AGENDA

Town of Lunenburg Council Meeting

Tuesday, October 13, 2020 at 2:00 p.m. - 4:00 p.m.

Lunenburg Town Council Chamber and Zoom/YouTube

Live Broadcast

1. Call to Order - *Mayor Rachel Bailey.*

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People – *Mayor Rachel Bailey.*

3. Agenda - *motion to approve.* **(Note: priority agenda items are bolded below).**

4. September 22 and 29 and October 8, 2020 Council meeting minutes - *motion to approve*.

5. Public Hearings, Presentations and Questions

6. Correspondence, Petitions and Proclamations consideration

    a. Lunenburg Academy Foundation letter of appreciation to the outgoing Town Council for their leadership and financial support;

    b. Region 6 Solid Waste Management Boardroom Brief October 2020;

    c. Letter of appreciation from Hewitt Hardiman for being selected the Town's 2020 Volunteer Award; and

    d. NSCAD Lunenburg Residence program notice.

7. Business arising from the Minutes/Unfinished Business

    a. Corporate Services

        i. Policy #84 Councillors' Recognition of Years of Service – *staff report*;

        ii. Bluenose Coastal Action Foundation Board membership and Bylaw update letter – *discussion*;

        iii. **Proposed repeal of Bylaw #6 Committees and Boards Bylaw (replaced by Policy #98 Committees of Council approved September 22) – *first reading and public advertisement for second/final reading a minimum of fourteen days after advertisement/Deputy Mayor*;** and

iv. Comprehensive Community Plan Steering Team and Municipal Planning Strategy, Land Use Bylaw and Subdivision Bylaw drafting.

b. Public Works Department

i. Nova Scotia Environment information about process to expand Town's watershed boundary to include the full natural watershed and watershed land management plan – *discussion*;

ii. LGBTQ+ crosswalk painting costs – *review*;

iii. Solar initiatives – *Town Engineer update*;

iv. Water meters – *Town Engineer update*; and

v. Tannery Road sidewalk project – *Town Engineer update*.

8. Committee Meeting Minutes, Recommendations, Reports and Notices of Motion

a. Audit Committee September 17, 2020;

b. Protective Services Committee September 17, 2020 meeting minutes - *1 x recommendation/Councillor Croft*;

c. Heritage Advisory Committee September 21, 2020 meeting minutes – *1 x recommendation/Councillor Mosher*; and

d. Joint Occupational Health and Safety Committee meeting minutes October 1, 2020.

9. New Business

a. Corporate Services

i. South Shore Public Libraries request for donated ($60 + HST) use of the Lunenburg Heritage Bandstand for Lunenburg Lit Fest outdoor school event - *motion*;

ii. South Shore Public Libraries Board vacancy created by the resignation of Sarah Lochhead – *appointment*;

iii. Debenture resolution for long term borrowing – *staff report*;

iv. 2020/21 Capital and Operating Variance Report for August – *staff report*; and

v. Halloween Saturday, October 31, 2020 preparations – *discussion*.

b. Protective Services

i. LDFD receipt of funding to purchase Fire Hall heat pumps and

Capital budget 2020/21 approval request – *staff report*.

c. Public Works

i. Unbudgeted Capital budget ratification of a replacement air compressor following safety inspection – *staff report*.

10. Consideration of Council in camera October 8, 2020 meetings notices of motion and recommendations

(Nil.)

11. Adjournment – *motion to approve*.

Agenda items awaiting staff reports, etc. for further consideration

Agenda Item	Department	Council Meeting Assigned	Status
Blockhouse Hill development additional staff report	Corporate Services	August 25, 2020	Additional planning and development options report being prepared
Anti-Racism Special Committee membership and draft terms of reference	Corporate Services	August 25, 2020	Additional report regarding draft terms of reference and membership nomination update being prepared
NS Fisheries regarding marine debris clean-up program	Public Works and Corporate Services	September 8, 2020	Staff will inquire of the Department of Fisheries what assistance municipalities are suggested to provide
Cultural Action Plan	Corporate Services	September 8, 2020	Staff report will be prepared about what the expectations of Town are and suggested resources
Revised Solid Waste Bylaw approval and proposed repeal of Council Procedure Bylaw	Council	September 22, 2020	Second and final Bylaw reading at October 27, 2020 Council meeting
Planning Advisory Committee 1 x citizen vacancy appointment	Council	September 22, 2020	Advertisement placed in newspaper for citizen applications

TOWN OF LUNENBURG COUNCIL MEETING MINUTES

TUESDAY, SEPTEMBER 22, 2020 AT 2:00 P.M.

VIA AUDIO/VIDEO CONFERENCE DURING COVID-19 PANDEMIC

PRESENT: Mayor Rachel Bailey
Deputy Mayor John McGee
Councillor Danny Croft
Councillor Ronnie Bachman
Councillor Peter Mosher
Councillor Matt Risser

ALSO PRESENT: Kelly Cunningham, Recreation Director
Lisa Dagley, CPA, CGA, Finance Director
Arthur MacDonald, Heritage Manager
Heather McCallum, Assistant Municipal Clerk
Bea Renton, Chief Administrative Officer
Dawn Sutherland, Planning/Development Manager

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1. Call to Order and Moment of Silence in Honour of Former Mayor Laurence Mawhinney

The Mayor called the meeting to order at 2:00 p.m. and welcomed everyone.

Her Worship offered the following comments in memory of Former Mayor Mawhinney who passed away on September 15.

Rev. Dr. D. Laurence Mawhinney was our Mayor from 1979-2012 for a total of 33 years.

He was the face and voice of Lunenburg through many challenges, like the decline of the fishery and the exodus of Clearwater, and many triumphs, like the UNESCO World Heritage Designation of Old Town Lunenburg, which celebrates its 25th Anniversary this year.

Through it all he served with intelligence and integrity, determination and dignity, passion and style.

He represented Lunenburg while also serving Municipalities throughout the Province as President of the Union of Nova Scotia Municipalities and then Municipalities throughout the Country as President of the Federation of Canadian Municipalities. He instilled pride in us and made us all proud.

And, being an elected official was only part of what he did and who he was. As a Presbyterian Minister he also served the congregation here in Lunenburg and in other parishes in the County.

And above all he was a husband, father, and grandfather.
I'd like to publicly thank his family, wife Marion, sons, David and Michael and daughters Alison and Suzanne for sharing him so generously with all of us for so many years. Our deepest condolences go out to you.

Laurence's legacy of service will speak for itself and he will be long and fondly remembered.

A moment of silence was observed in his honour.

A book of condolences will be publically available for signing the next two days which will be presented to the Mawhinney family.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Mayor spoke of Lunenburg's location on the unceded territory of the Mi'kmaq People.

3. Agenda

Motion: moved by Councillor Mosher, seconded by Councillor Risser to approve the agenda with the addition of Provincial easing of Arena restrictions. Motion carried.

4. September 8 and 15, 2020 Council meeting minutes

Motion: moved by Councillor Mosher, seconded by Councillor Croft to approve the September 8 and 15, 2020 Council meeting minutes. Motion carried.

5. Public Hearings, Presentations and Questions

6. Correspondence, Petitions and Proclamations consideration

7. Business arising from the Minutes/Unfinished Business

    a. Corporate Services

        i. Municipal and CSAP elections 2020 – draft resolution regarding "Notice of Poll" additional advertisement methods

Council considered the Returning Officer's recommendation for additional advertisement of the upcoming electronic and phone voting procedure for the Council election (Schedule "A").

Motion: moved by Councillor Bachman, seconded by Councillor Risser that:

WHEREAS:

1. Section 50 of the Municipal Elections Act requires that after Nomination Day, the Returning Officer shall cause a notice to be published in a

   newspaper circulating in the Municipality containing information (including names of candidates) as provided in section 50(1).

2. Section 50(2) states that in addition to the notice referred to subsection (I), the Returning Officer shall give notice:
   a. by flyers distributed to a household;
   b. by mailing cards to voters; or
   c. in any manner approved by Council.

3. The Returning Officer recommends to Council that the said Notice of Poll be included in the Town Electric Utility bills circulated at the end of September 2020.

BE IT THEREFORE RESOLVED THAT:

A. Pursuant to section 50(2) of the Municipal Elections Act, the Council hereby approves and directs that the Notice referred to in Section 50(1) of the Municipal Elections Act (Notice of Poll) be circulated with the Electric Utility bills at the end of September 2020.

Motion carried.

ii. Proposed adoption of revised Bylaw #38 Solid Waste Management Bylaw – motion to give first reading/Councillor Mosher

Motion: moved by Councillor Mosher, seconded by Councillor Risser to give first reading and advertise the proposed revised Solid Waste Management Bylaw #38 (Schedule “B”) for adoption at the next available Council meeting. Motion carried.

iii. Proposed adoption of Committees of Council Policy – motion to adopt/Deputy Mayor

Council discussed the draft Policy which will replace the Committees Bylaw.

Motion: moved by Deputy Mayor McGee, seconded by Councillor Croft that the Committees of Council Policy (Schedule “C”) be adopted. Motion carried. Councillor Risser voted in the negative.

iv. Proposed repeal of Bylaw #5 Council Procedure Bylaw – motion to give first reading/Deputy Mayor

Motion: moved by Deputy Mayor McGee, seconded by Councillor Croft to give first reading and advertise the proposed repeal of Bylaw #5 Council Procedure Bylaw (Schedule "D"). Motion carried.

v. Proposed amendments to Policy #18 Town Sponsored Events – motion to approve/Deputy Mayor

Motion: moved by Deputy Mayor McGee, seconded by Councillor Risser to approve the proposed amendments to Policy #18 Town Sponsored Events Policy (Schedule "E"). Motion carried.

vi. Policy #84 Councillors' Recognition of Years of Service

The Mayor asked the Deputy Mayor to assume the Chair for this item. The Deputy Mayor chaired the Council discussion relating to the current Council members who will not be re-offering or potentially re-serving after the October Council election.

Motion: moved by Councillor Risser, seconded by Councillor Mosher to provide the retiring Council members with a Town photo and a Town restaurant gift certificate, with the Mayor also receiving some Lunenburg Academy coat hooks, based on a similar method of calculating the gift value similar to retiring staff (Schedule "F").

Councillor Croft said that he would not be participating further in this discussion as he is one of the Council members not re-offering.

Motion defeated. Deputy Mayor McGee, Councillors Mosher and Bachman voted in the negative.

Staff were directed by Council to prepare a recommendation for Council consideration at the next Council meeting.

vii. NSFM Long Service Award applications

This notice was received for information only with no action required.

viii. Bluenose Coastal Action Foundation Board membership and Bylaw update letter

With the Foundation's recent Bylaw changes, the Town no longer has a required Council appointment to the Board as explained in their letter (Schedule "G"). Council discussed whether to offer an appointment for the Board's possible consideration as was suggested that they do in the letter. No decision was made.

ix. Planning Advisory Committee citizen appointment vacancy created by the resignation of Council candidate Susan Sanford

The Returning Officer advised staff yesterday that Ms. Sanford did not need to resign from the Committee because of the NS Municipal Elections Act candidacy qualifications because he reconsidered an amendment made to the Act allowing this. He further told staff that he earlier notified Ms. Sanford of this, but she wanted to proceed with letter of resignation from the Committee.

Motion: moved by Councillor Risser, seconded by Councillor Croft that staff advertize for the PAC vacancy to be appointed by the next Council (Schedule "H"). Motion carried.

8. Committee Meeting Minutes, Recommendations, Reports and Notices of Motion

a. Comprehensive Community Plan Steering Team June 10, July 8 and August 12 and September 16, 2020 meeting minutes – 1 x recommendation from September 16/Councillor Risser

Council and staff thanked the Town consultants and Team members for the work on the preparation of the Comprehensive Community Plan (Schedule "I"). It was noted that once accepted by Council it will form the basis of the Town's new Municipal Planning Strategy, Land Use Bylaw and Subdivision Bylaw the consultants will prepare for Council adoption through the planning process.

Motion: moved by Councillor Risser, seconded by Councillor Mosher to accept the draft Comprehensive Community Plan dated September 18, 2020 (Schedule "I") and direct the consultants to prepare the draft Municipal Planning Strategy, Land Use Bylaw and Subdivision Bylaw. And that approval of this document (Schedule "I") and the subsequent planning documents be deferred for consideration by the next Council.

The consultant's representatives, Steffen Käubler and Erica Brook, Upland Planning and Design Studio, next provided an overview of the document and the public engagement process that was undertaken and proposed 35 priority action items implementation plan over the next 40 years and five year reviews. The next task is to prepare the Town's new Municipal Planning Strategy, Land Use Bylaw and Subdivision Bylaw for Council and public consideration.

Council discussed whether it was appropriate to approve the document at this time or accept it for later consideration and possible approval when the revised planning documents are being dealt with? Council agreed to revise the Team's recommendation to an acceptance of the report as a preliminary step in the overall review and approval process of the various documents included in this project as noted above.

The motion was put and passed.

3:13 p.m. – 3:33 p.m. – Council recess and meeting resumption.

c. Lunenburg War Memorial Community Centre/Recreation Committee August 12, 2020 meeting minutes – 1 x recommendation

Mayor Bailey asked the Deputy Mayor to assume the Chair because of the potential perception of an interest in the matter as a former soccer team member. The Deputy Mayor assumed the Chair.

Motion: moved by Councillor Bachman, seconded by Councillor Croft that Council approve the proposed nomination of the Lunenburg Lasers soccer team 1979-86 to the Nova Scotia Sports Hall of Fame (Schedule "J"). Motion carried.

The Mayor resumed chairing the meeting.

Council discussed the options presented by the change in Provincial Health protocols relating to sports and performing arts activities which now allow up to 50 people, as opposed to ten before, to participate at any time. This would allow hockey and other Arena ice activities to resume. Hockey NS will be providing health protocol "Rebound Plan" later this week to help guide this. Staff recommended a follow-up Recreation and Finance staff report and special Council meeting to consider it and determine an Arena re-open date. The Recreation Director has contacted long term Arena renters who are all interested in resuming rentals in some form.

Motion: moved by Councillor Risser, seconded by Councillor Croft that we have a special Council meeting to receive an updated Recreation and Finance staff report regarding the proposed re-opening of the Arena reflecting on the anticipated Hockey NS "Rebound Plan", potential COVID-19 cleaning surcharge, consultation with Arena customers, consideration of how many observers may enter the Arena when hockey and other events are taking place, etc. Motion carried.

Council will meet on September 29 after 3:00 p.m. if the staff report is ready.

7. Business arising from the Minutes/Unfinished Business

b. Public Works Department

i. Nova Scotia Environment information about process to expand Town's watershed boundary to include the full natural watershed

Deferred.

8. Committee Meeting Minutes, Recommendations, Reports and Notices of Motion

d. Joint Occupational Health and Safety Committee July 9, 2020 meeting minutes

The minutes were received for information.

9. New Business

    a. Corporate Services

        a. Request of Lunenburg Board of Trade for donated use of the Community Centre Auditorium for Municipal Election Candidates' Forum on October 8 ($216. approx.) and promotion of same

Motion: moved by Deputy Mayor McGee, seconded by Councillor Risser to provide a grant to the LBOT to offset the cost of hosting a Municipal Elections Candidates' Forum on October 8 (Schedule "K").

The Finance Director advised in response to a Council question that this would be an in kind grant by the Town offering the facility for no charge and therefore would not take from remaining grant monies.

The motion was put and passed.

        b. Doctor Internship program grant request of Lunenburg Now

Deferred.

10. Consideration of Council in camera meeting September 15, 2020 notices of motion and recommendations

    a. Lunenburg Academy Foundation first floor Classroom 106 Lease approval draft resolution

Motion: moved by Councillor Bachman, seconded by Councillor Risser that:

WHEREAS:

1. The Town of Lunenburg is the owner of the Lunenburg Academy Building at 97 Kaulbach Street.
2. Lunenburg Academy Foundation is a Society registered under the Societies Act of Nova Scotia and a registered charity, whose main goal is the care, preservation, and restoration of the Lunenburg Academy.
3. The Lunenburg Academy Foundation seeks a ten year lease of room 106 in the Academy Building for the purposes of the Heritage Interpretive Classroom.
4. Pursuant to section 50 (5) (c) of the Municipal Government Act, a municipality may lease property owned by the municipality at market value.
5. Pursuant to section 51 of the Municipal Government Act, a municipality may lease property at less than market value to a non-profit organization that the Council considers to be carrying on an activity that is beneficial to the municipality, provided

that such Resolution must be passed by at least a 2/3 majority of the Council present and voting.

BE IT THEREFORE RESOLVED THAT:

A. Council considers Lunenburg Academy Foundation to be a non-profit organization which is carrying on an activity that is beneficial to the Town; and

B. The Town agrees to enter into the lease, a copy of which is attached hereto as Schedule LAF (with such minor modifications as the Mayor and Manager/Clerk deem appropriate), and the Mayor and Manager/Clerk are authorized to execute the document on behalf on the Town and to affix the municipal seal thereto (Schedule "L").

Motion carried.

9. New Business

a. Corporate Services

b. Doctor Internship program grant request of Lunenburg Now

Motion: moved by Deputy Mayor McGee, seconded by Councillor Risser to contribute $200 to Lunenburg NOW's Doctor Intern event as an economic development expense item (Schedule "M"). Motion carried.

10. Adjournment

Motion: moved by Councillor Risser, seconded by Councillor Croft to adjourn the meeting. Motion carried. Mayor Bailey voted in the negative.

The meeting adjourned at 4:04 p.m.

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Bea Renton, CAO

TOWN OF LUNENBURG COUNCIL MEETING MINUTES

TUESDAY, SEPTEMBER 29, 2020 AT 3:00 P.M.

VIA AUDIO/VIDEO CONFERENCE DURING COVID-19 PANDEMIC

PRESENT: Mayor Rachel Bailey
Deputy Mayor John McGee
Councillor Ronnie Bachman
Councillor Peter Mosher
Councillor Matt Risser

ALSO PRESENT: Kelly Cunningham, Recreation Director
Lisa Dagley, CPA, CGA, Finance Director
Heather McCallum, Assistant Municipal Clerk
Bea Renton, Chief Administrative Officer

ABSENT: Councillor Danny Croft

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1. Call to Order

The Mayor called the meeting to order at 3:00 p.m. and welcomed everyone.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Mayor spoke of the Town of Lunenburg's location on the unceded territory of the Mi'kmaq People. She reminded Council that October 1 is recognized in Nova Scotia as Treaty Day which begins the observance of Mi'kmaq History Month in October.

3. Agenda

Motion: moved by Councillor Risser, seconded by Councillor Mosher to approve the agenda. Motion carried.

4. Arena re-opening date determination and COVID-19 pandemic health requirements

The Recreation Director and Finance Director provided an overview of their staff report (Schedule "A") regarding the proposed Arena re-opening on October 26 in view of the October 1 Provincial health directives allowing fifty persons to be present for certain sporting activities such as hockey. Previously, the Provincial Medical Health Order stipulated that only ten persons could be engaged in contact sports including hockey which made it impossible for full teams to play against one another.

Council discussed the Federal and Provincial governments' recent funding announcement to assist municipalities during the pandemic, the details of which are not yet known. When known, this information will be shared with Council.

Motion: moved by Councillor Mosher, seconded by Councillor Bachman that the Lunenburg War Memorial Arena open for the ice season on October 26, 2020 with an extended season until April 23, 2021.

Council discussed how the budget increase to offset reduced Arena revenue during this period should be funded? As noted in the draft motion contained in the staff report (Schedule "A") "…an Operating Surplus Reserve transfer of $49,000 is (proposed if October 26 re-opening) approved to assist in the funding of the arena operations for fiscal 2020-21." Council inquired if there are 2020/21 Town budget savings because of the pandemic? The Finance Director advised that budget expenditure and revenue reductions were earlier made when the 2020/21 Town budget was approved in response to the anticipated downward financial impact of the pandemic. If there are further cost savings, then the proposed $49,000 Reserve transfer may not be needed to the full extent, but this is difficult to forecast given the financial variables presented by future rental revenues during the pandemic, the Town is already seven months into the fiscal year and Capital and Operating expenditures have been made based on the approved budgets. It was commented staff should be challenged to find other savings to reduce the potential use of Reserve funds.

Council asked the Recreation Director if a fogger would be used to sanitize the Arena which she advised will the practice because of the vast surface area of the various facilities.

Motion carried. The Mayor voted in the negative in the absence of subsidization funding determination.

Council discussed whether to ask the Municipality of the District of Lunenburg for financial assistance with the Arena re-opening cost? It was remarked that a staff report to find cost reductions or additional revenues could be prepared. The Finance Director spoke of the Town's high Financial Condition Indicator for budgeting accuracy and municipalities are not permitted by Provincial legislation to budget for a deficit. Staff have assessed the Town's financial ability to fund the projected $49,000 additional deficit as outlined in the staff report (Schedule "A"). Council members spoke of the importance of building the Town Reserves which is a shared goal and progress has been made.

5. Adjournment

Motion: moved by Deputy Mayor McGee, seconded by Councillor Risser to adjourn the meeting. Motion carried.

The meeting adjourned at 3:36 p.m.

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Bea Renton, CAO

TOWN OF LUNENBURG COUNCIL MEETING MINUTES

THURSDAY, OCTOBER 8, 2020 AT 12:00 P.M.

VIA ZOOM/YOUTUBE LIVE BROADCAST

PRESENT: Mayor Rachel Bailey
Deputy Mayor John McGee
Councillor Peter Mosher
Councillor Matt Risser

ALSO PRESENT: Ian Tillard, P.Eng. Town Engineer consultant
Pat Burke, Q.C., Town Solicitor
Lisa Dagley, CPA, CGA, Finance Director
Heather McCallum, Assistant Municipal Clerk
Bea Renton, Chief Administrative Officer

REGRETS: Councillor Ronnie Bachman
Councillor Danny Croft

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1. Call to Order

The Mayor called the meeting to order at 12:03 p.m.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Mayor recognized Lunenburg's location on the unceded territory of the Mi'kmaq People.

3. Agenda

Motion: moved by Councillor Risser, seconded by Deputy Mayor McGee to approve the agenda as circulated. Motion carried.

4. Meet in camera

Motion: moved by Councillor Mosher, seconded by Deputy Mayor McGee to meet in camera to consider the acquisition of land pursuant to section 22, Municipal Government Act. Motion carried.

5. Resumption of Council meeting in public session

1:21 p.m. - Council resumed their public portion of the meeting.

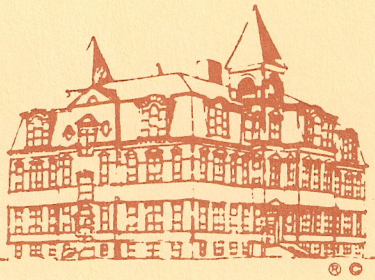
There were no Council in camera meeting recommendations to consider.

6. Adjournment

Motion: moved by Councillor Risser, seconded by Councillor Mosher to adjourn the meeting. Motion carried.

The meeting was adjourned 1:22 p.m.

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Bea Renton, CAO



The Lunenburg Academy Foundation Inc. 1981

September 18, 2020

Town Council
Town of Lunenburg
P.O. Box 129
Lunenburg, Nova Scotia, B0J 2C0

Dear Mayor Bailey and Town Councillors:

The Academy Foundation would like to take this opportunity to sincerely thank the outgoing Council for their leadership and financial support over the past six years. The Lunenburg Academy repurposing project began when the school closed in 2012, necessitating the development of a collective vision for our historic education and cultural landmark.

Starting with a wide ranging Task Force and then the creation of the Future Use Business Plan, capital projects such as the tenant readiness renovations to the interior, the relocation of the Library, and the exterior restorations now close to completion, we have succeeded in our quest to ensure a meaningful community role for our Academy. Most importantly we have grown our tenant occupancy to almost 100% which is a critical component of the self-sustaining objective in the business plan.

We would also like to acknowledge the other players who provided support and expertise - Provincial and Federal funding partners, Town Staff as well as the architects, designers and various construction companies whose efforts have contributed to our collective success.

The Foundation is hard at work to deliver on the promise to create a Heritage Interpretive Classroom to tell the story of the Academy and its role in the Town and the education system of Nova Scotia and the country.

We look forward to working with the newly elected council to continue our efforts and ensure the "castle on the hill" stands proudly as a fitting testament to our Town's past, present and future.

Sincerely,

Melanie Comstock
President, Lunenburg Academy Foundation

Boardroom Brief

October 2020

PO Box 639, Mahone Bay, NS B0J 2E0
Valda.Walsh@Region6SWM.ca



Election time

October 17 is Municipal election time in Nova Scotia. Many members of the current Region 6 Inter-Municipal Committee will not be returning. Our chairman, Michael Ernst is one of them.

During Michael's 3 years of leading this board, he has changed our format to be one that is more engaging and interactive as well as developing an agenda that introduces a new element of a presentation at each meeting. It was under his direction that we held our first workshop where a think-tank produced some focus as we pilot forward.

One of the longest standing members is Karl Nauss who has represented the interest of the residents for Mahone Bay since our inception. Aside from a brief break (2000-2004), Karl has been part of the fabric of our region. He too is not reoffering – thank you for your civil service, sir.

Best of luck to all of you as the day approaches!

Orientation

How much do you know about the municipal role in solid waste management? As a municipality in this area, did you know that collection, processing, educating and enforcement of waste from your residents (and some businesses) runs about 15% of your municipal budget? Region 6 has put together a look into solid waste for orienting new councillors and seasoned councillors alike. A handout is being sent to each unit in Region 6, for education purposes, along with an invite to tour your waste sites and invite our helpful staff to a council meeting to answer your questions.

As your experts in solid waste, please reach out to us to help you understand solid waste in your neighborhood, within the region, and across Nova Scotia. You will be amazed at how much there is to learn!

CHAIR
Michael Ernst

VICE-CHAIR
Vacant

REGIONAL COORDINATOR
Valda Walsh

REGIONAL FINANCE
Diana Gibson

REGIONAL EDUCATOR
Angela Taylor

Region of West Hants: Scott McLean

Chester: Floyd Shatford

Mahone Bay: Karl Nauss

Lunenburg: Rachel Bailey

Bridgewater: Bill McInnis

Lunenburg (MD): Michael Ernst

Region of Queens: Brian Fralic

Lockeport: George Harding

Shelburne: Rick Davis

Shelburne (MD): Terry McIntyre

Barrington: Murray Atkinson

Clark's Harbour: Louann Link

It's baaaack! Need help with public bins?



You asked for it and Region 6 said YES! If you need help with public bins maintenance or signs or placement . . .or you need new bins, or you would like us to assess where your bins are and if it is working for you. . .there is a program for that.

Angela has had the opportunity to look at - and into - your public waste sorting stations. Contact her directly to find out what may be your next steps to encourage public sorting in your area. Angela.Taylor@Region6SWM.ca

Waste Reduction Week October 19-25

As Waste Reduction Week approaches, Region 6 will be encouraging your businesses and residents to pitch in and we hope you will join us!

There are many things you can do as a municipality; proclamation, light a civic building in **green** or **blue**, conduct waste audits in your municipal buildings. Whatever you want to do, we are here to help. To make it easy, we have media releases and proclamation template ready or you can do your own using the resources of Waste Reduction Week Canada https://wrwcanada.com/en/resources/resource-kits/municipalities

We will also be running ads, webinars and contests around the theme of "Getting Back to the Bag" among other related topics. Our hope is to encourage followers to get back to using their reusables and avoid single-use disposable wherever possible.

Region 6 Benchmark

In March, Region 6 hosted a workshop that provided some valuable focus for our team. Over the next year, we are conducting all our work with the focus on three key areas:

- Develop Region 6 information and best practices package
- Increase public education and promote consumer responsibility; and
- Seek and make recommendation for cost sharing opportunities in service delivery

We have developed several tools and continue to work on others. It has been proven that working together is the best way to be more efficient and effective in solid waste operations. Ask us how we can help you.

If you have something waste-wise that you want to share please send it along to **Valda.Walsh@Region6SWM.ca** and we would be happy to add it to our Boardroom Brief.

September 28, 2020

To Mayor Bailey and Council Members:

I wish to express my sincere gratitude for being chosen to receive the 2020 volunteer award for the Town of Lunenburg. It is a great honour to be recognized by my hometown, and for doing something that I truly enjoy. Again, I am very grateful for your thoughtfulness.

Sincerely,

Hewitt Hardiman

Hewitt Hardiman

NSCAD announces Lunenburg Community Studio residence participants

K'jipuktuk/Halifax (September 24, 2020) – NSCAD University continues its artist-in-residence program with the Town of Lunenburg, with three NSCAD alumni beginning their residency this month.

Recent NSCAD graduates Jessie McLaughlin, Sienna Maeba and Undine Foulds are the newest artists-in-residence in the South Shore community.

"Taking part in a residency program is a great way to launch an artistic career," said Martine Durier-Copp, PhD, Dean, NSCAD University. "A residency program is an exciting option for artists who have an interest in community engagement, developing teaching skills, and sharing their work with a diverse group of art enthusiasts. Residents become active participants in their host communities, engaging town residents in the visual arts through exhibitions, receptions and guest lectures."

From Bedford, Jessie McLaughlin (BFA 2020) is a textile and fashion artist who explores how materials, text, colour and the textile processes of weaving, quilting and applique create knitted and woven clothing. From Toronto, Sienna Maeba (BFA 2020) has an interdisciplinary practice that also incorporates fashion and textiles, with a focus on colour palettes. From the Pacific Northwest, Undine Foulds (BFA 2020) an interdisciplinary artist working in ceramics with a focus on slip casting.

"We're thrilled to welcome Jessie, Sienna and Undine to Lunenburg ," said Lunenburg Mayor Rachel Bailey. "The artist in residence program contributes greatly to the cultural vitality of this community and also to the development and creativity of local artists."

NSCAD's first partnership was forged with the Town of Lunenburg in 2006. Since its establishment, many of the NSCAD alumni who moved to Lunenburg through the program continue to live and work in the area. Each year, up to three NSCAD alumni share the large, light-filled studio in the triple bays of Lunenburg's former fire hall.

In addition to Lunenburg, NSCAD also has residence programs in three more Nova Scotia locations: Dartmouth, New Glasgow, and Sydney.

Merryn Tresidder (MFA 2020) will serve as artist-in-residence in New Glasgow this fall, with Nick Nylen (BFA 2020) and Natasha Verbeke (BFA 2020) filling the roles at the MacPhee Centre for Creative Learning in Dartmouth. The program in Sydney continues with the Cape Breton Centre for Craft. Learn more about NSCAD community studio residences here.

-30-

Media contact:

Darcy MacRae
Communications Coordinator
NSCAD University
dmacrae@nscad.ca
902-579-4393

Document No:
Meeting: October 13, 2020
Circulate: Council, BR, LD
File:

M E M O R A N D U M

TO: **TOWN COUNCIL**

FROM: **HEATHER MCCALLUM, ASSISTANT MUNICIPAL CLERK**

DATE: **OCTOBER 9, 2020**

RE: **COUNCIL RECOGNITION OF SERVICE GIFTS**

---

1. FACTS

At the Council Meeting of September 22, 2020, a discussion was held regarding Councillors' recognition of years of service, as some members of Council (Mayor Bailey and Councillor Croft) are not re-offering in the upcoming municipal election. The following direction was given to staff by consensus:

> *Staff were directed by Council to prepare a recommendation for Council consideration at the next Council meeting.*

Currently, the following policies are in place:

- **Town Council**

  The Councillors' Recognition of Years of Service Policy #84 (2017) indicates that any non-returning Councillor who has served a full term in office shall be presented with a gift which shall be a Town of Lunenburg flag or gift of equivalent value. Any non-returning Councillor who has served more than two terms in office may receive addition recognition at the discretion of Council (Attachment "A").

- **Town Staff**

  The Recognition of Service Awards Policy (part of Personnel Policy 2020) indicates that upon voluntary resignation or retirement, each Town employee shall receive a Recognition of Service Award. The value of the gift is calculated at $25 per year of service with a $75 minimum. This increases in the case of a retirement at age 50 or older, with a minimum of five years continuous service, to $30 per year of service with a $250 minimum (Attachment "B"). Traditionally staff choose their own gifts at the value level they have earned.

Mayor Rachel Bailey has served three terms (12 years) on Council, two of them (8 years) as Mayor. Councillor Danny Croft has served six terms (24 years).

2. ISSUES AND OPTIONS ANALYSIS

- **Equivalent Values**

The custom-order Lunenburg flag retails for $95.

The value of the used Councillor iPads in the second-hand market (iPad 3, 16GB) is approximately $100.

Mayor Bailey has requested a set of used coat hooks that were once installed at Lunenburg Academy. While holding much sentimental value, the cash value is negligible.

- **Council Service Award Calculation**

Option 1

If the Service Award gifts are calculated per Policy #84, one term could be considered equivalent to a $95 gift. Therefore Mayor Bailey's three-term service = $285, and Councillor Croft's six term service = $570.

Option 2

If the Service Award gifts are calculated per the Personnel Policy, voluntary resignation or retirement is equivalent to $25/year. Therefore Mayor Bailey's 12-year service = $300, and Councillor's Croft's 24-year service = $600.

Note: The Personnel Policy also allows for a level of $30/year for employees of at least five years who are retiring at age 50+, but the five-year span does not align well with a four-year Council term and is not recommended.

- **Gift Recommendations**

Mayor Bailey
- Consult her on her preference for a gift valued at approx. $185-$200
- Lunenburg Academy coat hooks, per her request
- Keep her Council iPad and iPhone

Councillor Croft
- Consult him on his preference for a gift valued at approx. $470-$500
- Keep his Council iPad

3. FINANCIAL IMPACT

The financial impact of Councillors' Recognition of Service Awards is $655-700 plus the two iPads to pay tribute to Mayor Bailey and Councillor Croft.

Depending on the outcome of the Municipal Election on October 17, 2020, there may be other Councillor(s) deserving of acknowledgement.

4. STRATEGIC PLAN RELEVANCE

Strategic Direction 5: Operate the Town efficiently and effectively by:

e) Maintaining a positive work environment for Council and staff.

5. RECOMMENDATION AND DRAFT MOTION

Option 1

Draft Motion: That the Councillors' Recognition of Years of Service gift be calculated at a value of $95 per term served; and that per "Gift Recommendations" in this report both Mayor Bailey and Councillor Croft keep their iPads, Mayor Bailey keeps her iPhone and receives coat hooks from Lunenburg Academy.

Option 2

Draft Motion: That the Councillors' Recognition of Years of Service gift be calculated at a value of $25 per year served; and that per "Gift Recommendations" in this report both Mayor Bailey and Councillor Croft keep their iPads, Mayor Bailey keeps her iPhone and receives coat hooks from Lunenburg Academy.

Attachments –

A. Councillors' Recognition of Years of Service Policy #84 (2017)
B. Recognition of Service Awards Policy (part of Personnel Policy 2020)

Acknowledged only by:

Bea Renton
Town Manager/Clerk

#84. TOWN OF LUNENBURG POLICY: COUNCILLORS' RECOGNITION OF YEARS OF SERVICE

1.0 Purpose

To provide a consistent procedure for recognition of Councillors' years of service.

2.0 Procedure

1.1 Any non-returning Councillor who has served a full term in office shall be presented with a gift which shall be a Town of Lunenburg flag or gift of equivalent value. If possible, it will be presented at a Council meeting or Council Chamber setting before the end of their term.

1.2 Any non-returning Councillor who has served more than two terms in office may receive additional recognition in exceptional circumstances at the discretion of Council.

Clerk's Annotation For Official Policy Book

Date of Notice to Council Members of Intent to Consider [7 days minimum]: June 27, 2017

Date of Passage of Current Policy: July 25, 2017

I certify that this Policy was adopted by Council as indicated above.

_____ July 27, 2017
Clerk Date

RECOGNITION OF SERVICE AWARDS

I. Policy Objective:

The purpose of this Policy is to define the purpose for recognizing the contribution made by employees at the time of their retirement or voluntary resignation from the Town.

