



TOWN OF LAKE COWICHAN

Public Works and Environmental Services Committee

Tuesday, November 19th, 2019 at 6:00 p.m. – Council Chambers

AGENDA

1. CALL TO ORDER

Page #

INTRODUCTION OF LATE ITEMS (if applicable)

2. APPROVAL OF AGENDA

3. BUSINESS ARISING AND UNFINISHED BUSINESS

(a) Superintendent, Public Works and Engineering Services re: WTP Update

3

(b) Ongoing Items Still Being Addressed:

(i) CLEC Water System-Update.

(ii) Updating of Signage – river, Legion, etc.

4. DELEGATIONS AND REPRESENTATIONS

None.

5. CORRESPONDENCE

None.

6. VERBAL COMMENT FROM THE PUBLIC ON A SUBSEQUENT ITEM ON THE AGENDA–

(maximum 3 minutes per speaker and maximum time allotted 15 minutes)

7. REPORTS

(a) Superintendent, Public Works and Engineering Services re: Sanitary Treatment Plant Slope Stabilization.

5

(b) Superintendent, Public Works and Engineering Services re: River Road Fire Hydrants.

7

(c) Superintendent, Public Works and Engineering Services re: Town Road Network.

9

(d) Superintendent, Public Works and Engineering Services re: Integrated Rainwater Management Plan.

12

(e) Superintendent, Public Works and Engineering Services re: Summary Report for Public Works.

15

8. NEW BUSINESS

(a) Transport Canada - Signage Guide for Vessel Operation Restriction Regulations.

18

9. NOTICES OF MOTION

10. PUBLIC RELATIONS ITEMS

11. QUESTION PERIOD (maximum 3 minutes per speaker and maximum time allotted 15 minutes)

- Limited to items on the agenda

12. ADJOURNMENT

Please note: Should this meeting end sooner than 7:00 p.m., the next meeting may start no later than 10 minutes after adjournment of this meeting.

This Page
is
Intentionally
Left Blank

Memo



TO: Chief Administrative Officer
SUBJECT: WTP update
DATE: November 15, 2019
FROM: Superintendent, Public Works and Engineering Services

Ongoing Work

Backwash Chamber and Turbidly

14-Nov - Bartek was on site resolving the check valve issue. VIHA to be contacted to approve solution and commission filters.

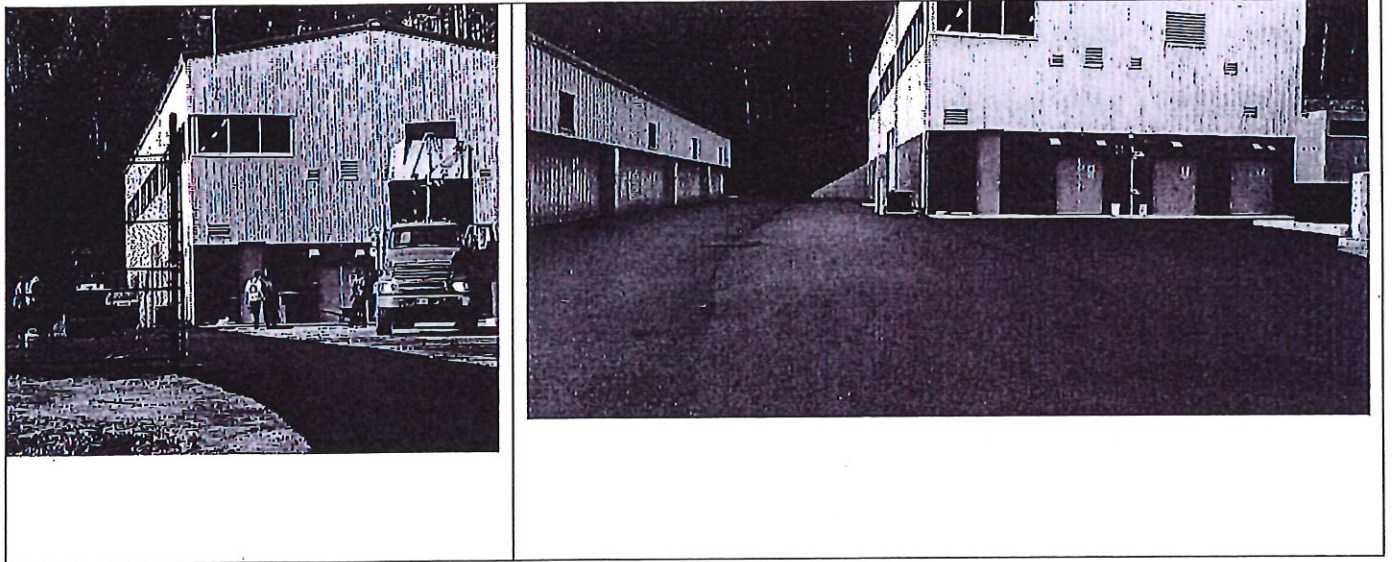
Soda Ash System:

- 7-Nov – Static Mixer arrived on site.
- 11th –Nov – Trittech on site to do roughin for Soda Ash.
- 12th-Nov – AJP on site to measure and space planning for Soda Ash.
- 13th - Nov - Soda Ash equipment arrived on site.
- AJP returned to site for installation. (current)



Paving

- Paving completed on 8-Nov.



PWS Training


- PWS crew working towards Level III Operator certification.
- Bartech and Level 3 Operator from other jurisdiction on call.

Media Loading

Issue: awkward loading of media over guardrails.

Media loading rarely happens and will not affect the start-up of the WTP.

Will create procedures for operators to load media properly.



Kam So, P.Eng
Superintendent, Public Works and Engineering Services

Memo



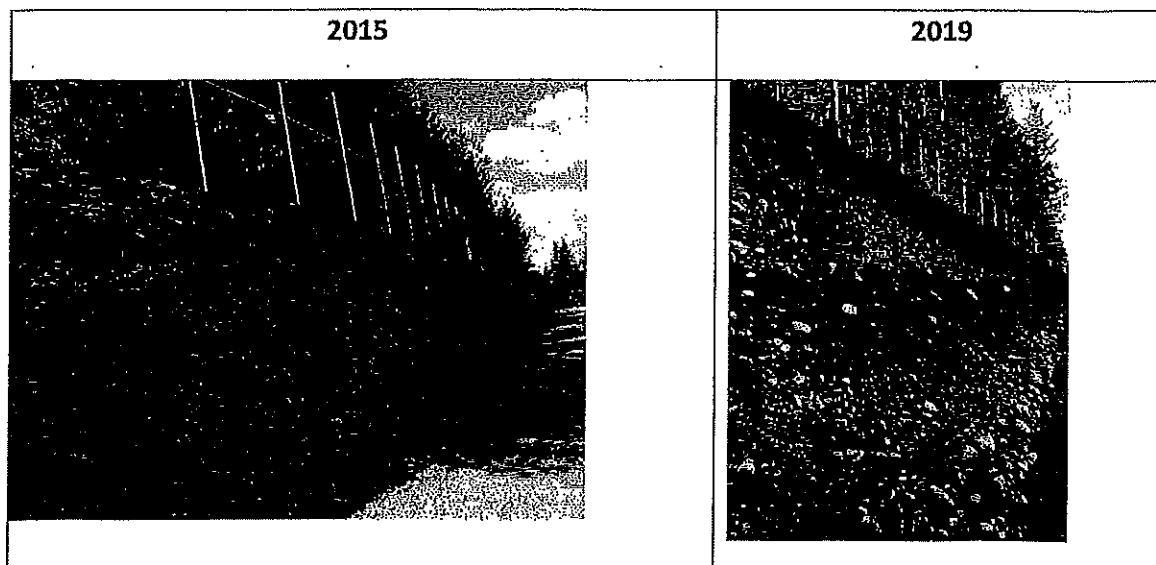
TO: Chief Administrative Officer
SUBJECT: STP Slope Stabilization
DATE: November 12, 2019
FROM: Superintendent, Public Works and Engineering Services

