peavine	0.0135	0.0135	Low	Low	Low	0.0
Groundsel	7.664	7.664	Low	Low	Low	0.0
Herb Robert	0.0295	0.0295	Low	Low	Low	0.0
Queen anne's lace / wild carrot	0.1773	0.1773	Low	Low	Low	0.0
Sowthistle species	1.5048	1.5048	Low	Low	Low	0.0
Western goat's-beard	0.002	0.002	Low	Low	Low	0.0
Wild buckwheat	0.0308	0.0308	Low	Low	Low	0.0

Appendix B – Prevent these invasive plants from establishing

The following species have a CISC Management Category of “Prevent”. These species are not known to occur in the region, but are likely to establish if introduced. The recommended response to these plants is to eradicate them if found.

- Common Crupina
- Common Reed,
- Cordgrass, Dense-flowered
- Cordgrass, English
- Cordgrass, Salt meadow
- Cordgrass, Smooth
- Hawkweed, Whiplash
- Knapweed, Russian
- Kudzu Pueraria Montana
- Rush Skeleton weed
- Yellow Starthistle



Priority Invasive Plant List - Cowichan Valley Regional District (2017)

PREVENT

These species are not known to occur in the region, but are likely to establish if introduced.

Eradicate if found.

Plant Species	Status
Common Crupina <i>Crupina vulgaris</i>	Provincial EDRR
Common Reed, <i>Phragmites australis</i>	Provincial EDRR
Cordgrass, Dense-flowered <i>Spartina densiflora</i>	Provincial EDRR
Cordgrass, English <i>Spartina anglica</i>	Provincial EDRR
Cordgrass, Salt meadow <i>Spartina patens</i>	Provincial EDRR
Cordgrass, Smooth <i>Spartina alterniflora</i>	Provincial EDRR
Hawkweed, Whiplash <i>Hieracium flagellare</i>	Regional EDRR
Knapweed, Russian <i>Acroptilon repens</i>	Regional EDRR
Kudzu <i>Pueraria Montana</i>	Provincial EDRR
Rush Skeleton weed <i>Chondrilla juncea</i>	Regional EDRR
Yellow Starthistle <i>Centaurea solstitialis</i>	Provincial EDRR

ERADICATE

These species are known to occur in limited distribution and low density.

Eradicate if found.

Plant Species	Status
Blueweed, <i>Echium vulgare</i>	Regional EDRR
Buffalo Burr, <i>Solanum rostratum</i>	Regional EDRR
Garlic Mustard <i>Alliaria petiolata</i>	Regional EDRR
Giant Hogweed <i>Heracleum mantegazzianum</i> (T) (N)	Regional EDRR
Giant Reed <i>Arundo donax</i>	Provincial EDRR
Hoary Alyssum <i>Berteroa incana</i>	Regional EDRR

Hoary Cress, Heart-pod <i>Lepidium draba subsp. Draba</i>	Regional EDRR
Knapweed, Black <i>Centaurea nigra</i>	
Lesser Celandine, <i>Ficaria verna</i>	Regional EDRR
Loosestrife, Garden (Yellow) <i>Lysimachia vulgaris</i>	Regional EDRR
Milk Thistle <i>Silybum marianum</i> (N)	Regional EDRR
Poison Hemlock <i>Conium maculatum</i> (T)	
Policemans Helmet/Himalayan Balsam <i>Impatiens glandulifera</i>	
Shiney Geranium; geranium lucidum	Provincial EDRR
Slender False Brome, <i>Brachypodium sylvaticum</i>	Provincial EDRR
Sulfur cinquefoil <i>Potentilla recta</i>	Regional EDRR
Sweet Fennel <i>Foeniculum vulgare</i>	Regional EDRR
Wild Chervil <i>Anthriscus sylvestris</i>	Regional EDRR
CONTAIN	
These species have established infestation in portions of the region.	
Contain existing infestation and prevent spread to un-infested areas.	
Plant Species	Status
Carpet Burweed <i>Soliva sessilis</i>	
Dalmatian Toadflax <i>Linaria dalmaticab</i> (B) (N)	
Giant Mannagrass <i>Glyceria maxima</i>	
Gorse <i>Ulex europaeus</i>	
Hawkweed, Orange <i>Hieracium aurantiacum</i>	
Knapweed, Diffuse <i>Centaurea diffusa</i> (N)	
Knapweed, Spotted <i>Centaurea maculosa</i> (B) (N)	
Knotweed, Bohemian <i>Fallopia x bohemica</i> (N)	
Knotweed, Giant <i>Fallopia sachalinensis</i> (N)	
Knotweed, Himalayan <i>Polygonum polystachum</i> (N)	
Knotweed, Japanese <i>Fallopia japonica</i> (N)	
Parrot Feather <i>Myriophyllum aquaticum</i>	
Scotch Thistle <i>Onopordum acanthium</i>	
Yellow Flag Iris <i>Iris pseudacorus</i> (N)	
CONTROL	

Established infestations common and widespread throughout the Coastal ISC region.	
Focus control in high value conservation areas.	
Use biological control, if available, on a landscape scale.	
Plant Species	Status
Bur Chervil <i>Anthriscus caucalis</i> (N)	
Burdock Species <i>Arctium spp.</i>	
Butterfly Bush <i>Buddleja davidii</i>	
Canada Thistle <i>Cirsium arvense</i> (B) (N)	
Cutleaf Blackberry <i>Rubus laciniatus</i>	
Daphne/Spurge-Laurel <i>Daphne laureola</i> (T)	
Tansy, Common <i>Tanacetum vulgare</i>	
Teasel, Fuller's <i>Dipsacus fullonum</i>	
English Holly <i>Ilex aquifolium</i>	
English Ivy <i>Hedera helix</i>	
Eurasian Water-milfoil <i>Myriophyllum spicatum</i>	
Hawkweed, Yellow <i>Hieracium caespitosum</i>	
Himalayan Blackberry <i>Rubus armeniacus</i> (discolor)	
Jimsonweed/Devil's Apple <i>Datura stramonium</i> (T)	
Loosestrife, Purple <i>Lythrum salicaria</i> (B) (N)	
Periwinkle Species <i>Vinca spp.</i>	
Scotch Broom <i>Cytisus scoparius</i>	
St. John's Wort <i>Hypericum perforatum</i> (B)	
Tansy Ragwort <i>Senecio jacobaea</i> (B) (N)	
Yellow Archangel <i>Lamium galiiobdolon</i>	
2017 Passive Inventory Species (limited data but anecdotally widespread in Coastal ISC area)	
Jimsonweed/Devil's apple	
Saltcedar/Tamarisk	
Common Hops <i>Humulus lupulus</i>	
European Mountain Ash <i>Sorbus aucuparia</i>	
European Cherry Laurel <i>Prunus laurocerasus</i>	
2017 Risk assessment underway by MoTI/FLNR	
Spanish broom <i>Spartium junceum</i>	
White weeping flowered broom <i>Retama monosperma</i>	
Shiney geranium <i>Geranium lucidum</i>	

Need more information	
Golden Willow	
Supplemental Notes:	
<ul style="list-style-type: none"> The above lists are a merely starting point for public consultations; Feedback is encouraged. 	
** BC Proposed Prohibited Weeds (PDF, February 2015)	
(B) = Invasive plants with biological control agents available	
(T) = Invasive plants which pose potential human health and safety hazards	
(N) = BC Weed Control Act, Regulated Noxious Weed in BC	