II. Procedure:

1. Upon voluntary resignation or retirement, each Town employee shall receive a Recognition of Service Award as follows:

    a. for continuous service of less than five years, a letter of appreciation and a gift appropriate for the years of service; or

    b. for continuous service of five years or more, a letter of appreciation, a certificate of service, and a gift appropriate for the years of service.

2. For the purpose of determining the value of the gift, the following guide should be used:

    a. For employees who voluntary resign before retirement age (50 years of age): $25. per year of service with a $75. minimum.

    b. For employees who retire at age 50 or older with a minimum of five years continuous service: $30. per year of service with a $250. minimum.

45 School Street, Suite 403, PO Box 489, Mahone Bay, NS, B0J 2E0

Tel: 902-634-9977 Email: info@coastalaction.org Web: www.coastalaction.org

August 15, 2020

Town of Lunenburg
Attn. Rachel Bailey, Mayor
119 Cumberland Street, P.O. Box 129
Lunenburg, Nova Scotia, Canada B0J 2C0

RE: Appointed board representation from Council

Dear Mayor Bailey;

Since its inception in 1993, the Bluenose Coastal Action Foundation (now known as Coastal Action) has had appointed representation to our board from your council. This was pursuant to our articles establishing BCAF filed with the province in 1993. This year we rewrote these articles, as well as our bylaws, and during that process decided that such a requirement was no longer necessary. Therefore, we have eliminated the requirement of having board representation from the five municipal councils in Lunenburg County. We would still welcome (and indeed, encourage) participation and board membership from councillors or staff from your municipality.

We are embarking on an exciting future and hope we can continue to rely on your support as we work to improve our environmental future.

We also want to thank you for your support and participation over the last 27 years.

Yours truly,

Kelly Wilson
Board Chair
Coastal Action

TOWN OF LUNENBURG

BY-LAW NO. 6

COMMITTEES AND BOARDS BY-LAW

Short title

1.1 This by-law shall be known as and may be cited as the "Committees and Boards By-law".

Standing committees

2.1 The Council shall appoint annually, as soon after the election as is convenient, the following standing committees:

2.1.1 General Government Services Committee,

2.1.2 Protective Services Committee,

2.1.3 Transportation Services Committee,

2.1.4 Environmental Health Services Committee,

2.1.5 Public Health and Social Assistance Committee,

2.1.6 Environmental Development Services Committee,

2.1.7 Recreation, Cultural Services and Education Committee,

2.1.8 License Committee,

2.1.9 Tenders Committee,

2.1.10 Cemetery Committee,

2.1.11 Water Committee, and

2.1.12 Electric Light Committee.

Memberships

2.2 Each committee shall consist of three members or such other members as the Council directs.

Other committees

2.3 Council may appoint such other standing or select committees as from time to time it deems necessary.

Mayor ex officio member

3.1 The Mayor shall be an ex officio member of all standing and select committees.

Boards and committees

4.1 The Council shall also at the same meeting appoint such members of the following boards and committees as under the provisions of any statue or regulation it has power to appoint:

4.1.1 Board of Arbitration between Municipality of Chester and Municipality of Lunenburg and the Towns of Lunenburg, Bridgewater and Mahone Bay,

4.1.2 Board of School Commissioners,

4.1.3 Board of Fire Escapes,

4.1.4 Members of the District Planning Commission,

4.1.5 Housing Commission,

4.1.6 Industrial Commission,

4.1.7 Planning Advisory Committee,

4.1.8 Lunenburg War Memorial Community Centre Commission,

4.1.9 South Shore Regional Library Board,

4.1.10 Lunenburg Home for Special Care Corporation,

4.1.11 Common Lands Committee, and

4.1.12 Fishermen's Memorial Hospital Board.

Other boards, etc.

4.2 The council shall also at the same meeting appoint such members of such boards and commissions as it is authorized to do under any Act or regulation.

Duties of committees	5.1	Standing and other committees shall:
Reports and recommendations	5.1.1	Report to Council from time to time, whenever desired by Council and as often as the interests of the Town may require on all matters connected with the duties imposed on them respectively and recommend such action by Council in relation thereto as may be deemed advisable or necessary.
By-laws	5.1.2	Prepare and introduce into Council all such by-laws as may be necessary to give effect to such of their reports and recommendations as are adopted by Council.
Act on resolutions and by-laws	5.1.3	Give effect through the proper officers to all by-laws and resolutions of Council that relate to their duties.
Accounts	5.1.4	Examine all accounts connected with the discharge of their duties, for performance of any work or for the purchase of any materials or goods under their supervision.
Report on matters referred	5.1.5	Consider and report on any and all matters referred to them by the Council or the Mayor, and every such report shall be signed by the Chairman.
Annual report	5.1.6	Present to Council on or before the last regular meeting of Council in each and every year for the information of Council and of the citizens generally, as well as for the guidance of the committees of the following

year, a general report of the state of the various matters referred to them respectively during the year, the work or business done through or by each committee, and the expenditure made under their authority and superintendence and such report shall contain such suggestions in regard to the future action of the succeeding committees as experience may enable the reporting committee to make in respect to the matter embraced in their report.

Bonding — 5.1.7 — See that the persons in office or appointed to office, connected with the department of each respective committee, have given or do give the necessary security for the performance of their duties, and in case of any new appointment, that the security is given before any such person enters upon his duties.

Meet monthly — 5.1.8 — Hold a regular meeting for the transaction of the business of the department over which such committee presides at least once in each month.

Special committees — 6.1 The Council may from time to time appoint special committees as it deems necessary for the purpose or enquiring into and reporting upon any matter referred to any such committee.

Chairman — 6.2 The first named member of every committee shall act as its chairman.

Chairman absent — 6.3 In the absence of the chairman in any regularly called meeting a quorum of the committee present may appoint a chairman pro tempore.

Vacancy

7.1 If any councillor so appointed at any committee ceases to be councillor he shall thereupon cease to be a member of such committee, and the Council shall appoint another to fill the vacancy.

Removal

7.2 Where the appointment is held during pleasure, the Council may by majority vote remove any member or committee or any member of the board or commission which it has power to appoint.

Appointment without notice

7.3 A vacancy happening in any committee or in respect to any member appointed by Council in any board or commission, may be filled by resolution of the Council at any meeting, and without giving any notice of motion.

Report in writing

8.1 The report of every committee shall be in writing, signed by the chairman or majority of the committee. If the committee is not unanimous the minority may submit a separate report or reports.

Marked by Town Clerk

8.2 All reports of the committees, written resolutions, petitions and other original communications to Council shall be numbered and initialled by the Town Clerk and marked with the date of the meeting of the Council at which they are presented, and shall be referred to in the minutes in addition to any other designation by such numbering of all such reports and resolutions, petitions and other communications and shall be filed in convenient form by the Town Clerk and remain as part of the records of Council.

Proposed expenditures

9.1 It shall be the duty of all standing or other committees of Council to consider and report to Council on or before the first day of March in every year a general statement of its proposed expenditures for the forthcoming year giving as fully as may be the reasons which necessitated the same.

Appropriations

9.2 The report of the various committees on the proposed expenditures of their committee shall be typewritten and only considered by Council at the meeting next succeeding that on which the said report is made, except by a two-thirds vote of the whole Council, and the report of the said committee when agreed to or amended shall constitute the appropriations of Council for the several services to which that report relates.

Accounts to be referred

10.1 All accounts and claims against the Town and all proposed appropriations of money shall, unless otherwise specially provided for by-law or resolution of Council to be referred to and reported on by the proper committee or committees and the report thereon adopted by Council before being paid, and every such resolution and report and all other resolutions and reports relating to the Town expenditures and finances shall be duly entered in the minutes of Council at length.

General committee

11.1 The General Government Services Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

11.1.1 general legislative services, including meetings of Council and matters affecting the Mayor and councillors;

11.1.2 general administrative services, including officers, administrative staff and legal services;

11.1.3 financial management, including accounting, audits, budget control, purchasing, debt and sinking fund administration, pension fund administration and other financial management matters;

11.1.4 assessment, including liaison with provincial officials and assessment appeals;

11.1.5 taxation, including tax billing and collection, tax rebates and concessions, and matters concerning properties acquired for taxes;

11.1.6 common services, including multi-purpose building; and

11.1.7 general government services, including elections, plebiscites and public meetings; conventions and delegates; general accident and damage claims and public liability insurance; inter-governmental relations; and grants to organizations and individuals.

Protective Services Committee

12.1 The Protective Services Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

12.1.1 liaison and cooperation with the Town of Lunenburg Police Commission;

12.1.2 traffic planning and control;

12.1.3 police station and buildings;

12.1.4 administration of justice responsibilities of the Town, including courts, registry office, prosecutor, witnesses and jurors;

12.1.5 fire protection responsibilities of the Town including the fire fighting force; buildings and equipments; fire alarm systems; fire investigations and prevention; water supply and hydrants; and training of fire fighting personnel;

12.1.6 the Emergency Measures Organization of the Town and flood control; disaster control; and first aid and ambulance services;

12.1.7 consumer protection as far as it is a responsibility of the Town, including weights and measures and weigh scales;

12.1.8 protective inspection, including building inspection; electrical inspection; plumbing inspection; and other safety inspections;

12.1.9 animal and pest control, including dog and weed control.

Transportation Services Committee

13.1 The Transportation Services Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

13.1.1 general engineering services, including equipment, workshops, yards and buildings;

13.1.2 road transport, including planning and surveying, maintenance and supervision;

13.1.3 engineering planning and design;

13.1.4 roads and streets, including surfaces, allowances, intersections, approaches, sidewalks, ditches, storm sewers and storm drainage systems; street cleaning; and snow and ice removal;

13.1.5 street lighting;

13.1.6 traffic services, including street signs, traffic lane marking, house numbering, traffic signals and railway crossings;

13.1.7 parking, including meters and off-street parking;

13.1.8 water transport, including docks and port facilities; ship canals and channels; and

13.1.9 public transit, including research planning and design.

Environmental Health Services Committee

14.1 The Environmental Health Services Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

14.1.1 sewage collection, treatment and disposed systems;

14.1.2 comfort stations;

14.1.3 garbage and waste collection, disposal and use, including Town dumps, landfills and incinerators; and

14.1.4 environmental protection, including air pollution control; water pollution control; noise abatement and other environmental protection measures.

Public Health and Social Assistance Committee

15.1 The Public Health and Social Assistance Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

15.1.1 cooperation with provincial and federal health authorities and the Board of Health in cooperative or joint programs;

15.1.2 cooperation with provincial, federal and local health authorities in the provision of medical care (including care of indigents) and hospital services; and

15.1.3 social assistance and the provision of welfare services to the aged, unemployed, handicapped, disadvantaged, one-parent families and children.

Environmental Development Services Committee

16.1 The Environmental Development Services Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

16.1.1 environmental planning and zoning;

16.1.2 general land assembly; urban renewal; beautification; land rehabilitation and other community developments;

16.1.3 housing, either by construction, operation and maintenance, or by encouraging such through programs with or by other private or governmental authorities or otherwise;

16.1.4 natural resource development, including agricultural programs; water resource development and conservation; fisheries; forests; minerals and other natural resources;

16.1.5 assistance to regional development through cooperation with private or other governmental agencies;

16.1.6 industrial and commercial parks and commissions and assistance to industrial and commercial development;

16.1.7 the encouragement, development and promotion of tourism;

16.1.8 conventions and public receptions; and

16.1.9 markets.

Recreation and Cultural Services Education Committee

17.1 The Recreation and Cultural Services and Education Committee shall have the following services and matters under its charge and supervision and shall report to Council thereon:

17.1.1 cooperation and liaison with the Lunenburg War Memorial Community Centre Commission respecting recreational facilities including community centres and halls and arenas; swimming pools and beaches and marinas; golf courses; exhibitions; amusement parks and fairs; stadiums; and parks and playgrounds;

17.1.2 cultural buildings and facilities, including archives; historic sites; art galleries; museums; libraries; theatres; concert halls; zoos; aquariums and aviaries;

17.1.3 educational facilities and services, including adult retraining; nurseries and day schools; and

17.1.4 cooperation with and assistance to other private and government agencies providing educational services to the residents of the Town.

License Committee

18.1 The License Committee shall have under its charge and supervision the issuing of all licenses required by Council and shall perform such duties as may be required of them in reference to licenses by any Act, by-law or regulation, or committed to their charge by Council.

Tenders Committee

19.1 The Tenders Committee shall have under its charge and supervision and control of all Town tenders and shall perform such duties as may be required of them in reference to tenders by Council.

Cemetery Committee

20.1 The Cemetery Committee shall have under its charge and supervision the control of cemeteries, crematoriums and morgues and shall perform such duties as may be required of them in connection therewith.

Water Committee

21.1 The Water Committee shall have under its charge and supervision and control the source, purification, protection and treatment of the water supply; transmission and discussion of water; and customer billing and collection for water supply.

Electric Light Committee

22.1 The Electric Light Committee shall have under its charge and supervision and control the production and/or purchase and distribution of electric energy; customer billing and collection for electric energy supply.

Complaints

24.1 Any ratepayer of the Town may complain to or lay any grievance before the chairman of any standing committee of any service of the Town who shall bring the matter before the first regular meeting of the Council thereafter, with a statement of the complaint or grievance and of what has been done by the committee in respect of the same.

Repeal

25.1 All former Committees and Boards By-law of the Town are hereby repealed and this by-law substituted therefor.

Approved by Town Council: July 27, 1978
Approved by M.M.A. : January 16, 1979

Kelly Jardine

From: Dawn Sutherland <DSutherland@explorelunenburg.ca>
Date: October 2, 2020 at 11:00:37 AM ADT
To: Rachel Bailey <RBailey@explorelunenburg.ca>
Cc: Matt Risser <MRisser@explorelunenburg.ca>, John McGee <JMcGee@explorelunenburg.ca>, Bea Renton <brenton@explorelunenburg.ca>, Arthur MacDonald <AMacDonald@explorelunenburg.ca>
Subject: RE: CCP Steering Team and MPS: LUB:Subdivision By-Law drafting

HI.

I have attached the terms of reference for the Steering Team. The Steering Team made a recommendation on the CCP and PAC will make recommendations on the planning documents.

The Steering Team continues in their role of quality control – oversight of the project.

Here is info on the term for the ToR:

10.0 TERM

The Steering Team shall be in effect until dissolved by Council or upon completion of the Comprehensive Community Plan Project.

So yes, Council would be in keeping with the ToR if wanting to dissolve the Steering Team prior to completion of the entire project.

Dawn

Dawn M. Sutherland, MCIP, LPP
Manager of Planning and Development
Town of Lunenburg
119 Cumberland Street
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Approved by Council 11 September 2018, amended 23 October 2018

COMPREHENSIVE COMMUNITY PLAN PROJECT

Terms of Reference ("ToR") for the Comprehensive Community Plan Project Steering Team ("Steering Team")

1.0 DEFINITIONS

In these ToR,

"Council" means the Council of the Town of Lunenburg.

"Comprehensive Community Plan" is a community-specific, inclusive and holistic planning process that covers all aspects of the community, and enables it to plan its development and lay out its vision and high-level goals for the long term.

"Comprehensive Community Plan Project" includes the generation of a Comprehensive Community Plan as well as an updated Municipal Planning Strategy, Land Use By-law, and Subdivision By-law as supporting documents.

"Comprehensive Community Plan Steering Team" means an advisory group tasked by Council to be the governing body of the Comprehensive Community Plan Project and will provide strategic leadership and governance oversight.

2.0 TITLE

The advisory group to Council shall be named the Comprehensive Community Plan Project Steering Team (Steering Team).

3.0 PURPOSE

The purpose of the Comprehensive Community Plan Project Steering Team (Steering Team) is to monitor the quality of Comprehensive Community Plan and updated Municipal Planning Strategy, Land Use By-law, and Subdivision By-law as they develop; provide support, guidance, and oversight of the process; and ensure that the scope of work is adhered to and milestones met in accordance with the Request for Proposals (RFP), attached as Appendix 1.1.

4.0 RESPONSIBILITIES

4.1 The responsibilities of the Steering Team will be to:

a. monitor the quality of Comprehensive Community Plan, Municipal Planning Strategy and Land Use By-law and Subdivision By-law as they develop;

b. provide support, guidance, and oversight of the Comprehensive Community Plan process and its progress;
c. provide oversight of the Municipal Planning Strategy and Land Use By-law and Subdivision By-law processes and their progress;
d. ensure that the scope of work is adhered to and milestones met;
e. provide regular updates to Council;
f. based on delegated authority, make decisions that are in accordance with the terms of the RFP;
g. provide advice and recommendations to Council on any substantive changes to the scope of work and/or terms of the RFP; and
h. provide a recommendation to Council relating to the approval of the Comprehensive Community Plan.

4.2 The Steering Team may consult with Town of Lunenburg staff, Council, or stakeholders, as necessary.

4.3 The Steering Team may seek outside expertise, as necessary.

4.4 The Steering Team may establish rules of procedure that are necessary for the performance of its responsibilities.

5.0 MEMBERSHIP

5.1 Voting members of the Steering Team shall include:
i. Chair, Town Councillor #1,as appointed by Council
ii. Town Councillor #2, as appointed by Council
iii. Town Councillor #3, as appointed by Council
iv. Citizen Representative #1, as appointed by Council
v. Citizen Representative #2, as appointed by Council
vi. Qualified Expert #1, as appointed by Council
vii. Qualified Expert #2, as appointed by Council
viii. Qualified Expert #3, as appointed by Council

5.2 Non-voting, ex-officio members shall include:
i. Project Manager/Manager of Planning and Development
ii. Heritage Manager
iii. Town Engineer
iv. Staff representative of the Municipality of the District of Lunenburg
v. Representative of a Provincial organization or crown corporation (e.g. Develop Nova Scotia, Municipal Affairs)

5.3 There shall be a maximum of eight (8) voting members.

5.4 Council may appoint new members to join the Steering Team and amend the ToR accordingly.

5.5 Resource people may be invited to attend the meetings upon request from the Chair on behalf of the Steering Team to provide advice and assistance, as necessary.

5.6 Citizen representatives shall have expertise in project management, community engagement, programming and policy, rural and urban planning, asset management, or other area of expertise deemed beneficial by Council in providing oversight of the plan process.

5.7 Qualified experts shall have expertise in project management, community engagement, programming and policy, rural and urban planning, asset management, or other area of expertise deemed beneficial by Council in providing oversight of the plan process. Town citizens who meet the criteria shall be given preference in the selection process.

6.0 CHAIRPERSON

6.1 The Chair of the Steering Team shall be a Town Councillor and appointed by Council.

6.2 The Chair shall provide information on the progress of the Steering Committee as well as bring forward its recommendations to Council.

6.3 The Chair shall preside over all Steering Team meetings. The Chair will ensure that the meetings are conducted in a cordial and respectful manner and that matters are discussed in accordance with the meeting agenda.

6.4 The Chair shall set meeting dates and approve the agenda.

6.5 The Chair shall be the spokesperson for the Steering Committee.

7.0 MEETINGS

7.1 Meetings shall be held once a month.

7.2 Special or extraordinary meetings shall be called by the Chair, when necessary.

7.3 Quorum shall consist of fifty percent (50%) of the members plus one (1).

7.4 Record of meetings will be recorded in the form of notes by the Town of Lunenburg staff. At each meeting, the previous notes will be reviewed by members.

7.5 The Steering Team meetings are open to members of the public.

8.0 AMENDMENTS

The Terms of Reference may be amended by Council.

9.0 CONFLICT OF INTEREST

The Steering Team members have an obligation to disclose any conflicts of interest relative to the matters under discussion.

10.0 TERM

The Steering Team shall be in effect until dissolved by Council or upon completion of the Comprehensive Community Plan Project.

Approval:
11 September 2018 Motion of Council:

Terms of Reference for Comprehensive Community Plan Steering Team

Motion: moved by Councillor McGee, seconded by Councillor Risser to approve the draft Terms of Reference for the Comprehensive Community Plan Project Steering Team, as set out in Appendix 1 (Schedule "B").

Motion: moved by Councillor Risser, seconded by Councillor Croft to amend the previous motion to add that two citizen representatives will be replaced with qualified experts in this field, with Town citizens who meet the criteria being given preference in the selection process. Motion carried.

Amendment:
23 October 2018 Motion of Council:

Motion: moved by Councillor Risser, seconded by Councillor McGee to amend the Terms of Reference for the Comprehensive Community Plan Project Steering Team, as follows:

1. In Part 5.1 after vii. Qualified Expert #2, as appointed by Council, add *viii. Citizen Representative or Qualified Expert, as appointed by Council*;
2. In Part 5.3, replace "seven (7) voting members" with *eight (8) voting members.*

Motion carried.

Ann Covey

Subject: Coun Sep 22 20 Town of Lunenburg Watershed Expansion
Attachments: ProtectedWaterAreaDesignation.pdf; Lunenburg_PWA Summary.docx

From: Allen, Mike E [mailto:Mike.Allen@novascotia.ca]
Sent: September 4, 2020 3:07 PM
To: Bea Renton <brenton@explorelunenburg.ca>
Subject: Re: Town of Lunenburg Watershed Expansion

Hi Bea,

I am sending along information pertaining to the Town of Lunenburg's interest in adjusting the existing designated Protected Water Area (PWA) boundary for Dares Lake, the Town's water supply. Included is the guide book resource (pdf) produced by the Department (Section "**Amending or Cancelling a Designation**" on **page 9** , is most applicable) as well as a summary document regarding initiating the process. Essentially, amending an existing designated PWA boundary follows the same process as applying for a new designation. Of note for the Town, is the necessity of conducting public/ landowner/ stakeholder consultations, as the newly included land parcels will be subject to existing regulations attached to the designation.

Once an application is received, there are several aspects to the approval process, including a review by Nova Scotia Environment to assess the proposed changes and the public consultation conducted, and a legal review by provincial solicitors. The application and information is reviewed by other provincial departments, including Aboriginal Affairs as well as Energy and Mines/ Lands and Forestry, where Crown lands are involved. Timeframes for the review process are variable depending on the nature of the water supply, the range and scope of the changes proposed, and the extent of public consultation conducted.

- Note, upon approval the new boundary can be presented with a digital map/ shapefile, to be included in the SWPP and in the designation under the Env Act.

- This also presents the opportunity to change the existing associated PWA regulations (i.e. additions, amendments/ wording changes, cancellation- removals, etc.), if the Town wishes to pursue

- We had also discussed de-registering the existing designation for the former Lunenburg Town Reservoir, if it is no longer needed.

Again, I am your resource for Source Water Protection, so please do not hesitate to reach out for any associated matters. I am more than happy to guide you through this particular PWA process, or provide information to your Council.

Take care and have a nice weekend,

Mike

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Environmental and Natural Areas Management

Environment and Labour

Developing a Municipal Source Water Protection Plan:
A Guide for Water Utilities and Municipalities

Designation of a Protected Water Area



Designation of a Protected Water Area
Part of Step 4 in Developing a Municipal Source Water Protection Plan

Designing Plans for Source Water Protection in Nova Scotia

A Drinking Water Strategy For Nova Scotia describes a multiple-barrier approach to clean, safe drinking water for Nova Scotians. The first line of defence in this multiple-barrier approach is to keep clean water clean. A booklet series entitled *Developing a Municipal Source Water Protection Plan: A Guide for Water Utilities and Municipalities* describes how water utilities and municipalities can do that. The booklets guide you through the process of developing a source water protection plan for your municipal water supply and are available on the website at www.gov.ns.ca/enla/water.

To keep clean water clean, we must protect the source water supply area. **Step 4** of the booklet series describes how to develop a source water protection plan, including six options for managing risks. One of these options is to request that the source water supply area be designated as a protected water area under the Environment Act. This guide describes what a water utility must do if it chooses to include this option in its source water protection plan.

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www.gov.ns.ca/enla/water

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Introduction

Source water protection planning includes identifying options to manage, reduce or eliminate risks. Management strategies reinforce each other and form a cohesive plan that strives for the best possible source water quality protection.

Every community is different with respect to its water supply, water users, and the types of industries and activities which characterize the landscape. Therefore, each community needs to evaluate how it might manage potential risks to its drinking water supply and implement specific strategies to protect it.

In some situations, communities may opt to have all or a portion of its source water supply area designated under the Environment Act to manage specific activities that are known to degrade water quality. Designating a protected water area is one of the six management options that may be included in a source water protection plan. This guide explains when designation is appropriate, and the process a water utility must follow if it chooses this option.

By now, you should have completed the first three steps and begun Step 4 – developing a source water protection management plan. You have set management goals and objectives for the plan, and you must now choose the right combination of management options for your source water supply area. There are six options:

A – Acquisition of land in the source water supply area affords one of the highest levels of protection.

B – By-laws (municipal) allow regulation of the land uses permitted in the source water supply area.

B – Best management practices can be used to manage activities in the source water supply area.

C – Contingency planning ensures the continued protection of public health in the event of contamination of a source water supply area.

Review of Steps in the Source Water Protection Planning Process

Steps 1 to 3:

- an advisory committee is formed
- the source water protection area is delineated and characterized
- sources of contamination are identified and addressed
- source water issues currently being addressed have been defined
- source water issues that need to be addressed have been defined
- source water issues that will be addressed in the new management plan have been defined
- source water issues that need to be addressed in the long-term have been defined
- resources and funding have been thoroughly explored

Step 4:

- management goals and objectives have been set

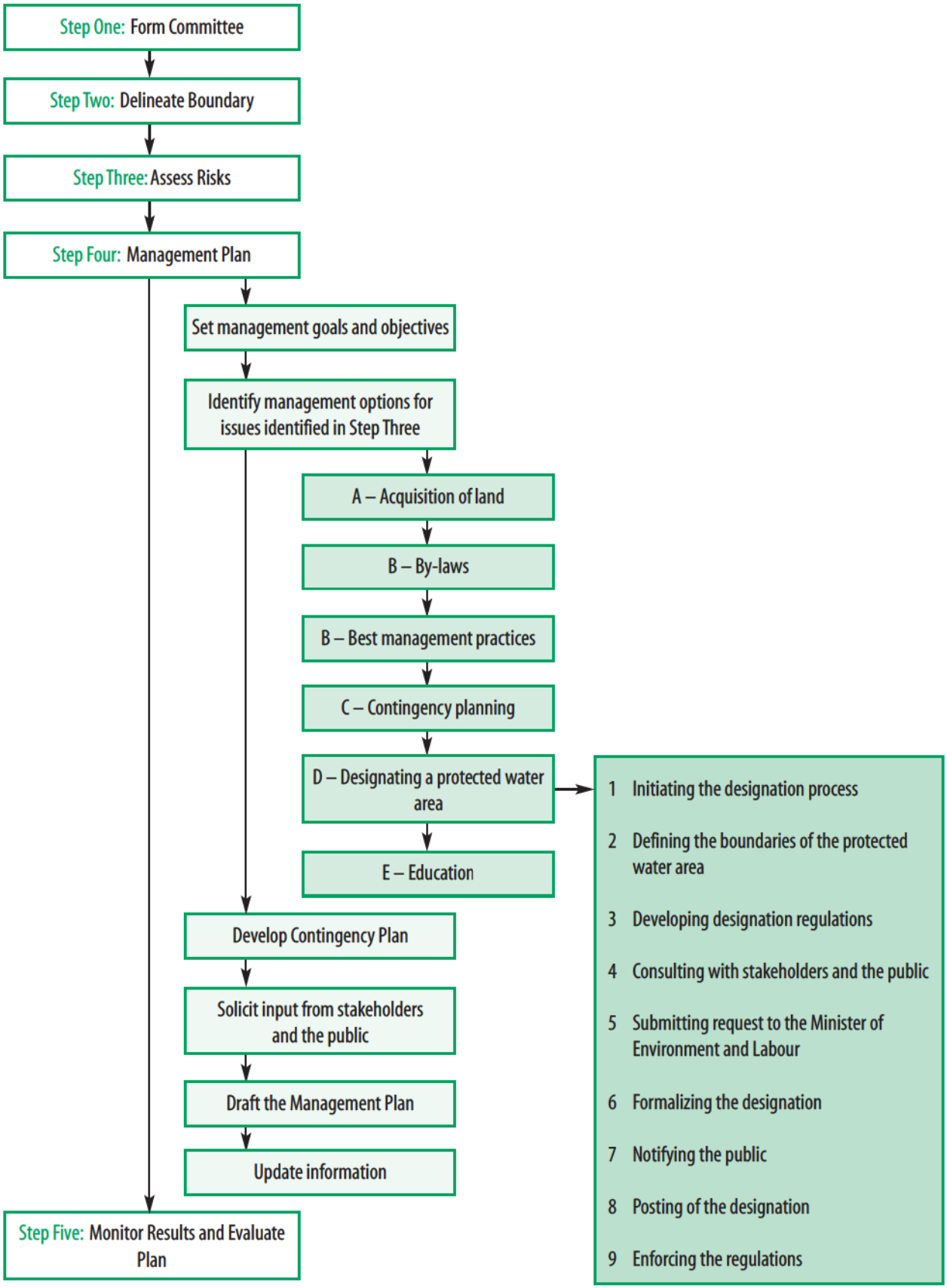
Next task: identify management options for issues identified in Step 3

D – Designation of a protected water area with regulations under the Environment Act allows a water utility to oversee regulated activities that may impair water quality within a source water supply area.

E – Education and awareness programs inform stakeholders about the need to protect source water supply areas, and the process for developing a source water protection plan.

This guide will help you determine if designating a protected water area is appropriate for your circumstances, and the process for achieving that designation.

Source Water Protection Planning Flow Chart



What is a Designated Protected Water Area?

Designation of a protected water area is one possible management option available to water utilities to protect or manage potential threats in the source water supply area. The Environment Act empowers the Minister of Environment and Labour to designate an area surrounding a source of drinking water as a protected water area, if requested by a water utility. Corresponding regulations are also approved by the Minister as part of the designation.

Designation differs from other approaches to managing risks to drinking water because it uses a regulatory approach to directly prohibit or restrict activities that can impair water quality. It is important to recognize that protected water area regulations can only be developed in the context of Section 106 of the Environment Act. They are meant to be applied under specific circumstances and can only apply to activities that are known to or have the potential to impair water quality.

Nova Scotia Environment and Labour works with the advisory committee to develop protected water area regulations as part of the source water protection planning process. Since these regulations must be followed by people living or working within the source water supply area, they must be developed with stakeholder input so that any issues or concerns are addressed.

Once the designation has been approved, it is the responsibility of the water utility to post signs and protect the area, including enforcing the regulations.

Designation is NOT land use zoning

Although it may seem like protected water area designation regulations are similar to land use zoning by-laws, there are important differences.

First, designation falls under the Environment Act and it does not regulate types of land use, whereas land use planning is governed by the Municipal Government Act.

More information on land use planning under the Municipal Government Act can be found in the Local Government Resource Handbook, prepared by Service Nova Scotia and Municipal Relations. View or download this handbook at www.gov.ns.ca/snsmr/muns/manuals and refer to the following sections:

5.2 Municipal Planning Strategy and Land Use By-Law Preparation
5.6 Model Land Use By-Law
5.7 Municipal Water Supply Watershed Planning

Second, land use or zoning by-laws mainly regulate the "development" of land, principally the location and use of buildings and structures, while designation mainly regulates "activities" on the land or water with the potential to impair water quality. However, in some cases, designation may regulate certain activities associated with development. For example, construction activities causing erosion and sedimentation can be controlled through protected water area regulations.

The third main difference is that the enforcement of protected water area regulations is the responsibility of the water utility whereas land use by-laws are enforced by the municipality in which the source water supply area is located. If drinking water supplies cross political boundaries, municipalities should work together to help manage the source water supply area.

Designation is NOT expropriation

To expropriate land means to take land without an owner's consent and is governed by the Expropriation Act. When an area is designated as a protected water area, an individual's property is not taken from him or her. It is a requirement of the Environment Act to engage in fair and open public consultation as part of the protected water area designation process.

Designation is NOT a source water protection plan

Historically, designation has been used by a number of communities to protect their source water supply areas by regulating as many activities as possible. Although designation has generally been used as a "stand-alone" management strategy in the past, it now forms part of a broader management approach called source water protection planning.

The source water protection planning process is more flexible and adaptable so it can address a broader range of issues than designation, with various management options based on the types of risks in the source water supply area. Through the course of developing a source water protection plan, a Watershed Advisory Committee may determine that a protected water area designation, for part or all of the source water supply area, is an appropriate option to manage specific risks.

However, before contemplating designation, Steps 1 through 3 of the source water protection planning process must be completed and Step Four must be underway.

The Designation Process

There are a number of steps in the designation process to be completed by the water utility and its advisory committee. First, the area to be designated must be defined. Second, regulations are developed to address risks previously identified during Step 3 of the source water protection planning process. Next the water utility and its advisory committee consult with stakeholders and the public. If the community supports the designation, a request is submitted to the Minister of Environment and Labour to approve, file and publish the designation and regulations. The last steps are notifying people of the designation and ongoing enforcement of the approved regulations by the water utility.

Designation Process

- Initiate the designation process
- Define the protected water area boundary
- Develop designation regulations
- Consult with stakeholders and the public
- Submit request to the Minister of Environment and Labour
- Formalize the designation
- Notify public of designation
- Post protected water area designation
- Enforce regulations

Legislation Enabling Designation

The following is Section 106 of the Environment Act, Chapter 1, S.N.S., 1994-95 which enables the Minister of Environment and Labour to designate a protected water area:

Designation of a Protected Water Area

(1) The Minister, when requested by an operator of a water works or proposed water works, may designate an area surrounding any source or future source of water supply for a water works as a protected water area.

(2) The operator of a water works or proposed water works named in a designation made pursuant to subsection (1) shall
  (a) give notice of the designation of the area as a protected water area by publishing the notice in a newspaper having circulation in the county or counties in which the area is located and in the Royal Gazette;
  (b) have the notice of designation recorded at the registry of deeds in the county or counties in which the area is located; and
  (c) post signs in the area indicating that it has been designated a protected water area.

(3) The operator of a water works or proposed water works is responsible for taking all measures to protect the area designated, and the enforcement of any regulations made pursuant to subsection (6).

(4) When requested by an operator of a water works or proposed water works, the Minister may cancel a designation made pursuant to this section, in whole or in part.

(5) Any protected water area designated pursuant to the Water Act, prior to the coming into force of this act remains so designated.

cont'd

(6) At the request of the operator of the water works or proposed water works, the Minister may make regulations to prohibit, regulate or require the doing of any act or acts in a protected water area that may impair or prevent the impairment, as the case may be, of the quality of the water in the protected water area.

(7) Before designating a protected water area, the Minister shall ensure that the operator of the water works or proposed water works has provided opportunities for public consultation.

(8) No claim of injurious affection lies against any person as the result of a designation of a protected water area.

(9) The exercise by the Minister of the authority contained in subsection (6) is regulations within the meaning of the Regulations Act.

Initiating the process

Early consultation with Nova Scotia Environment and Labour representatives will help the water utility navigate through the designation process. It is important for the utility to understand its roles and responsibilities, as well as the Minister's authority under the Environment Act.

Defining the boundaries of the protected water area

A designated protected water area must have a distinct boundary that can be marked on a map. A topographic map at a scale of 1:10,000 is a common base for plotting the boundary. The boundary may or may not be the same as the boundary defined in Step 2 of the source water protection planning process because of enforcement or other administrative reasons. In the past, surveyors generated a legal boundary description of straight lines having distances and bearings. However, protected water area boundaries may also be described using topographic, political, or property boundaries. Today's GPS units are able to assist in generating maps by computer.

Whatever approach is used to define the boundary, it is important to consider that the public and those who will enforce the protected water area regulations must be able to determine where the boundary is on the ground. Therefore, public highways and other land marks should be incorporated wherever practical.