Background

During the 2015 expansion of the Town's Wastewater Treatment Plant, the bank along the south side of the third cell was to be cut at a slope of 2.5(H) to 1(V). There is a high grade 12' fence and trees on top of the slope. When the fence was installed, there was a decision to locate the fence line further north to maintain a screen of trees between the public road and new cell. As a result, the slope of the bank was cut at 1(H) to 4(V).

From a geotechnical viewpoint, the soil slope is too steep to be stable in the long term. Given the nature of the slope, it would be expected to see the face and crest regress over time through a combination of weathering, freeze thaw, rain and wind action. The face is essentially too steep to become vegetated without some form of enhancement. Since 2015, there has been considerable erosion.

Without intervention, the slope will result in considerable maintenance and localized repair work. We would also routinely expect to see cobble size material topple and roll onto the roadway and the lagoon cell. The falling slope will also affect the stability of the fence. The pictures below show the extent of the damage.



There are several low cost practical measures could be implemented in order to reduce maintenance.

Solutions

There are several options to minimize the Town's maintenance issues:

1. Relocate the fence and cut the slope back to the design of 2.5(H) to 1(V).
2. Install a low catchment wall near the toe of the slope to contain material from rolling onto the bench. Occasionally removing material to maintain the catchment capacity.
3. Increase the width of the bench to enhance catchment. Losing some cell capacity.
4. Install a secured mesh over areas of looser material to reduce likelihood of slumping.

RFP

The Town issued an RFP for Design and Construction administration services which closed on 1st-Nov-19. The town received four bids for the competition. The summary of prices is below:

Proponent	Bid Amount	Scope of Work
Solid Soil Solution	\$79,450	Construction
Tetra Tech	\$44,420	Geotechnical, Design and Construction Administration
Onsite Engineering Ltd.	\$20,442	Design and Construction Administration
McElhanney	\$20,246	Design and Construction Administration

Recommendations

There were two proposals that stood out in the competition. Both Onsite Engineering and McElanney had excellent proposals that demonstrated they had a clear understanding to the project's needs.

In the end, it is the recommendation of the Town to choose McElhanney for the proposal. McElhanney has an office in Duncan and is in the best position to provide the project onsite inspections.



Kam So, P.Eng
Superintendent, Public Works and Engineering Services



Memo



TO: Chief Administrative Officer

SUBJECT: River Road Fire Hydrants

DATE: November 15, 2019

FROM: Superintendent, Public Works and Engineering Services

Background

There is an Out of Service bag on a fire hydrant on River Road for the past two years. A question from a considered citizen at Oct 16th PWS Committee meeting, asked why the fire hydrant was out of service.

Response

Almost all of the town's fire hydrants are downstream from the Town's water reservoir. When the fire hydrants are in use, the water drawn out from the fire hydrants are taking water from the water reservoir. The town reservoir has the capacity of water to maintain continued use of the fire hydrates for fire-fighting purposes.

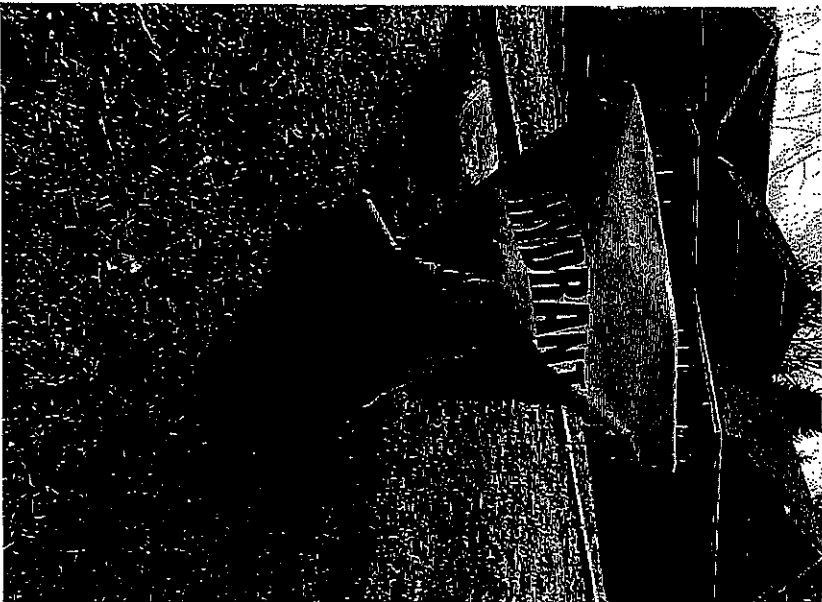
There is an Out of Service bag on the fire hydrant between the town's water intake pump station and the reservoir. Water that would be released from the River Road fire hydrant takes raw water directly from the water intake pump station. Using the river road fire hydrant would significantly reduce the amount of water being processed at the WTP.

Given that the fire hydrant also does not have a readily supply of water from the water reservoir, the water would be on demand from the water intake pump and there would be significantly less water pressure available, while stressing the water pump for on demand water.

The fire hydrant is not removed because there is value in using the fire hydrants for water flushing activities.

The fire hydrant is in working condition. The water that would service that fire hydrant does not allow for continued use for firefighting.

The Fire Department is aware of the out of service fire-hydrants and the fire hydrants are not a safety concern for the community.



Kam So, P.Eng
Superintendent, Public Works and Engineering Services

Memo



TO: Chief Administrative Officer

SUBJECT: Town Road Network.

DATE: November 15, 2019

FROM: Superintendent, Public Works and Engineering Services

Background

Municipal roads are the primary form of transportation in the town of Lake Cowichan. A well maintained road network is vital to the movement of people to connect us with our neighbors and to facilitate the movement of goods to support the economy. Due to a variety of reasons such as weather conditions, amount of traffic and types of traffic, roads will eventually deteriorate and will need repair.