Some protected water area boundaries have deviated from the source water protection plan area boundary because the designation applied only to the area of greatest risk rather than the natural watershed or groundwater recharge area. Future designations could also deviate from the source water protection plan area boundary, such as where the activities to be regulated only apply to specific portions of the source water supply area.

A very simple example of this situation would be the need to regulate motorized vessels or vehicles on a water supply lake, either on open water or when ice covered. The protected water area designation in this case would apply only to the lake and the lake shore. Other options, such as acquisition of land, best management practices, contingencies, and education would be used to protect areas outside the designation.

Step 2: Delineate a Source Water Protection Area Boundary

Surface Water Supplies:

The boundary delineation of a surface water supply can be generated in several ways. Topographic maps can be used to manually connect the high elevation points around the surface water body to delineate the watershed boundary. The boundary can be generated by computer from a series of GPS points which are gathered in the field and plotted on a map. The boundary can also be generated on a computer through a process called digital elevation modelling.

Groundwater Supplies:

The boundary of a groundwater supply is commonly determined through computer-based groundwater modelling. The recharge areas to be managed around groundwater sources are called wellhead protection zones. These zones are based on the time it takes for different types of contaminants to reach the well. Usually three zones are established that denote specific time of travel distances. For example, Zone 1 might represent the time it takes contaminants to reach the well within two years. Zone 2 would be the travel time from two to five years, and Zone 3 would be the five to 25-year travel time.

For more information see "Step 2 Developing a Municipal Source Water Protection Plan - Delineate a Source Water Protection Area Boundary" published by Nova Scotia Environment and Labour, and available at www.gov.ns.ca/enla/water .

Developing designation regulations

After the protected water area boundary has been defined, regulations must be developed that reflect an appropriate response to the potential risks identified in Step 3 of the source water protection planning process. Nova Scotia Environment and Labour should be consulted to assist with the development of regulations. Regulations should be reviewed on a regular basis in case updating or amending is required.

Regulations are appropriate in situations where certain activities cannot be managed through other strategies to reduce the potential degradation of the source water. For example, the use of herbicides to control weeds may require a specific regulation which dictates a standard for herbicide storage, timely application, and setbacks from watercourses within the source water supply area.

As mentioned above, regulations can also be applied to just a portion of the source water supply area, such as a particular water body. In these circumstances, regulations can be used to prohibit motor boats, swimming, or the release of substances into the water.

Although regulations made under Section 106 (6) of the Environment Act can't directly control types of land uses, they can be used to control impacts associated with development. For example, they may require erosion and sediment control plans during building or road construction that may occur within the source water supply area.

Protected water area regulations may complement the overall source water protection plan and address the specific risks that are not addressed through other management options. They may be restrictive and prohibitive in nature, or they may be more flexible requiring an approval or notification from the water utility to undertake regulated activities. Sample regulations and the associated activities are listed in Appendix A.

Approvals and Notifications

Approvals

Some activities regulated by the designation process may be subject to approval by the water utility. The granting of an approval is based on a set of criteria that are specific to the activity being regulated and apply to how or when the activity is conducted.

In most instances approvals require that further mitigative measures be taken. For example, sediment and erosion control plans may be required for approval to be granted for road construction within a designated protected water area.

Where a regulation makes reference to an approval from the department, it refers to an existing approval under the Environment Act and enforced by Nova Scotia Environment and Labour.

Notifications

There are some regulations that require notification be given to the water utility for certain activities. Notification of an activity subject to regulation is made to the water utility in writing, prior to commencement of the activity. As a result, the water utility has a greater awareness of when and where activities within the watershed are taking place.

Consulting with stakeholders and the public

Section 106 (7) of the Environment Act requires public consultation before a protected water area can be designated by the Minister. The consultation plan should involve landowners and other stakeholders, including the municipality in which the proposed designated area is located.

Public consultation is a mandatory element of the designation process because it ensures that people affected by the process are given an opportunity to express any concerns they might have. A fair, open and transparent consultation usually includes public meetings or public information sessions to explain to stakeholders how the utility and advisory committee prepared the proposal for the designation.

Stakeholders who are not active members of the advisory committee can request that the committee provide additional supporting information and copies of minutes taken during the meetings. Water utilities may also choose to provide information about the designation process on their municipal websites.

Submitting request to the Minister of Environment and Labour

After the protected water area boundaries and regulations have been developed and public consultation has occurred, appropriate legal documents must be finalized and submitted to the Minister of Environment and Labour for final approval. This set of documents includes:

- a legal description and map of the area as required in Section 106 (1) of the Environment Act;
- a set of regulations properly formatted as required in Section 106 (6) of the Environment Act; and
- documentation on the completed public consultation as required in Section 106 (7) of the Environment Act.

The department's solicitor will review the documents. The purpose of the solicitor's review is to ensure proper form and authority, not to change the intent of the regulations.

Formalizing the designation

Following the Minister's approval, Nova Scotia Environment and Labour will file the protected water area designation and regulations with the Department of Justice's Registry of Regulations. Certification of filing and subsequent publishing in the Royal Gazette brings the regulations into force in accordance with the Regulations Act.

Notifying the public

The water utility is required to record the designation at the Registry of Deeds in the county or counties in which the protected water area is located. The water utility is also required by the Environment Act to give public notice of the designation in a newspaper with circulation in the county or counties in which the area is located. It is not necessary to publish the entire designation in the newspaper, but the notice should provide a sufficient amount of detail and how to get more information. Ideally, all those who own land within the protected water area should receive a letter from the water utility with information about the designation and the source water protection plan.

Posting of the designation

The water utility must post and maintain signs along all public roads which access the protected water area and in other appropriate places visible to the public. Signs must clearly indicate that the area is a protected water area and that regulations apply. The sign may also indicate the type of prohibited or restricted activities. The name and phone number of the water utility should be visible to inform people how to get further information. These actions are necessary to ensure members of the public take appropriate action to help keep the area clean.



Enforcing the regulations

The water utility has the responsibility of enforcing the protected water area regulations per Section 106 (3) of the Environment Act. To do this, the water utility can appoint one of its employees to become a peace officer or special constable through provisions in the Police Act. When the employee is established as a special constable, he or she is able to issue Summary Offence Tickets for infractions within the protected water area. Failure to comply with protected water area regulations under section 106 of the Environment Act can result in a fine of $675 (2005).

Monitoring and Evaluation

As part of the source water protection plan, the water utility should undertake a water quality monitoring program. It should include regular evaluation of the source water protection plan, including the effectiveness of the designation. Changes should be made as necessary to ensure the plan and the designation are effectively managing risks.

For more information see "Step 5: Developing a Municipal Source Water Protection Plan - Develop a Monitoring Program to Evaluate the Effectiveness of a Source Water Plan" published by Nova Scotia Environment and Labour and available at www.gov.ns.ca/enla/water.

Amending or Cancelling a Designation

Amending a designation

The water utility may request the Minister of Environment and Labour to amend either the boundaries or the regulations for a protected water area.

For example, a boundary line could be moved in response to a request from a landowner whose property is partly within the designated area. Over time, the property owner may feel that the designation encumbers the way he or she manages the entire property. If the property is located at the extremity of the designated area, far from the water supply intake, the water utility may grant the request to exclude the entire property from the protected water area.

Boundaries have also been amended in the past to coincide with municipal land use zoning boundaries, to avoid public confusion arising from two sets of boundary lines. They might also need adjustment to enable more efficient forest management planning.

Reasons for amending regulations may vary from simply updating the text or definitions to provide clarity or consistency, to adding a new regulation to address a new threat to water quality. A regulation may also be deleted if it is no longer relevant.

Prior to requesting an amendment, the water utility and its advisory committee would take the same steps as required for initial designation, including defining new boundaries and/or regulations, public consultation, and preparation of legal documents, including a new map if boundaries are changing. Once approved, the water utility must file the new designation and regulations pursuant to the Regulations Act, and meet the other public notification requirements. Posted signs would be relocated if the protected water area boundaries were amended.

Cancelling a designation

The water utility may request that the Minister of Environment and Labour cancel a designation, in whole or in part. There are various reasons why a cancellation may be sought. For example, the area may be well managed by other components of the source water protection plan, or updated technical information may indicate that the area is not contributing to the source of the water supply.

Regardless of the reason, the water utility should conduct the same kind of consultation as required for initial designation and submit the request for cancellation to the Minister of Environment and Labour. Once the designation is cancelled, a notice is published in the Royal Gazette. The water utility must notify the public in the same way as is required for the initial designation. Any posted signs must be taken down or modified to indicate the current protected water area designation.

For More Information

Nova Scotia Environment and Labour can provide input into the development of management practices and will review the final source water protection plan.

Nova Scotia Environment and Labour
Water and Wastewater Branch
5151 Terminal Road
PO Box 697
Halifax, Nova Scotia
B3J 2T8
Phone: (902) 424-5300
Fax: (902) 424-0503
www.gov.ns.ca/enla/water

APPENDIX A – A Reference For Preparing Regulations for Protected Water Areas

This appendix includes some samples to assist water utilities in preparing draft regulations. These samples illustrate activities that are typically regulated in protected water areas and are meant to serve only as examples. The use of these samples does not guarantee approval by the Minister.

The regulations that a water utility chooses will depend on the conditions in the source water supply area, and whether the source of water is groundwater or surface water (a river or a lake). For example, it may not be necessary to have regulations on forestry activities if there is currently no forestry activity in the source water supply area, and there is not expected to be any in the future. Water utilities should obtain professional assistance before selecting a regulation (e.g. ask a professional forester if the forestry regulation is appropriate for their area).

Examples that are marked with an asterisk * indicate that the value (such as swimming within 200 metres of the water intake) is provided as an example only. Water utilities should determine appropriate values based on public consultation and science.

Sample Regulations:
Note that not all of the following activity regulations may be applicable to every protected water area. Regulations may need to be tailored to fit the level of protection required in each circumstance.

Activity: Home heating oil tanks and fuel storage tanks

Issue: Small amounts of contaminants such as oil, can render large quantities of drinking water non-potable. It can be very expensive, if not impossible, to remove these contaminants from groundwater and/or surface water.

Sample Regulation:
No person is permitted to install a new home heating oil tank, a gasoline fuel storage tank, or a diesel fuel storage tank within the protected water area unless the tank is supported by concrete footings, has a leak detection device and is:
(a) made of stainless;
(b) made of fibreglass;
(c) constructed with double walls; or
(d) approved prior to installation in writing by the water works operator.

Activity: Storage of contaminants

Issue: Small amounts of contaminants such as dry cleaning fluids, can render large quantities of drinking water non-potable. It can be very expensive, if not impossible, to remove these contaminants from groundwater and/or surface water.

Sample Regulation:
Any potential contaminant stored within the protected water area must be contained within a storage tank that is supported by concrete footings and has a leak detection device and is:
(a) made of stainless steel double wall construction;
(b) made of fibreglass; or
(c) approved prior to installation in writing by the water works operator.

Activity: On-site sewage disposal systems

Issue: Improperly designed and/or maintained sewage disposal systems can leak nitrates, phosphates, bacteria, viruses, and other contaminants to groundwater and surface water. The greater the distance between a disposal system and groundwater and/or surface water, the more likely the contaminant will be broken down into a less harmful substance.

SAMPLE

Sample Regulation:
No person is permitted to construct, install or cause the construction or installation of an on-site sewage disposal system contrary to the On-site Sewage Disposal Systems Regulations and the terms and conditions of an approval issued by Nova Scotia Environment and Labour.

Activity: Forestry operations

Issue: Healthy forests can help maintain groundwater and surface water quality. They play an important part in filtering contaminants and preventing erosion and sedimentation. Properly designed forestry management plans can reduce the risk of altering the health of a forest.

Sample Regulation:
No person is permitted to undertake a forestry operation on land greater than 10* hectares within the protected water area unless the operation is conducted pursuant to a forestry management plan prepared by a professional forester in accordance with the objectives and policies approved by the water works operator.

Note: The forestry management plan may address topics such as setback distances for roads, machinery and tree harvesting from watercourses and wells; maximum percent of forest to be harvested per year; and harvesting methods. It should be designed to minimize risks of contamination from spill of petroleum products, and sedimentation and erosion.

Activity: Road construction and watercourse alteration

Issue: Unpaved roads and road construction activities can release sediment into watercourses. Properly designed and constructed roads can minimize the risk of erosion and sedimentation. The erosion and sediment control requirements for public highways are sufficient to reduce the risk of contamination to water sources. In addition, roads can also create areas where vehicles could inadvertently enter watercourses and cause fuel to contaminate the water supply.

Sample Regulation:
(1) No person is permitted to undertake any road construction work in the protected water area unless the work is conducted between June 1* and September 30*, inclusive, in any year (in order to minimize impacts to aquatic organisms).

(2) No person is permitted to expose at any time more than 1,900* square metres of roadway subbase in the protected water area.

(3) All roads that are located within 15* m of a watercourse must have concrete barriers to prevent vehicles from inadvertently entering the watercourse.

Activity: Disposal of wastes or garbage (i.e., landfill, waste disposal site)

Issue: The disposal of wastes can cause harmful chemicals to leach from the site into groundwater. Small amounts of chemicals can make large amounts of drinking water non-potable. It can be very expensive, if not impossible, to remove these contaminants from groundwater and/or surface water.

Sample Regulation:
No person is permitted to establish a dump, landfill, or waste disposal site within 500* metres of a watercourse or well in the protected water area.

Activity: Mining, pit and quarry operations and other excavations

Issue: These activities can affect drinking water quality through erosion, the release of metals or the release of acid runoff into water draining from the mine site. Properly designed mining, quarrying or processing operations can take place under controlled conditions, resulting in minimal impacts on water supply sources. However, all mine and quarry operations must be approved by Nova Scotia Environment and Labour.

SAMPLE

Sample Regulation:
No person is permitted to authorize or commence an operation to extract peat, gravel, rock or minerals in the protected water area without first obtaining written approval of the water works operator.

Activity: Agriculture

Issue: A well designed environmental farm plan, combined with a nutrient management plan, can reduce the risk of contamination. Contaminants such as oil and nitrates can make drinking water non-potable. It can be very expensive, if not impossible, to remove these contaminants from groundwater and/or surface water.

Note: The Department of Agriculture should be contacted for more information on environmental farm plans and nutrient management plans.

Sample Regulation:
An agricultural operation undertaken within the protected water area must be conducted according to a nutrient management plan and environmental farm plan prepared by a qualified person in consultation with the water works operator.

Activity: Access (boating, swimming, fishing, car washing, etc.)

Issue: Large numbers of people swimming, bathing or fishing in the source water area can contaminate the water with excrement, phosphates and litter. Large numbers of people washing vehicles in a source water area can contaminate water with phosphates and petroleum products. Motorized vehicles, such as motor boats and all-terrain vehicles (ATVs), can leak petroleum products into the water. Small amounts of contaminants such as oil and gas can make large amounts of drinking water non-potable. It can be very expensive, if not impossible, to remove these contaminants from groundwater. ATVs can also cause erosion and sedimentation of the watercourses. The greater the distance between the intake and swimmers, bathers, fishers or people operating/washing a vehicle, the less risk of contaminated drinking water.

Sample Regulation:
(1) No person is permitted to swim, bathe, wash, or cut ice at any time in [insert name of water body] or any other watercourse within the protected water area.

(2) No person is permitted to fish from the shoreline of or in [insert name of water body] or any watercourse within the protected water area.

(3) No person is permitted to wash a vehicle in any watercourse or within 60* m of the shoreline or bank of any watercourse within the protected water area.

(4) No person is permitted to, at any time, operate a vessel of any kind, on, through or over [insert name of water body] or any watercourse in the protected water area, unless authorized by the water works operator for the protection of the protected water area.

(5) No person is permitted to fill a gasoline tank or transfer any liquid fuel from tank to tank on or within 100* m of the shoreline or bank of [insert name of water body] or any watercourse within the protected water area, except for the purpose of operating a water treatment plant or a purpose reasonably incidental to the maintenance of private property.

Activity: Burning

Issue: Healthy forests can help maintain water quality. They play an important part in filtering contaminants and preventing erosion and sedimentation. Large uncontrolled forest fires can reduce the ability of the forest to perform these functions in the years immediately following the fire. The highest risk of forest fire is from late spring to early fall, so the greatest precautions should be taken when lighting fires during this period.

SAMPLE SAMPLE SAMPLE

Sample Regulation:
No person is permitted to light or be responsible for an open fire in the protected water area from April 1* to October 31*, inclusive, in any year.

Activity: Biocides and pest control products

Issue: Small amounts of chemicals such as biocides can make large amounts of drinking water non-potable. It can be very expensive, if not impossible, to remove these contaminants from water.

Sample Regulation:
(1) Prior written permission from the water works operator is required to use a biocide or pest control product within the protected water area.

(2) A biocide or pest control product used in an agricultural operation within the protected water area must be applied only by a certified applicator and only if recommended for use by a pest management specialist and approved under subsection (1).

Activity: Corridor easements

Issue: This type of construction can cause sediment to erode into watercourses. Properly designed construction plans can minimize the risk of erosion and sedimentation.

Sample Regulation:
No person is permitted to construct a pipeline, railway, telephone line, power line or other similar development or grant an easement on, over or across the protected water area without first obtaining the written approval of the water works operator.

Activity: Urban development (ground disturbance)

Issue: Ground disturbance can cause large amounts of sediment to erode into watercourses. Healthy vegetation plays an important part in filtering contaminants and preventing erosion and sedimentation.

Sample Regulation:
No person is permitted to undertake an activity that causes or might cause soil erosion resulting in sedimentation of a watercourse located within the protected water area. If sedimentation occurs in a watercourse within the protected water area, an operator or person responsible for the sedimentation must undertake immediate action to install erosion and sediment control measures and notify the water works operator.

Activity: Vegetation removal (non-forestry related)

Issue: Healthy vegetation can help maintain groundwater and surface water quality. It plays an important part in filtering contaminants and preventing erosion and sedimentation.

Sample Regulation:
(1) No person is permitted to alter or remove vegetation within 100* m of [insert name of water body] or within 30* m of any watercourse or wetland within the protected water area unless such alteration or removal is:
(a) approved in advance by the water works operator; or
(b) related to the operation of the water treatment plant/system and following consultation with the advisory committee.

SAMPLE

NOVA SCOTIA

Environment and Labour

Environmental and Natural Areas Management

Protected Water Area (PWA) Designation Summary

The province requires municipal water utilities to develop and follow a Source Water Protection Plan (SWPP) which identifies communication, roles, and risk management for the protection of source waters of municipal supplies.

The Water Works Operator (Municipality or Water Utility) has the option of applying to have the water supply area designated as a "Protected Water Area" under the *Environment Act*, which allows the water utility to regulate activities that may impair water quality and/ or quantity within the source water supply area.

What is a Protected Water Area?

A Protected Water Area (PWA) is an area surrounding a drinking water source that has been designated under the *Environment Act* by the Minister of Environment at the request of the water utility. A PWA Designation is one management option available to water utilities to manage risks in the source water area. Designation uses a regulatory approach to prohibit or restrict activities that are or have the potential to be a risk to the water supply. PWA regulations are specific to the area designated, and enforcement is the responsibility of the associated municipality or water utility.

What are the steps to having an area designated?

There are several steps involved for a water utility to designate a PWA. These include formally defining the area to be designated, developing associated regulations, and holding public consultations.

Step 1: Proponent submits request to NSE for PWA designation, amendment, cancellation or regulations

This includes:
-Formal request letter, containing background information as appropriate
-Description with mapping, of the physical area to be designated
-Copy of the proposed or amended regulations, if applicable, for the designated area
-Detailed records of the public consultations, including descriptions of public/ landowner/ stakeholder input; and demonstration of how any questions or concerns have been addressed

Environment Act

Designation of protected water area

106 (1) The Minister, when requested by an operator of a water works or proposed water works, may designate an area surrounding any source or future source of water supply for a water works as a protected water area.

(2) The operator of a water works, or proposed water works named in a designation made pursuant to subsection (1) shall

> (a) give notice of the designation of the area as a protected water area by publishing the notice in a newspaper having circulation in the county or counties in which the area is located and in the Royal Gazette;
>
> (b) have the notice of designation recorded at the registry of deeds and the land registration office in the county or counties in which the area is located; and
>
> (c) post signs in the area indicating that it has been designated a protected water area. 62 environment 1994-95, c. 1 OCTOBER 1, 2012

(3) The operator of a water works or proposed water works is responsible for taking all measures to protect the area designated, and the enforcement of any regulations made pursuant to subsection (6).

(4) When requested by an operator of a water works or proposed water works, the Minister may cancel a designation made pursuant to this Section, in whole or in part.

(5) Any protected water area designated pursuant to the Water Act, prior to the coming into force of this Act remains so designated.

(5A) Any area surrounding a source of public water supply defined and prescribed pursuant to Section 16 of Chapter 42 of the Acts of 1963, An Act to Amend the Water Act, is deemed to be a protected water area designated pursuant to the Water Act and remains so designated.

(5B) Any designation of a protected water area and any regulations regulating an activity in a designated protected water area that is referenced in subsection (5A) or were in effect on April 1, 1977, are deemed to have been filed pursuant to subsection 24(1) of the Regulations Act before April 1, 1978.

(6) At the request of the operator of the water works or proposed water works, the Minister may make regulations to prohibit, regulate or require the doing of any act or acts in a protected water area that may impair or prevent the impairment, as the case may be, of the quality of the water in the protected water area.

(7) Before designating a protected water area, the Minister shall ensure that the operator of the water works or proposed water works has provided opportunities for public consultation.

(8) No claim for injurious affection lies against any person as the result of a designation of a protected water area.

(9) The exercise by the Minister of the authority contained in subsection (6) is regulations within the meaning of the Regulations Act. 1994-95, c. 1, s. 106; 2001, c. 6, s. 103; 2006, c. 30, s. 35.

Land Use

- RSSIDE - Residential Single Unit Dwelling Detached
- AG - Agriculture
- AGSBHA - Agriculture - Site Based - Housing Animals
- AGLBLT - Agriculture Land Based Long Term Cropping System
- MAPRWP - Manufacturing - Processing - Water Purification
- PLWA - Protected & Limited Use - Watershed
- ITVAMI - In Transition Vacant Mining
- ITVAAG - In Transition Vacant Agriculture
- ITVARC - In Transition Vacant Recreation, Culture & Entertainment
- Fire Pond
- Forestry Silviculture Treatment
- FO - Forestry

- Building Point
- 2007 Natural Watershed Boundary
- Prescibed Watershed Line
- Collector Road
- Local Road
- Non-addressed roads
- swamp
- Tree Line
- Building outline
- Utility
- Waterline
- Waterbody
- Property Line

2007 Natural Watershed Boundary
Area: 482.6 ha (1192.7 ac)
Prescribed Watershed Boundary
Area: 364.5 ha (900.7 ac)
(The area of the watershed boundaries were calculated using the Municipality's Geographic Information System. The calculation of the watershed area includes all land and water features within the polygon shown on the map, including lakes, rivers and roads)

N W E S

0 150 300 600 900 Meters

1:13,000

Revised: December 2007
Municipality of the District of Lunenburg, Planning Department
C:\Data\Projects\Planning2007\DaresLake\
DaresLake_LU11x17_nov2007.mxd

Dares Lake Area:
164.3 ha (406 ac)

Northwest Rd
Kinley Farm Rd
Burnside Rd
Highway 3
Highway 3
Highway 3
Highway 3
Windward Ave
Eastern Ave
Awalt Rd
O'Brien Rd

Source Water Management Plan for the Dares Lake Watershed

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Appendix “B” ..... Protected Watershed Regulations (March 8,1972)

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Appendix “D” ..... Dares Lake Protected Water Area Regulations (NS Reg 260/2007)

Appendix “E” ..... Survey Plan of Dares Lake Watershed

Appendix “F” .....Wildlife Habitat and Watercourse Protection Regulations

Appendix “G” .....Best Management Practices / Forestry Planning in Municipal Drinking Water Supply Areas Nova Scotia dated September 29, 2005

Appendix “H” .....Best Management Practices Manual/Nova Forest Alliance

Appendix “I” .....Nova Scotia’s Wildlife Habitat and Watercourse Regulations

Appendix “J” .....The Responsible Use of Herbicides in Nova Scotia Forests

Appendix “K” ..... Wild Lowbush Blueberry IMP, Weed Management Guide

Appendix “L” .....Low Bush Blueberry Fact Sheet

Appendix “M” ..... The Woodlot Roads Stream Crossing Guide

Appendix “N” ..... Emergency Spill Regulations

Appendix “O” ..... Existing Land Use Plan

Appendix “P” ..... Guidelines for Monitoring Public Water Supplies

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Revised: May 29, 2020

SOURCE WATER PROTECTION MANAGEMENT PLAN

FOR THE TOWN OF LUNENBURG WATER UTILITY'S DARES LAKE WATERSHED

Introduction

The Province of Nova Scotia introduced a Drinking Water Strategy in fall 2002. The Strategy was developed to ensure Nova Scotians enjoy high quality and safe drinking water. It is based on a multiple barrier approach which requires that source water be kept clean, potable water be treated to a higher standard making it safer to drink and that treated water be monitored to prove it's safe to drink. It also requires that all municipal water systems obtain new approvals to supply water to customers and this includes the construction of new water treatment plants or upgrades to existing plants to meet the higher standards. Operators of municipal water systems are required to prepare a Source Water Protection Plan with the involvement of stakeholders.

History of the Water Utility

The Lunenburg Water and Electric Light, Heating and Power Company Limited was incorporated under Chapter 117 of the Nova Scotia Acts of 1888. In 1895 it acquired lands and water rights to construct and operate a commercial and residential water distribution system in and around Lunenburg. On August 22, 1896 the Lunenburg Board of Trade petitioned the Lunenburg Town Council to purchase the Company's waterworks system. Council agreed and offered $65,000, which the Company rejected. The Company eventually agreed to sell for $90,000 on November 15, 1902. Council borrowed an additional $15,000 to extend and upgrade the water system. A 700,000 gallons open reservoir was constructed near civic #524 Northwest Road at an elevation of 212 feet above sea level to provide additional storage and pressure within the distribution system.

In 1941, increasing commercial water demands required the installation of a booster pump on the main supply line. This served to maintain pressure at higher elevations. It was built along the Northwest highway between the open reservoir and the Town boundary. It was later converted to a chlorination facility in 1958.

Chlorine and lime feed equipment were installed in the main pumping station in 1965 to disinfect and increase the alkalinity of the water.

In 1968, a 750,000 gallon steel water tank was built on Hospital Hill Road in Garden Lots to provide additional storage within the distribution system and water required by High Liner Foods to meet their increased production requirements.

Flow proportional chlorine equipment was installed in 1990 and chlorine was added to the distribution system based on the water volume pumped to the Town.

The Utility's original water distribution system was primarily constructed of cast iron pipe. Since the 1970's the Utility has replaced these older cast iron pipes with cement lined ductile iron (CLDI) and polyvinyl chloride (PVC) pipes to improve water quality and

increase fire flows.

On June 10, 2009 Lunenburg Town Council awarded a $6.8 Million contract to Mid Valley Construction for the construction of a new water treatment plant and system upgrades to meet new Provincial Surface Water Treatment Standards. Improvements at the Water Utility pump house included three new pumps with variable speed drives to optimize energy use and a new roof. The new Water Treatment Plant uses membrane filtration with enhanced coagulation for organics removal and has a peak production rate of 5,400 cubic meters per day. Water is fed to the distribution system by gravity from a new reservoir, reducing energy use associated with treated water pumping. The membrane filtration recovers 95% of raw water flows, significantly reducing the daily volume of filtered organic materials for disposal when compared to conventional filtration. The filtered materials flow by gravity through pipes to the Town's Wastewater Treatment Plant for treatment.

A new glass lined bolted reservoir was constructed next to the Water Treatment Plant to replace an existing open reservoir. The new reservoir incorporates a central fixed volume chlorine contact tank and an outer ring for water storage requirements. The project also includes a remote chlorine monitoring and dosing station located at the existing Garden Lots standpipe at the far end of the distribution system.

Dares Lake and the Town Water System

The intake pipe that draws water from Dares Lake is located approximately 300 feet from the shore on the eastern side of the lake. It is piped to the Water Utility's intake building and flows by gravity to the Water Utility's pump house located by the western shore of nearby Cantelope Lake. This raw water is next pumped to the Water Treatment Plant for micro filtration treatment. The treated water from the Plant is then stored in a glass lined steel reservoir where it flows by gravity in the Water Utility distribution system. Dares Lake has a stable yield of 10,800 cubic meters per day during a dry season.

The Water Utility currently supplies drinking water to approximately 1,100 residential customers and over 100 of these customers are located in Northwest, Lilydale and Garden Lots. There are approximately 200 commercial customers and ten of these customers are located in the Municipality of the District of Lunenburg (District). Fire hydrants are installed on the distribution system and provide fire protection to the District and the Town of Lunenburg. The Dares Lake water supply and distribution system is a valuable resource for residential and commercial customers in both municipalities.

The Town's current Water Treatment Plant was officially opened in September 2010. It is a vital component of the Town's capital assets meeting Provincial treatment standards to address customer needs for personal consumption, commercial and institutional operations, firefighting and other customer requirements. Maintaining the quality of water in Dares Lake is critical to the successful management of the Water Utility because if it were contaminated there would be a significant cost associated with finding another source of water. Business and residential customers would be severely inconvenienced if potable water was not available for everyday use.

Dares Lake Watershed

In March 1972, 900 acres of land surrounding and including Dares Lake was designated as a protected water area under the Nova Scotia Water Act. The amount of land included in this designation represents approximately 3/4 of the total watershed area. Provincial Regulations were approved to protect the water supply against potentially harmful activities such as animal pasturing, fishing, boating, etc. that could negatively impact Dares Lake water quality. However, there are approximately 300 acres of land which are outside of the protected watershed, but are within the natural drainage area that have not been designated as a protected water area. The Town continues to explore various options to incorporate additional lands into the protected watershed.

The Source Water Protection Advisory Committee and Town Council reviewed the land within the natural drainage area of Dares Lake and put forth the following means of protecting this valuable resource and they have been included in this Plan. Town Council and Water Utility annually review these initiatives and update as required.

Methodology of the Source Water Protection Plan

The most cost effective way to prevent drinking water from being contaminated is to protect the source of the water supply. The amount of fresh water available to municipalities is limited and the quality can be threatened by increased development and other human activity. Protecting the water supply will ensure good quality drinking water for residents and businesses in both the Municipality of Lunenburg and the Town of Lunenburg.

The Nova Scotia Department of Environment has developed guides for water utilities and municipalities to assist in preparing a Source Water Protection Plan. The following is a list of the guides available from the Province:

1. Form a Source Water Protection Advisory Committee.

2. Delineate a Source Water Protection area boundary.

3. Identify potential contaminants and assess risk.

4, Develop a Source Water Protection Management Plan.

5. Develop a monitoring program to evaluate the effectiveness of a Source Water Protection Plan.

These five guides were used by the Source Water Protection Advisory Committee in developing this Source Water Protection Management Plan.

Formation of the Source Water Protection Advisory Committee

The Town of Lunenburg established a Source Water Protection Advisory Committee in fall 2005. A representative from the Nova Scotia Department of Environment reviewed

the Provincial Drinking Water Strategy with the Committee and provided direction on the structure and responsibilities of a Source Water Protection Advisory Committee.

The Source Water Protection Advisory Committee required representation from the land owners in the Dares Lake watershed. Therefore, a meeting was held with land owners on March 1, 2006 to explain why a Source Water Advisory Committee (Committee) was required and requested that they appoint two representatives to be active participants on the Committee. Two representatives were selected and attended Committee meetings. Committee Terms of Reference were developed by the Committee and approved by Town Council on June 15, 2006. A copy of the Committee's Terms of Reference is attached as Appendix "A" to this document.

Delineation of the Source Water Protection Area Boundary

The Dares Lake watershed was originally surveyed by Mr. Errol Hebb and a plan prepared on March 27, 1971. This survey plan identified land around the Dares Lake watershed which was to be protected. This land was protected from certain activities after being designated as a protected area in March 1972. A copy of the Dares Lake Protected Water Area Regulations is attached in Appendix "B".

The protection of the watershed was reaffirmed in 2007 under the NS Environment Act. A copy of the reaffirmed Dares Lake Protected Water Area Designation is attached as Appendix "C". A copy of the reaffirmed Dares Lake Protection Water Area Regulations is attached as Appendix "D".

The Source Water Protection Advisory Committee determined that a detailed survey of the drainage boundary was required to identify all the land which drained towards Dares Lake. Richard Wentzell, a Forest Technician from Mahone Bay, was hired to conduct this survey and completed his work in May 2007. A copy of his survey plan is attached in Appendix "E".

Risk Management Options

The Source Water Protection Advisory Committee discussed various methods to protect the watershed. The options listed below are provided in a guide prepared by the Nova Scotia Department of the Environment for the protection of water supplies.

A. **Acquisition of Land** - the direct ownership of land in the source water supply area affords one of the highest levels of water quality protection.

B. **By-laws** - adopt land-use bylaws or develop a new municipal planning strategy. These instruments allow regulation of land uses permitted in source water supply areas. You can find more information in the Service Nova Scotia and Municipal Relations Local Government Resource Handbook: Municipal Water Supply Watershed Planning Model, section 5.7.

C. **Best Management Practices** - use best management practices and

guidelines to manage activities that take place in the source water supply area.

D. **Contingency Plans** - if there's a spill or other event that threatens the quality or quantity of the source water, a well-prepared contingency plan will allow continued protection of public health.

E. **Designation** - the Environment Act allows for the designation of Protected Water Areas. Designation allows a water utility or municipality to regulate activities like swimming, fishing and logging within a delineated area.

F. **Education** - work with stakeholders in the source water supply area to teach them about drinking water and water resource stewardship. This Source Water Protection Management Plan is intended to educate the public about the importance of a public water supply. Signs have been posted around the watershed to ensure that the public is aware of Dares Lake being a public water supply.

Watershed Activities and Potential Risk to Source Water Quality

The Source Water Protection Advisory Committee conducted a review of the following activities which could be a potential risk to water quality in Dares Lake. Each activity indicates how the watershed is to be protected to eliminate or reduce the risk of contaminating the water supply.

1. Forestry Operations

Forestry operations are to be conducted in accordance with the following documents or the latest revision.

a. Wildlife Habitat and Watercourse Protection Regulations made under Section 40 of the Forest Act, Appendix "F".
b. Best Management Practices / Forestry Planning in Municipal Drinking Water Supply Areas Nova Scotia dated September 29, 2005, Appendix "G".
c. Best Management Practices Manual as prepared by the Nova Forest Alliance, Appendix "H".

Landowners must comply with NS Department of Environment regulations with respect to the application of herbicides within the watershed.

2. Christmas Tree Cultivation and Harvesting

Best Management Practices for Christmas tree cultivation and harvesting must be followed when working in the watershed. Christmas tree cultivation and harvesting is to be conducted in accordance with the latest revision of the following documents.

a. Nova Scotia's Wildlife Habitat and Watercourse Regulations (Appendix "I"), and
b. The Responsible Use of Herbicides in Nova Scotia Forests (Appendix "J").

3. Blueberry Cultivation and Harvesting

Best Management Practices for blueberry cultivation and harvesting must be followed when working in the watershed. Blueberry cultivation and harvesting is to be conducted in accordance with the latest revision of the following document.

a. Wild Lowbush Blueberry IMP, Weed Management Guide as published by the Province of New Brunswick, Department of Agriculture, Fisheries and Aquaculture (Appendix "K").
B. Lowbush Blueberry Fact Sheet from the Wild Blueberry Producers Association of Nova Scotia (Appendix "L").

4. Roads

a. Any person who wants to use or alter a watercourse (creek, brook, stream, river, lake, pond, spring, lagoon or any other natural body of water) requires a Watercourse Alteration Approval from NSE in accordance with the Environment Act.
b. The Woodlot Roads Stream Crossing Guide prepared by Glen Brathwaite 1992 (Appendix "M") is to be followed when constructing a wood lot road within the watershed.
c. Culverts on Awalt Road are to be maintained by Nova Scotia Transportation and Infrastructure Renewal.