There are generally three types of road maintenance:

Preventative Maintenance – Work done in first five years to extend the life of pavements such as patching, joint sealing, crack sealing. This work is done by the PWS crew.

Resurfacing – Fresh layer of asphalt applied to the surface of the road to restore its structural integrity. This can extend a pavement's life span 10-15 years. Resurfacing will prevent the need for costly reconstruction work.

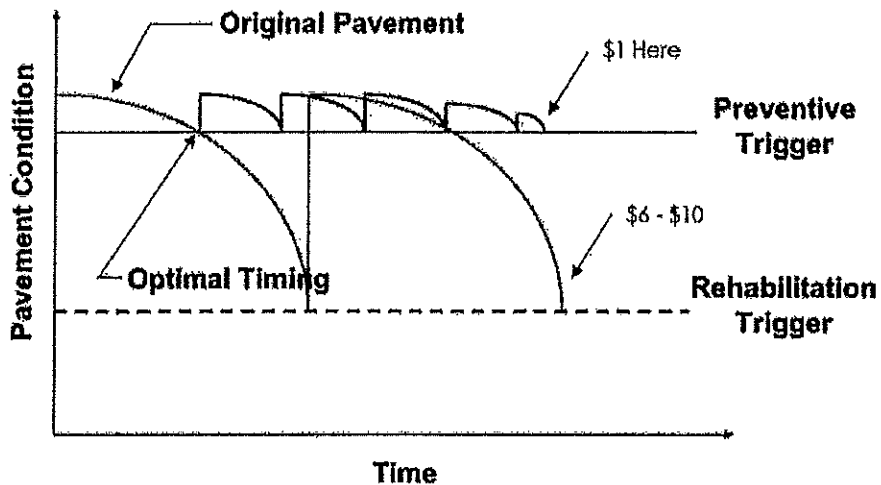
Reconstruction – Required work is structural in nature an overlay is not possible anymore. Construction costs are very expensive and there could be service disruptions. Reconstruction is required as the pavement has deteriorated to the point where the sub-base must be removed and replaced. A proper pavement management system should not allow pavement to reach this stage.

With a good road management strategy, roads should be consistently maintained by preventative maintenance and then an overlay every 10-15 years. The timing of the overlay should prevent any need for an expensive reconstruction.

The pavement condition can be rated on a scale of 1-10. 10 being in perfect condition, 1 being in very poor condition. Preventative maintenance should prolong the time pavement is above a rating of above 7. When the pavement reaches a Level of Service of 6-7, a surface overlay should be considered and conducted.

Deterioration of pavement is not linear. For the first few years, the pavement will show signs of deterioration very slowly, even slower with regular preventative maintenance. There is a trigger point in time, where either an overlay should happen, or the pavement will significantly drop in condition.

Below is a diagram how a proper pavement management strategy should model. The top line is the condition of the pavement over time with preventative maintenance to extend the life of the road and an overlay to return the road back to the original condition. The larger bottom line is when maintenance is neglected and there is an expensive reconstruction.



Pavement Management System

Larger jurisdictions have database that manages roadway inventory and condition assessments. With mathematical deteriorate curves and lifecycle analysis, they can determine the life cycle plan for the roadway inventory. As a town with a small inventory, a complicated PMS is not necessary.

Condition of Town Roads

Many of the roads in town are approaching a condition that resurfacing may not be possible anymore and a reconstruction is required.

Resurfacing Strategy

Different classes of roads would have different Level of Services (LOS):

- Arterial roads like North Shore Road would have the most traffic and heavier vehicles, hence a higher LOS.
- Collector Roads like Coronation St would have a medium traffic, residential vehicles, hence a medium LOS.
- Local roads Nelson Rd would have low traffic, hence the lowest LOS.

Resurfacing of arterial roads would be prioritized over collector and local roads. The worst condition roads would be prioritized over better condition roads.

Discussion

Given the size of the roads in our inventory, we do not need a complicated Pavement Management System.

Roads are deteriorating and we must start overlaying some roads before they reach the point of reconstruction.

Depending on budget and funding, we should start conducting resurfacing road projects each year.



Kam So, P.Eng
Superintendent, Public Works and Engineering Services

Memo



TO: Chief Administrative Officer

SUBJECT: Integrated Rainwater Management Plan

DATE: November 15, 2019

FROM: Superintendent, Public Works and Engineering Services

Background

The town of Lake Cowichan has many built up impervious areas that do not absorb rainwater. As a result, the rainwater could be diverted into pools and other unwanted areas that could damage public or private property. An Integrated Rainwater Management Plan (IRMP) is required to preserve, maintain and enhance infrastructure of areas of significance.

Drainage systems are designed to efficiently carry runoff away from development and discharge into the receiving waters. These systems include paved roads, gutters, catch basins, ditches, and storm drains. Drainage systems accelerate the runoff process and increase peak discharges and volumes. This can and often does have negative impacts on receiving watercourses in the form of channel erosion, habitat degradation, reduced base flow and reduce water quality.

IRMP Goals

The primary objectives of the IRMP is to develop solutions that are guided by the community planning documents and regional guidelines. There are three primary objectives:

1. Protection of public safety and private/public property from flooding;
2. Reduction of runoff volumes and peaks to minimize erosion and protect downstream aquatic habitat; and
3. Improvement to rainwater runoff quality for both ecosystems and human health.

Consideration for Climate Change

With climate change rainfall intensity during storm events will likely increase and result in higher peak discharges.

Major town Changes

- New subdivisions will significant change future rainwater management criteria's.

Workplan

In May 2013, Kerr Wood Leidal Associates was retained by the Town to prepare a IRMP. The scope of the project included:

1. Completing an inventory of the storm water sewer and drainage network within the town.
2. Carryout a habitat inventory to identify and map condition of aquatic and riparian features.
3. Develop a hydrologic/hydraulic model to test existing and future land use.
4. Recommend mitigation measures/rainwater management facilities for flow reduction.
5. Review community bylaws and land-use planning documents to recommend changes and updates.
6. Reviewing Municipal Engineering Standards and make recommendations.
7. Assessing storm water drainage facilities.
8. Develop IRMP that outlined the overall strategy for the Town and an implementation strategy.

An IRMP adds more emphasis on the frequency of reoccurring events and protection of watercourse health and stability.

IRMP Implementation identified priorities for implementation:

Priority	Description	Total Upgrade Length	Sum of Replacement Costs (\$)
Highest	Flooding with no safe overland flood route (Major Drainage System)	577	\$287,000
High	Flooding (Minor System with Flooding)	5,951	\$1,869,000
Medium	Surcharging requiring upgrade of two or more standard pipe sizes	3,054	\$1,316,000
Low	Surcharging requires upgrade of one standard pipe size.	555	\$135,000
Minimum Standard	Pipe sizing requiring upgrade to minimum pipe diameter of 200 mm.	759	\$132,000
Major Culverts	Upgrade of Bear Creek Culvert	20	\$350,000
	Grand Total	10,916	\$4,089,000

Further action:

- Require future development to either provide detention to limit runoff to meet design maximum design flows for existing land use conditions in downstream drainage system.
- Encourage low impact development practices and source controls including bio-swales, rain gardens, and reduced pavement widths.
- Encourage use of innovative rainwater designs including permeable pavement, green roofs, and rainwater harvesting.
- Encourage the reduction of deleterious substances such as fertilizers, cleaning agents and other toxic chemicals.
- Require comprehensive erosion and sediment control plans as part of land development and construction.
- Review and update IRMP plan and model every ten years to include new techniques, technologies or lessons learned and work completed.

Discussion

- Consider applying for funding as other jurisdictions.
 - North Cowichan pursues new flood mitigation plan for Canada Avenue.
 - <https://www.lakecowichangazette.com/news/north-cowichan-pursues-new-flood-mitigation-plan-for-canada-avenue/>
- Consider new Rainwater Management Bylaw
 - Most beneficial with specific directives relating to on-site retention, peak flow attenuation and treatment to allow the Town to meet its goal and objectives with regards to protecting the natural environment.
 - Subdivision Bylaw and Zoning Bylaw would be most beneficial.
 - Focuses of changes to drainage, volume reduction and water quality.



Kam So, P.Eng
Superintendent, Public Works and Engineering Services

Memo



TO: Chief Administrative Officer

SUBJECT: Summary Report for PWS - Oct/Nov

DATE: November 15, 2019

FROM: Superintendent, Public Works and Engineering Services

Summary Report for PWS – Oct/Nov

Asset Management Plan

- Asset Management RFP – Reviewed and provided recommendation for Award.

Capital Projects

- River Road Booster Station Upgrade – Competition closes on 18-Oct – Reviewed and provided recommendation for award.
 - Attended project kick-off meeting.
- Sewage Lagoon Slope Stability – Competition closes on 1-Nov – Reviewed and provided recommendation for award.
- North Shore Water Intake – Genset – Reviewed submitted scope of work, provided recommendation to sole source design work to Stantec.
 - Attended project kick-off meeting.
- Working on deficiency requirements for the WTP with Stantec.
 - Soda Ash arrived on the 14-Nov. AJP installing.
- No Parking Line and Cross walk to be added outside High School.
- WTP
 - Installed water intake pipe.
 - Paving completed 8-Aug.
 - Soda Ash arrives 8-Aug, to be delayed a week due to conflict of Paving.

Maintenance

- Reservoir Cleaning Planning – Scheduled for cleaning 18th-22nd Nov.
- Repair 2-4 water leaks a week.
- Replacement of Water Booster Pump on Neva Road. Zone 4 without adequate water pressure for several days.
- 15 Light rehabilitation requests to BC Hydro.
 - BC Hydro will come out when there are enough requests at one trip.
 - ETA 10 days to 2 months.

-
- Ongoing patching of roads.
 - North Shore Road
 - Front of Health Centre
 - Most damaged areas around town.
 - Side walk repair, multiple areas.

Operations

- PWS crew maintained weekly garbage collection.
- PWS crew contained daily water and wastewater collection.
- Fire hydrate checks
- PWS crew compiles Lagoon and Water reports.

Meetings

- Met with MoTI District Engineers and Road Managers to discuss MoTI work plans.
- Met with First Nations Operations Manager on River Road Booster Station Project and FN future development plans.
- Attend BC Hydro Emergency Management Meeting
- Met with WSP Engineering Director and toured the Sewage Lagoon and WTP.
- Met with over 20 concerned citizens about issues relating to infrastructure.
- Met with Rollins rep to learn about Garbage trucks.
- Attended CVRD Meeting on Asset Management.
- Attended CVRD Meeting on Emergency Management.

Training

- Members of the JOHSC attending training on Hazard Identification & Workplace Inspections.
- PWS employee attended training on Water Quality and Sampling for Water and Wastewater Systems.
- PWS employee attended training on Small Water Systems
- PWS employee attended training on Small Waste Water Systems.
- PWS employees attended Asbestos Management training.

Safety

- JOHSC monthly meeting. Topics include: Safety Policy, Harassment Policy, Safety Manual, Safe Job Procedures.
- Safety inspections completed.
- New Safe Job Procedures written.
- Discussion on future safety training.

Equipment Purchases

- Side walk repair tools
- Water line replacement equipment.
- Water line finder.

Resident Concerns

- Request for storm drain ditch on North Shore Rd.
 - Will provide design solution and present to resident for 50/50 cost sharing.
- Request for ditch cleaning on Savoy Rd.
- Request for storm drain fix on Wilson Rd.
- Request for snow plow to not create flooding conditions on King George in the winter.
- Request for easement lifted on Stanley Rd.
- Request for storm drain to be fixed Town easement on Cottonwood Ave.
- Several requests for information on STP from realtors on Hudgrove St.
- Request on access for mobility impairment issues at the Bus Stop.
- Zoning requests for house on Neva St.
- Zoning requests for house on Beech Cres.
- Multiple water connections requests.



Kam So, P.Eng
Superintendent, Public Works and Engineering Services

SIGNAGE GUIDE

FOR VESSEL OPERATION RESTRICTION REGULATIONS



www.tc.gc.ca/boatingsafety



Transport
Canada

Transports
Canada

Canada

© Her Majesty the Queen in Right of Canada, represented by the Minister of Transport, 2014.

Cette publication est aussi disponible en français sous le titre «Guide des administrations locales – Règlement sur les restrictions visant l'utilisation des bâtiments».

Catalogue No.: T29-75/2010E-PDF

ISBN: 978-1-100-16061-0

Permission to reproduce

Transport Canada grants permission to copy and/or reproduce the contents of this publication for personal and public non-commercial use. Users must reproduce the materials accurately, identify Transport Canada as the source and not present theirs as an official version, or as having been produced with the help or the endorsement of Transport Canada.