5. Brooks, Streams and Watercourses Flowing into Dares Lake

Options should be evaluated in regard to mitigating any potential pollution sources near culverts/water crossings which flow towards Dares Lake.

6. Accidents and Spills

The accidental spill of any contaminant which may affect water quality even to a slight degree shall be cleaned up immediately and reported to the Town of Lunenburg as noted in the Contingency/Emergency Plan. Spills may also have to be reported to NSE as per the Emergency Spill Regulations (Appendix "N").

7. Pesticides and herbicides

The current regulations for the Dares Lake watershed prohibit the use of insecticides or fertilizers that could affect water quality even to the slightest degree in Dares Lake. The use of pesticides within the Dares Lake watershed must comply with Pesticide Regulations made under section 84 of the Environment Act.

8. Recreation

Recreational activities are prohibited on or near the Dares Lake as per the Dares Lake Protected Water Area Regulations. Property owners who own land which abuts Dares Lake may request permission from the Town Engineer for some recreational activities. If it is deemed that the activity will not cause an adverse effect to the quality of water in Dares Lake the Town Engineer may grant permission for that activity to take place.

9. Agriculture Uses

a. Pasturing or grazing of cattle or livestock is prohibited in the Dares Lake protected watershed area and discouraged in the natural watershed area.
b. The application and storing of manure is prohibited in the Dares Lake protected watershed area and discouraged in the natural watershed area.
c. Farmers are encouraged to implement an Environmental Farm Plan (EFP) by contacting the Nova Scotia Federation of Agriculture for any farms located within the natural watershed area.

10. Development

The Dares Lake Protected Water Area Regulations state "... no houses, cottages, sheds, lean to's, hovels, barns, privies or any other structure housing persons or animals, either on a temporary or permanent basis may be erected within the prescribed area..." (Appendix "D").

The Source Water Protection Advisory Committee received and updated a plan identifying existing land uses within the watershed and a copy of the plan is attached as Appendix "O".

CONTINGENCY / EMERGENCY PLAN

Water Utility and Water Supply Contacts

In the event of an emergency where water in Dares Lake is or may be contaminated as a result of a spill or release the Town Engineer or Public Works Superintendent must be contacted as soon as possible to determine the extent of the spill or release and to take appropriate action. Scotia Business is the dispatch service for the Town of Lunenburg Water Utility. Scotia Business will contact the Town Engineer or Public Works Superintendent during non-working hours. Contact numbers for Water Utility Managers are provided below and these numbers can be used during normal working hours (Monday to Friday between 8:00 am and 4:30 pm).

Primary Contact Number (24 hours a day / 7 days a week)

Water Utility Dispatch Service (902) 527-0150

Secondary Contact Numbers (during normal working hours)

Water Utility Managers

Town Engineer (902) 634-8992
Public Works Superintendent (902) 634-8992

Water Supply Information

The Dares Lake Water Supply is located in Northwest, Lunenburg County, Nova Scotia. The watershed (natural drainage area) is approximately 900 acres which surrounds and includes Dares Lake. The water intake (civic #763 Northwest Road, Route 324) is located on the eastern side of Dares Lake. The pump house (765 Northwest Road, Route 324) is where water is pumped into the distribution system. A map is attached as Appendix “Q”.

Emergency Procedure

In the event of an emergency where the water supply has become contaminated the Town of Lunenburg Water Utility Water Quality Emergency Notification Procedure should be activated. This procedure is kept on file at the Water Treatment Plant and Town Hall. The first action to be taken by the Town Engineer or designate as the Water Utility Manager is to ensure all Water Utility pumps are turned off to prevent contaminated water from entering the distribution system. The Town Engineer will next contact the Regional Emergency Management Organization Manager, Town of Lunenburg Emergency Management Assistant Coordinator and Chief Administrative Officer as soon as is possible to advise of the emergency. The Town Engineer will next contact Nova Scotia Environment (NSE) and the Nova Scotia Medical Officer of Health (NSMOH) along with all the institutional and commercial customers whose contact information is included in the Water Utility Water Quality Emergency Notification Procedure.

The Town Engineer and Regional Emergency Management and Lunenburg Assistant Emergency Management Coordinators will work with the NSMOH and NSE in planning action required to protect Water Utility customers. The plan may include such measures as issuing a boil water advisory, radio, social media and other advertisements, posting of signs in the community and direct contact to institutional, conferring with institutional and commercial customers at a higher health risk due to water demands. A plan will be formulated to determine the source of the contamination and how to remove it from the watershed and distribution system. The plan will also address as necessary an alternate source of water for Water Utility customers be it by truck and/or bottles of water during the investigation, clean-up and testing the water supply prior to resuming normal use. The determination as to when the water supply is safe will be made by NSE and NSMOH in consultation with the Town Engineer.

In the event of a fire or contamination spill within the watershed the Fire Department is to be immediately contacted by calling 911 by whomever witnesses the fire or spill.

Contingency/Emergency Plan Annual Review

The Contingency/Emergency Plan should be reviewed on a yearly basis to ensure that information is up to date. It should also be reviewed after an emergency to determine if any updates are required.

EVALUATION AND MONITORING

Evaluating and Updating the Plan

The Source Water Protection Management Plan will be annually reviewed by the Source Water Protection Advisory Committee if in effect or Council to determine if the Plan is achieving the desired results. If the Plan is not meeting the objectives of the Committee and/or Council as applicable then it should be updated to reflect changes required to protect the watershed.

Monitoring Program

Water quality in Dares Lake is monitored and tested by the Town's Water Utility. If raw water conditions change or are of concern to the Utility then action should be taken to address the issue(s) to ensure that there are no adverse water quality effects in the watershed. Raw water samples are tested two times per year for all parameters in the Guidelines for Canadian Drinking Water Quality and results compared to prior test results. Any results which indicated a change in raw water quality should be investigated to determine the source of the contaminant. Routine monitoring of the water supply is to be conducted in accordance with NSE's Guidelines for Monitoring Public Water Supplies (Appendix "P").

Appendix "A"

TOWN OF LUNENBURG WATER UTILITY
SOURCE WATER PROTECTION ADVISORY COMMITTEE
TERMS OF REFERENCE

INTRODUCTION

The Town of Lunenburg's Source Water Protection Advisory Committee (SWPAC) will use these Terms of Reference to develop a Source Water Protection Plan for Dares Lake watershed. The Source Water Protection Plan will be used to protect water quality in Dares Lake and the customers that are supplied water by the Town's Water Utility. The Nova Scotia Department of Environment will provide guidance to the Advisory Committee in developing the Source Water Protection Plan.

DARES LAKE WATERSHED

Dares Lake watershed is located approximately four (4) kilometers northwest of the Town of Lunenburg. The watershed is approximately 800 acres in area, of which 500 acres are prescribed as a protected area. The surface area of the lake is approximately 400 acres. The majority of land within the watershed is privately owned. The Town of Lunenburg owns approximately 70 acres of land within the watershed.

The protected area within the Dares Lake watershed was officially designated as a protected area in 1972 and published in the Royal Gazette on May 3, 1972. The watershed generally consists of raw forested land. No structures have been built in the watershed area.

SOURCE WATER PROTECTION ADVISORY COMMITTEE PURPOSE

The primary purpose of the Advisory Committee is to ensure that safe drinking water is supplied to both businesses and residents within the Town of Lunenburg and the Municipality of the District of Lunenburg. The best method to ensure that the water supply does not get contaminated is to develop best management practices for activities within the watershed. This can be achieved by planning and working with all stakeholders who have an interest in the watershed and water supply.

ROLE OF THE SOURCE WATER PROTECTION ADVISORY COMMITTEE

1. Provide a method for all stakeholders to get involved and share information on matters of watershed protection.

2. Develop best management practices for activities within the watershed. The plan may incorporate a range of available options, including

(1) Acquisition of Land
(2) By-laws (Planning Strategy and Land Use By-laws)
(3) Best Management Practices
(4) Contingency Plans
(5) Designation
(6) Education

3. Identify the boundary of the watershed area.

4. Identify the potential contaminants and assess risk.

5. Advise on forestry and other land use issues within the watershed.

6. Develop a Source Water Protection Management Plan which upon completion will be recommended to the Town of Lunenburg Town Council for approval.

MEMBERSHIP

Voting Members

Two Members from Lunenburg Town
One Member from Municipality of the District of Lunenburg
Two Members from Dares Lake landowners
Town Engineer of the Town of Lunenburg

Non - voting Members

Town Planner of the Town of Lunenburg
Municipal Planner of the Municipality of the District of Lunenburg
Two employees from the Nova Scotia Department of Environment

OPERATION OF THE SOURCE WATER ADVISORY COMMITTEE

1. Chairperson and Vice-Chairperson will be appointed by the Committee on or about the 1st of April each year.

2. Each member may appoint an alternate to attend meetings in their absence.

3. The Town of Lunenburg will prepare minutes for all meetings.

4. The Committee will attempt to resolve issues by a consensus of the members entitled to vote on issues. If a consensus cannot be reached then a vote shall be taken of which at least two thirds of the voting members will have to be in favor in order for a motion to pass. Three voting members will constitute a quorum.

5. The Chairperson shall act as spokesperson for the Committee.

6. Amending the Terms of Reference will require the approval of the Town of Lunenburg.

Appendix "B"

PPENDIX "B"

The Undersigned, the Minister charged with the administration of the Water Act, pursuant to Section 17 of the said Act hereby orders that the area of land in the County of Lunenburg, hereinafter described, which surrounds a source of water supply for the water works operated by the Town of Lunenburg, is now and hereafter designated as a Protected Water Area:

The Undersigned, pursuant to sub-section (2) of Section 17, does hereby order that with respect to the protected water area the following regulations will apply:

1. No Municipality or person shall discharge or deposit any material of any kind into or in any well, lake, river, pond, spring, stream, reservoir or other water or water course or on any shore or bank thereof or into or in any place that may cause pollution or impair the quality of the water in Dares Lake for domestic, commercial or industrial use.

2. No Municipal or private garbage or refuse may be disposed of within the prescribed watershed area, either by sanitary land fill, incineration or any other method.

3. No fishing, swimming, boating, camping, picnicking, snowmobiling or any other similar purpose will be permitted in or on the lake or in or on the prescribed area, unless it is for the express purpose of making surveys, taking water samples or any other use deemed necessary by the Town of Lunenburg for its' own use and benefit.

4. No houses, cottages, sheds, lean to's, hovels, barns, privies or any other structure housing persons or animals, either on a temporary or permanent basis may be erected within the prescribed area.

5. No grazing of cattle or livestock of any kind will be permitted within the prescribed watershed area.

6. Any land presently being used and maintained as "cultivated land" may continue to be used as such, providing precautions are taken to prevent runoff of excessive amounts of insecticides and fertilizers that could even to a slight degree affect the quality of the water in Dares Lake.

7. Logging or cutting of wood on so-called "woodlot areas" may continue providing:
   (a) Indiscriminate cutting is not permitted.
   (b) Good conservation and preventative land erosion practices are adhered to.
   (c) Persons carrying out the logging operation do not indiscriminately drain gas or oil from machinery, vehicles or hand machines on the ground where the residue could be washed into the lake.

DATED at Halifax, in the Province of Nova Scotia this 8th day of March A. D. 1972.

Appendix "C"

Dares Lake Protected Water Area Designation

made under subsection 106(5) of the *Environment Act*

S.N.S. 1994-95, c. 1

N.S. Reg. 259/2007 (March 8, 1972)

Canada)

Province of Nova Scotia)

In the Matter of The *Water Act*, Chapter 335, of the Revised Statutes of Nova Scotia 1967, as amended by Chapter 64 of the Statutes of Nova Scotia 1968

- and -

In the Matter of A Protected Water Area

The Undersigned, the Minister charged with the administration of the *Water Act*, pursuant to Section 17 of the said Act hereby orders that the area of land in the County of Lunenburg, hereinafter described, which surrounds a source of water supply for the water works operated by the Town of Lunenburg, is now and hereafter designated as a Protected Water Area:

All and singular that certain parcel or tract of land and land covered by water situate lying and being at Northwest in the County of Lunenburg, Province of Nova Scotia, Canada, which can be more particularly described as follows:

Beginning at a point on the division line between properties of Michael Falkenham and Lottie M. Cantelope et al. on the Northeastern side of Dares Lake which said point is located Three Hundred Sixty feet (360.0') measured Northeastwardly along said division line from the mean high water mark of the Northeastern shore of Dares Lake;

Thence from said point so located South Eleven degrees three minutes Fifty-four seconds East (S 11°03'54" E) (Astronomic Meridian) over said property of Lottie M. Cantelope et al. One Thousand Three Hundred Ninety feet (1,390.0') more or less, to a point marked by a stake driven into the ground;

Thence South Thirty-six degrees Twenty-six minutes Fifty-four seconds East (S 36°26'54" E) over properties of Lottie M. Cantelope et al. and Benjamin Kaulback One Thousand Four Hundred Seven and Seventy-four one hundredths feet (1,407.74') more or less, to a point marked by a stake driven into the ground;

Thence South Forty degrees Fifty-four minutes Thirty seconds West (S 40°54'30" W) along the Southeastern boundary of property of Evans Parks and Ross Parks Eight Hundred Fifty and Ninety-eight one hundredths feet (850.98') more or less, to a point marked by a stake driven into the ground;

Thence North Fifty-nine degrees Thirty minutes West (N 59°30' W) over said property of Evans Parks and Ross Parks One Thousand One Hundred Sixty-two feet (1,162.0') more or less to a point marked by a stake driven into the ground;

Thence South Thirty-seven degrees Thirty-one minutes West (S 37°31' W) over properties of Evans Parks and Ross Parks and Heirs of the Estate of Forman Robar and Amiel Demone respectively Five Thousand Eleven and Ninety-four one hundredths feet (5,011.94') more or less, to a point marked by a stake driven into the ground;

Thence South Seventy-two degrees Thirty minutes West (S 72°30' W) over property of Carol W. Dares and Elmore Awalt respectively Two Thousand Five Hundred Fifty-two and Ninety-one one hundredths feet (2,552.91') more or less, to a point marked by a stake driven into the ground;

Thence North Twenty-two degrees Thirty minutes West (N 22°30' W) over property of Elmore Awalt Seven Hundred Fifteen and Sixty-two one hundredths feet (715.62') more or less, to a point marked by a stake driven into the ground;

Thence North Nine degrees Thirty-nine minutes West (N 09°39' W) over property of Elmore Awalt and Hugh Anderson respectively One Thousand Three Hundred Ninety-six feet (1, 396.0') more or less, to a point marked by a stake driven into the ground;

Thence North Seventeen degrees Four minutes East (N 17°04' E) over properties of Hugh Anderson, Lloyd Wentzell and Hazel Wentzell respectively Three Thousand Four Hundred Twenty Feet (3,420.0') more or less, to a point marked by a stake driven into the ground;

Thence North Twenty-seven degrees Thirty-five minutes East (N 27°35' E) over properties of Lloyd Wentzell and Hazel Wentzell, Olive E. Dorey and Aubrey Berringer respectively Four Thousand Two Hundred Seventy-nine and Seven one hundredths feet (4,279.07') more or less, to a point marked by a stake driven into the ground;

Thence North Fifty-three degrees Thirteen minutes Fifty-four seconds East (N 53°13'54" E) over property of Aubrey Berringer and along the division line between properties of Palmer Langille and Olive E. Dorey Seven Hundred Seventy-eight and Thirty-eight one hundredths feet (778.38') more or less, to a point marked by a stake driven into the ground;

Thence North Fifty-two degrees Six seconds East (N 52°00'06" E) along said division line One Hundred Fifty-seven and Seventy-seven one hundredths feet (157.77') more or less, to a point marked by a stake driven into the ground;

Thence North Fifty-two degrees Thirty-six minutes East (N 52°36' E) along said division line Three Hundred Ninety-five and Forty-nine one hundredths feet (395.49') more or less, to a point marked by a stake driven into the ground;

Thence North Fifty-four degrees Fifty-three minutes East (N 54°53' E) along said division line One Hundred Eighty-two and Twenty-eight one hundredths feet (182.28') more or less, to a point marked by a stake driven into the ground;

Thence North Fifty-three degrees Seventeen minutes East (N 53°17' E) along said division line Two Hundred Ninety-six and Forty-six one hundredths feet (296.46') more or less, to a point marked by a stake driven into the ground;

Thence South Thirty-five degrees Fifty-six minutes East (S 35°56' E) over properties of Olive E. Dorey, Michael Falkenham and Aubrey Berringer One Thousand Three Hundred Sixty-four and Thirty-eight one hundredths feet (1,364.38' more or less, to a point marked by a stake driven into the ground;

Thence South Forty-three degrees Thirty-six minutes forty-eight seconds East (S 43°36'48" E) over property of Aubrey Berringer Two Hundred Twenty-five and Forty-five one hundredths feet (225.45') more or less, to a point marked by a stake driven into the ground;

Thence South Forty degrees Ten minutes East (S 40°10' E) over properties of Aubrey Berringer, Alice Spidle, Muriel Nauss, Olive Dorey and Michael Falkenham respectively One Thousand Five Hundred Fifteen and Sixty-six one hundredths feet (1,515.66') more or less, to a point marked by a stake driven into the ground;

Thence South Eleven degrees Three minutes Fifty-four seconds East (S 11°03'54" E) over said property of Michael Falkenham Four Hundred Eighty feet (480.0') more or less, to the point marking the place of beginning, all bearings being astronomic.

The herein described lot of land and land covered by the waters of Dares Lake contains an approximate area of Nine Hundred and Seventy-one one hundredths acres (900.71 acs.) and is shown on a Plan of Survey showing Dares Lake and bordering properties at Northwest, Lunenburg Co., N.S. dated at Bridgewater, N. S. the 27th day of March, A. D., 1971 and approved by Errol B. Hebb, Nova Scotia Land Surveyor No. 7.

Dated at Halifax, in the Province of Nova Scotia this 8th day of March A. D. 1972.

Glen M. Bagnell

Minister Charged with the Administration of the *Water Act*

Appendix "D"

Dares Lake Protected Water Area Regulations

made under subsection 106(5) of the

Environment Act

S.N.S. 1994-95, c. 1

N.S. Reg. 260/2007 (March 8, 1972)

(1) No Municipality or person shall discharge or deposit any material of any kind into or in any well, lake, river, pond, spring, stream, reservoir or other water or water course or on any shore or bank thereof or into or in any place that may cause pollution or impair the quality of the water in Dares Lake for domestic, commercial or industrial use.

(2) No Municipal or private garbage or refuse may be disposed of within the prescribed watershed area, either by sanitary land fill, incineration or any other method.

(3) No fishing, swimming, boating, camping, picnicking, snowmobiling or any other similar purpose will be permitted in or on the lake or in or on the prescribed area, unless it is for the express purpose of making surveys, taking water samples or any other use deemed necessary by the Town of Lunenburg for its own use and benefit.

(4) No houses, cottages, sheds, lean to's, hovels, barns, privies or any other structure housing persons or animals, either on a temporary or permanent basis may be erected within the prescribed area.

(5) No grazing of cattle or livestock of any kind will be permitted within the prescribed watershed area.

(6) Any land presently being used and maintained as "cultivated land" may continue to be used as such, providing precautions are taken to prevent runoff of excessive amounts of insecticides and fertilizers that could even to a slight degree affect the quality of the water in Dares Lake.

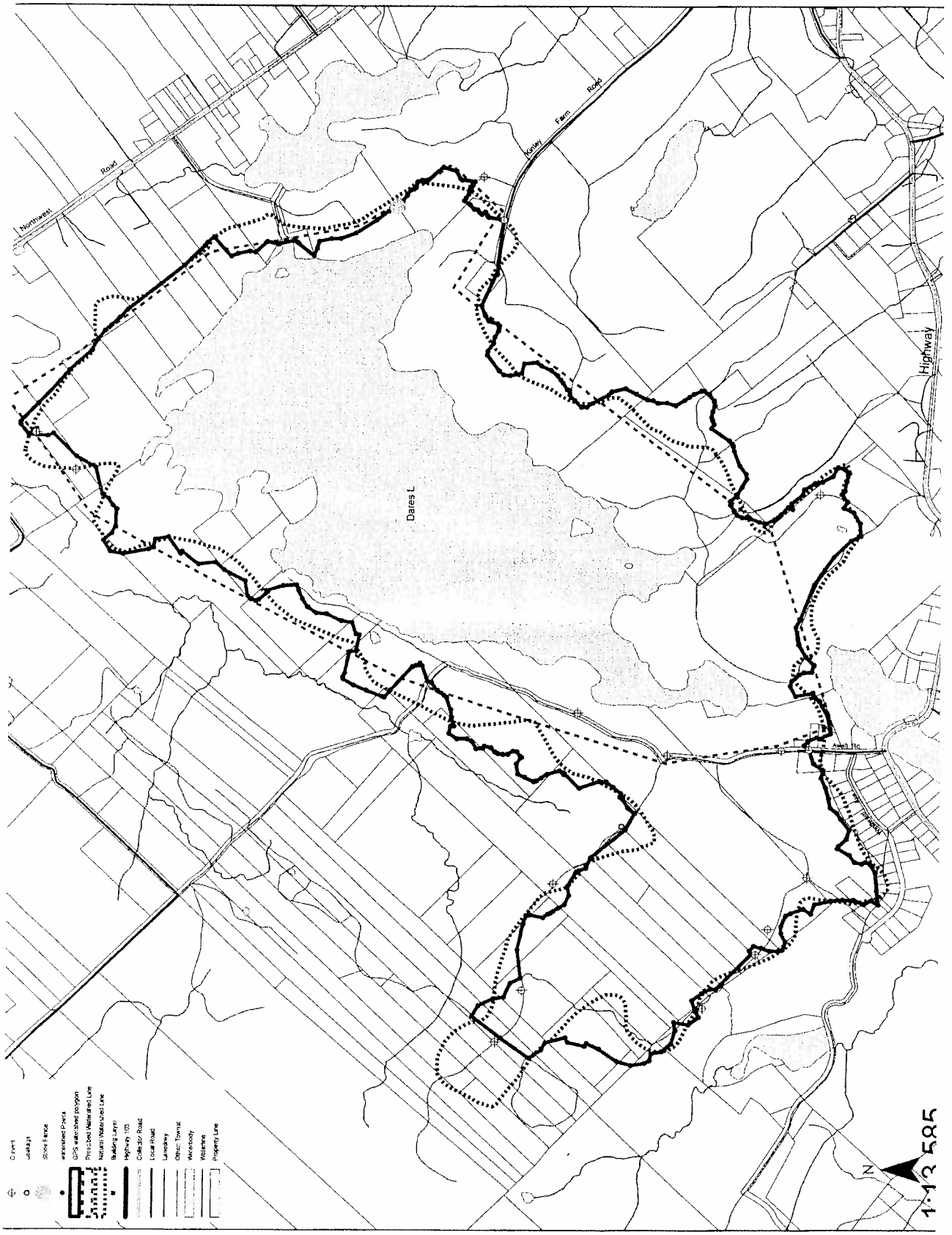
(7) Logging or cutting of wood on so-called "woodlot areas" may continue providing:

(a) Indiscriminate cutting is not permitted.

(b) Good conservation and preventative land erosion practices are adhered to.

(c) Persons carrying out the logging operation do not indiscriminately drain gas or oil from machinery, vehicles or hand machines on the ground where the residue could be washed into the lake.

Appendix "E"


Northwest
Road
Kinsey Farm
Road
Highway
Dares L
Awalt Rd
N
1:12,595
Cursor
Lookout
Snow Fence
watershed Points
GPS watershed polygon
Prescribed Watershed Line
Natural Watershed Line
Building Layer
Highway 100
Collector Road
Local Road
Laneway
Other Towns
Waterbody
Waterline
Property Line

Lunenburg Watershed (Dares Lake)

Establishing the Boundary

The Town of Lunenburg has been using Dares Lake as the towns water supply since 1895. I was hired by the Town in 2006 to establish the boundary for the watershed surrounding Dares Lake.

The criteria used to establish the boundary was very simple; any land that would allow water to drain into Dare's Lake would be considered "watershed lands". I started to establish the general locations and land search in January 2007. I spent time walking the alleged boundary and marked it with flags, as I determined the boundary. I planned much of the initial walking with times of peak water flow. With weather being unpredictable this can be difficult, however, this turned out to be very important, especially in the Spectacle Lake area and the south western side of Dare's Lake.

The points shown on the map were collected using a hand held GPS unit (Garmin Map76) and plotted on digital mapping. In addition to the boundary I have included culvert locations and a few points of interest in addition to the boundary.

The GPS readings (waypoints), give an area of the watershed as 1191 acres (482 hectares). A dot grid was used to estimate the area of the lake. My calculations give an area of the lake as 402 acres (162.5 hectares) 33.7% of the enclosed watershed area. The remaining 66.7% would be the lands that surround the lake.

The GPS data was collected on the following dates: April 26th , 27th ,28th , 30th, May1st and May 5th . All readings were taken in 2007.

373 waypoints were gathered during my final traverse of the watershed. I have broken the traverse into the following sections, with a brief description of each.

Waypoints	Description
1-2	Abandoned field
2-53	Wooded areas with openings regeneration well established
26	Low area
45	Low area
53-54	Well established regeneration 8-12' mixed stand

54-62	Stand of thinned mature spruce
56	Low area
62-66	Openings with regeneration at differing stages
68-71	Christmas Tree lot
71-82	Thicket of coniferous trees - openings with differing stages of growth
82-91	Mature spruce with openings/road
83-85	Low area
91 -95	Blueberry cultivated lands
96-115	Road, mature spruce (some thinned) arriving at Awalt Road vicinity
116-125	Through "home properties" crossing Awalt Road Note: This area may require more detailed research in times of heavy water flow
123-125	Low area
121- 147	Young immature growth - thick in places
147-160	Mature thinned spruce
160-168	Along a road and into the edge of a regenerated cut-over 4-10' naturally regenerated trees
168- 173	Patchy - Mature spruce, some deciduous trees regeneration established in openings - small areas with recent selection cuts
173	Low area
173-188	Mature with openings - recent selection cuts, spruce, hemlock & deciduous trees
188-190	Along a road in a Christmas Tree lot
189-192	Christmas Tree lot
192-195	Area with varying species and openings
195-199	Along a road
199-213	Through mature thinned spruce and road in places
202-203	Low area
213-226	Mature thinned spruce

226-256	Regenerated cut-over with 8-20' growth variety of species coniferous and deciduous
256-313	Variety of stand conditions- mostly spruce some areas thinned, however mostly natural growth
259-260	**Low area**
281	**Low area**
303	**Low area**
307-309	**Low area** Note: This area flooded and drained into Martin's Brook during peak water flow
314- 316	Christmas Tree lot
316-320	Cultivated lands
320-324	Mature coniferous woods
324-325	Immature forest (home properties) Note: Should be checked out in times of peak water flow
325-332	Field, forest openings, recent cutting Note: I think a culvert/ditch could divert water to Cantelope lake from 324 to here, thereby reducing the area of the watershed
332-334	Field
334-335	Dam on Dare's Lake - brook leading to Pump House
335-336	Road from dam to Dare's Lake
336-346	Differing stages of over mature forested lands
346-372	Regenerated cut-over both coniferous and deciduous, thinned and natural. 8-20'
372-373	Road and field
373-1	Field

Culverts	Direction of flow
Culvert 1	New culvert directing water to Martin's Brook
Culvert 2	New culvert directing water to Dare's Lake
Culvert 3	Culvert on Kinley Farm Road directing water to Cantelope Lake
Culvert 4	Culvert on a logging road directing water to Dare's Lake
Culvert 5	Culvert on home property leading to Spectacle Lakes
Culvert 6	Culvert leading to Dare's Lake
Culvert 7	Culvert leading to Dare's Lake - this has the largest volume of flow leading to Dare's Lake
Culvert 8	Culvert leading water to Martin's Brook
Culvert 9	Culvert directing water to Dare's Lake. I think this portion (189-195) could be diverted to Martin's Brook, with some excavating
Culvert 10	Culvert outside the watershed boundary, directing water to Martin's Brook
Culvert 11	Culvert directing water to Dare's Lake
Culvert 12	Culvert directing water to Dare's Lake
Culvert 13	Culvert directing water from a fire pond to Dorey's Marsh
Culvert 14	Culvert directing water to Doreys Marsh
Culvert 15	Culvert directing water to Dare's Lake
Old Culvert	Remains of an old culvert - water goes to Cantelope Lake
"Leakage"	It appears a culvert may have collapsed under the road. This leakage appears to be fed by a fire pond and leads to Martin's Brook
Stone wall/fence	At weigh-point 346 there are the remains of an old stone wall

Note: Andrew Parks indicated to me that he **may** establish a home on the Parks property. He would like to place it to the north of waypoints 373-2. I think a minimal amount of ditching could easily divert any water in this area to culvert number 3.

S Symbol Set=2H R DATUMM E NAD83 066 0.0000000E+00 -1.6434840E-11 0 0 0H
COORDINATE SYSTEMU UTM UPSF ID-------- WpCl CC Zne Easting Northing Symbol------
------- T O Alt(m) CommentW
001 USER -- 20T 391429 4916454 Waypoint I E 51.8 26-APR-07 17:21W
002 USER -- 20T 391313 4916505 Waypoint I E 57.1 26-APR-07 17:23W
003 USER -- 20T 391274 4916491 Waypoint I E 55.4 26-APR-07 17:26W
004 USER -- 20T 391253 4916479 Waypoint I E 54.0 26-APR-07 17:27W
005 USER -- 20T 391242 4916446 Waypoint I E 56.1 26-APR-07 17:29W
006 USER -- 20T 391227 4916440 Waypoint I E 54.9 26-APR-07 17:30W
007 USER -- 20T 391214 4916442 Waypoint I E 55.9 26-APR-07 17:30W
008 USER -- 20T 391191 4916455 Waypoint I E 56.1 26-APR-07 17:30W
009 USER -- 20T 391168 4916460 Waypoint I E 56.6 26-APR-07 17:31W
010 USER -- 20T 391137 4916481 Waypoint I E 54.4 26-APR-07 17:33W
011 USER -- 20T 391121 4916483 Waypoint I E 54.9 26-APR-07 17:34W
012 USER -- 20T 391061 4916439 Waypoint I E 57.8 26-APR-07 17:35W
013 USER -- 20T 391045 4916422 Waypoint I E 57.3 26-APR-07 17:35W
014 USER -- 20T 391042 4916397 Waypoint I E 54.9 26-APR-07 17:36W
015 USER -- 20T 391051 4916353 Waypoint I E 61.6 26-APR-07 17:37W
016 USER -- 20T 391088 4916344 Waypoint I E 58.5 26-APR-07 17:40W
017 USER -- 20T 391093 4916296 Waypoint I E 59.0 26-APR-07 17:41W
018 USER -- 20T 391080 4916280 Waypoint I E 56.8 26-APR-07 17:41W
019 USER -- 20T 391063 4916243 Waypoint I E 55.4 26-APR-07 17:42W
020 USER -- 20T 391044 4916220 Waypoint I E 53.5 26-APR-07 17:42W
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022 USER -- 20T 391014 4916198 Waypoint I E 45.5 26-APR-07 17:43W
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025 USER -- 20T 390968 4916172 Waypoint I E 45.5 26-APR-07 17:46W
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027 USER -- 20T 390921 4916128 Waypoint I E 58.3 26-APR-07 17:53W
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031 USER -- 20T 390968 4916027 Waypoint I E 59.2 26-APR-07 17:56W
032 USER -- 20T 390981 4916015 Waypoint I E 57.8 26-APR-07 17:56W
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092 USER -- 20T 390476 4915085 Waypoint I E 53.2 26-APR-07 19:14W
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097 USER -- 20T 390240 4915254 Waypoint I E 50.6 27-APR-07 14:10W
098 USER -- 20T 390103 4915306 Waypoint I E 43.4 27-APR-07 14:12W
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100 USER -- 20T 390005 4915310 Waypoint I E 49.2 27-APR-07 14:13W
101 USER -- 20T 389957 4915284 Waypoint I E 51.6 27-APR-07 14:14W
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110 USER -- 20T 389798 4915248 Waypoint I E 45.1 27-APR-07 14:20W
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113 USER -- 20T 389743 4915211 Waypoint I E 47.0 27-APR-07 14:22W
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115 USER -- 20T 389678 4915194 Waypoint I E 40.5 27-APR-07 14:23W
116 USER -- 20T 389661 4915193 Waypoint I E 43.9 27-APR-07 14:24W
117 USER -- 20T 389641 4915231 Waypoint I E 49.2 27-APR-07 14:25W
118 USER -- 20T 389646 4915243 Waypoint I E 51.3 27-APR-07 14:25W
119 USER -- 20T 389632 4915276 Waypoint I E 51.6 27-APR-07 14:26W
120 USER -- 20T 389616 4915290 Waypoint I E 47.5 27-APR-07 14:26W
121 USER -- 20T 389596 4915270 Waypoint I E 47.7 27-APR-07 14:27W
122 USER -- 20T 389546 4915254 Waypoint I E 57.8 27-APR-07 15:04W
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124 USER -- 20T 389523 4915222 Waypoint I E 55.2 27-APR-07 15:05W
125 USER -- 20T 389520 4915219 Waypoint I E 54.7 27-APR-07 15:06W
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127 USER -- 20T 389453 4915210 Waypoint I E 54.7 27-APR-07 15:08W
128 USER -- 20T 389411 4915198 Waypoint I E 53.0 27-APR-07 15:08W
129 USER -- 20T 389376 4915193 Waypoint I E 60.7 27-APR-07 15:17W
130 USER -- 20T 389355 4915167 Waypoint I E 56.1 27-APR-07 15:18W
131 USER -- 20T 389331 4915152 Waypoint I E 56.1 27-APR-07 15:19W

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134 USER -- 20T 389227 4915160 Waypoint I E 52.5 27-APR-07 15:26W
135 USER -- 20T 389218 4915165 Waypoint I E 55.9 27-APR-07 15:26W
136 USER -- 20T 389192 4915119 Waypoint I E 57.6 27-APR-07 15:27W
137 USER -- 20T 389165 4915100 Waypoint I E 98.2 27-APR-07 15:30W
138 USER -- 20T 389158 4915074 Waypoint I E 88.3 27-APR-07 15:31W
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144 USER -- 20T 389002 4915065 Waypoint I E 52.0 27-APR-07 15:44W
145 USER -- 20T 389020 4915103 Waypoint I E 52.0 27-APR-07 15:44W
146 USER -- 20T 389017 4915108 Waypoint I E 52.5 27-APR-07 15:45W
147 USER -- 20T 389020 4915143 Waypoint I E 48.9 27-APR-07 15:45W
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205 USER -- 20T 389001 4916181 Waypoint I E 54.0 28-APR-07 08:59W
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259 USER -- 20T 389931 4916728 Waypoint I E 43.9 28-APR-07 10:02W
260 USER -- 20T 389922 4916744 Waypoint I E 42.4 28-APR-07 10:02W
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295 USER -- 20T 390409 4917725 Waypoint I E 42.4 28-APR-07 10:58W
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297 USER -- 20T 390371 4917750 Waypoint I E 41.7 28-APR-07 11:00W
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310 USER -- 20T 390804 4918130 Waypoint I E 42.2 28-APR-07 11:21W
311 USER -- 20T 390809 4918197 Waypoint I E 43.6 28-APR-07 11:22W
312 USER -- 20T 390849 4918225 Waypoint I E 46.5 28-APR-07 11:23W
313 USER -- 20T 390860 4918225 Waypoint I E 49.4 28-APR-07 11:24W
314 USER -- 20T 390930 4918163 Waypoint I E 51.1 28-APR-07 11:26W