To request permission to reproduce materials from this publication for commercial purposes, please complete the following web form: www.tc.gc.ca/eng/crown-copyright-request-614.htm

Or contact: TCcopyright-droitdauteurTC@tc.gc.ca

TABLE OF CONTENTS

INTRODUCTION	4
CREATING ARTWORK FOR SIGNS AND BUOYS	5
STEP 1 – DETERMINE WHAT RESTRICTIONS APPLY	5
STEP 2 – DETERMINE IF CONDITIONS APPLY	7
STEP 3 – FOLLOW TECHNICAL REQUIREMENTS FOR SIGNS	9
LAND AND WATER-BASED SIGNS	9
REQUIREMENTS FOR BUOYS	12
STEP 4 – INSTALLATION OF SIGNS AND BUOYS	15
PLACEMENT OF SIGNS	15
PLACEMENT OF BUOYS	16
STEP 5 – MAINTAIN SIGNS AND BUOYS	16
LIABILITY	17
CONTACT INFORMATION	18
USEFUL LINKS AND REFERENCES	19

INTRODUCTION

The *Vessel Operation Restriction Regulations (VORR)*, established under the *Canada Shipping Act, 2001 (CSA, 2001)* allow any level of government (federal, provincial, territorial and municipal) to ask the federal government to restrict the use of recreational and commercial boats on all bodies of water in Canada. These restrictions may help achieve local safety, environmental or public interest goals. For example, you may ask for *VORR* restrictions to:

- Prohibit all boats
- Limit engine power or type of propulsion
- Set speed limits
- Restrict towing activities on any sporting or recreational equipment, including wake surfing
- Prohibit a sporting, recreational or public event or activity

Restrictions can apply at all times or can be specific to certain times of the day, week, month or year. They can also target specific types of boats on a waterway or a portion of it.

On waterways with a restriction, installing signs or buoys will help boaters know what the restriction is and what they must do. There are no rules for the number of signs or buoys you must install or where you should place them. However, well-placed signs and buoys will increase the chance that the restriction will produce the results you want and make it easier to enforce.

Since you, as the Local Authority, have been granted the right to restrict boating on one or more water bodies in your area, you are responsible for:

- Producing;
- Installing; and
- Maintaining restriction signs and / or buoys. [*VORR*, s. 6(2)(a)]

This guide will help you meet your responsibilities and comply with the regulations.

REMEMBER

No one is allowed to place a sign or buoy that restricts any vessel from operating in Canadian waters without the Minister's permission. [*VORR*, s. 5(a)]

Vessel Operating Restriction Regulations are the last resort for solving problems.

Involved stakeholders working together can often find more timely, effective and affordable solutions. If, however, parties cannot agree on an alternate solution, the *VORR* can be an efficient way to resolve waterway conflicts. *Please refer to the Local Authorities' Guide to Vessel Operation Restriction Regulations* for more information on how to create a *VORR*.

You can find this guide at: <http://www.tc.gc.ca/eng/marinesafety/debs-obs-menu-1362.htm>.

CREATING ARTWORK FOR SIGNS AND BUOYS

This section will help you design your signs and buoys to Transport Canada's requirements. Your regional Transport Canada office can also give you advice on these technical specifications.

Make sure your *VORR* signs and buoys meet these legal requirements. If they don't, the Minister may:

- Remove any private buoy or sign that does not comply with the regulations;
- Order you to modify it to meet current standards; and
- Fine you for not meeting the requirements under *VORR*, s.6 (2).

To learn more about your responsibilities when placing signs and buoys, please go to:

- The *Vessel Operation Restriction Regulations*
<http://laws-lois.justice.gc.ca/eng/regulations/sor-2008-120/>
- The *Private Buoy Regulations (PBR)*
<http://laws-lois.justice.gc.ca/eng/regulations/sor-99-335/>

Transport Canada's Navigation Protective Program (NPP) staff can provide information to anyone looking to place a private buoy or design a navigation system for a waterway. You can find a list of NPP regional offices and contact information at <https://www.tc.gc.ca/eng/programs-631.html>



No Wake Signs

Everything that moves through the water will cause a wake. Canada does not recognize "no wake" signs because they are **not enforceable**. If boat wakes are a concern, consider placing "watch your wake" or "low wake" signs on shore.

















Also, the sign to the left does not meet *VORR* legal requirements.

STEP 1 – DETERMINE WHAT RESTRICTIONS APPLY

As a Local Authority that has received the right to restrict boating on one or more waterways in your area, **you** are responsible for making people aware of the restrictions. This isn't hard, as each type of restriction has a specific symbol and format you must use on all signs and buoys.

Table 1 (page 6) will help you determine which symbols apply to your restriction(s).

TABLE 1 – VORR SCHEDULE SPECIFIC SYMBOLS

VORR Schedule	Description	Symbol	Information Graphics	Example
SCHEDULE 1 VORR, s. 8(1)(a)	Waters on which all vessels are prohibited		NONE	
SCHEDULE 2 VORR, s. 9(1)(a)(b)	Waters on which motorized vessels (including power-driven vessels and electric powered vessels) are prohibited			
SCHEDULE 3 VORR, s. 9(1)(a)(c)	Waters on which power-driven vessels (vessels propelled by an internal combustion engine or a steam engine) are prohibited			
SCHEDULE 4 VORR, s. 8(1)(b)] VORR, s. 9(1)(d)]	Waters in public parks and controlled access bodies of water on which motorized vessels (including power-driven vessels and electric powered vessels) are subject to an engine power limit.		1234 5678 90 MAX kW	
SCHEDULE 6 VORR, s. 8(1)(b) VORR, s. 9(1)(e)]	Waters on Which Power-driven Vessels and Vessels Driven by Electrical Propulsion Are Subject to a Speed Limit		1234 5678 90 MAX km/h	
SCHEDULE 7 VORR, s. 9(1)(a)(f)	Waters in which towing a person on any sporting or recreational equipment, or allowing a person to wake surf, is prohibited except during the permitted hours.		SKI	
SCHEDULE 8 VORR, s. 9(1)(a)(f) VORR, s. 11	Waters in which a sporting, recreational or public event or activity is prohibited.		REGATTA	

NOTE:

Schedule 5 was repealed in 2016 and all existing restrictions in that Schedule are now in Schedule 6.



If two or more restrictions apply, use the elongated circle symbol to display the appropriate symbols. In the example to the left, this waterway has the following restrictions:

- Schedule 7 - no recreational towing activities allowed; and
- Schedule 6 - a 10 km / h speed limit.

STEP 2 – DETERMINE IF CONDITIONS APPLY

In some cases a restriction may have conditions, such as:

- Specified times;
- Certain days / months; or
- Specific geographic areas.

If no additional conditions apply to your restriction, please go to STEP 3.

If the boating restriction is subject to conditions, there are two types of graphics you may use, depending on the situation:

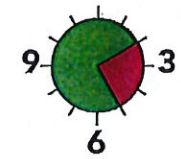





The first shape is a directional disc with an arrow pointing in the direction where the restriction applies. The directional disc will also have the symbol that relates to the restriction within its border. Please refer to Table 1 for more information on symbols. [VORR, s. 8(2)]

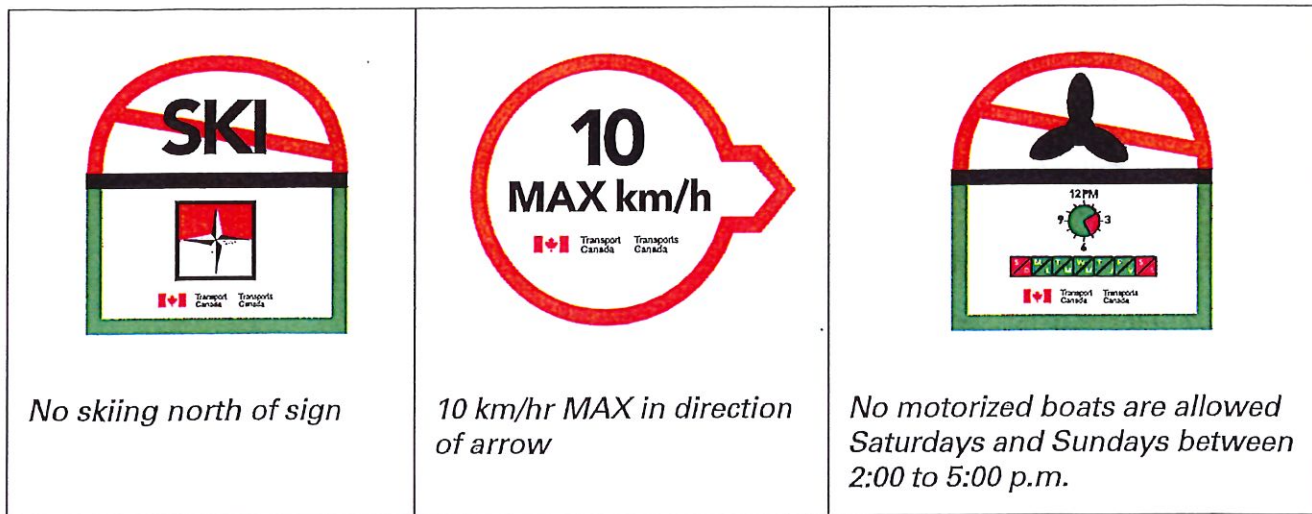


The second shape is a semi-circle with an international orange outline, over a black line above a rectangle with a green border. The half circle will show a restriction symbol from Table 1, while the rectangle will describe the condition(s) in Table 2. [VORR, s. 8(1)(d)]

TABLE 2 – VORR CONDITION INFORMATION

<p>CERTAIN TIMES OF THE DAY [VORR s. 9(2)(a)]</p> <p>When a restriction applies to certain hours of the day, those hours must be marked in red on a symbol of a clock.</p>	<p>AM 12 PM</p>  <p>In this example, the restriction is in place between 2:00 and 5:00 p.m.</p>
<p>CERTAIN DAYS OF THE WEEK [VORR s. 9(2)(b)]</p> <p>When the restriction only applies to certain days of the week. Each day is represented by a bar with seven boxes. Each box is marked with the first letter of the day (<i>English and French</i>). Letters are white. Red squares show when the restriction is in effect and the green squares show when the activity is allowed.</p>	 <p>In this example, the restriction is in place for both Saturday and Sunday.</p>
<p>CERTAIN MONTHS OF THE YEAR [VORR s.9(2)(c)]</p> <p>A Local Authority may wish to restrict boating activities for certain months between April and November. You must represent these types of VORR with a bar with eight boxes. Each box has the first letter of the month in white. Red squares show when the restriction applies. Green squares show when the activity is allowed.</p>	 <p>In this example, there is a restriction in place for April, October and November.</p>
<p>SPECIFIC GEOGRAPHICAL AREA RESTRICTIONS [VORR s.9(3) & (4)]</p> <p>The sections of the black compass coloured in international orange show the direction where the restriction applies.</p>	 <p>In this example, the restriction is to the north of the sign.</p>

Examples of signs for restrictions with conditions



STEP 3 – FOLLOW TECHNICAL REQUIREMENTS FOR SIGNS

Land and Water-based Signs

Once you have identified all the graphic elements that fit the restriction(s) you want people to follow, it is important to make sure the signs and buoys also follow the format described in the regulations. Please see the *VORR*, Sections 8, 9 and Schedule 9 for more details on these requirements.

You must make sure every *VORR* sign:

- Has the words **Transport Canada** (English) and **Transports Canada** (French) printed in black at the lower edge. This is known as the Transport Canada Signature block. [*VORR* s.8(5)]



- Has an international orange band as a border. The width of the band must be one-twelfth of the width or diameter of the sign. [*VORR* s.8(4)]
- Has any additional information on the restriction you need to share with boaters inside an information rectangle underneath the sign with an international orange band as a border. The width of that band must be one-twelfth of the width or diameter of the sign. [*VORR* s.8(3)]

Size:

Your local sign shop or Public Works Department can provide advice on the size and materials to use so the sign is:

- Easy to see from far away;
- Easy to read from a moving boat;
- Cost-effective
- Able to stand up to the marine environment.

Guidelines to use when calculating sign size:

- Land-based sign should be at least 60 cm in diameter or width.
- Floating signs should have a minimum 30 cm diameter or width.

Height:

When installing signs, remember wind or heavy rain can affect water levels. Make sure signs are clearly visible in all conditions, **you should** install them so:

- The lower edge of a symbol on a sign is at least 40 cm above the surface of the water; and
- For land-based signs, the lower edge of a sign is at least two (2) metres above calm water.

IMPORTANT TIP:







Make sure any signs you install on the shore also comply with local bylaws or regulations in your area.

Colours:

The *VORR* states some of the borders and symbols are specific colours. Please refer to the chart below the appropriate colour match when printing your signs or buoys.

International Orange	Green	Red
RGB: 255, 79, 0 CMYK: 0, 69, 100, 0 Websafe: ff6600 HEX: ff4f00 RAL (closest match): 2008	RGB: 0, 181, 26 CMYK: 70, 0, 90, 0 Websafe: 00cc33 HEX: 00b51a RAL (closest match): 6038	RGB: 204, 44, 36 CMYK: 0, 100, 90, 0 Websafe: cc3333 HEX: cc2c24 RAL (closest match): 3028

Land and Water-Based Signs

Signs should be at least 60 cm in diameter or width	Visible 30 metres from sign travelling 15 km/h max	Visible 60 metres from sign travelling 60 km/h max
SIGN SIZE (MINIMUM)	At least 45 cm in diameter or width "medium-sized" sign	At least 75 cm in diameter or width "large-sized" sign
SYMBOLS	At least 45 cm 	At least 75 cm 
INFORMATION GRAPHICS	At least 20 cm high 	At least 40 cm high 
LETTERING (TABLE 1, COL. 4)	At least 5 cm high Recommend plain, bold font in black	At least 10 cm high Recommend plain, bold font in black
BORDER IN INTERNATIONAL ORANGE	One-twelfth (1/12) the width or diameter of the sign	One-twelfth (1/12) the width or diameter of the sign
INFORMATION RECTANGLE (IF NEEDED)	<ul style="list-style-type: none"> • Border in international orange at least one-twelfth (1/12) the width or diameter of the sign; • Placed below the VORR signage graphics (ex: Table 1, Col. 5)  <i>Example of how to use an information rectangle</i>	<ul style="list-style-type: none"> • Border in international orange at least one-twelfth (1/12) the width or diameter of the sign; • Placed below the VORR signage graphics (ex: Table 1, Col. 5)  <i>Example of how to use an information rectangle</i>
INSTALLATION HEIGHT - ON LAND	at least two (2) metres above calm water	at least two (2) metres above calm water
INSTALLATION HEIGHT - ON WATER	at least 40 cm above the surface of the water	at least 40 cm above the surface of the water