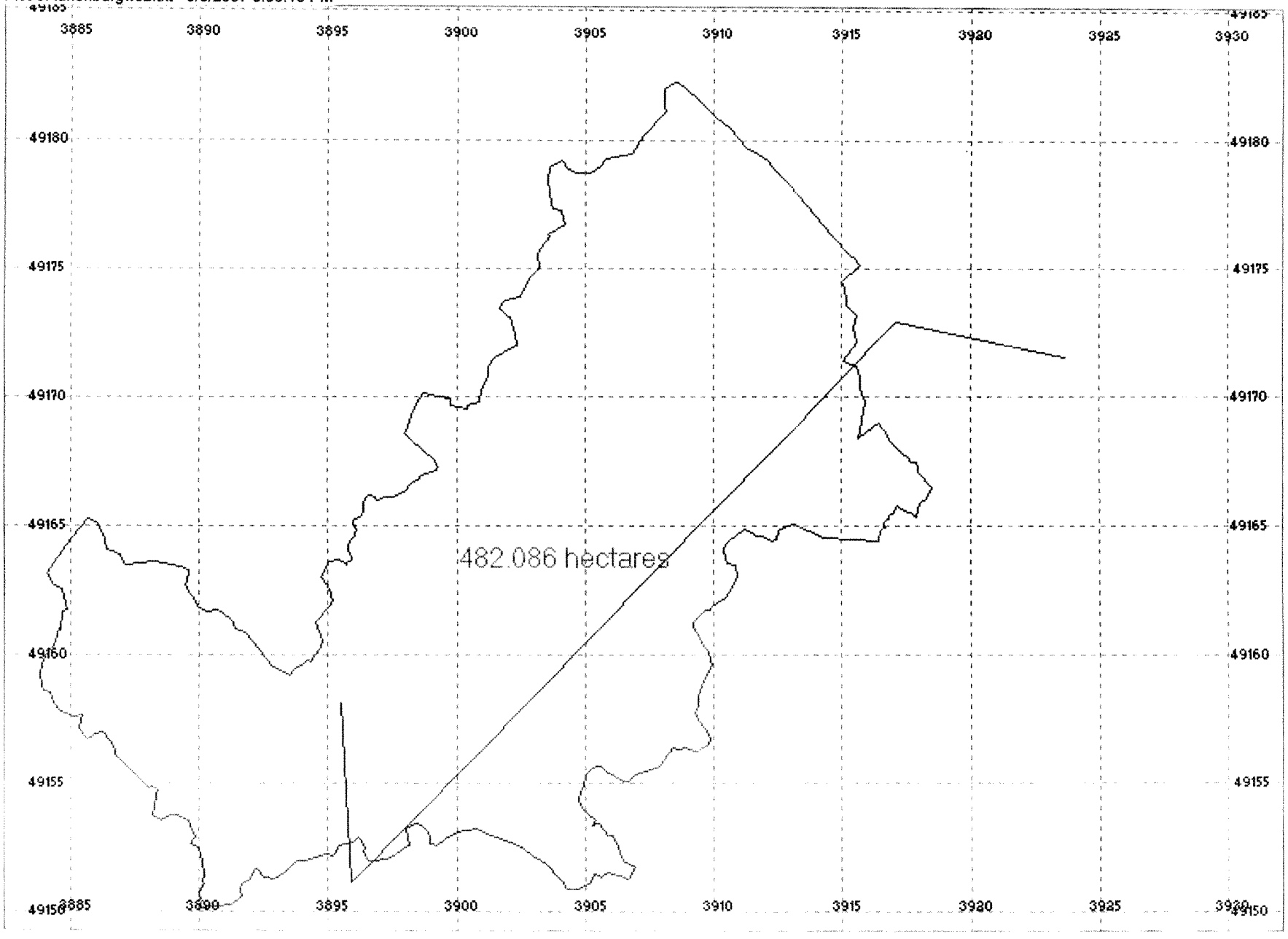
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363 USER -- 20T 391717 4916574 Waypoint I E 42.4 30-APR-07 11:58W
364 USER -- 20T 391702 4916552 Waypoint I E 43.1 30-APR-07 11:59W
365 USER -- 20T 391684 4916536 Waypoint I E 42.7 30-APR-07 11:59W
366 USER -- 20T 391681 4916522 Waypoint I E 45.5 30-APR-07 12:00W
367 USER -- 20T 391671 4916515 Waypoint I E 46.7 30-APR-07 12:00W
368 USER -- 20T 391664 4916507 Waypoint I E 49.2 30-APR-07 12:01W
369 USER -- 20T 391673 4916494 Waypoint I E 50.8 30-APR-07 12:01W
370 USER -- 20T 391659 4916486 Waypoint I E 51.3 30-APR-07 12:02W
371 USER -- 20T 391653 4916481 Waypoint I E 50.8 30-APR-07 12:02W
372 USER -- 20T 391644 4916436 Waypoint I E 47.0 30-APR-07 12:03W
373 USER -- 20T 391432 4916448 Waypoint I E 50.4 30-APR-07 12:06W

CULVERT 1 – 20T 390673 4918024 Waypoint I E 44.1 30-APR-07 10:13W
CULVERT 2 – 20T 390818 4918173 Waypoint I E 42.9 30-APR-07 10:19W
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CULVERT 5 – 20T 389599 4915273 Waypoint I E 54.2 01-MAY-07 18:37W
CULVERT 6 – 20T 389596 4915376 Waypoint I E 71.0 01-MAY-07 18:39W
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CULVERT 10 -- 20T 388470 4916441 Waypoint I E 62.6 01-MAY-07 19:04W
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CULVERT 14 -- 20T 388600 4915664 Waypoint I E 58.3 01-MAY-07 19:28W

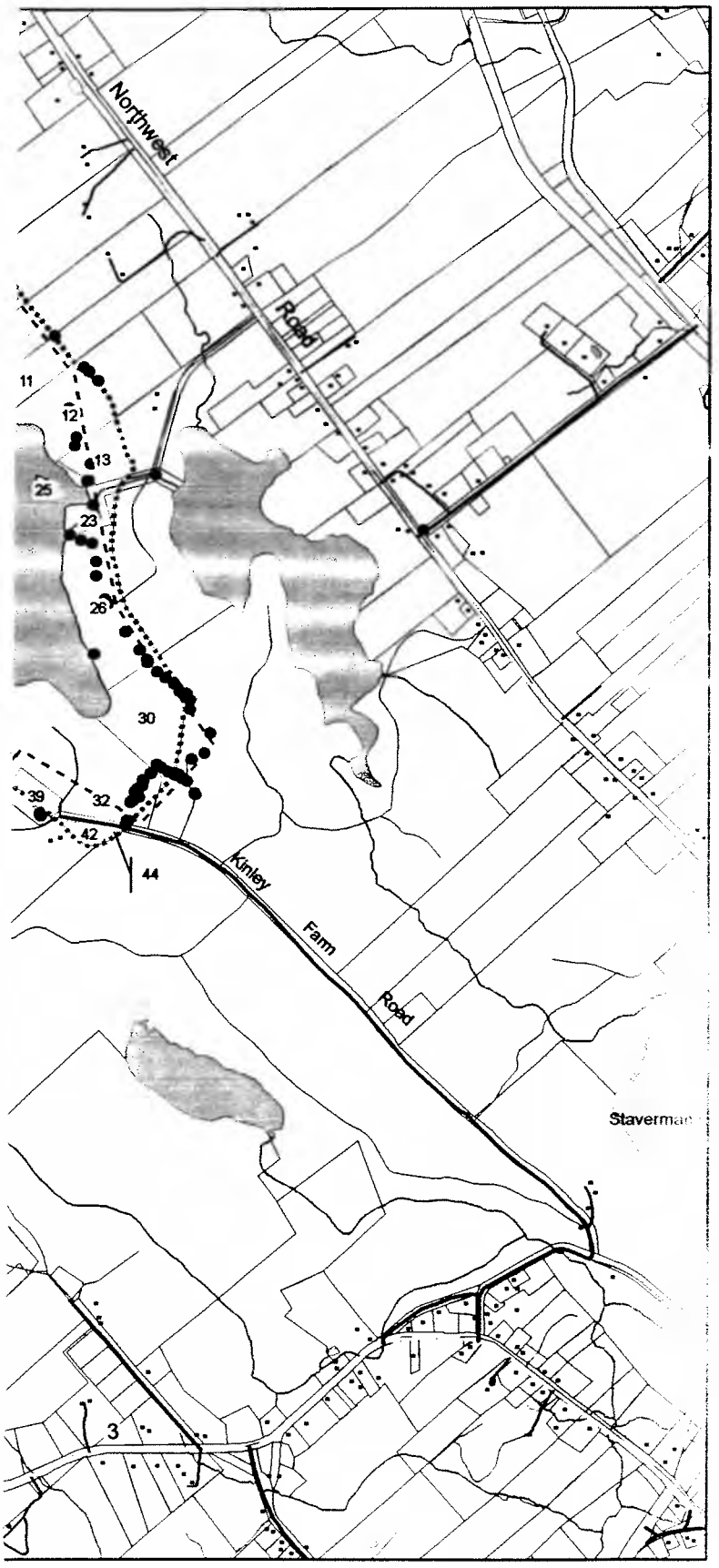
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OLD CUVT USER -- 20T 391810 4916500 Waypoint I E 47.0 30-APR-07 12:14W
STONE FENCE USER -- 20T 391597 4916969 Waypoint

Plot of lunenburgws2.txt 5/8/2007 8:50:18 PM



Scale 1:21715

482.086 hectares


Northwest
Road
11
12
13
25
23
26
30
39
32
42
44
Kinley
Farm
Road
3

This consolidation is unofficial and is for reference only. For the official version of the regulations, consult the original documents on file with the Registry of Regulations, or refer to the Royal Gazette Part II.

Regulations are amended frequently. Please check the list of Regulations by Act to see if there are any recent amendments to these regulations filed with the Registry that are not yet included in this consolidation.

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Wildlife Habitat and Watercourses Protection Regulations

made under Section 40 of the
Forests Act
R.S.N.S. 1989, c. 179
O.I.C. 2001-528 (November 15, 2001, effective January 14, 2002), N.S. Reg. 138/2001
as amended by O.I.C. 2002-609 (December 20, 2002), N.S. Reg. 166/2002

Citation
1 These regulations may be cited as the *Wildlife Habitat and Watercourses Protection Regulations*.

Definitions
2 In these regulations

(a) "Act" means the *Forests Act*;

(b) "basal area" means the surface area of the cross-section of the trunks of the standing trees, measured at a height of 1.3 m from the ground;

(c) "bed" means that portion of a watercourse within a defined flow channel containing predominantly mud, silt, sand, gravel or rock;

(d) "forestry operator" means a person who harvests or permits the harvest of primary forest products or who conducts or permits a silviculture operation or related program on forest land and includes, but is not limited to

(i) an owner, occupier, lessee, or tenant of forest land, and

(ii) a producer or buyer of forest products, as defined in the Act,

and an agent, contractor or anyone otherwise acting on behalf of such a person;

(e) "harvest" means a forestry operation that removes primary forest products from an area of forest land, but does not include the removal of Christmas trees or a forestry operation whose primary purpose is to convert the land to a non-forestry use;
Clause 2(e) amended: O.I.C. 2002-609, N.S. Reg. 166/2002.

(f) "marsh" means an area of permanent standing or slow moving water that is vegetated in whole or in part with aquatic or hydrophytic plants;

(g) "special management zone" means an area of forest required to be established adjacent to a watercourse in accordance with Sections 5 and 6 to protect the watercourse and bordering wildlife habitat from the effects of forestry operations;

(h) "vehicle" means a vehicle propelled or driven otherwise than by muscular power, whether or not the vehicle is registered pursuant to the *Motor Vehicle Act*;

(i) "watercourse" means the bed and shore of a river, stream, lake, creek, pond, marsh, estuary or salt-water body that contains water for at least part of each year.

Application
3 For greater certainty, these regulations apply only to persons carrying out forestry operations in a forest or on forest land.

Legacy trees and habitat structure
4 (1) On any harvest site comprising an area greater than 3 hectares of forest land, the forestry operator shall ensure that at least 10 living, or partially living, trees are left standing for each hectare of forest land cut.

(2) The trees required to be left standing pursuant to subsection (1) shall be

(a) in the same proportion by species as the forest stand being cut;

(b) as large as or larger than, in height and diameter, the average height and the average diameter, measured at a height of 1.3 m from the ground, of the trees within the forest stand being cut; and

(c) clumped together in accordance with the following:

(i) each clump shall contain no fewer than 30 trees,

(ii) there shall be at least one clump for each 8-hectare area, or part thereof, of forest land cut,

(iii) where there is more than one clump, clumps shall be situated no more than 200 m apart and at least 20 m but no more than 200 m from the edge of the forest stand being cut,

(iv) where there is one clump, it shall be situated at least 20 m but no more than 200 m from the edge of the forest stand being cut, and

(v) there shall be no harvesting of trees within any clump.

(3) Trees required to be left standing pursuant to subsection (1) shall not be removed before the next harvest.

(4) A forestry operator shall ensure that levels of snags and coarse woody debris on all harvested sites are similar to natural patterns to the fullest extent possible.

Determining average width of watercourse
5 For the purposes of Sections 6 and 7, the average width of a watercourse shall be determined by measuring the width of the bed of the watercourse at 10 approximately equidistant locations extending along the entire portion of the watercourse situated within or adjacent to the forest land where a forestry operation is carried on, and taking the average of the measurements.

Special management zones

6 (1) Where the average width of a watercourse situated on or adjacent to forest land on which a forestry operation is carried on is equal to or greater than 50 cm, a forestry operator shall establish or ensure the establishment of a special management zone of at least 20 m in width along all boundaries of the watercourse.

(2) Where the land on which a special management zone is established pursuant to subsection (1) has an average slope within 20 m of a watercourse boundary of greater than 20%, the forestry operator shall increase the width of the special management zone by 1 m for each additional 2% of slope to a maximum of 60 m in width.

(3) No forestry operator shall within a special management zone

(a) permit the use of, use or operate a vehicle for forestry operations within 7 m of the watercourse;

(b) reduce the basal area of living trees to less than 20 m^2 per hectare; or

(c) create an opening in the dominant tree canopy larger than 15 m at its greatest dimension.

(4) Despite clause (3)(a), the operation of a vehicle for the purpose of watercourse crossings approved by the Department of Environment and Labour is permitted within a special management zone.

Protection of watercourse less than 50 cm wide

7 Where the average width of a watercourse situated on or adjacent to forest land on which a forestry operation is carried on is less than 50 cm, no forestry operator shall permit the use of, use or operate a vehicle for forestry operations within 5 m of the watercourse, except for the purpose of watercourse crossings approved by the Department of Environment and Labour.

Provisions applying to all watercourses

8 A forestry operator shall ensure that understory vegetation and non-commercial trees within 20 m of the edge of any watercourse are retained to the fullest extent possible.

9 No forestry operator shall conduct any activity within 20 m of the edge of any watercourse that would result in sediment being deposited in the watercourse.

Offence

10 Every person who does anything prohibited by these regulations or who fails to do anything required by these regulations is guilty of an offence.

Last updated: 24-03-2009

Appendix "G"

Best Management Practices/Forest Planning in Municipal Drinking Water Supply Areas Nova Scotia

September 29, 2005

Forestry Operations in Municipal Water Supply Areas

Forestry operations proposed in municipal water supply areas (MWSA) are subject to regulations and provisions in the Environment Act and any additional provisions or management strategies contained within municipal source water protection plans (SWPP). While the Forests Act and the Environment Act are administered under the provincial Departments of Natural Resources and Environment and Labour respectively, SWPP's are administered by the water utility operator or the municipality. As a matter of good business practice persons involved in forestry operations are expected to take every precaution to protect the environment, and respect local communities.

The objective of this pamphlet is to outline the various activities associated with the different stages of forest operations and explain how regulations under the Forests and Environment Acts work in concert with provisions in SWPP's to protect drinking water quality in MWSA's.

Source Water Protection Planning

Every provincially approved municipal water utility in Nova Scotia must develop a plan to prevent contamination of the source water and keep it as clean as possible. These plans are called Source Water Protection Plans and are a condition of approval to operate the water utility. Source Water Protection Plans contain a range of management strategies that are designed to manage and minimize impacts from activities that can potentially impair water quality. Each municipal SWPP is unique to the source water supply area.

Management strategies may include specific regulations developed under section 106 of the Environment Act (*Designation of a Protected Water Area*). Regulations and other management strategies, such as best management practices, in a municipal source water protection plan may affect forestry activities. It is the responsibility of proponents planning to conduct forestry related activities to contact Nova Scotia Environment and Labour, and the local water utility operator, in order to find out if there are any additional constraints to activities they may undertake, and determine how SWPP management strategies may affect proposed forestry activities.

Best Management Practice and Long Term Planning

In Nova Scotia, generally two types of approaches are taken to managing the forest when addressing environmental considerations. The most common approach is "Best Management Practices" that are designed to protect watercourses, forest attributes, maintain water quality and wildlife habitat. In this document, a table is provided that outlines a subset of the existing regulations and practices in Nova Scotia that contribute to the maintenance of water quality when undertaking forest operations within a municipal water supply area. The table is provided in Appendix "A" together with information on interpreting the table and sources for more detailed information.

A second approach that is complementary to the "Best Management Practices" involves sustainable long term forestry management planning. This approach provides greater assurance that water quality and quantity will be maintained or enhanced over the long term. This approach ensures measures for the long term maintenance of healthy vegetative cover on forest lands and may place limits on the overall amount of human-caused forest disturbance which should occur within specified time frames.

Sustainable long term forest management planning has been used in cooperation with water utilities where Crown, large land owners or Crown licensees have tenure. Such planning is often done in the context of broader planning for the entire tenure holding, but is more detailed within the municipal water supply area where maintenance of water quality and quantity has been identified as the priority objective. This approach will have limited value if the MWSA is small or there is not a lot of forest land. Fractured land holdings could make this approach complex and more difficult as the cohesive cooperation of many land owners may be needed. However, it should be of interest, particularly if there is a lot of forest land or the municipality has acquired land within the MWSA.

In long term planning, consideration is given to applying land classification and ecosystem management principles to resource management. Knowledge regarding natural forest disturbance regimes, the stages of forest development and the local ecology can assist to develop cutting patterns and practices. This is used to promote natural patterns of species, balanced age class distributions, promote natural forest stand development and stand structure and determine representative forests to serve as old forest habitats. A pamphlet entitled "Mapping Nova Scotia's Terrestrial EcoSystems" is available from the Department of Natural Resources which provides more explanation.

Consideration and analysis of underlying geology, soil stability, vegetative cover, disturbance regimes, frequency of natural and human-caused disturbances in the municipal water supply area is encouraged. Potential for future large scale catastrophic events should be given particular consideration and avoided, if possible, by appropriate interventions in forest development. For example, large tracts of forest land that are allowed to become over-mature in municipal water supply areas could potentially cause water quality problems such as sedimentation from uprooted trees or excessive amounts of decaying organic material. The likelihood of this type of event is influenced by site, exposure, forest stand conditions and forest tree species. Some combinations present very little risk while others present a very high risk. Experienced foresters can assist in assessing the risk.

Where it is determined that the risk is high or the conditions are such that an unstable forest is likely to develop over time, the implementation of forest treatment prescriptions from careful, knowledgeable based planning can reduce risks to water quality. Professionals specializing in ecosystem based management and silviculture and harvesting options can assist.

Once an analysis has been done, a plan should set out goals with a strategy to achieve the stated objectives. Enhanced forest management prescriptions, special practices or restrictions may be necessary on portions of watersheds where site specific sensitive conditions exist or to regulate the amount of disturbance occurring with defined time periods. Flexibility should be built into the plan to allow for measures to deal with unexpected large scale events such as hurricane, fire, insect infestation, and disease.

The plan should also contain measurable indicators that can be used to monitor and evaluate how the plan is progressing and whether adopted objectives and practices are being successfully implemented.

Appendix "B" briefly outlines a potential analysis, planning, implementation, inspection, monitoring and continual improvement process. Appendix "C" outlines examples of enhanced practices that may be adopted as a result of an analysis and planning exercise.

Appendix "A"
Summary of Existing Regulations and Practices that Contribute to Maintaining Water Quality

A summary table is provided to outline the most pertinent existing regulations and practices to assist a water utility when determining a suitable and reasonable suite of best forest management practices for a municipal water supply area. Due diligence on the part of woodlot owners refers to reasonable practices to mitigate or protect against potentially damaging actions or activities that are reasonably foreseeable.

Interpreting the Table

Column 1
The first column is intended to summarize by major category type, the practices currently used in Nova Scotia to protect watercourses and watercourse habitat. These measures contribute to the maintenance and enhancement of water quality and quantity.

Column 2
The second column outlines applicable regulations, standards or guidelines. These include the *Wildlife Habitat and Watercourses Protection Regulations*, the *Fire Fighting Equipment Regulations* made under the *Forests Act*; the *Pesticide Regulations*, *Activities Designation Regulations* and *Protected Water Area Regulations* made under the *Environment Act*, 1994-95.

Notes: Nova Scotia Environment and Labour (NSEL) Pesticide Approvals for the application of a pesticide to a forest land site are made consistent with the *Pesticide Regulations*, specific provisions in any Designated Protected Water Area Regulation, and any site specific terms and conditions of approval deemed prudent by NSEL.

Column 3
The third column is considered by the forest industry as the standard in Nova Scotia. The Nova Forest Alliance has broad representation of parties with interest in forests and forestry and these parties cooperated in the development of the "Contractor and Operators Best Management Practices" publication.

Column 4
The fourth column is intended to record known applied enhanced practices used by operators on forest land tenures. This is not a comprehensive listing and the enhancements listed may only be practised at certain locations where deemed prudent to address site specific conditions such as municipal water supply areas or locations where soils are particularly sensitive to erosion.

PRACTICES THAT MAINTAIN WATER QUALITY AND QUANTITY WITHIN NOVA SCOTIA FORESTS			
"✔" denotes Wildlife Habitat/Watercourses Protection Regulations, Pesticide Regulations, Designated Protected Water Area Regulations, watercourse alteration approvals and Pesticide Application Approvals. "✔✔" denotes a tenure or industry standard that exceeds the Regulations 1	Regulations 2	Nova Forest Alliance (Contractors and Operators Best Management Practices) 3	Crown or Industry Land Holdings (Selected Enhancements) 4
Riparian Zones (Special Management Zones)			

a) Minimum width of 20 m (each side) applied to all watercourses 50 cm or greater - additional width dependant on slope of bank.	✔		
b) On slopes greater than 20% add 1 metre of width for each additional 2% of slope to a maximum of 60m in width. For slopes greater than 30 degrees go to the first regular break in slope that is more than five metres (16 feet) wide and establish the buffer strip at least five metres back from this break.	✔	✔✔ (No. Max)	 ✔✔
c) Minimum width of 60 m for fish bearing streams (each side).			✔✔
d) Zone measurements are generally taken from the edge of the defined stream channel. When streams are bordered by grassy, intermittently flooded meadows, measure from the forest/meadow edge.			✔✔
e) Machine Exclusion Zones (MEZ) - watercourse < 50 cm wide 5m MEZ and leave ground vegetation intact - watercourse > 50 cm 7m MEZ - watercourse > 50 cm 10m MEZ	✔ ✔	 ✔✔	✔✔ (high stumps)
f) Harvesting - Maintain a minimum of $20m^2$/ha Basal Area * and leave wind firm trees. - Do not allow woody debris from a forestry operation to enter a lake or stream and keep it out of areas that are periodically flooded. - Do not create an opening in the dominant canopy larger than 15m. - Do not create an opening larger than the height of the largest tree. - Fueling and oiling machinery should be >30 m from a watercourse or bare mineral soil. - Remove all garbage from the site and dispose of hazardous materials properly.	✔ ✔	 ✔✔ ✔✔ ✔✔	 ✔✔ ✔✔ ✔✔
Road Construction			
a) Construct road approaches, stream crossings, temporary crossings and fire ponds in accordance with regulations, standards and guidelines **	✔	✔✔	✔✔
b) Minimize rutting and soiled disturbance by processing at stump/using low ground pressure tires/avoid operating during excessively wet periods or operating when ground is frozen.			✔✔

c) Minimize road network and stream crossings.		✔✔	✔✔
d) Use temporary crossings for forwarding wood where appropriate.		✔✔	✔✔
e) Use trail orientation, berms and "take off" ditches to divert water flow from roads and trails into filtering areas or settling ponds.			✔✔
Pesticides			
a) Compliance with Pesticide Regulations	✔		
b) Compliance with Designated Protected Water Area regulations.	✔		
c) Compliance with Nova Scotia Environment and Labour Pesticide Application Approvals and applicator certification requirements.	✔		
Fire			
a) Fire Fighting Equipment Regulations	✔		

* Cross section of the area occupied by trees/hectare at breast height.

* * Stream crossings are subject to Nova Scotia Environment and Labour approvals. Please contact the Department for further information. Also see "Woodlot Roads/Stream Crossings" - Cooperation Agreement for Forestry Development 1991-1995, N. S. Department of Natural Resources.

NOTES:

- For more details on the Wildlife Habitat and Watercourses Protection Regulations see www.gov.ns.ca/natr/forestry/strategy/wildl_hab - click on regulations.

- The most recent version of the Best Management Practices Manual for Contractors and Operators may be purchased from the Nova Forest Alliance. See website www.novaforestalliance.com to order publication (PDF) or E-mail info@novaforestalliance.com.

- For further information on General Pesticide Regulations see NSEL Pesticide Regulations: Section 84 NS Environment Act, 1994-95, available at: www.gov.ns.ca/just/regulations/regs/env6195.htm.

- For specific information on Pesticide Regulations for Designated Protected Water Areas (PWA) see NSEL Pesticide Regulations: Section 84, 1994-95, Part III, Subsection 21, available at: www.gov.ns.ca/just/regulations/regs/env6195.htm.

Appendix "B"

Potential Analysis, Planning, Implementation, Inspection, Monitoring and Continual Improvement Process

- Undertake Land Classification/Forest Ecosystem and Underlying Geology Analysis.
- Develop a 20-year plus management/tactical plan.
- Develop five year harvest and silviculture plans.
- Prepare a one year Annual Operating Plan.

Notes: Annual operating plans to contain harvest and silviculture prescriptions, rationale and any mitigating or special practices.

Annual operating plans should be consistent with Five Year Plans and the Five Year Plan consistent with the Long Term Plan.

- Develop long term and short term road plans consistent with the management/tactical plan.
- Source water protection committee to review forestry and road plans prior to implementation.
- Follow Wildlife Habitat/Watercourses Protection Regulations.
- Provide and maintain forest fire fighting equipment as per regulations made pursuant to Section 27 (4) of the Forests Act.
- Map any Special Management Zones determined necessary and exceeding the Provincial Wildlife Habitat/Watercourses Protection Regulations.
- Specify any cut size limitations and spacial distribution provisions.
- Specify any chemical application (pesticide and herbicide) restrictions exceeding the Provincial Pesticide Regulations.
- List the practices expected by major category, e.g. Roads, Harvest Operations, Extraction Trails, Special Management Zones, Fire Equipment, Oil Spills, Equipment Maintenance, Stream Crossings, Bridges and Culverts. (See examples in Appendix "C")
- Forest road construction and forest treatments should follow the road plan and the treatment prescriptions in the annual operating plans.
- Develop measurable indicators, check lists and inspection protocols to assist with monitoring and evaluation of adopted plans and practices.
- Source water protection committee should review annually, the results of monitoring and then evaluate and arrange for corrective action or improvements as deemed prudent or necessary to ensure the success of the Long Term Management/Tactical Plan.

Appendix "C"

Enhanced Practices that May Be Adopted

The following are examples of further enhanced practices frequently recommended within municipal water supply areas.

Roads

- Follow the long term and short term road plans approved by the Watershed or Wellfield Advisory Committee. Note: Reduce the overall road network, minimize stream crossings and the length and number of skid trails.
- Roads should be located wherever possible on grades less than 10%.
- There should be minimal road width and curve radius to reduce road erosion.
- Establish grass cover on slopes and ditches adjacent to roadways.

Stream Crossings/Bridges/Culverts

- Water turnouts should be used on all roads where they approach streams to divert storm runoff from roads onto the forest floor.
- Roads should be gravelled where they approach streams with clean gravel.
- Road crossings should be placed at the narrowest section of the stream where stable approaches are available. The approaches and structure should be at right angles to the stream. This reduces sedimentation occurrence.
- Streams should be assessed for bridge or culvert installation and properly sized for peak flows. Failure to do so may result in frequent washouts and sedimentation.
- Open bottom culverts should be used when possible and properly set for fish passage. There is less washout with open bottom culverts. Open bottom culverts can usually be installed with less disturbance to the stream bottom.
- Bridge and culvert placement should create as little disturbance as possible.

Harvest Operations

- Pre-treatment conditions should be recorded.
- Follow operating plan prescriptions.
- Ribbon off stream buffers, special management zones, environmentally sensitive areas and any culturally significant areas.
- Meet or exceed regulations.
- Consider options to save or secure natural regeneration in harvesting applications.
- Operate machines in a manner to minimize impacts to soil, regeneration and understory.
- Time operations in sensitive areas to summer when ground is dry or in winter when ground is frozen or protected by snow cover.
- Keep machinery out of watercourses. Temporary bridges must be removed when the operation is completed.

- Keep debris out of waterways, recreational trails, roads, neighbouring immature stands, boundary lines and ribboned non cut areas.

- All garbage must be removed from the site and all hazardous substances properly disposed of outside the watershed.

- Forest debris should be left on the forest floor after harvesting.

- Portable toilet facilities should be used.

Equipment Maintenance/Oil Spills

- Power saws should be used according to the following practices:
  - Use vegetable-based oil to lubricate chains.
  - Store fuel in approved containers and labelled clearly.
  - Remove fuel containers from the site when work shift is over.
  - Fuel power saws over a spill pad and keep all fuels on the spill pad.
  - Use fire retardant pouches with each saw.

- Use of machinery should follow these precautions:
  - Vegetable-based oil should be used to lubricate chains.
  - Machines should be kept clean and leak-free.
  - Machines should be equipped with industry approved fire extinguishers.
  - Machines should carry a spill kit.

- Fuel tanks for machinery should be clean, leak-free, have a locking device, a no-drip nozzle, used with a spill kit, and should be stored on mineral soil as far away as possible from watercourses (at least 100 metres or 330 feet).

- No fuel or oil should be stored within the boundaries of the watershed or stored in approved areas.

- Refuelling should take place on spill pads outside of all buffer zones.

- All fuel leaks over five litres should be reported to the Water Utility and Nova Scotia Environment and Labour within one hour.

- Fire extinguishers should be available during all harvesting operations and should also meet required specifications.

- All trucks with loaders should have remote engine shut down.

- All trucks with loaders should have a hydraulic tank float switch.

Special Management Zones

- Zones may be enhanced beyond the regulations at specified locations, in cooperation with landowners, particularly the main water supply bodies and those close to the point of intake. Examples include enhanced machine exclusion zones, greater amounts of living trees to be retained in harvesting operations, no cut zones and limits on size of openings within a special management zone that can be created.

Harvesting

- Limits on clearcut size, distribution of cuts and amount of harvest area within specified time frames are sometimes negotiated with landowners.

Fire Fighting Equipment

- Persons in charge of an operation or activity conducted in the woods or within 305 metres (1,000 feet) of the woods during the fire season are required by regulation under the Forest Act to provide and maintain fire fighting equipment. Further details may be obtained from the Department of Natural Resources.

Appendix "H"

NOVA FOREST ALLIANCE

CONTRACTORS & OPERATORS
BEST MANAGEMENT PRACTICES MANUAL
MARCH, 2012

Adopted by

Forest Products Association of Nova Scotia

The nature of our business is growing.

BMP CONTRACTOR

A Contractors Code of Practice

I will conduct forest operations in accordance with a mutually developed woodlot operations plan that recognizes landowner objectives and ecological values.

I will plan and operate in a manner designed to protect biodiversity.

I will conduct harvesting operations to facilitate forest renewal.

I will construct forest roads in a manner that minimizes impact on the environment.

I will operate with due diligence for the health and safety of employees and the public.

I will promote public awareness of sustainable forest management and respond to public concerns about forest practices in a sensitive and progressive manner.

I will participate with the Nova Forest Alliance in monitoring and evaluating my compliance with these principles.

_____	_____
Contractor	Chair, Nova Forest Alliance

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INTRODUCTION

Welcome to the latest edition of the Nova Forest Alliance Best Management Practices (BMP) Manual. It was prepared through the diligent efforts of a number of individuals and organizations that work together to improve forestry practices in Nova Scotia. The manual is the basis for training sessions offered by the Forestry Safety Society of Nova Scotia.

Many of the fundamental procedures and practices remain unchanged from the 2007 edition of the manual. The format has been improved so that information may be found more easily. Good forestry is a process of continuous improvement, and this manual sets the bar a little higher for practitioners of forest management in the province.

The manual is intended to be a reference that can be kept handy at the job site. It is the product of more than a decade of collaboration and revision. We hope that it will be used by all contractors and woodlot owners who wish to operate safely, efficiently and with respect for the environment.

Nearly three-quarters of Nova Scotia's forest land is under private ownership. Of paramount importance are the landowners' visions for the future of their properties. This manual suggests effective ways of working with woodlot owners to achieve their objectives. Other sections describe procedures that are valuable in recognizing significant wildlife habitat, the proper construction and maintenance of woodlot roads, safe handling and storage of fuel and oils, and harvesting methods that require ecological consideration of each forest site.

An increasing public scrutiny of forest practices and greater demand for products from well-managed forests indicates that a multitude of techniques must be used in managing forests. This manual lays a foundation for procedures that most woodlot owners and forest contractors implement on a regular basis.

With ever-increasing demands on Nova Scotia's forests to provide ecological and economic values to society, woodlot owners and contractors must exhibit – by practice – a progressive approach towards sustainable forest management.

We hope that this manual lays the groundwork for efficient and effective harvesting of wood fiber, respect for wildlife habitat and the prudent renewal of our forest resources. We recognize that this manual is a work in progress and welcome your feedback. Please feel free to contact us should you have any comments or suggestions for improvement.

Yours sincerely,

Nova Forest Alliance BMP Working Group

NOVA FOREST ALLIANCE MEMBERSHIP LIST

PARTNERS

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Canadian Forest Service
Canadian Institute of Forestry Nova Scotia Section
Canadian Parks and Wilderness Society-NS Chapter
Christmas Tree Council of Nova Scotia
Cobequid Salmon Association
Conform Ltd.
CMM - First Nations Forestry Program
Dalhousie University
Department of Fisheries and Oceans
Ecology Action Centre
Eskasoni Fish and WIldlife Commission
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NS Department of Natural Resources
NS Environmental Network
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Nova Scotia Forestry Association
NS Silviculture Contractors Association
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Southwest Nova Biosphere Reserve Association
St. Mary's River Association
Unaffiliated Environmentalists
Unaffiliated Landowners
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FOREST PRODUCTS ASSOCIATION OF NOVA SCOTIA

The Forest Products Association of Nova Scotia (FPANS) is adopting this Best Management Practices Manual as a tool to help its members follow the seven Principles of Forest Stewardship for Nova Scotia.

Our forest industry directly supports 13,000 jobs and indirectly provides employment to an additional 10,000 Nova Scotians each year. The forest is a complex resource that we all must treat with great respect. Through the use of this manual the Forest Products Association of Nova Scotia endeavors to ensure our industry continues to thrive by managing this complex resource in a sustainable fashion.

As the forest industry we also recognize our responsibility to work with landowners, maintain clean water, provide opportunities for forest recreation, and to enhance our natural, biodiverse, Acadian Forest landscape. Following the Best Management Practices detailed throughout this manual will ensure contractors, woodlot owners and industry members are contributing to the sustainable use of our forest resource while maintaining our environment and contributing to our social needs.

By adopting, distributing and providing training on this Best Management Practices manual the Forest Products Association of Nova Scotia intends to:

1. Provide a better understanding of the Principles of Forest Stewardship.

2. Increase awareness of some measure of sustainability.

3. Demonstrate a commitment to fulfilling the Principles of Forest Stewardship by members of FPANS.

4. Provide consistency in the way all FPANS members understand and apply the Principles.

Principles of Forest Stewardship in Nova Scotia

Forest Products Association of Nova Scotia

1. Forest operation will be conducted in accordance with an operations management plan for the property which identifies environmental protection and forest conservation measures.

2. Forest planning and operations will be conducted in accordance with the Wildlife Habitat and Watercourse Protection Regulations for Nova Scotia which are designed to sustain forest biodiversity and wildlife habitat.

3. Harvesting operations will be designed to facilitate forest renewal either by natural regeneration or planting.

4. Forest roads will be constructed in accordance with the Standards of the Nova Scotia Department of the Environment.

5. The health and safety of employees and the public will not be compromised by any forest practice.

6. Through the Forest Products Association of Nova Scotia, public awareness and information on Nova Scotia forests will be promoted. Members will cooperate with the Association in responding to public concerns about forest practices in a sensitive and progressive manner.

7. Private landowners have the right to manage their individual forest properties in accordance with their own objectives, while meeting or exceeding government standards for environmental protection and forest conservation.

DEVELOPING LANDOWNER AGREEMENTS: BEST MANAGEMENT PRACTICES

MAKING CONTACT WITH THE LANDOWNER

Making contact with the landowner is the critical first step. First impressions are important and contractors need to approach landowners with honesty and professionalism. Your first step is to prepare thoroughly before meeting the landowner.

FPANS Stewardship Principles 6 & 7

PREPARING FOR THE INTERVIEW

STANDARD PRACTICES

- Prepare yourself mentally for the interview. Think about the landowner's point of view and what kind of reassurances and information they may want of you.
- Remember you need to take time to get to know the landowner. Try to establish a rapport. The best way to do this is by asking questions.
- Have some information about yourself. This can be written material such as pamphlets about your company, business cards, photos of past operations or just information you can tell the landowner. The idea is to show professionalism, not to brag.
- It is helpful to have information on the property on which you want to work. Things such as aerial photographs, property maps and woodlot size can be helpful when talking to landowners. You must use your judgment on when it is appropriate to use this information. Some landowners may feel you are checking up on them if you bring out the information too soon.
- Have a working knowledge of the area where you are operating, this could include topics such as: species-at-risk, invasive exotic species, and significant wildlife habitat.
- You may want to have some information on current silviculture programs. Pamphlets are available for most programs. This is helpful even if you do not plan on doing silviculture work yourself. It demonstrates that you are committed to more than just cutting down trees.
- Allow time to walk the woodlot or portion of the woodlot with the owner.

ENHANCED PRACTICES

- Bring the landowner to other sites where you have worked to show the quality of your work.
- Show landowners examples of other uses of the forest on their land – for example, a sugar bush or recreational trails.

- Develop a portfolio with photographs of previous work on other woodlots.

OWNER'S OBJECTIVES AND EXPECTATIONS



STANDARD PRACTICES

It is important to remember that landowners have the right to manage their property according to their own objectives while meeting or exceeding government regulations. Contractors need to take the time early in the process to determine what those objectives are.

- Asking questions is one of the most important approaches to determining the landowner's objectives and values for their woodlot. Values could include cultural, ecological and geologically important features. Objectives that may be important to landowners include: timber production, income generation, appearance, protection of old growth, wildlife, biodiversity, heritage values such as burial grounds and old farm sites, traditional travel routes, and recreational values such as walking, snowmobiling or having a camp.

- Suggest other forest management alternatives with respect to harvesting, silviculture and the potential for non-timber forest products.

ENHANCED PRACTICES

- Complete a survey or questionnaire to assist in determining the landowner values and/or objectives for the woodlot.

PROPOSED OPERATION PLAN

If you plan to perform a forestry operation on a particular woodlot, you likely have in your mind a rough plan of where you are going to work and how you are going to go about it. This is taken a step further in an operation plan by putting it on paper. An operation plan may be very simple, consisting of a single piece of paper showing the location of the proposed operation and legend. For larger undertakings it may be more complex. Basically, an operation plan outlines what you intend to do, and:

- Demonstrates accountability and responsibility.

- Shows due diligence.

- Reduces misunderstandings.

- Demonstrates a professional image.

- Helps ensure quality work.

WOODLOT ASSESSMENT (INVENTORY)

An operation plan begins with determining what is on the woodlot. This will help determine what can be done to meet the landowner's objectives. An assessment should include a number of actions:

STANDARD PRACTICES



- Conduct an inventory of forest products present on the site. The woodlot condition and the landowner requirements will determine what this inventory will consist of. The inventory may be a formal technical cruise or it may be a less formal descriptive type cruise.
- Identify all watercourses including springs, brooks, rivers, streams, ponds and lakes.
- Record observations of wildlife and habitat such as nests and dens.
- Assess other items important in designing the operation such as: soft or wet ground, wetlands and areas of human interest such as old farm sites or graveyards.
- Identify special management areas such as old growth forests, unique or endangered plants or areas with significant wildlife habitat such as deer wintering areas.
- Identify opportunities to pursue work with other landowners/contractors in the area to discuss broader landscape objectives.
- Identify areas with potential opportunities for afforestation, including: old fields/pastures, abandoned roads/landings, and pits/quarries.
- Identify the potential for prescriptions other than clearcutting.

ENHANCED PRACTICES

- Conduct assessment of broader woodlot values (i.e. non-timber) in consultation with a forestry professional.
- Inventory assessment should document any observed invasive exotic plant or animal species. Consult with DNR if necessary.
- Complete Landowner Decision Support Tool.

PUTTING THE PLAN TOGETHER

The operation plan should include a description of the proposed operations and their location on a map. In finalizing the plan it will be important to re-examine landowner objectives to determine if all of them are met. The plan at this point may have to be revised if not all objectives can be met.

The plan should also include the following items:

STANDARD PRACTICES

- Landowner objectives where applicable.
- A map outlining boundary lines and areas of operation.
- A description of the vegetation present on the area of operation including tree species and size.
- Area to be harvested, harvest prescription and the harvesting method and system to be used.
- Special management areas, wildlife clumps, sensitive or unique areas, recreational trails and graveyards.
- Watercourses and wetlands.
- The number of clumps, wildlife trees and Coarse Woody Debris (CWD) to remain after harvest.
- Stream crossings required and the methods for crossing the stream.

ENHANCED PRACTICES

The operation plan includes in addition to the above:

- Forest stand characteristics from the timber cruise such as stand age, stand health, site quality, stand volume and timber quality.
- Results of consultations with forestry professionals such as the potential for alternative treatments.
- Forest Inventory data; this can be in the form of a table.
- A general description of the type of prescription to be applied, where applicable (e.g. shelterwood, thinning, etc.).
- Potential locations for clumps, corridors, etc. detailed on an operating plan map.

NEGOTIATIONS WITH THE LANDOWNER

Negotiations begin with doing your homework. A proposed operation plan for the landowner to review demonstrates professionalism and responsibility. For example, a great deal of information can be conveyed on a map which can be easily understood by many people. You may also want to include the results of the timber inventory. This could be total volume by product and/or species.

STANDARD PRACTICES

- Go through the proposed operation with the landowner by showing what you plan to do.
- Explain the timing, type of operation, the boundaries of the operation and how you plan to do it.
- Make sure you explain how your proposed operation will help them meet their objectives.
- Detail any areas that will not be cut and why (e.g. around hawk nests, sensitive areas or stream buffers).
- Agree on the financial arrangements.
- Be prepared to revise the operation plan to reflect the landowner's thoughts.

ENHANCED PRACTICES

- Visit the operation area with the landowner to review the operation plan.

HELPFUL HINTS ON FINANCIAL ARRANGEMENTS

- The best method of payment for both the contractor and landowner must be decided. If the landowner has not talked to an accountant, you should advise them to do so before finalizing an agreement.
- Two common methods of payment are lump sum (a complete payment based on what the contractor believes the timber is worth) or piece rate (payment is made as the timber is scaled). Each method has different implications under current tax laws. Type of payments can have impacts for contractors as well. For example, lump sum payments may affect cash flow. All these aspects must be considered when negotiating with an owner and you may be able to offer several options.
- If the agreed arrangement is a piece rate payment, you will have to determine what scale will be used for payment. This could be roadside scale or mill scale. In the case of mill scale it is best to provide the owner with copies of all mill scale receipts.
- The Landowners may require some or all of the following items:

- Liability insurance.
- Clear beginning and end dates of the harvest.
- A specific season of harvest.

AGREEMENT WITH THE LANDOWNER

Any agreement between people or companies should include a contract or lease. This will help protect both you and the landowner and will help avoid future misunderstandings. Contractors should consult a lawyer to develop an agreement that meets their needs.

STANDARD PRACTICES

- Reference to the Operation or woodlot management plan, if applicable, or a description or map of the area of operation.
- Requirement to adhere to fire regulations.
- Method and terms of payment.
- Liability issues.
- Cancellation/termination conditions.
- Wildlife and environmental protection.
- Road construction, maintenance and upgrading.
- Timing of operation.
- Definition of merchantable timber and minimum stump heights.



- Reference to applicable laws such as Wildlife Habitat and Water Course Protection Regulations, Occupational Health and Safety Act, Workers Compensation Act, Forest Act, Wildlife Act, Water Resources Protection Act and Endangered Species Act.
- Workers Compensation Clearance letter.
- Verify that landowner has clear title.
- Binding of agreement to executors and heirs of the property in case something should happen to the landowner.
- Extension of operation timing due to unforeseeable acts.
- Provision for or against assignment of contract.

ENHANCED PRACTICES

- In addition to providing a contract with all of the above listed items, the contract should be registered with a lawyer to provide additional protection to both parties.

- Provide a performance bond to the landowner (if requested).

HELPFUL HINTS

Once you have an agreement with the landowner, your communications should not stop there. It is a courtesy that pays off in trust, to keep landowners informed of the progress of the operation. You may want to send a notice to the landowner a week before you actually start. You may also want to send a notice a week before you finish. Keep a paper trail of your activities for that woodlot, particularly mill scale receipts. You may not plan on using the information but it pays off to keep a paper record.

ROAD CONSTRUCTION: BEST MANAGEMENT PRACTICES

Roads have a major impact on a forested area including impacts on watercourses, drainage, access, wildlife habitat, soil erosion and the visual aesthetics of an area. Roads can enhance the benefits from the forest if constructed properly. Roads essentially take land out of forest production; as a result, careful consideration should be given to their location and requirements. Investing now in a well planned and constructed road will reduce long term maintenance costs and environmental impacts. The following outlines some best management practices that contractors can follow in order to provide the highest quality service to their customers in the design and construction of an access road.

GETTING STARTED - PLANNING AND LAYOUT

FPANS Stewardship Principle 4

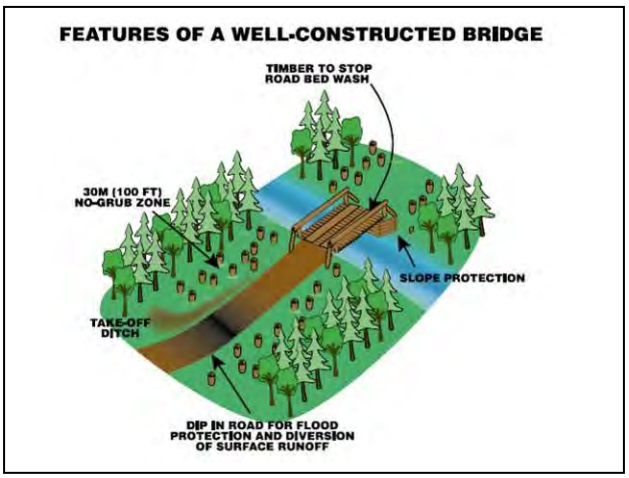
STANDARD PRACTICES

- Owner objectives must be identified and considered.
- The potential for multiple use of the road should be identified.
- Information should be gathered on the area such as topographic information, stream locations, special management features, soil types and drainage.
- Locate roads on stable ground (such as low slopes and high ground).
- Avoid river valleys, steep slopes, swamps and rock ledges, fragile areas (e.g. thin sandy soils) and sensitive areas (e.g. marshes, deer wintering areas, hawk nests).
- Minimize impact on watercourses by reducing the number of crossings and locate the road as far away from watercourses as possible.
- Prepare a preliminary sketch of the road location.



- Adjust road location to reflect site conditions.
- Complete a final sketch of the road location noting special features (i.e. watercourse crossings, landings, etc.).
- Flag and review road location with landowner and reach an agreement.
- Apply for and receive permits and applications (i.e. NS Environment approval for installation of a bridge or culvert and DOT road access permits).

- Any work that disturbs a watercourse or wetland requires a permit from NS Environment and work must be carried out or supervised by a person certified by NS Environment as a Recognized Individual who has completed the NS Watercourse Alteration Certification training.
- In-stream work is only allowed between June 1st and September 30th.
- Temporary bridges may be installed year-round, but must have a permit.



ENHANCED PRACTICES

- Consider the sight distance for landscape/aesthetic values.
- Road construction staff should be trained/equipped to implement best management practices (e.g. erosion Control, grading).
- Narrow the road corridor to 10 meters in width with a 30 meter no grub zone on either side of watercourse.
- Seeding – Erosion Control.

APPLYING ROAD CONSTRUCTION TOOLS AND TECHNIQUES

STANDARD PRACTICES

- Use standard accepted road construction practices and follow all regulations and policies (i.e. woodlot roads/stream crossings, endangered species legislation, wetland conservation policy).
- Ensure road is built with proper erosion control.
- Fuel and oil machinery must be more than 30m away from a watercourse on bare mineral soil.
- Dispose of used oil properly through a used oil recycle facility. Information is available through your fuel and oil supplier.
- Avoid having water running in a ditch for greater than 300m to minimize erosion.
- Use cross culverts to avoid blocking natural drainage.

- Use ditches or culverts to direct drainage through vegetation filters and not directly into streams.

- Construct stream crossings with the first priority placed on minimizing impacts on the aquatic ecosystem, including NS Environment water crossing regulations.

- Apply road construction practices that exceed minimum regulations, such as crossing at the narrowest part and at right angles to the stream, crossing at locations with stable soil and without steep sides and crossing where the stream is running relatively straight.

- Bridges must be constructed to the conditions in your permit and the NS Environment regulations.

ENHANCED PRACTICES

- Seed roadsides or use brush mats.

- Use advanced construction techniques such as the use of a rock apron at the culvert outlet.

- Document the work with digital photography.

- Prepare an annual inspection and maintenance plan for your roads and water crossings.

- Post appropriate signage to indicate location of bridges and gates.

HELPFUL HINT

Avoid using the road excessively during wet weather. This can damage the road and create erosion/sedimentation problems, especially in areas with steep slopes.

TEMPORARY STREAM CROSSINGS FOR FORWARDING WOOD

STANDARD PRACTICES

- Temporary stream crossings require a permit from NS Environment. Application must be accompanied by a best management practices document that includes:
  - Bridge design diagram.
  - Erosion and sedimentation control measures.
  - Method of bank stabilization at approaches.
  - Location map (1:50,000 topographic map).
  - Contact information of landowner.
  - Timing and type of harvest operation.



- Use brush mats or logs at ends of crossing.
- Cross at right angles to stream.
- Do not put crossing structure in stream.
- A copy of the permit must remain on-site during operations.
- Remove temporary crossing after operation, and within the specified time limits stated in the permit.
- Stabilize the approaches to the bridge location after removal.
- No silt should enter the stream.

ENHANCED PRACTICES

- Construct a portable solid-bottom bridge that can be re-used from site to site.
- Document installation and removal procedure with digital photography for record-keeping and to be used in future permit applications.



Practice set-up of a temporary watercourse crossing using bunk logs and fabricated runners.



WILDLIFE HABITAT: BEST MANAGEMENT PRACTICES

FPANS Stewardship Principle 2

Wildlife is an important forest value. Wildlife habitat can be defined as an area characterized by a distinct assemblage of landforms, aquatic forms, vegetation, soil and moisture regimes that are considered to be important for a variety of selected wildlife species. Forest operations can either enhance wildlife habitat, detract from it, or maintain the status quo. It is important to consider wildlife aspects at both the woodlot level as well as on adjacent woodlots. One extremely important aspect to consider is species at risk which is governed by both federal and provincial legislation. The Nova Scotia Department of Natural Resources and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) maintains a list of species that are considered to be vulnerable and therefore may need special conservation measures to be implemented.

WILDLIFE HABITAT PLANNING



Adequate information should be available in order to integrate wildlife considerations into forest operations. For example, the following should be considered in the design of any forest operation:

STANDARD PRACTICES

- Have a working knowledge of the species at risk (SAR) in your area of operation
  - Key factors include:
    - Habitat requirements.
    - Applicable legislation.
    - Operational restrictions.
  - Options for researching SAR information include:
    - Contacting regional DNR wildlife biologist (see phone listings in Resources section).
    - Consult relevant websites (as listed in Resources section).
  - Document SAR research actions.
  - Operation plan shall include specific SAR protection measures.

- Significant wildlife habitat features should be located on the property and their impact on the operation considered. Significant wildlife habitat features could include:
  - Active nesting sites.
  - Deer wintering areas.
  - Watercourses.
  - Large diameter snags.

- The landowner's objectives for wildlife habitat should be identified and incorporated into the operation plan.

- Forest workers should be trained to apply best management practices in wildlife habitat.

ENHANCED PRACTICES

- Landscape level issues should be considered in the design of the forest operation. For example adjacent woodlot harvests could have an impact on cut size, the need for clumps and corridors.

- Late successional Acadian forests offer unique wildlife habitat and should be left intact for biodiversity.

APPLYING TOOLS AND TECHNIQUES FOR WILDLIFE HABITAT

DEVELOPING A VARIETY OF FOREST HABITATS - HARVEST DESIGN:

STANDARD PRACTICES

- Harvest prescriptions should promote a variety of age classes, tree species and vegetation types.

- If the prescription is clearcut, areas should not exceed 50 hectares (125 acres) except in the case of salvage as a result of blowdown, insect and disease damage, or fire.

- In cuts exceeding 50 hectares, wildlife corridors 50 metres in width should be used to join uncut areas.

- If cutting next to an old cut, wait until regeneration is at least 2m tall to avoid creating cuts that exceed 50 hectares (125 acres).

- Blocks should follow stand or landform edges to create irregular cut boundaries.

- Trees within the corridors can be selectively cut, ensuring that a minimum of 20 m2/ha of basal area is left at all times.

- Leave live wind-firm trees and snags within the corridors.

- Corridors should be located to include a variety of wildlife habitat features.

The BEST corridors provide a variety of cover including:

* shrubs
* dense young softwoods
* low lying areas
* mixture of mature hardwood and softwood trees

ENHANCED PRACTICES

- Harvest prescriptions will promote a variety of age classes, tree species and vegetation types.

PROTECTING AQUATIC ECOSYSTEMS

When forests are harvested adjacent to watercourses, special management zones (SMZ's) should be established along each side to leave enough vegetation for stream protection and to maintain a rich wildlife community. An ideal buffer zone involves minimal disturbance within 20 metres of the watercourse.

STANDARD PRACTICES



- Refer to the Nova Scotia Wildlife Habitat and Watercourse Protection Regulations and the Nova Scotia Wetland Conservation Policy prior to harvesting.

WATERCOURSE PROTECTION

Watercourses less than 50 cm in width.

- Vehicles cannot be operated within 5m of the watercourse.
- Ground vegetation and non-commercial trees must be left intact within the SMZ.

Watercourses 50 cm and greater in width.

- Vehicles cannot be operated within 7m of the watercourse.
- Increased buffer width is required if slopes within the SMZ are greater than 20%. Add one metre of buffer width for each additional 2% in slope.
- Trees within the buffer zone may be selectively cut leaving a minimum of 20 m2/ha of basal area.
- No opening larger than 15m in the dominant tree canopy can be created.
- To reduce blowdown leave green wind-firm trees within the SMZ.

WETLAND CONSERVATION

- Any areas that potentially could be classified as wetlands under the Nova Scotia Wetland Conservation Policy, which could include wooded swamp, should have further consultation by a qualified wetland specialist.

ENHANCED PRACTICE

- The BEST buffer is the widest buffer possible.

PROVIDING WILDLIFE CLUMPS, SNAGS AND CAVITY TREES

At least one third of Nova Scotia's wildlife use snags and cavity trees for habitat. The following practices should be considered to protect this habitat in harvest areas:

STANDARD PRACTICES

- Refer to the Nova Scotia Wildlife Habitat and Watercourse Protection Regulations prior to harvesting.
- Leave snags and cavity trees within clumps.
- Any cut greater than 3 ha of forest land must have at least one wildlife clump.
- Cuts greater than 8 ha in size require additional clumps, relative to the size of the cut (refer to Regulations).
- Each clump shall contain at least 30 trees.

A good clump includes:

*A cavity tree with a dbh > 30 cm, with woodpecker holes, living or dead
*Average tree diameters and species mix representative of the original stand
*At least 10% dead trees
*At least 0.02 ha (10 m x 20 m)

- The trees left standing shall be in the same proportion by species, height and diameter as the forest stand being cut.
- Where there is one clump, it shall be situated at least 20 m but no more than 200 m from the edge of the forest stand being cut.
- Where there are additional clumps, they shall be situated no closer than 20 m apart, and no further than 200 m apart. The clumps must be no more than 200 m from the edge of the forest stand being cut.
- There shall be no harvesting of trees within a clump.



Coarse-Woody Debris

- Leave snags and woody debris scattered evenly across the site.
- Ensure that levels of snags and coarse woody debris are similar to natural patterns to the fullest extent possible.

PROTECTING SIGNIFICANT WILDLIFE HABITAT:

Some forests contain special characteristics that make them more important to wildlife species than other areas. These areas are referred to as significant wildlife habitat, and they may contain any or all of the following:



- A site that is unique within the province.
- Provides habitat for species at risk.
- Is used by unusually large concentrations of wildlife.

Some examples of these sites that may be encountered are:

Deer Wintering Areas

- Provide thermal and snow cover for deer.
- Typically mature conifers on south/southwest slopes.
- Look for heavy browse & lots of tracks.

Raptor/Heron Nests

- Look for large nest structures in trees.
- Normally occupied and sensitive to disturbance between March and mid July.

Local interest groups and the Nova Scotia Department of Natural Resources have gathered information on these sites and have created wildlife habitat maps. Contact the Department of Natural Resources prior to operations to determine if there is any significant wildlife habitat areas present on the woodlot.

HARVESTING: BEST MANAGEMENT PRACTICES

HARVESTING CONSIDERATIONS

Harvesting is a forest practice that can have a significant impact on the environment. Forest harvesting operations can be designed to benefit environmental, economic and social values. However, improperly designed and implemented harvest operations can have negative effects on the landscape. The following best management practices will contribute to sustainable forest management.

GETTING THE PRESCRIPTION RIGHT - FOR THE FOREST AND THE LANDOWNER

The first step in setting a prescription for a woodlot is to determine the landowner's objectives. This step guides the decision-making process from which prescriptions are developed. Some prescriptions may favor one objective over the other, but the ultimate decision rests with the landowner.
A variety of objectives (including recreation, preserving old growth, wildlife habitat conservation and fibre production) can be met by implementing the appropriate prescriptions.

FPANS Stewardship Principles 1 & 3

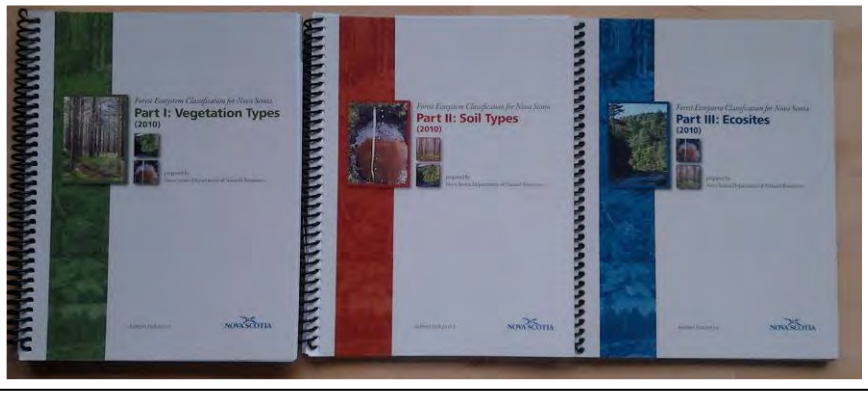
Financial assistance may be available and contractors are encouraged to refer to the Nova Scotia Forest Sustainability Regulations for further information.

Getting the prescription right involves collecting relevant data about the forest to assist in determining appropriate prescriptions. With this information, the landowner can make an educated decision as to which prescription is most appropriate to meet their objectives.

The "Getting the Prescription Right for the Landowner - Decision Support Tool" is a useful tool to aid contractors in identifying suitable options and provides documentation on the decision-making process.

DETERMINING THE FOREST TYPE AND STRUCTURE

In order to determine the range of viable prescriptions possible on a woodlot, an assessment of the forest type and structure is necessary. This assessment should be conducted as part of the development of the operation plan and should include the following items:



• Soil type – texture, drainage and site quality.

• Description of the major tree and plant species present on the site.

• Stand characteristics such as age, health, tree size, density and growth rate.

• Stand history – determine if any previous treatments have been done.

• Terrain – slope and obstacles to equipment.

• Presence of advanced regeneration.

• Potential for high value products such as veneer or sawlogs.

Field Assessment Form

Best Management Practices

Getting the Prescription Right for the Landowner - Decision Support Tool

Forest management has a significant impact on the environment. Choosing the best management option depends on many factors including: landowner objectives, stand type and condition, non-timber values, and economic and operating conditions.

A good forest management prescription will help to address your goals as a woodlot owner as well as consider the health of the future forest.

This tool:

- Is to be used by a forester, forest technologist or forest contractor in consultation with the landowner.
- Is based on the premise that collectively we are striving towards maintaining forest types that are consistent with the Acadian Forest Region.
- Assesses various values or aspects of the stand being considered for timber harvest and then evaluates a series of harvest options in terms of whether they will contribute positively or negatively to that particular value.
- Does not make a recommendation or a final decision. It does, however, identify suitable options and provides documentation on the decision-making process. It can be extremely helpful in explaining harvest decisions to family members, neighbours or concerned community members who may not fully understand why a specific prescription has been chosen.

Planning your forest management options properly will contribute to the future health and productivity of your woodlot and ensure that you will be able to continue to enjoy your forest for the many values it provides.

Two useful references supporting this tool are Nova Forest Alliance's:

Contractors and Operators Best Management Practices Manual
and
Forest Ecosystem Classification of Nova Scotia's Model Forest Guide

IDENTIFYING THE MANAGEMENT AREA - STAND #	
Woodlot Owner Name	Forester/Technologist/Contractor Name
Woodlot Location PID #	Date Completed
Approximate Stand Area	Prescription
Forester/Technologist/Contractor Signature	Date
Landowner Signature	Date

Natural Resources Canada | Ressources naturelles Canada

Canada

Landowner Objectives for Stand: The following diagram illustrates potential landowner objectives for a stand.

PRESCRIPTION OBJECTIVE	Alternative treatments to achieve prescription objectives		
	Heavy Removal 100% to 80% of Merchantable Volume	Moderate Removal 60% to 40% of Merchantable Volume	Light Removal Less than 40%* of Merchantable Volume
Promotion of Regeneration	Clearcut Overstory Removal Seedtree	Shelterwood Strip/Patch Cut	Selection Cut Commercial Thinning Crop Tree Release
Promotion of Existing Tree Quality	n/a	n/a	Selection Cut Commercial Thinning Crop Tree Release
Maintenance of Forest Cover	n/a	Shelterwood Strip/Patch Cut	Selection Cut Commercial Thinning Crop Tree Release

* 30% in moderate or higher exposure

Landowner Objectives/Issues to be Considered:

_____

_____

_____

_____

PART 1 STAND ASSESSMENT - This section provides a brief description of the stand including the trees to be harvested (merchantable) and the younger trees that may be growing beneath (regeneration). To complete this section the user needs to traverse the stand area to get a feel for the stand characteristics.

MERCHANTABLE PORTION - (Please circle or write in appropriate response)

1	Forest Ecosystem Classification units. (Determine which ecosystem units describe the stand. Each unit is associated with management interpretations which should be reviewed to aid further stand assessment and decision making. See FEC Guide)	Vegetation Type		Soil Type	
2	Does the stand contain trees of similar ages? OR Does the stand contain trees of different ages? Please circle	Evenaged Unevenaged			
		Long-lived Species		**Short-lived Species**	
3	What is the stand's merchantable species composition? (Rate scoring on the largest % of species)	Species 1	Species 2	Species 3	Species 4
		%	%	%	%
4	Is the current stand volume increasing, staying constant or decreasing?	increase constant decrease		increase constant decrease	
5	Is there evidence of insect or disease damage?	none insect disease		none insect disease	
6	Is there evidence of physical damage?	none blowdown frost broken tops salt		none blowdown frost broken tops salt	
7	Does this stand have old growth/climax characteristics? (For reference see NSDNR's *Interim Old Forest Policy*)	yes no			

Landowner Objectives for Stand: The following diagram illustrates potential landowner objectives for a stand.

PRESCRIPTION OBJECTIVE	Alternative treatments to achieve prescription objectives		
	Heavy Removal 100% to 80% of Merchantable Volume	Moderate Removal 60% to 40% of Merchantable Volume	Light Removal Less than 40%* of Merchantable Volume
Promotion of Regeneration	Clearcut Overstory Removal Seedtree	Shelterwood Strip/Patch Cut	Selection Cut Commercial Thinning Crop Tree Release
Promotion of Existing Tree Quality	n/a	n/a	Selection Cut Commercial Thinning Crop Tree Release
Maintenance of Forest Cover	n/a	Shelterwood Strip/Patch Cut	Selection Cut Commercial Thinning Crop Tree Release

* 30% in moderate or higher exposure

Landowner Objectives/Issues to be Considered:

_____

_____

_____

_____

PART 1 STAND ASSESSMENT - This section provides a brief description of the stand including the trees to be harvested (merchantable) and the younger trees that may be growing beneath (regeneration). To complete this section the user needs to traverse the stand area to get a feel for the stand characteristics.

MERCHANTABLE PORTION - (Please circle or write in appropriate response)

1	Forest Ecosystem Classification units. (Determine which ecosystem units describe the stand. Each unit is associated with management interpretations which should be reviewed to aid further stand assessment and decision making. See FEC Guide)	Vegetation Type		Soil Type	
2	Does the stand contain trees of similar ages? OR Does the stand contain trees of different ages? Please circle	Evenaged Unevenaged			
		Long-lived Species		**Short-lived Species**	
3	What is the stand's merchantable species composition? (Rate scoring on the largest % of species)	Species 1	Species 2	Species 3	Species 4
		%	%	%	%
4	Is the current stand volume increasing, staying constant or decreasing?	increase / constant / decrease		increase / constant / decrease	
5	Is there evidence of insect or disease damage?	none insect disease		none insect disease	
6	Is there evidence of physical damage?	none blowdown frost broken tops salt		none blowdown frost broken tops salt	
7	Does this stand have old growth/climax characteristics? (For reference see NSDNR's *Interim Old Forest Policy*)	yes no			

8	Are there any special tree species present? Specify				
9	Slope	relatively flat moderate steep			
10	Aspect/Wind Exposure	north east south west very exposed moderately exposed protected			
REGENERATION PORTION		Species 1	Species 2	Species 3	Species 4
11	Is there sufficient established and desirable regeneration to restock the site? List by species.				
		%	%	%	%
12	Is a desirable seed source available?	yes no			
PART 2 NON-TIMBER ASSESSMENT - This section will assist the user in determing if there are any non-timber factors that could influence the choice of harvest method. Generally this will include factors **within the site or in the surrounding area.** Each of the features identified on the site should be circled to provide a record of what has been considered.					
13	Are there any features within or adjacent to the stand?	dwelling boundary line well (water supply) valued viewscape no significant features other(specify)			
14	Are there any features of cultural/heritage/archeological significance?	old foundation stone walls burial site aboriginal site no features other			
15	Are there recreational features in use?	trails campsite/picnic fishing recreational access wildlife viewing tree stand no features other			
16	What water resource issues need to be considered?	watercourse lake pond water table no features other			
17	Wildlife habitat issues eg. any habitat defined as critical or desired by landowner	nesting area deer wintering area cavity trees wetland no features coarse woody debris other			
18	Are any non-timber forest products present? List				
PART 3 Scoring of Harvest Prescriptions - this section enables the user to score the harvest prescriptions based on their ability to accomodate stand, non timber, economic and operating conditions.					

In part 3, the user rates each of the harvesting options against the Part 1 - Stand Assessment and the Part 2 - Non-Timber Assessment to determine the extent to which the harvest option will have a negative, positive or neutral impact .

Interpreting the rankings:

For each of the treatments the rankings should be totaled. The score only provides a relative weighting of one prescription against the other.

In other words, if shelterwood harvest scores a +6 and clearcut a +4 then the shelterwood harvest has the greater potential to address the stand development parameters outlined in the decision key. It could therefore be considered as a more suitable prescription than the clearcut option.

The objective of the scoring is to provide a list of prescriptions which the landowner and contractor can discuss and finalize based on landowner objectives and contractor constraints.

SILVICULTURE TREATMENT/HARVEST OPTIONS

Nova Scotia is part of the Acadian Forest Region. The natural Acadian forest is characterized by stands of trees having various sizes, ages, and mixtures of species. Late successional species including red spruce, white pine, hemlock, sugar maple and yellow birch predominate.

Land use practices over the past four hundred years have altered forest development in Nova Scotia. Many forest stands are now even aged and contain more early successional tree species including balsam fir, white spruce, larch, red maple, white birch, and poplar.

This section contains a brief description of various harvesting prescriptions, and the appropriate forest conditions for their application.

The following prescriptions are listed by the age class structure that they tend to create. For more information on the following prescriptions, there are several resources listed in the background information section.

The age class structure of a stand refers to the relative ages of the trees making up the stand. *Even-aged* stands generally result from stands composed of trees that began growing at about the same time. *Uneven-aged* stands refer to stands that have trees of various ages from juvenile to mature present on the same site.

EVEN-AGED

CLEARCUT SYSTEM



Clearcutting can be used to prepare a site for the establishment of a new even aged stand. Regeneration can be achieved naturally by sprouting and seeding or by artificial means such as planting or direct seeding. This system is most applicable in stands dominated by shorter lived, lower value species such as white spruce, fir and the intolerant hardwoods. If applied in forests with longer lived species such as red spruce, cut sizes can be reduced to allow for natural seeding from adjacent stands.

Two variations on this prescription are possible in the Acadian forest – strip cutting and patch cutting. These variations will tend to decrease the cut size, promote better natural regeneration and favor some wildlife species.

SEED TREE SYSTEM

This system promotes natural regeneration of a site by leaving a number of trees standing, ranging from 15 to 35 per hectare. They should be good quality and wind-firm to provide seed for the next crop. The seed trees may be harvested after the stand has been regenerated if this can

be accomplished without damaging the natural regeneration. This system can be applied in stands that contain dominant white pine, yellow birch, white ash and sugar maple.

SHELTERWOOD SYSTEM



Shelterwood harvesting involves the removal of the overstory in several stages over a few years. The new stand is established under the cover of the existing forest. This treatment is most applicable where low light conditions and cool temperatures are required for regeneration of the forest. Sites where shelterwood is an applicable prescription generally have tight crown closure with little advanced regeneration and can be composed of shade-tolerant species such as white pine, red spruce, Eastern hemlock, sugar maple and yellow birch.