Requirements for Buoys

You must make sure all buoys have:

- The words Transport Canada (English) and Transports Canada (French) printed in black at the lower edge. This is known as the Transport Canada Signature block. [VORR s. 8(5)]
- An international orange band as a border. The width of that band must be one-twelfth of the width or diameter of the sign. [VORR s. (8)(4)]
- Any additional information on the restriction you need to share with boaters, inside an information rectangle underneath the sign, with an international orange band as a border. The width of that band must be one-twelfth of the width or diameter of the sign. [VORR s. (8)(3)]
- A horizontal band immediately above and immediately below the sign so each band [VORR s. 9(5) (a)(b)(c)]:
 - Is one-twelfth the width or diameter of the buoy;
 - Is coloured international orange; and
 - Extends all around the buoy.

Please refer to Diagram 1 on the following page for more details.

Each buoy must be:

- Large enough for boaters to see from a distance;
- Easy for boaters to read, understand, and take action in a timely manner; and
- Comply with *Canadian Aids to Navigation* (TP 968) requirements. [PBR, s. 4(1)(c)]

NOTE:

Buoys owned by a federal or provincial department or agency **must** meet the requirements above but are not subject to the *Private Buoy Regulations* (PBR). The PBR applies to all other buoys not covered by this exemption. To determine if your buoy has the exemption, please refer to:

- Government of Canada Departments and Agencies list, or
- The provincial or territorial government website for your area.

If you have questions, please contact your local Transport Canada Navigation Protection Program (NPP) office for more information.

Privately-owned buoys

PBR requires all privately-owned buoys to:

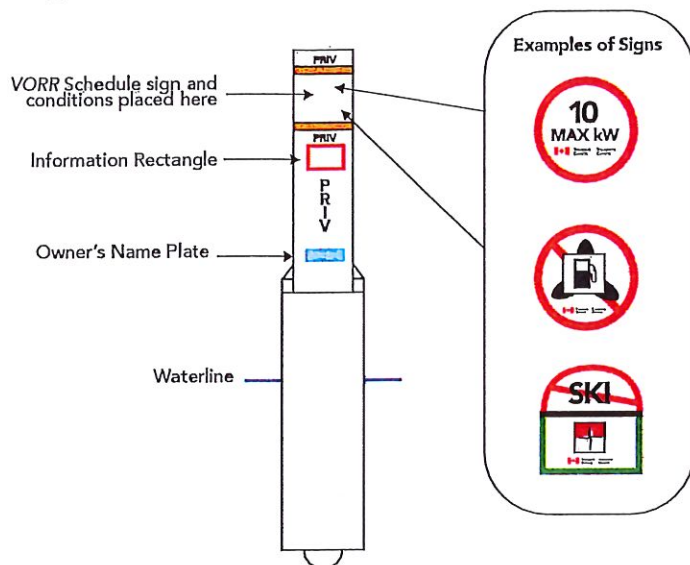
- Show at least 30.5 cm above the waterline and be at least 15.25 cm wide. [PBR, s. 4(1)(a)]
- Be at least 15.25 cm wide. [PBR, s. 4(1)(a)]
- Display "PRIV" in capital letters, on opposite sides of the buoy. These letters must be:
 - As large as practical for the size of buoy;
 - White when the background colour is red, green or black; and
 - Black when the background colour is white or yellow. [PBR, s. 4(1)(b)(i)(ii)(iii)]
- Permanently display the name, address and telephone number of the owner where it is easy to see and read. [PBR, s. 4(1)(d)]

You can find the *Private Buoy Regulations* at <http://laws-lois.justice.gc.ca/eng/regulations/sor-99-335/> ; or learn more in the *Owners Guide to Private Buoys* <https://www.tc.gc.ca/Publications/en/TP14799/PDF/HR/TP14799E.pdf>



NOTE:

If the buoy has a light, it must remain lit throughout the night and meet *Canadian Aids to Navigation System, 2011* (TP 968) requirements. You can find details at: <http://www.ccg-gcc.gc.ca/aids/Canadian-Aids-To-Navigation-2011>.

Diagram 1 – Example Buoy





BUOYS

Requirements in the <i>VORR</i>	Minimum size visible from 30 m and travelling 15 km/h	Minimum size visible from 60 m away and travelling at 60 km/h max
INTERNATIONAL ORANGE BANDS [VORR, s. 9(5)(a)(b)(c)]	Two bands that: <ul style="list-style-type: none"> • Are one-twelfth (1/12) the width or diameter of the buoy. These bands should be at least 40 mm wide. • Are international orange; and • Extend around the entire buoy. Note: The bottom band should be at least 40 cm above the waterline.	
SYMBOLS (MINIMUM) [VORR, s. 8(1)(2) and 9(1)(2)(3)(4)]	At least 45 cm 	At least 75 cm 

Continued on next page

Continued from previous page

Requirements in the <i>VORR</i>	30 m from sign travelling 15 km/h max	60 m from sign travelling 60 km/h max
GRAPHICS	At least 20 cm high 	At least 40 cm high 
LETTERING (TABLE 1, COL. 4)	At least 5 cm high Recommend plain, bold font in black	At least 10 cm high Recommend plain, bold font in black
INTERNATIONAL ORANGE BORDER [VORR, s. 8(4)]	One twelfth (1/12) the width or diameter of the sign	
ADDITIONAL INFORMATION [VORR, s. 8(3)]	<ul style="list-style-type: none"> Place in a rectangle with an international orange border at least one twelfth (1/12) the width or diameter of buoy; Place this information rectangle below the bottom international orange band; 	

Requirements in the Private Buoy Regulations (<i>PBR</i>)	
HEIGHT – TOP OF BUOY TO WATERLINE [PBR, s. 4(1)(a)]	At least 30.50 cm
WIDTH OF BUOY ABOVE WATERLINE [PBR, s. 4(1)(a)]	At least 15.25 cm
"PRIV" MARKINGS [PBR, s. 4(1)(b)]	<ul style="list-style-type: none"> Use black capital letters, either horizontal or vertical; Make letters as large as possible; Place "PRIV" on opposite sides of the buoy in any of the three (3) spots shown in Diagram 1.
OWNER'S CONTACT INFORMATION [PBR, s. 4(1)(d)]	<p>The name plate on all private buoys must:</p> <ul style="list-style-type: none"> Include the owner's current [PBR s. 4(2)]: <ul style="list-style-type: none"> - name - address - telephone number Display information in a permanent way that is easy to read.