UNEVEN-AGED

THE SELECTION SYSTEM

The selection system is used where the primary goal is to restore or maintain the structure and composition of the Acadian Forest Region. The objective is to retain forest cover, improve overall stand quality and maintain an uneven-aged stand condition with natural regeneration of shade-tolerant tree species. Tree removal is typically done at regular intervals of 5 to 20 years and involves the removal of individual trees or small groups of trees. This system simulates one of the natural disturbance patterns present in the Acadian forest where old mature trees would die or blow down and would be replaced by younger trees.

Two types of selection harvesting commonly used are single tree or group selection.

SINGLE TREE SELECTION

This treatment focuses on the removal of individual trees from the stand at regular intervals. The resulting stand will be composed of trees with a range of ages and sizes, although this can take several entries to accomplish.



GROUP SELECTION

The objective of this treatment is to create small gaps where natural regeneration of shade-tolerant tree species can become established. To accomplish this, canopy openings should not exceed twice the average stand height. Group selection can be used to create an uneven-

aged forest, or to maintain a forest that is already in an uneven-aged condition.

MAKING THE DECISION

The ultimate decision on what to do with the forest rests with the landowner, however it is a good practice for the contractor to present the landowner with several prescriptions that could address their objectives and recognize the values present in their forest.

Once the landowner has considered possible harvesting options and selected an appropriate treatment, it is important to carefully plan the harvest. The following practices apply to all harvesting systems.

PLANNING THE HARVEST

STANDARD PRACTICES

- Harvest planning should consider wildlife habitat, aquatic ecosystems, and the provision of snags and downed woody material. See Wildlife Habitat BMP's.
- The harvest prescription selected should consider landowner objectives, natural disturbance patterns and stand specific conditions.
- The area to be harvested should be identified on the ground and flagged.
- Special Management Zones should be identified and flagged.
- Harvesting operations should be planned with consideration for natural regeneration, taking care to protect advanced regeneration when present.
- Wood extraction trails should be located to minimize environmental impact.
- Harvesting should maximize the production of high value products while minimizing waste, within market constraints.
- Consider harvest timing to accommodate environmental conditions and markets.
- Location of extraction trails, landings, and crossings should be planned to minimize impact on watercourses.
- Locations for piling wood should be identified and should consider local hazards and constraints (for example power lines, traffic flows, right of ways and other uses for the area).
- Where selection cuts are prescribed, advance marking of at least some of the trees should be considered.
- Consider impacts of harvesting on viewscapes and other landowners.

ENHANCED PRACTICES

- Locate harvest boundaries along naturally occurring features (stand types, topography).
- Consult a Depth to Water Table (wet areas) Map to determine potentially sensitive areas.
- Inform adjacent landowners of pending harvest operations.
- Consult the Nova Scotia Forest Ecosystem Classification guide to determine soil characteristics of the site when considering the harvesting of forest products, including: boles, slash, limbs and tops.

HARVESTING OPERATIONS

STANDARD PRACTICES



- Implement operations plan as written.
- Be aware of and follow Nova Scotia Occupational Health and Safety Regulations on all harvesting sites.
- Be aware of and follow Fire Protection Regulations for fire prevention during fire season.
- Avoid rutting by keeping machinery away from soft or wet ground and using brush matting where required.
- Remove all garbage from the site and properly dispose of hazardous materials (including petroleum products).
- Optimize utilization by minimizing stump height and processing trees to acceptable minimum top size.
- Use caution and proper procedures in the handling and storage of harmful substances.
- Keep all boundaries, roads and recreational trails free of debris.
- Never allow machinery or debris to enter a watercourse.
- Avoid operating during excessively wet periods to minimize rutting, soil compaction and erosion.
- Avoid damaging advanced regeneration.
- Avoid damaging roads, culverts and ditches with forwarding and harvesting machinery.
- Refuel and service machinery at least 30 metres away from a watercourse and on bare mineral soil.
- Repair damage done to forwarder/skid trails and access roads.

POST HARVEST ACTIVITIES

STANDARD PRACTICES

- Record information on volume harvested.
- Complete self performance checklist.
- Repair any damage to roads and environment.
- Ensure that landowner is satisfied with the operation.
- Ensure all roadside wood is promptly removed from site.
- Supply owner with final sketch or GPS map of harvest area and outline process for ensuring regeneration occurs, including the re-vegetation of landings.
- Contractor should supply the landowner with a list of silviculture contractors that can provide reforestation services.

ENHANCED PRACTICES

- The contractor should ensure the harvested site has a regeneration survey completed within 3 years and arrange for the appropriate silviculture treatment to ensure optimum reforestation.
- Practice due diligence by taking digital photographs of pre/post site and road conditions.
- Recommend contacts for follow-up silviculture treatments.

ENSURING A SAFE OPERATION: BEST MANAGEMENT PRACTICES

Nova Scotia's Occupational Health and Safety Act provides for the promotion, co-ordination, administration and enforcement of occupational safety and health. Occupational health and safety involves five essential elements:

- Prevention
- Internal responsibility
- External support (training)
- Enforcement (monitoring)
- Response to changing needs (updating procedures)

FPANS Stewardship Principle 5

Forest operations raise unique challenges for contractors and operators. The nature of forest work, the variation in environmental conditions and stand conditions, coupled with the use of mechanized equipment can create dangerous work situations for both the contractor as well as visitors to the site. The following practices are considered mandatory and are described more fully in the latest edition of "Forest Professional."

STANDARD PRACTICES

- Personal protective equipment (PPE) appropriate to the operation must be worn by the forest worker. Equipment must be approved as outlined in the "Forest Professional" and be kept in good repair.

- Develop a procedure and record keeping system for competency training for all employees.

- Contractors must understand and conduct operations in accordance with the Nova Scotia Occupational Health and Safety Act and regulations, codes of practice and other applicable acts and/or regulations.

- Contractors must undertake periodic visual checks of any employee working under hazardous conditions (including working alone) and develop effective policies and procedures to address the risk.

- First aid supplies and services must be made available as required by Occupational Health and Safety regulations, including a valid remote location plan.

- Safe operating practices must be adhered to for the operation of equipment used in a forest operation. Some examples might include:
  - Forwarding wood on steep slopes
  - Chainsaw operation, etc.

- Harvesting and road construction practices must be used as outlined in the latest edition of the "Forest Professional".

ENHANCED PRACTICES

- Each contractor should have an Occupational Health and Safety Program in place.
- Contractors should participate in third-party audits of their Occupational Health and Safety Program.
- Job sites should be posted to indicate that work is in progress.

FUEL AND OIL STORAGE AND HANDLING

Storing, using and transporting petroleum products is a responsibility that all contractors and their employees must consider as a significant requirement of their jobs. Any amount of spilled or released petroleum product has the potential to contaminate surrounding soils if not properly contained and disposed of in an approved manner. If these products penetrate ground water they can travel for hundreds of meters affecting household water supplies, destroying wildlife and habitat.

The following are basic conditions contractors and/or employees must be aware of to reduce the risk of an adverse environmental incident:

STANDARD PRACTICE

- Applicable legal requirements will be met or exceeded as per regulations when working with controlled products.
- Develop and implement an Emergency Response Plan that includes training and drills for expected emergencies and includes proper use of spill kits and their disposal.
- Any movement of a fuel tank over 450 litres on a site will be done by a person with current Transportation of Dangerous Goods (TDG) training.
- A method for disposal of used fuel and oils in accordance with provincial regulations is to be used and documented.
- Every effort must be made to ensure spill kits are restocked after use.
- Perform and document monthly visual inspections of storage tanks.

ENHANCED PRACTICE

- Where possible, environmentally friendly products will be substituted for more hazardous fuels and oil.
- Install automatic shut-off valves on hydraulic equipment.

FUELING AND LOCATION OF STORAGE TANKS AND FACILITIES

STANDARD PRACTICE

- Off road fueling, fuel storage sites and facilities will be on reasonably level ground, free of large rocks or exposed bedrock, and will be located at least 30 metres from any defined watercourse, wetland, pond, or lake.

- Fuel may be stored and transported in a small means of containment (less than 450 litres – slip tanks) providing that the means of containment is designed, filled, closed, secured, and maintained to ensure that there will be no accidental release of the product during transport.

- Fuel being stored and transported in a means of containment greater than 450 litres must meet the requirements of section 5.12 of the Transportation of Dangerous Goods Act and Regulations.

- All fuel tanks must have proper TDG and WHMIS placards.

- Each operation will be equipped with a large spill kit. Each machine will have a supply of absorbent material.

- When being moved on a public highway, a tank must be properly mounted on a licensed and inspected trailer.

- Ensure lube oil, grease, antifreeze and other controlled products are kept inside a secure and locked structure when no one is on site.



ENHANCED PRACTICES

- Each machine must have access to an adequate supply of absorbent material for spills.

- Each fuelling location should have a “Plug & Dyke” kit.

FUEL STORAGE TANKS AND PUMPS CHECKLIST

Contractors/employees will make routine checks/inspections of the following items on fuel storage tanks and pumps:

- All transportation tanks must be secured to the truck or trailer.

- Pumps, discharge hoses and drain plugs are well maintained and kept free of leaks.

- Ensure nozzle is in place and in good repair on automatic shut-off nozzles. When refueling, an operator must be at the nozzle at all times, regardless of the type of nozzle, except when using a hand pump.



- All fuel discharge hoses must have a nozzle.
- All hand pumps must be equipped with automatic shut-off nozzles.
- All pumps are fitted with a secure and sturdy locking mechanism and are kept locked when not in use.
- Electrical leads to the fuel pump must be well maintained with no breaks in the wire insulation and be properly connected to the power source.
- Gravity flow pumps should not be used in any situation.

HYDRAULIC OIL SYSTEMS

Contractors/employees will check and ensure that the hydraulic systems on all forestry equipment are well maintained and controls are in place when lines are disconnected for repairs. Proper procedures must be followed to minimize loss of hydraulic oil into the environment.

OIL SPILLAGE DURING SERVICE AND REPAIRS

Every effort will be made to prevent the loss of fuel, motor oil, hydraulic oil, gear oil, and other deleterious material into the environment through the collection of these fluids during service and repairs. When a small amount of fluid spillage is unavoidable an oil proof barrier in combination with oil absorbing material will be used to prevent soil and water contamination.

ENVIRONMENTAL EMERGENCY NUMBER - 1-800-565-1633

A spill of more than 100 liters (22 gal) will be reported to the Nova Scotia Environment.

Judgement must be exercised when reporting spills lower than the stated amounts. (i.e. spills on or near drinking water sources or other sensitive areas should be reported regardless of the amount).

PERFORMANCE MONITORING: BEST MANAGEMENT PRACTICES

Performance should be continuously monitored and adjusted in order to ensure that best management practices are being adhered to and that established objectives are being met. A system of recording performance is useful. It provides the contractor with a tool to assist them in completing a thorough performance review as well as documentation which can be supplied to wood purchasers or landowners to illustrate compliance with best management practices.

The following checklists will make it easy for the contractor to determine if the operation meets best management practices and to identify where improvements are required.

STANDARD PRACTICES

- It is recommended that the contractor complete the checklist at three stages of operation:

    1. Before the operation starts.
    2. During the operation.
    3. Post operation.

- Only those practices that are relevant to the operation need be assessed. This program will enable the contractor to identify practices or areas which need improvement early in the operation.

ENHANCED PRACTICES

- Provide landowner with completed checklists.

- Maintain paper copy for future reference and provision to wood purchasers.

BUSINESS: BEST MANAGEMENT PRACTICES

Whether you are a contractor or landowner operating on your own land, you are a small business. The success of your business is dependent upon management of your operation and/or woodlot. The management aspect is as important as the operation and repair of your equipment.

STANDARD PRACTICES

- Develop a business plan that provides direction over the short term and long term for your business. The plan should include revenue, expenses and annual cash flow as well as a 3 to 5 year forecast. Equipment replacement plans should be reviewed and updated annually.

- Consult an accountant to ensure that your books are properly set up and provide the information you will need to manage your business.

- Develop a record keeping system that provides you the information to manage your business such as equipment maintenance and repair, parts inventory, wood sold and wood inventory on landing, production, operating costs, staff expenses, training, and your safety program.

- Track operating costs at least monthly to ensure you have a good understanding of your per unit costs and the factors that affect them.

- Use contracts for operations such as stumpage purchases, silviculture work and road building.

- When negotiating contracts or selling forest products, you have to know all your costs, including capital, operating expenses, payroll, taxes, insurances, overhead and a reasonable rate of return.

- Have a human resource plan that identifies staffing needs, recruitment, training, retention and dismissal.

- Have adequate insurances such as liability, equipment, vehicle and Workers Compensation to protect yourself and your business. Landowners should require proof of adequate insurance.

- Stay current on forest products markets, specifications and prices and be prepared to respond to changes in the market place.

- Be registered as applicable with appropriate government agencies such as Revenue Canada, Joint Stocks, WCB.

- Join and participate in an appropriate professional organization(s).

ENHANCED PRACTICES

- Research emerging technologies to assist in managing your business such as GIS/GPS, various operational software that optimizes production.
- Research emerging forest products markets.
- Participate in continuing education programs.
- Encourage employees to participate in an appropriate professional organization(s).

SELF PERFORMANCE CHECKLISTS

DEVELOPING LANDOWNER AGREEMENTS: BEST MANAGEMENT PRACTICES

BEFORE MEETING THE LANDOWNER:

	Standard	Enhanced
• Information gathered on the woodlot; maps, air photos etc.	☐	
• Information provided to landowner on forest operations	☐	
• Portfolio made available with photographs of previous work		☐

DISCUSSED DURING THE LANDOWNER INTERVIEW:

	Standard	Enhanced
• Landowner's objectives	☐	
• Forest management alternatives – harvesting, silviculture, non-timber	☐	
• Survey to determine landowner objectives administered		☐

WOODLOT ASSESSMENT

	Standard	Enhanced
• Inventory of forest products	☐	
• Observations of wildlife and habitat recorded	☐	
• Watercourses identified	☐	
• Other operating constraints identified (areas of human interest, etc.)	☐	
• Special Management Areas identified (i.e. significant habitat, old growth, endangered plants, designated wetlands etc.)	☐	
• Opportunities to work together with other landowners identified	☐	
• Assessment of broader woodlot values conducted		☐
• Document any observed invasive exotic plant or animal species		☐
• Potential for prescriptions other than clearcutting identified		☐
• Completed Landowner – Decision Support Tool		☐

OPERATION PLAN INCLUDES

	Standard	Enhanced
• Landowner objectives	☐	
• A map showing boundary line and areas of operation	☐	
• Description of vegetation on areas of operation (tree species and size)	☐	
• Area to be treated, prescription, method and system to be used	☐	
• Special management areas identified	☐	
• Watercourses and wetlands identified	☐	
• Forest/Wildlife requirements identified	☐	
• Stream crossings and method of crossing noted	☐	
• Forest stand characteristics from inventory		☐
• Consultations with forestry professional to assist in development of plan		☐
• Forest inventory data included		☐
• Brief description of prescription type		☐
• Potential locations of wildlife management features		☐

NEGOTIATION AND AGREEMENT WITH LANDOWNER

	Standard	Enhanced
• Operation plan reviewed with the landowner	☐	
• Method of payment agreed upon	☐	
• Revisions incorporated to meet landowner needs	☐	
• Visit area(s) of operation with landowner		☐
• Provide landowner with contract or lease		☐
• Register contract with lawyer		☐
• Provide performance bond		☐

ROAD CONSTRUCTION: BEST MANAGEMENT PRACTICES

PLANNING AND LAYOUT

	Standard	Enhanced
• Owner objectives and approval of road location determined	☐	
• Fragile/sensitive areas avoided	☐	
• All required permits in place	☐	
• Sight distance/aesthetics considered		☐

CONSTRUCTION

	Standard	Enhanced
• Ditches/culverts adequate – road well drained	☐	
• Erosion control has been implemented	☐	
• Site clean of garbage and machinery	☐	
• Road sides seeded or brush mats installed		☐
• Document work with digital photography		☐
• Annual inspection and maintenance plan		☐
• Watercourse alteration certified		☐

TEMPORARY STREAM CROSSINGS

	Standard	Enhanced
• Installed in accordance with guidelines	☐	
• Removed the temporary crossing	☐	

WILDLIFE HABITAT: BEST MANAGEMENT PRACTICES

	Standard	Enhanced
• Working knowledge of species at risk	☐	
• Document species at risk research actions	☐	
• Species at risk protection measures included in plan	☐	
• Wildlife features identified and considered	☐	
• Landowner objectives considered	☐	
• Landscape level issues considered		☐
• Late successional Acadian forest left intact		☐

DEVELOPING A VARIETY OF FOREST HABITATS – HARVEST DESIGN

	Standard	Enhanced
• Harvest prescription appropriate	☐	
• Harvest area less than 50 ha.	☐	
• Corridors installed where required	☐	
• Wind-firm trees and snags left within corridors	☐	
• Special management areas addressed	☐	
• Blocks –irregular shaped to increase edge habitat	☐	
• NS Wildlife Habitat and Watercourse Protection Regulations followed	☐	
• Harvest prescriptions to promote a variety of age classes, tree species and vegetation types		☐
• Widest buffer possible left		☐

HARVESTING BEST MANAGEMENT PRACTICES

HARVESTING OPERATIONS

	Standard	Enhanced
• Followed operations plan	☐	
• Followed NS Occupational Health and Safety regulations	☐	
• Followed Fire Protection Regulations	☐	
• Avoided rutting	☐	
• Proper procedure followed in handling and storage of harmful substances	☐	
• Garbage/equipment removed from site	☐	
• Avoided damaging advanced regeneration	☐	
• Repaired damaged trails and roads	☐	

POST HARVEST ACTIVITIES

• Harvested volume recorded	☐
• Self performance checklist completed	☐
• Damaged roads and environment repaired	☐
• Landowner satisfaction verified	☐
• Roadside wood removed	☐

• Provided GPS map of harvested area with outline process for regeneration	☐	
• Provided list of silviculture contractors	☐	
• Ensure a regeneration survey is completed		☐
• Pre/post site and road conditions photos taken		☐
• Follow-up silviculture treatments contacts supplied		☐

ENSURING A SAFE OPERATION

	Standard	Enhanced
• Personal protective equipment worn and kept in good repair	☐	
• Employee competency training procedures and record keeping system developed	☐	
• NS Occupational Health and Safety Act and other applicable act/regulations followed	☐	
• Performed visual checks on employees at risk and developed policies and procedures to address the risk	☐	
• Followed the practices of the latest edition of the "Forest Professional"	☐	
• Occupational Health and Safety program in place		☐
• Participated in third-party audits		☐
• Posted work in progress on job sites		☐

FUEL AND OIL STORAGE AND HANDLING

	Standard	Enhanced
• Met applicable legal requirements	☐	
• Developed and implemented an Emergency Response Plan	☐	
• Used fuel and oils recorded and disposed of in accordance with provincial regulations	☐	
• Spill kits must have sufficient supplies to accommodate size of operation	☐	
• Environmentally friendly products used		☐
• Automatic shut-off valves installed		☐

FUELING AND LOCATION OF STORAGE TANKS AND FACILITIES

	Standard	Enhanced
• Not closer than 30m from any defined watercourse	☐	
• Met requirements of the Transportation of Dangerous Goods Act and Regulations	☐	
• Proper TDG and WHMIS placards	☐	
• Tanks properly mounted on a licensed and inspected trailer	☐	
• Stored products locked in structure when no one is on site	☐	
• Machines have absorbent material for spills		☐
• Fueling locations have a "Plug & Dyke" kit		☐

FUEL STORAGE TANKS AND PUMPS

	Standard	Enhanced
• Transportation tanks secured	☐	
• Pumps, discharge hoses and drain plugs maintained with no leaks	☐	
• Nozzles kept in good repair	☐	
• Fuel discharge hoses have nozzles	☐	
• Hand pumps equipped with automatic nozzles	☐	
• Pumps locked when not in use	☐	
• Electrical leads to fuel pump maintained	☐	
• Gravity flow pumps not used	☐	

ADDITIONAL RESOURCES

Nova Forest Alliance - www.novaforestalliance.com

- At a Glance: A Guide to Identifying and Managing Nova Scotia Hardwoods
- Forest Ecosystem Classification of Nova Scotia's Model Forest
- Woodlot Info Shop Website – www.woodlotinfoshop.ca

Woodlot Management Home Study Program - Nova Scotia Department of Natural Resources - http://www.gov.ns.ca/natr/education/woodlot/

- Introduction – Getting More from Your Woodlot
- Principles of Forest Stewardship
- Introduction to Silviculture (Module 1)
- Harvesting Systems (Module 2)
- Thinning for Value (Module 3)
- Wildlife and Forestry (Module 4)
- Stand Establishment (Module 5)
- Chain Saw Use and Safety (Module 6)
- Woodlot Ecology (Module 7)
- Wood Utilization & Technology (Module 8)
- Woodlot Recreation (Module 9)
- Managing Woodlot Finances: Planning and Investment Guide (Module 10A)
- Managing Woodlot Finances: Income Tax and Estate Planning Guide (Module 10B)
- Roads and Trails: Planning it Right from the Start (Module 11)
- Small Scale Harvesting Equipment – What's Right For You? (Module 12)
- Non Timber Forest Products: Growing Opportunities (Module 13)

Nova Scotia Forest Practices Pamphlets - Nova Scotia Department of Natural Resources

- Your Forest Management Plan (Pamphlet 1)
- Building Woodland Roads (Pamphlet 2)
- Forest Surveys and Boundary Lines (Pamphlet 3)
- Safe Felling (Pamphlet 9)
- Safety From Stump to Roadside (Pamphlet 10)
- Harvesting Systems Clearcut Method (Pamphlet 13)
- Harvesting Systems Selection Method (Pamphlet 14)
- Harvesting Systems Seed Tree Method (Pamphlet 15)
- Harvesting Systems Release Cutting (Pamphlet 16)

Nova Scotia Department of Natural Resources

- Integrated Resource Management Pamphlet and Video
- Selling Standing Timber
- Forest Sustainability Regulations – Information leaflet FOR-3
- Woodlot Roads/Stream Crossing Manual

- Forestry/Wildlife Guidelines
- More Wildlife on Your Woodlot
- Forestry Field Handbook
- Hardwood Thinning Manual
- Shelterwood Harvesting Manual
- Merchantable Thinning Manual - Softwoods

Logging for Wildlife – *Nova Scotia Forestry Association*

A True Picture – Taking Inventory of Your Woodlot – *Eastern Ontario Model Forest*

The SFM Essentials – An Introduction to the Sustainable Forest Management Standards – *Canadian Standards Association*

The Forest Professional – Guidelines for the Stewards of Tomorrow's Forests – Occupational Health and Safety Division – *Nova Scotia Department of Labour*

Registered Professional Foresters Association of Nova Scotia – www.rpfans.ca

Forest Products Association of Nova Scotia – www.fpans.ca

Nova Scotia Forest Technicians Association – www.nsfta.ca

Canadian Institute of Forestry – Nova Scotia Section - http://www.cif-ifc.org/site/nova_scotia

Green Pages Directory – DvL Publishing – www.countrymagazines.com/greenpages.shtml

LIST OF LEGAL REQUIREMENTS

PROVINCIAL LEGISLATION

- Occupational Health and Safety Act
  - Occupational Health and Safety First Aid
  - Occupational Safety General
  - Workplace Hazardous Materials Information System
  - Occupational Health (enforced under this act)

- Dangerous Goods Transportation Act
  - Dangerous Goods Transportation

- Endangered Species Act
  - Species at Risk List

- Environment Act
  - Activities Designation
  - Approvals Procedure
  - Dangerous Goods Management
  - Emergency Spill
  - Environmental Assessment
  - Motive Fuel and Oil Approval
  - NS Environmental Assessment Board
  - On-site Sewage Disposal Systems
  - PCB Management
  - Pesticide
  - Petroleum Management
  - Protected Water Areas
  - Used Oil
  - Solid Waste-Resource Management
  - Sulphide Bearing Material Disposal
  - Water and Wastewater Facility

- Forests Act
  - Forest Fire Protection
  - Forest Sustainability
  - Registration and Statistical Returns
  - Wildlife Habitat and Watercourse Protection

- Labour Standards Code
  - General Labour Standards Code
  - Minimum Wage Order
    - General
    - Logging and Forest Operations

- Land Registration Act
  - Land Registration General

- Off-highway Vehicles Act
  - Off-Highway Vehicles Trails Designation
  - Off-highway Vehicle Infrastructure Fund
  - Off-highway Vehicle Insurance
  - Off-highway Vehicles Closed Courses
  - Off-highway Vehicles Designated Trails and Trail Permits
  - Off-highway Vehicles Fees
  - Off-highway Vehicles General
  - Off-highway Vehicles Safety and Training
  - Off-highway Vehicles Vulnerable Areas Licensing

- Special Places Protection Act
  - See Site Specific Designations and Regulations

- Wilderness Areas Protection Act

- Wildlife Act
  - General Wildlife
  - Wildlife Management Area

- Workers' Compensation Act
  - Workers' Compensation General

FEDERAL LEGISLATION

- Canada Labour Code
  - Canada Occupational Health and Safety

- Canadian Environmental Assessment Act
  - Comprehensive Study List
  - Exclusion List
  - Inclusion List

- Canadian Environmental Protection Act
  - Environmental Emergency

- Canada Wildlife Act
  - Wildlife Area

- Fisheries Act

- Forestry Act

- Timber Regulations

- Migratory Bird Convention Act
  - Migratory Birds
  - Migratory Bird Sanctuary

- National Fire Code

- Navigable Waters Protection Act
  - Navigable Waters Works

- Pest Control Products Act
  - Pest Control Products

- Plant Protection Act

- Species at Risk Act

- Transportation of Dangerous Goods Act
  - Transportation of Dangerous Goods

USEFUL PHONE NUMBERS

Association for Sustainable Forestry 902-895-1179

Canadian Forest Service – Atlantic Forestry Centre – Fredericton 506-452-3500

Christmas Tree Council of Nova Scotia 902-895-6914

Department of Fisheries and Oceans 1-800-782-3058

Environment Canada - Environmental Protection Branch 902-426-7231

Forest Products Association of Nova Scotia 902-895-1179

Forest Safety Society of Nova Scotia 902-895-1107

Nova Forest Alliance 902-639-2921

Nova Scotia Department of Fisheries and Aquaculture Inland Fisheries 902-485-5056

Nova Scotia Department of Natural Resources
Central Region 902-893-5631
Eastern Region 902-563-3370
Western Region 902-527-5984

Nova Scotia Environment and Labour
Environmental Monitoring and Compliance Toll Free: 1-877-936-8476
Labour Standards Toll Free: 1-888-315-0110
Occupational Health and Safety Toll Free: 1-800-952-2687

Nova Scotia Forestry Association 902-895-1179

Sustainable Forestry Initiative 1-800-631-3657 (to report noncompliant forestry operations with regards to sustainable forestry)

Emergency Numbers
Fuel Spill Emergency 1-800-565-1633
Medical Emergency – 911
Forest Fire or Game Infraction Reporting 1-800-565-2224

Schedule "I"

Q. ***How is the width of a stream measured?***

A. Measure the width of the bed of the stream, which is the portion of the stream containing mud, silt, sand, gravel or rock covered by water for at least part of the year. Take a measurement at ten equidistant locations along the stream where it is adjacent to the proposed harvest area, then calculate the average of those measurements to determine the average width.

Q. ***Can you harvest trees in Special Management Zones?***

A. Yes, but you must leave a standing basal area (see next question) of at least 20 metres²/ hectare (87 feet²/acre) and not create an opening in the dominant canopy larger than 15 metres (48 feet). It is recommended that the most windfirm trees (ie. hardwood, pine, hemlock, and healthy red spruce) be favoured as the trees to remain standing in the Special Management Zones.

Q. ***How can I determine "Basal Area"?***

A. Basal area is the surface area of the cross section of the trunks of trees left standing, measured at a height of 1.3 metres (4.3 feet) from the ground. Usually measured in square feet per acre or square meters per hectare, the number can be estimated using a prism or relascope. For assistance contact a local N. S. Department of Natural Resources office.

Q. ***What are the best trees to leave as legacy trees in wildlife clumps?***

A. Large diameter trees are the best, as are those that will last a long time, such as hardwoods and hemlock. Most tree species are suitable. Living trees with dead tops, broken limbs or showing the first signs of decay will provide cavities for a long time. Try selecting a good cavity tree to use as the center of the clump. Leave enough standing trees around it to provide at least the minimum number of required trees per clump. Continue this procedure until there are at least the minimum number of clumps required for the harvest area. This allows the best candidate cavity trees to be kept and governs how the clumps are distributed.

Q. ***What happens if I do not follow these Regulations?***

A. You would be guilty of an offense and subject to a significant penalty.

Q. ***Where can I get more information?***

A. For more details, please read the regulations available from a N.S. Department of Natural Resources office.

or visit our website at:
www.gov.ns.ca/natr/forestry/strategy

NOVA SCOTIA
Natural Resources

02/2002

NOVA SCOTIA'S WILDLIFE HABITAT AND WATERCOURSES PROTECTION REGULATIONS



Information Circular
WDL-7

habitat, to ensure Nova Scotian forests will have a diversity of wildlife species in the future.

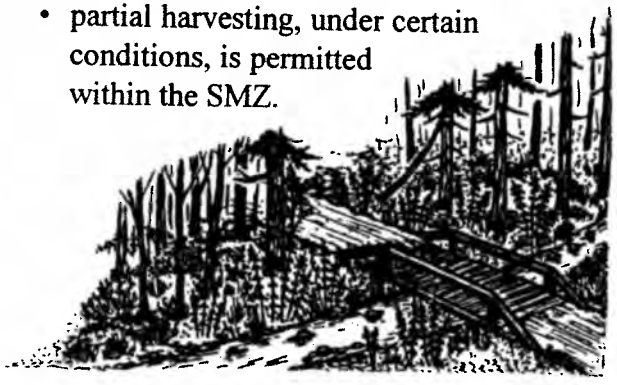
On January 14, 2002 these Regulations became law and must be followed when forest harvesting takes place on any woodland in Nova Scotia.

There are 3 techniques that must be followed when harvesting forest land:

1. Leaving Buffer Strips Along Watercourses

The area next to a watercourse provides food and shelter for many species of wildlife. When harvesting adjacent to a watercourse 50 centimetres (20 inches) or more in width:

- leave at least a 20 metre (66 feet) wide strip, called a Special Management Zone (SMZ), along each edge of the watercourse.
- partial harvesting, under certain conditions, is permitted within the SMZ.



Many species of animals and birds require openings or cavities in standing trees for nesting and shelter. When harvesting any area larger than 3 hectares (7.4 acres):

- leave at least 10 living trees standing (future cavity trees) for each hectare harvested.
- leave these trees in clumps, with a minimum of 30 trees per clump.
- for information regarding the number of clumps required, their composition and their location, see www.gov.ns.ca/natr/forestry/strategy.

3. Leaving Coarse Woody Debris

Standing dead trees, fallen trees and large branches, and rotting logs are important habitat for many species of wildlife, and when decomposed, they are a source of nutrients for the next forest. When harvesting:

- leave standing dead trees and as much large woody debris on the harvested area as possible.

For more details on the Wildlife Habitat and Watercourses Protection regulations, visit www.gov.ns.ca/natr/forestry/strategy or contact your local N. S. Department of Natural Resources office.

ABOUT THE WILDLIFE HABITAT AND WATERCOURSES PROTECTION REGULATIONS

Q. ***Why are there no restrictions on clearcutting in the Regulations?***

A. All forest harvesting methods change wildlife habitat. Some species prefer openings while others prefer forest cover. Clearcutting is the predominant method of harvesting used for a variety of legitimate reasons including the characteristics of our forests, economics and the size of area being harvested. Other methods such as selection and shelterwood harvesting are used where they suit the management objectives of the landowner and the forest being managed.

Q. ***Why must there be controls on what I can do on my land?***

A. Harvesting has a major impact on the habitat of wildlife (plants and animals) and on water quality. After consulting with the public, forest industry, environmental groups, foresters, and biologists, these new regulations provide the minimum standards that most parties agreed are necessary to protect the integrity of areas along defined watercourses.

Schedule "J"

Who regulates herbicide use in Nova Scotia?

Application of a herbicide on forest land in Nova Scotia requires approval by the Nova Scotia Department of Environment and Labour (NSDEL). All applications must adhere to the terms and conditions contained in their approval.

NSDEL sets "No-spray" set back zones to protect water supplies, watercourses, wetland areas and dwellings. They also stipulate public notification requirements, such as, applicators must notify residents of any dwelling within 500 m of the site that a herbicide application will be taking place.

Registered applicators must have successfully completed training and have been certified after passing a provincial exam. NSDEL has strict policies and procedures that certified herbicide applicators must follow when working on forest lands.

See the Nova Scotia Department of Environment and Labour website for more information:
http:www.gov.ns.ca/enla/services.htm

How do we know that the herbicide is reaching and staying within the treatment area?

Aerial applicators use global positioning technology and sophisticated computerized spray equipment thats controls droplet size, to ensure precise delivery of the herbicide. Prior to and during a spray operation, weather is closely monitored and the herbicide is applied only during low wind conditions as specified in the Approval from the Nova Scotia Department of Environment and Labour. Observations, post treatment by DNR staff, of the line on the ground between areas receiving and not receiving treatment is typically found to about one metre width.

The decision to use herbicides is never taken lightly. It is based on a careful analysis of the site and the species found, the selection of a thoroughly tested and understood product, and the skill of trained operators using modern technology to produce accurate and successful results. Herbicide use is one of the tools available to resource managers as they seek to enhance tree growth while ensuring the benefits from other forest values remain for present and future generations to enjoy.

For more information on forestry and forest management in Nova Scotia visit the Department of Natural Resources website:
http://www.gov.ns.ca/natr

NOVA SCOTIA
Natural Resources

Information Circular FOR - 4
May 2006
05-23-08/5000

The Responsible Use of Herbicides in Nova Scotia Forests

Science, Safety and Sustainability



Scotia's forest industry generates $150 million in direct and indirect taxes. As a major employer in many rural communities, the industry provides direct and indirect employment for more than 17,000 people.

Nova Scotia's forests must be able to regenerate and grow quickly to meet the growing demand for forest products and sustain the economic, social, and environmental benefits we value. Forest managers develop harvesting plans and post harvest treatments to manage healthy, diverse and productive forest stands. These plans include measures such as maintaining species representative of the original forest, and site specific silviculture treatments. Planning includes monitoring regeneration vigour, selecting appropriate planting stock and selective vegetation management programs.

To aid forest managers in the selection of appropriate harvest plans and silviculture treatments, a forest management Code of Practice has been introduced in Nova Scotia. As well, a guidebook on forest ecosystem management will be introduced to further assist forest managers in meeting biodiversity goals on Crown land forests. These will serve as guides for private woodlot managers as well.

Is vegetation management necessary?

Vegetation management is necessary to ensure that sufficient areas of Nova Scotia's forests are quickly restocked with commercial tree species to meet our wood supply needs without compomising forest sustainability. It is an accepted silviculture treatment and an integral part of todays' forest management strategy.

Vegetation management ensures trees receive adequate sunlight and have sufficient growing space to achieve optimum growth and development. Tree seedlings on some sites, whether natural

from other vegetation.

How are herbicides used?

The methods used in forestry are similar to those used to keep agricultural crops free of weeds by applying a herbicide or physically removing or cutting away competing vegetation. In many forest stands, cutting competing vegetation is time consuming, difficult, and expensive work and nearly always results in multiple stems replacing the initial plant. In other cases competing herbaceous plants,(ferns, raspberries, etc.) cannot be controlled by cutting.



Following cutting many competing species sprout new stems from the stumps or roots. Root systems are not affected by cutting the stems.

the life of the stand (usually 40 to 60 years). When needed, small amounts of approved herbicides are applied to sites to help seedlings become established. They offer a cost effective, efficient, and safe means of controlling competing vegetation. The use of herbicides is done in accordance with all regulatory requirements.

What are the main herbicides used in Nova Scotia forests?