STEP 4 – INSTALL SIGNS AND BUOYS

Placing Signs

No set rules exist when placing signs. You should apply local knowledge of the waterway, study boaters' behaviour, consider the shape and the size of the waterway, and the number of access points.

Consider what kind of boaters use the waterway:

- Are many of the users' day visitors using launching areas?
- Are many boaters just passing through?
- Are most boat operators familiar with the area?
- Are they local cottagers or residents?

TIPS

- Access points to the waterway are natural places for signs, and can include any public launching area. These signs should be clearly visible and face into shore.
- If the restricted waterway is a river or channel, post signs at all entry points to the restricted area.
- If the restriction's purpose is to protect swimmers, post signs on buoys at the edges of the restricted area.
- Choose spots that will not become overgrown with plants and trees throughout the season, so they are easy to see. This will also reduce maintenance costs.
- Work with the local enforcement agency that can also provide advice on sign locations.

If many visitors to the area use the waterway, you may need more signs at boat launches and other entry points. Ask yourself if the official vessel operation restriction signs are enough. Perhaps adding a sign with a map of the lake near boat launches (like a "you are here" map in a shopping mall) that shows the restricted areas and local hazards would be helpful to boat operators.



If most waterway users return season after season, installing just a few signs in high traffic areas and distributing pamphlets which explain the restriction(s) may also work well.

Placing Buoys

If your plan to let boaters know about a restriction involves placing of a buoy, you'll need to make sure to install it following the *Private Buoy Regulations (PBR)* requirements. For example, the buoy:

- Must be built and maintained in a manner and with materials that ensure that it will remain in position. [*PBR*, s. 4 (1)(e)]
- Must have an anchor built, installed and maintained in a way and with materials that will keep it in position. [*PBR*, s. 4(1)(f)]
- Must not interfere with or is likely to interfere with the safe navigation of any vessel; and
- Must not mislead or is not likely to mislead the boaters. [*PBR*, s.3]

Placing buoys on waterways with a nautical chart

If you are placing a buoy on a waterway that has a nautical chart, please contact the Canadian Hydrographical Society (CHS) and let them know the location and type of buoy being placed. This way, CHS can add the buoy to the existing nautical chart and also let boaters know it's location through the "Notice to Mariner" System.

You can find these requirements in the *Private Buoy Regulations* at:
<http://laws-lois.justice.gc.ca/PDF/SOR-99-335.pdf>

STEP 5 – MAINTAINING SIGNS AND BUOYS

As the local authority, you are responsible for all costs associated with sign and buoy:

- Installation
- Maintenance
- Replacement

It is important to check the signs often to make sure they have not been vandalized, hidden by plant growth or changed in any way. You should also check buoys regularly to make sure they have not drifted out of place and are still in good condition.

REMEMBER

Under Section 10 of the *Vessel Operation Restriction Regulations*, it is illegal to:

- **Remove an authorized sign unless the Minister has cancelled the authorization;**
- **Alter, conceal, damage or destroy an authorized sign; or**
- **Use an authorized sign or sign post as a mooring.**

The *Criminal Code*, Section 439(2) states:

"Everyone who willfully alters, removes or conceals a signal, buoy or other seamark that is used for purposes of navigation is guilty of an indictable offence **and liable for imprisonment** for a term not exceeding ten years."

You can be fined if you fail to follow *Vessel Operation Restriction Regulations* and *Private Buoy Regulations* under the *Contraventions Act and Regulations*. In areas where the *Contraventions Act* is not in place, offences will go through the Summary Conviction process. For more details, go to: <http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-313/page-4.html#docCont>

LIABILITY

If an accident involving a private sign or buoy happens, you, as the owner may be held liable for any damage resulting from negligent operation and/or maintenance of signs and buoys. We strongly recommend you:

- Make sure your private aids meet current Canadian regulations.
- Operate and maintain them in the proper manner.
- Purchase liability insurance.

CONTACT INFORMATION

Transport Canada Marine Safety and Security - Regional Offices

ATLANTIC

(Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland and Labrador)

10 Barter's Hill, 9th floor

P.O. Box 1300

St. John's, Newfoundland A1C 6H8

Tel: 1-709-772-6915

QUEBEC

1550, d'Estimauville Ave.

Quebec City, Quebec G1J 0C8

Tel: 1-418-648-5331

ONTARIO

100 Front Street South

Sarnia, Ontario N7T 2M4

Tel: 1-877-281-8824

PRAIRIE AND NORTHERN

(Alberta, Saskatchewan, Manitoba, Yukon, Northwest Territories and Nunavut)

344 Edmonton Street

P.O. Box 8550

Winnipeg, Manitoba R3C 0P6

Tel: 1-888-463-0521

PACIFIC

(British Columbia)

700-800 Burrard Street

Vancouver, BC V6Z 2J8

Tel: 1-604-666-2681

USEFUL LINKS AND REFERENCES

Regulations

VESSEL OPERATION RESTRICTION REGULATIONS

<http://laws-lois.justice.gc.ca/eng/regulations/SOR-2008-120/>

LOCAL AUTHORITIES' GUIDE – VESSEL OPERATION RESTRICTION REGULATIONS

http://www.tc.gc.ca/media/documents/marinesafety/LOCAL_AUTHORITIES_GUIDE_-_ENGLISH_-_ACCESSIBLE_PDF.pdf

VESSEL OPERATION RESTRICTION REGULATIONS CHECKLIST

http://www.tc.gc.ca/media/documents/marinesafety/VORR_APPLICATION_CHECKLIST_2014_-_ENGLISH_-_ACCESSIBLE_PDF.pdf

PRIVATE BUOY REGULATIONS

<http://laws-lois.justice.gc.ca/eng/regulations/SOR-99-335/>

Websites and publication resources

CANADIAN AIDS TO NAVIGATION (TP 968)

http://www.ccg-gcc.gc.ca/Aids_To_Navigation_System_2011

CONTRAVENTIONS REGULATIONS

<http://laws-lois.justice.gc.ca/eng/regulations/SOR-96-313/page-4.html#docCont>

OWNER'S GUIDE TO PRIVATE BUOYS (TP 14799E)

<https://www.tc.gc.ca/Publications/en/TP14799/PDF/HR/TP14799E.pdf>

TRANSPORT CANADA MARINE SAFETY AND SECURITY WEBSITE

www.tc.gc.ca/marinesafety

TRANSPORT CANADA OFFICE OF BOATING SAFETY WEBSITE

www.tc.gc.ca/boatingsafety

TRANSPORT CANADA NAVIGATION PROTECTION PROGRAM WEBSITE

<https://www.tc.gc.ca/eng/programs-621.html>

CANADA GAZETTE

www.gazette.gc.ca