The most predominately used herbicides are glyphosate-based products including: Forza™, Vantage Forestry™ and Vision™. Glyphosate is commonly used in agricultural crop production and domestic home and garden use for weed control. Forest use of herbicides accounts for less than one per cent of the total annual pesticide sold in Canada. In Nova Scotia, herbicides have been used successfully in forests for several decades.

Are herbicides safe?

Only herbicides registered by the Canadian Pest Management Regulatory Agency (PMRA) are approved for use in the forest industry. Prior to registering a herbicide the PMRA (a Division of Health Canada) reviews toxicological, environmental, chemical and efficacy studies to ensure product safety and performance. For further information visit the PMRA website at http:www.pmra-arla.gc.ca or call the PMRA Info Service at 1-800-267-6315.

Glyphosate products act on a metabolic process found only in plants. They have a high degree of human safety when used according to label directions and have been demonstrated to have low toxicity to insects, mammals, birds and fish. There is no known risk associated with eating the meat of game animals that have been feeding in treated areas.



Schedule "K"

Wild Blueberry Fact Sheet C.4.2.0

Wild Blueberry IPM
Weed Management Guide



Recommendations in this Guide are given for general information only. All herbicides used must be applied in accordance with label directions. The New Brunswick Department of Agriculture, Aquaculture and Fisheries by printing this publication does not offer any warranty or guarantee and does not assume liability for crop loss, animal loss, health, safety, or environmental hazards caused by the listed herbicides or practices. Trade names used in this Guide are given as a convenience to producers and are neither an endorsement of the product nor a suggestion that similar not mentioned products are not as effective.

Revised 2017

Agriculture, Aquaculture and Fisheries

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Introduction

The weed flora in wild blueberry fields is unique compared to that found in other agricultural fields. Producers manage a native perennial crop that grows in low pH soils without associated tillage or cultivation. Weeds which prefer this habitat thrive if not controlled. Weeds can shade and compete with the crop, reduce bud/flower production and yield, reduce quality and can interfere with harvesting. The origin of a field often determines the weed flora. Fields developed from abandoned hayfields or pastures typically have a large number of grasses and herbaceous perennial weeds. Fields developed from woodland often have plants commonly associated with the woodland undergrowth such as bunchberry, ferns, lambkill, rhodora, and other woody plants and shrubs.

A weed survey conducted in the year 2000 recorded more than 250 species in blueberry fields, compared to only 115 species in a 1985 survey. The number of many of the traditional woody weeds has decreased due to herbicide use, but this has been off-set by greater numbers of herbaceous annuals and perennials. Not all non-traditional species are considered as significant weed problems but some, like lamb's quarters and herbicide resistant fescue grasses, have the potential of becoming major problems. This change in weedy vegetation resulted from herbicide use, especially hexazinone (Velpar/Pronone). Other contributing factors have been changes in production practices that allow weeds to spread and thrive, such as the increased use of fertilizers, increased use of mowing instead of burning for pruning and the use of mechanical harvesters and other equipment that spreads weeds. In the future, growers can expect an increasingly diverse weed flora. It is important to understand the activity and limitations of available weed control options and to use herbicides in conjunction with other practices to manage weeds.

A blueberry weed management program should follow the principles of Integrated Pest Management (IPM). IPM is a pest management strategy that integrates preventive, cultural, mechanical, biological and chemical control methods to achieve a sustainable production system that balances economic, health and environmental concerns. IPM is based on dynamic principles rather than a definitive set of rules and can vary from farm-to-farm or even from field-to-field. A weed management program that follows the principles and practices of IPM is often referred to as an integrated weed management (IWM) program.

Components of an Integrated Weed Management Program

I. Weed Identification and Biology

When planning a weed management program, blueberry producers must first be able to identify the weeds present in each of their fields. Most weed guides do not include many of the important blueberry weeds. The New Brunswick Department of Agriculture, Aquaculture and Fisheries maintains an integrated pest management (IPM) image bank on the www.gnb.ca/agriculture website, available directly here. This site contains images of diseases, insects, weeds and other disorders affecting New Brunswick's blueberry crop. Most images are available in both low and high resolution and the site is completely bilingual. The site can be accessed by three different methods: 1) the Browse feature where a pest category and/or crop can be selected to find the appropriate images, 2) the Search feature using a key word search or 3) the Complete Listing showing all images in the bank. Clients with slower Internet connections should only select lower resolution images to avoid long download times. Other excellent illustrated publications for identification of blueberry weeds are: Weeds of Eastern Canadian Blueberry Fields by M.G. Sampson, K.V. McCully and D.L. Sampson. NSAC Bookstore, Truro, N.S. 229 pp or Guide d'identification Alliés et Ennemis du Bleuet Nain, by È-C. Desjardins and R. Néron, Centre de Référence en Agriculture et Agroalimentaire du Québec.

Knowing how plants are classified or grouped helps to understand similarities and differences between them. An understanding of the life cycle and the reproductive strategy of weeds is needed in order to use the best approach to their control. Based on life cycle, weeds within wild blueberry fields can be categorized as annuals, biennials or perennials.

A) Annuals

Annuals are becoming increasingly common in blueberry fields. Annuals reproduce only by seed and complete their life cycle in less than one year. They grow rapidly, produce large amounts of seed and may require control in both the sprout and crop year. Control methods must focus on preventing annuals from producing and spreading seed. Most annuals found in wild blueberry fields are summer annuals that germinate in the spring, produce flowers and seed and die in late summer or fall. These include such weeds as lamb's quarters, hemp-nettle, cow wheat and witch grass. There are also a few winter annuals found in blueberry fields. Winter annuals germinate in the fall and then over-winter in a seedling or rosette stage. They produce flowers and seeds the following summer and then die. Winter annuals include such weeds as common chickweed and Canada fleabane.

B) Biennials

Biennials complete their life cycle in two years. They produce a low-growing rosette of basal leaves with a taproot that over-winters. Biennials 'bolt' to produce a flowering stalk, set seed and die in the second year. Examples include yellow evening-primrose, wild carrot and meadow goat's-beard. Biennials are also becoming increasingly common.

C) Perennials

Perennial weeds are the most common in blueberry fields and generally more difficult to control. They live for more than two years and can be either herbaceous or woody. Perennial weeds may reproduce primarily by seed (daisy); by both seed and vegetative means (sheep sorrel); or primarily by vegetative means (bunchberry). Many perennial weeds grow in the same manner as the blueberry plant. Therefore, some of the production practices that promote blueberry growth (like pruning) also promote the growth of these weeds. Perennials which are low growing and spread vegetatively by interconnected underground root systems are the most difficult to control and cannot be controlled by hand-weeding. Some perennials can be controlled with selective or non selective herbicides, but for many, there are no satisfactory controls.

Annuals, biennials and perennials can be grouped in other ways. Flowering plants can be broadly classified as dicots (broadleaves) and monocots. There are also primitive plants that do not produce flowers. Plants can also be grouped into herbaceous (non-woody) and woody species.

1) Flowering Plants

Flowering plants produce seed and can be divided into broadleaved species or dicots (with two seed leaves) and monocots (with one seed leaf). Dicot leaves have a branching network of veins and flowers with petals, although these can be inconspicuous, as shown by alders or lamb's quarters. Monocots have leaves with parallel veins. With the exception of lilies and related plants, monocots have flowering heads of many small, reduced flowers (or florets) without petals that produce a single seed. Monocots include grasses, that are annuals or perennials with jointed stems that are usually hollow and round in cross section; sedges, which are usually perennial plants that form tussocks with leaves that are V-shaped and stems that are triangular in cross section; and rushes, that are annuals and perennials with tussocks of needle-like leaves that are round, jointless and filled with a whitish pith in cross section.

2) Non-flowering Plants

There are also primitive, non-flowering plants that reproduce by microscopic spores that include ferns, horsetails and mosses. Ferns, with stalks and fronds, and horsetails, with narrow leaves in whorls at joints of hollow stems, both spread by underground rhizomes and are difficult to control. Mosses are tolerant to most herbicides but may be suppressed by fire.

II. Scouting and Weed Mapping

Scouting and proper weed identification are the foundation of any integrated weed management program. Scouting involves walking fields in a pattern (e.g. "W" pattern) thereby allowing monitoring for potential weed problems over the entire field. Scouting provides an opportunity to evaluate weed control programs and to look for any herbicide injury. Scouting also provides an opportunity to identify and target new invasive weed species that have the potential to become serious weed problems in the future. Scouting results can be compiled into weed maps to highlight the locations of different weed species. Mapping for weeds from year-to-year is helpful in monitoring changes in weed species, weed densities, distribution, as well as providing an opportunity to plan your future weed control strategy. The management strategy must target the dominant weeds and prevent the spread of others.

The following should be documented when scouting and mapping:

- the weed species and its life cycle (annual, biennial, perennial);
- the size or growth stage of the weed (seedling, small, medium, large, flowering, seed formed, seed dropped);
- the density of the weed (counts or categorize as low, medium, high);
- the distribution (uncommon, scattered throughout, a few patches, numerous patches, common throughout; or estimate the percent blueberry field covered per weed species);
- the location of the weed infestations on a field map;
- the date of scouting.

Weed scouting in sprout fields should be done:

a) just before blueberry emergence to monitor for bunchberry presence and growth stage;
b) soon after blueberry emergence to monitor for potential grass problems;
c) late June - early July for weeds growing above the blueberry plants that would be susceptible to wiping treatments;
d) late summer-early fall for wiping and evaluating the current year's weed control program and also for planning next year's weed control program.

Weed scouting in crop fields should be done:

a) before blueberry buds swell to determine if Velpar or Callisto applications are required;
b) mid-May to mid-June to scout for grasses;
c) mid-July to harvest to determine presence, densities and location of weeds for fall treatments or next year's weed control program.

Special note should be made of weeds that appear to be increasing significantly in distribution and density or any new weeds. For example, burnweed has been noted in greater abundance in many New Brunswick fields. Weeds which may be undesirable for reasons other than competition should also be noted. Examples include weeds flowering during pollination, weeds known as alternate hosts for insects or diseases, or weeds which can interfere with harvesting.

III. Weed Thresholds and Action Levels

Weed thresholds have not been determined for New Brunswick blueberry fields. As a result, the decision to target a weed for control must be based on knowledge of the weed within your farming

system. From a strictly economic perspective, there is no reason to apply control measures unless the weed population inflicts crop damage greater than the cost of the control measure. To make knowledgeable decisions, growers must scout and monitor their fields and continuously observe weeds and evaluate their effect on the crop. Decisions to control weeds may be made even when the cost of control is greater than the losses resulting from weed competition. For example, weeds may have to be controlled despite low densities when they interfere with harvest, act as alternate hosts for insect pests or diseases, attract bees during pollination, or if they have a high potential to cause future problems if not controlled.

IV. Control Methods

With the information gathered through scouting and the knowledge about the weeds present in your fields, you can make the decision as to whether or not a weed should be targeted for control. If action is warranted, it is important to choose the methods that optimize costs and effectiveness, while minimizing potentially adverse effects. The most economical and effective blueberry weed management programs combine preventive, biological, cultural, mechanical and chemical practices within an integrated system.

A) Preventive

Preventive weed control includes all practices that prevent the introduction and spread of weeds into a blueberry field. It is important to be aware of activities which can introduce new weeds and try to prevent the weeds from being introduced. This will help minimize the build-up and spread of new weed introductions.

An important preventive practice is to clean equipment between fields. This is important as weed seeds and other plant parts can attach to equipment and soil and be transported by farm equipment. This is a particular problem with mowers, wipers and harvesters. Recent wild blueberry research has determined that 200,000 to 400,000 weed seeds could be found on individual blueberry harvesters. All equipment, including tractors, land levelling equipment and berry boxes, should be cleaned. Seed dispersal within and between fields can be limited by avoiding equipment operation though dense weed patches during peak periods of seed drop.

Limiting seed production will also help prevent weeds from spreading. Keeping weeds under control in ditches, field edges, and roadsides can minimize the introduction of new problem weeds. Weeds can also be introduced into blueberry fields through the use of weedy straw used for burning. It is critical that growers obtain as weed-free straw as possible. Purchase straw from a reputable source and, if possible, visit the grain field before harvest to check for weeds.

B) Cultural

Cultural practices that encourage a vigorous, dense and healthy crop help to reduce weed pressures as a result of less bare ground being exposed. The use of wood chips, sawdust or bark mulch can reduce weed problems and encourage clone expansion into bare areas. Bare areas can also be planted with blueberry plants to increase crop cover. The presence of some grasses, especially in bare spots, reduces invasion of broadleaved weeds and encourages blueberry expansion.

C) Fertility

Wild blueberries are adapted to grow and produce a crop on soil that is considered, by most agricultural specialists, to be poor in fertility. Plants have a requirement for nutrients from the soil (nitrogen, phosphorus and potassium, among others). Blueberries have a number of adaptations which allow them to thrive in this environment. Weeds are generally better adapted to respond to applied fertilizer than are blueberries. Excessive fertilizer rates that promote weed growth and

vigour should be avoided. Proper fertilizer rates should coincide with adequate weed control to maximize the benefit from each of these inputs. A reliable tool to determine fertility levels is leaf tissue analysis, outlined in this fact sheet.

Blueberries are adapted to a low pH environment, with a relatively low pH near 4 to 4.5. Many weeds, especially annuals and grass species, are not adapted to these conditions. More forest-type species, like lambkill and bunchberry, will not be affected by lowering the pH of the soil. Sulphur application can reduce the availability of soil nutrients for the weeds but allows the blueberries to grow because they are well adapted to acid soil. Approximately 112 kg/ha (100 lb/acre) of sulphur is required for a reduction of 0.1 pH unit. Do not apply more than 1120 kg/ha (1000 lb/ac) of sulphur in any given year. Application should not occur when the ground is saturated or injury to blueberries could result. Change in pH may take several years to be completed, with limited results soon after application.

D) Biological

Biological weed control is the deliberate use of highly selective enemies to reduce the population of a target weed to an acceptable level. In Atlantic Canada, there have been releases of either insects or pathogens against some weed species, including St. John's wort, Canada thistle, perennial sowthistle and toadflax. Biological control is generally most effective on introduced, non-native species in relatively undisturbed, pesticide-free agricultural habitats like pastures and rangelands. Naturally occurring disease epidemics have been observed for St. John's wort and bracken fern in blueberry fields, giving significant control in some years. The use of insecticides and fungicides as production practices within blueberry fields also makes the use of insects and pathogens as biological control agents more challenging. The prospect for biological weed control in wild blueberry is limited.

E) Mechanical

Mechanical methods of weed control include such practices as hand-pulling, pruning (mowing/burn) and clipping.

1. Hand-pulling

Hand-pulling is one of the oldest methods of weed control and is most effective against annuals, biennials and perennial seedlings. Established perennials can only be controlled effectively if the entire root system is removed. This is not possible, in most instances, although hand-pulling perennials can be effective in preventing seed production. If fields have both flowering and non-flowering weeds, flowering weeds should be removed first in order to prevent seed formation. It is also important to remove pulled weeds from the field, as many can still produce viable seed when lying on the soil surface. Hand-pulling is easier when the soil is wet.

2. Pruning (mow/burn)

The main purpose of pruning is to rejuvenate blueberry plants but it also aids in control of some weeds. Burning will control coniferous species and some shallow rooted grasses. The top growth of many woody and herbaceous perennials is generally killed by burning but underground parts re-sprout. Burning also reduces the return of many weed seeds from mature plants to the soil, and will kill many of the weed seeds present near the soil surface. Unfortunately, most burning operations provide only partial or erratic control results. Mowing as a pruning method may give some short-term suppression of perennial weeds and is generally not recommended as the sole method of control. Weeds must be mowed or cut several times during the season to ensure suppression. Species such as maple, birch and willow should be cut back to the ground level. Regrowth from the roots is common and frequently results in additional cuttings. Burning or

mowing alone may promote growth of many perennial weeds with extensive underground root systems by releasing apical dominance.

3. Selective mid-season clipping

Clipping the tops off weeds before seeds ripen prevents seed formation and helps reduce future weed problems. Clipping of species in June, July and August for a few seasons may help suppress weeds to acceptable levels. Clipping weeds every mid-summer has also been found to help control or suppress bracken fern, bayberry, *Prunus* spp., wild rose, and other weeds. Bracken fern should be cut just as the fronds unfold, at least two times, at four-to-six week intervals. Flowering weeds should be clipped before weeds which have not yet flowered. For weeds growing above the blueberry canopy, selective clipping can be performed with “whipper-snippers” or other similar equipment. Alternatively, non-woody weeds can be clipped through whipping. Hand clippers can also be used to target individual low growing weeds, such as sweet fern or lambkill. Clipping is labour intensive and does not generally result in permanent control.

F) Chemical

The use of herbicides to control weeds in blueberry fields is an important component of an integrated weed management program. Herbicides must be used responsibly and judiciously and as just one component within an overall program. Herbicides cannot be used as a cure-all for poor management. No single herbicide or combination of herbicides will control every weed within a blueberry field. Furthermore, excessive weed control that results in long-term bare ground should be avoided as this practice leads to soil erosion and impairs blueberry clone expansion.

Herbicides used within blueberry fields are either selective or nonselective. Following labelled rates and recommendations, selective herbicides control specific weeds without significantly injuring blueberry plants. Some selective herbicides (e.g. Velpar) are only safe to use at prescribed rates and times of application. If excessive rates are applied they are no longer selective and can cause severe crop injury. Nonselective herbicides kill both weeds and crop plants (e.g. glyphosate) and therefore caution must be exercised when applying them. Blueberry herbicides are applied either pre-emergence (applied before any blueberry plant or weed foliage emerges); or post emergence (applied after blueberry plant and weed foliage has emerged). Pre-emergence herbicides provide residual control, whereas post emergence treatments provide little or no residual control. To keep fields relatively clean, growers need both a “base program” and a “clean-up program”. The base program refers to the primary method relied on to control most weeds. For blueberry growers, Velpar is relied on most frequently to provide this base level of weed control. The clean-up program relies on herbicides such as Callisto, Ultim, Venture L, Poast Ultra, Spartan, Roundup, Lontrel or Banvel II to target specific weeds that escape the base program.

Even when label instructions are followed, not all weeds will be controlled. Each herbicide controls only specific weed species, and if timing and rates are not followed, control may be poor. In addition, other factors can also reduce weed control. For example, if heavy rains follow pre-emergence applications on sandy soils, some herbicides may leach away from the weed seed germination zone. Likewise for post emergence herbicides, if rain-free periods are not respected, control can be reduced. A pre-emergence herbicide may not be effective if labelled weeds have emerged before herbicide application. If emerged weeds are too large, control with post emergence herbicides will be reduced. Control from herbicides can also be reduced if weeds are under stress. For example, drought stress can cause weeds to form thicker layers of wax on leaf surfaces, thereby reducing herbicide uptake.

Herbicide Use

1. Methods of Application

There are several methods of applying herbicides, depending on the properties of the herbicide and target weed. The label gives detailed instructions on mixing and application of each product and should be carefully followed to ensure applications are safe and effective. The following gives general information on methods of applying the approved herbicides discussed in Notes on Herbicides Registered for Use in Wild Blueberry.

A) Overall Broadcast Spray

Overall broadcast spraying involves the use of boom sprayers to apply herbicides uniformly over entire fields or large areas. An overall broadcast spray is recommended for treating areas with a uniform rate of herbicide, such as pre-emergence applications of Velpar in the spring of the sprout year. Broadcast applications can also be made to large infestations of some species, such as sweet fern or lambkill, to treat them in the fall of the crop year with Banvel II. Pronone 10G can also be applied as a broadcast treatment by using a granular applicator such as a Vicon spreader. To apply the herbicides at the recommended rate, the equipment must be calibrated and in proper working order. Avoid irregular spray applications by using flagging tape, foam markers, appropriate dyes or GPS systems as guides.

B) Directed Spot Sprays

The objective of directed spot spraying is to apply herbicides to the weed foliage while avoiding contact with the blueberry foliage. Spot sprays are applied with either backpack or handheld sprayers or by operating a handgun from a line connected to a tractor-mounted sprayer. Depending on the product used and the time of application, blueberry plants can be injured or killed if the foliage is sprayed. Applications are often made in the summer of the sprout year, and can result in crop injury. Many species such as alders, sweet-fern, bayberry, lambkill and blackberry retain their leaves in a viable condition longer than the harvested blueberries. Treatment in the fall after blueberry leaf drop helps to reduce the potential for crop injury.

Herbicide applications to fully expanded leaves of brush species can be useful where there are limited numbers of escaped brush species. Unless otherwise stated on the label, applications should be limited to bushes that are less than 2 meters in height. If higher, they should be cut and the regrowth treated. Coverage should be uniform and thorough to wet all leaves and stems. Mix with water only and spray until wet, but avoid spraying to the point there would be runoff. Extreme caution must be used with any non-selective herbicide. Any spray contacting blueberry plants can cause severe injury or death. Applications made to actively growing bushes will be the most effective when there are good growing conditions and adequate soil moisture. Foliar applications are generally the most effective just after full leaf expansion in late spring or early summer. If foliage remains green and in good condition on some species (e.g. alders, bayberry, sweet-fern, willows and others), effective applications can also be made in early fall after harvest. There may be less herbicide injury to blueberry plants if applications are made after blueberry foliage has turned red and begun to drop, but careful application is still required.

C) Roller and Wiper Applications

There are several roller-type applicators now available, including several tractor-mounted models and small one-man portable machines for use in small fields. The herbicide is slowly delivered to an absorbent covered drum that wipes and transfers herbicide to the foliage of tall weeds. In order to improve coverage, most rollers must be operated relatively slowly. Wipers are also available that do not have a rotating drum. Wiping in two directions improves coverage and results in better

control. Do not wipe in a second direction until the herbicide from the first pass has dried. Wiping and rolling methods can be used where weeds are taller than the blueberry plants. A commercially available “hockey-stick” applicator has been used effectively for applying Roundup and similar products within small areas.

D) Stump Treatments

A stump treatment is a safe and effective way of controlling bushes and small trees. Stump treatments involve herbicide applications to tree stumps that were recently cut, thereby causing the stumps to decay faster. 2,4-D (low volatile ester formulation) or Garlon in oil can be either sprayed or painted onto freshly cut stumps and exposed roots. Best results are usually obtained on stumps 5 cm across or larger (refer to individual labels). All exposed bark, roots, and cut surfaces should be wet thoroughly either by painting or spraying. Most of the stump treatments will control crown suckering species, like birches, maples and pin cherries, but there may be regrowth of species that sucker from lateral roots, like poplars. Many woody weeds are affected by these treatments, and on certain species, stump treatments are more effective than foliage applications.

Stump treatments can be applied any time of the year, including the winter months as long as snow or water does not prevent application. Trash from brush cutting operations such as sawdust, leaves, branches, etc. should also be removed from the base of the stumps before treating. Unless otherwise stated, applications should be made to freshly cut stumps. For old stumps, it is best to drill several holes or split the stump with a wedge before applying the treatment. Care must be taken to ensure that all cut stems in a clump have been treated or regrowth can result. Dye can also be added to the mixture to help ensure all exposed surfaces of the stump have been treated, and stumps do not get retreated or skipped.

Unless otherwise stated on the label, the herbicides used as stump treatments should be applied in vegetable or mineral oil to help penetrate the exposed bark and cut surfaces. If regrowth appears it should be treated with an appropriate herbicide. Note that 2,4-D alone, glyphosate and Garlon are registered for general weed control and used in preparing land for blueberry production. These products are not registered for use in producing blueberry fields and can cause crop damage if applied directly to actively growing blueberry plants. Crop damage can be minimized by careful application.

E) Basal Bark Treatments

Many shrubs and small trees (up to 15 cm diameter) can be controlled by spraying or wiping the basal parts of their stems or tree trunks from the soil level up to a height of 50 cm or as recommended on the label. Basal bark treatments are advantageous because the entire shrub or tree does not require spraying. Treatments are applied in vegetable or mineral oil as recommended on the label. Use a nozzle that forms a very narrow band or stream when spraying basal bark treatments. Low volatile esters of 2,4-D or Garlon in oil can also be used for basal bark treatments. Old or rough bark requires more volume than young or smooth bark. Treatments can be applied any time of the year except when snow or water prevents application to the lower trunk and exposed roots.

2. Sprayer Calibration

Calibrating the sprayer regularly is extremely important. Broadcast herbicide applications should be made with an accurately calibrated boom sprayer. Blueberry plants can be injured if too much herbicide is applied. Backpack and air-blast sprayers should not be used for broadcast herbicide applications as coverage and distribution will not be uniform. Complete directions on sprayer calibration and calculating the amount of herbicide required can be found in the New Brunswick

Department of Agriculture, Aquaculture and Fisheries's Sprayer Calibration Fact Sheet (C.1.2.0) or in the Guide to Weed Control (Publication 75) from the Ontario Ministry of Agriculture and Food (available here). Calibration of fertilizer spreaders for Pronone 10G application is equally important, with more information found in this fact sheet: C.4.4.0.

The boom should be adjusted to the appropriate height above the target, either the ground for pre-emergence applications or the weed canopy for post emergence applications. The sprayer must be set up and operated to provide the correct amount of spray overlap. Overlap within a boom swath depends on both nozzle spacing and boom height. Overlap between boom swaths can result in a double application and crop injury. GPS systems and various boom-end marking systems (foam markers) can be used to mark the outer edge of the swath pass.

Herbicides are usually applied with flat fan nozzles. Nozzles such as the Delevan Raindrop nozzles or the air induction (venturi) type nozzles are effective. Cone-type nozzles are not recommended as spray pattern and distribution are poor at the lower pressures required for herbicide applications. Sprayer pressure should not exceed 276 kPa (40 psi) for herbicide applications unless otherwise recommended by the equipment manufacturer.

3. Best Management Practices

Blueberry growers can respond to the public's concern for the environment in a proactive manner through the adoption of Best Management Practices (BMP). Best Management Practices are recommendations and guidelines to help growers make sound environmental decisions in their farming operation. They are a combination of management, cultural, and structural practices that are considered effective and economical in reducing environmental impacts. They provide opportunities for growers to evaluate and choose the best management practices that are most appropriate for their own operation. Many of the production and management activities that blueberry growers practice influence not just themselves but their neighbours and community. Anything that can be achieved to prevent environmental pressures will make both the grower's operation and the blueberry industry more sustainable.

It is important that growers identify problem areas within their operation and select and implement the appropriate changes. Examples of Best Management Practices include:

- scouting fields and spray only when and where necessary
- making sure your sprayer or spreader is calibrated properly and accurately
- matching appropriate herbicide rates with soil type
- not mixing or loading near water, bringing the water to the sprayer
- not applying herbicides to rock formations and exposed ledges as they may provide a direct channel to groundwater
- avoiding spraying if heavy rainfall or winds are forecast
- using an anti-backflow device when filling sprayers from a water source to prevent contamination from backflow
- leaving an untreated vegetation strip near any water sources to act as a buffer and filter
- reading and following all instructions as stated on the labels

The use of hexazinone (Velpar DF, Pronone 10G) has been associated with groundwater contamination and soil erosion. A fact sheet, Best Management Practices for Hexazinone (C.4.5.0), has been prepared to help minimize these problems. It is important that these instructions be followed to safeguard the use of this herbicide.

4. Tank Mixing

A tank mix of a pest control product occurs when two or more products are applied at the same time through the same set of nozzles. Tank mixes can be mixtures of the same product type (herbicide + herbicide) or of different types (for example, herbicide + fungicide). Tank mixing provides benefits to producers by broadening the spectrum of pests controlled, helping to manage pest resistance and reducing application time and costs. Products may not be suitable for tank mixing due to physical incompatibility, increased risk of crop injury or decreased pesticide performance.

Some pesticide labels provide specific recommendations and instructions for applying products as tank mixes. These tank mixes have been evaluated for performance and safety. When using a labelled tank mix, follow all directions included on the product label. If a tank mix does not appear on a product label, producers can apply unlabelled tank mixes for registered products, provided that these six conditions are met:

a) All products are registered for use on the crop;
b) The tank mix only includes an adjuvant when specifically required by one of the tank mix partner labels. If an adjuvant is not required on the label of any tank mix partner, then no adjuvant may be added to the tank mix;
c) The stage of application for the crop and all pests for all products must overlap. The pests and crop must all be in an appropriate stage for application for all products in the tank mix;
d) All label directions are followed, including the use of the most restrictive buffer zone, personal protective equipment, restricted entry interval etc.;
e) Tank mixing is not excluded on any of the product labels. Some pesticide labels specifically prohibit mixing with other products;
f) Applying the products together provides a value to the end user, either through increased pest control spectrum, reduced application time/costs or resistance management.

Anyone who recommends or applies an unregistered tank mix does so at their own risk and liability. More information on the use of unlabelled tank mixes can be found in these documents: Memo – Use of Unlabelled Tank Mixes or Frequently Asked Questions.

Before tank mixing any pesticides, it is very important to test the compatibility of the products. When certain pesticides are mixed, they may gel or form a precipitate, either of which will be difficult to clean out of spray equipment. An easy method to test compatibility is a jar test. Before beginning the jar test, make sure to wear the appropriate personal protective equipment. Add water to a small jar or container, then add small amounts of the pesticides you are interested in mixing, in the order and ratios in which you plan to apply the products. Cover the jar and shake it vigorously, then leave it to settle for 15 minutes. If the mixture is smooth and free of clumps, the products should be physically compatible. If the jar feels warmer, or if there is any clumping or particles that do not disappear after additional shaking, the products are not compatible and should not be tank mixed. The jar test only evaluates physical compatibility. A tank mix may be physically compatible but may still cause crop injury or decreased pest control.

Tank mixing may reduce the margin of crop safety. The potential risks associated with tank mixes may be reduced if the products are applied using the correct rates, under ideal environmental conditions and at the proper growth stages. Follow the application recommendations on all product labels closely, with special attention to the environmental conditions associated with crop injury. Avoid tank mix application during stress or when environmental conditions may create stress conditions in the future, like periods of drought or heavy rains. Adding multiple products (more than two) and pesticide types may increase crop injury risk.

The weeds, crop and other pests targeted with the tank mix treatment must all be in the proper stage for each tank mix partner. Applying a control too early or too late for a given pest could decrease the level of control and not provide the desired economic benefit for the crop. In some cases, applying the proposed tank mix as two separate treatments, timed according to the proper pest stage, will provide an economic benefit greater than the costs saved by only having one sprayer pass.

Some pesticide formulations, like Venture L, have surfactants built-in with the pesticide. Others, like Poast Ultra, require additional surfactant to be added. When tank mixing pesticides, adding two surfactants will increase the risk of crop injury. If both pesticides require a surfactant, consider adding only a single surfactant and do not 'double-up' the surfactant applied to the crop.

When applying pre-emergent herbicides, tank mixing generally decreases the margin of crop safety for emerged blueberry sprouts. To reduce crop injury risk, ensure any pre-emergent herbicide applications are made well in advance of the expected blueberry plant emergence in the spring.

Consider using higher water volumes when tank mixing. More water will allow for better product dilution and mixing, which is very important when using dry herbicide formulations. Higher water volumes will also improve product coverage and may help improve pest control.

Follow all mixing instructions on the product label. When the label does not provide mixing instructions, pesticides may be mixed in the following manner. Fill the spray tank ½ full with water and start agitation. Add in the different formulations in the order below, allowing time for complete mixing and dispersion of each product.

1) Dissolvable Packs (WSP)
2) Wettable Powder (WP, W)
3) Water-Dispersible Granules and Dry Flowables (WDG, DF)

Maintain agitation and fill the spray tank to ¾ of the final water volume, then add:

4) Water-based Solutions (S, L, SC, F)
5) Emulsifiable Concentrates (EC, E)
6) Spray Adjuvants (surfactants, fertilizers)

Finish filling the tank and maintain agitation throughout the entire spraying procedure.

Notes on Herbicides Registered for Use on Wild Blueberry

Herbicide label information overrides any discrepancies between information presented in this guide and the label. Herbicides are presented in alphabetical order and rates are given in kilograms or litres of commercial product. Additional information on weed susceptibility, herbicide use and toxicity are given in tables that follow.

1. Authority 480 (sulfentrazone)

Authority is a selective, soil applied herbicide for the control of wild buckwheat, lambs quarters, pigweed and other broadleaf weeds. Under research conditions, sheep sorrel was suppressed following Authority application. Authority may be applied as a broadcast spray. Applications should be made to dormant blueberry plants and only once in a two year period. Research evaluations were made either in the late fall of the crop year following mowing and blueberry leaf drop or in the early spring of the sprout year before blueberry emergence. Applications to blueberry plants with emerged growth are not recommended due to leaf burning and possible stand loss.

Use 0.22 to 0.29 L/ha (0.09-0.12 L/ac) of Authority per application, depending on soil organic matter and texture. Use the higher rates within the rate range for soils with pH less than 7.0 and organic matter greater than 3%. Do not use on coarse soils classified as sand which have less than 1% organic matter. Do not apply in fine textured soils with less than 1.5% organic matter. Do not apply in any type of soils with an organic matter content greater than 6%. Do not use on soils with a pH of 7.8 or greater. Refer to the product label for specific rate recommendations and weeds controlled.

Apply in a minimum water volume of 100 L per hectare. Do not apply to saturated soils. When soils are wet, do not apply if heavy rainfall is expected within 24 hours. Do not apply to frozen soil.

Authority is taken up by plant roots and shoots. Moisture is required to activate the herbicide in the soil. Adequate moisture of at least 18 mm is required within 14 days after application for optimal control. If adequate rainfall is not received in a timely fashion, irrigate with a minimum of 18 mm of water. When activating moisture is delayed, a reduced level of weed control may occur.

Authority is persistent in the soil. The total amount available in any given soil is determined by the interaction of soil type (mainly clay content), percent organic matter, soil pH, soil moisture and application rate. Both clay and organic matter bind Authority, making it less available to plants. As soil pH increases, availability of Authority in the soil increases. Irrigation with highly alkaline water (pH above 7.5) may increase the amount of Authority available in soil solution and may cause an adverse crop response. Residual weed control may be reduced when the herbicide is applied where heavy crop residue exists (such as leaves, straw and /or weeds).

Apply no more than 0.292 L/ha of Authority per season in a single field. Do not continually apply Authority to the same field for multiple seasons. Do not apply Authority to fields treated in the previous year (only apply Authority in one field season over a two year period). Authority may leach through the soil and into the water table, especially in sandy soils or in areas where the depth to the water table is shallow. Only apply one treatment of a Group 14 soil-residual herbicide per season to avoid crop injury and/or soil residual issues. Soil residual Group 14 herbicides include Authority and Chateau.

2. Callisto 480 SC (mesotrione)

Callisto is a selective broadleaf herbicide for the control of labelled weeds in the sprout or crop year of wild blueberry production. Callisto has both pre-emergent (soil) and post-emergent (leaf) activity. Callisto can be broadcast using ground application, once per year, over the top of the blueberries. Within the cropping season, applications must be made prebloom to the crop. Treated areas cannot be harvested within 60 days of application. Apply in 100-200 L water per hectare with a spray pressure of 206-300 kPa. Two application timings are registered; however, most grower experience indicates improved weed control from post-emergent use.

Pre-emergent: Up to the 2 leaf weed stage, apply 0.3 L Callisto/ha. No surfactant is required.

Post-emergent: Up to the 8 leaf weed stage, apply 0.3 L Callisto/ha. A non-ionic surfactant, Agral 90, must be added at 0.2% v/v (2 L Agral 90 per 1000 L spray solution).

In susceptible plants, herbicide activity results in bleaching symptoms, followed by plant death. Bleaching typically begins in leaf foliage and at growing points 3-5 days after application, with weed death 2-3 weeks later. Although weed competition is quickly halted, visual symptoms of dying weeds (discolouration) may take up to 2 weeks to appear, depending on the weed species and growing conditions. The bleaching symptom may be noted on less susceptible plants (like tree species) but may not result in plant death. For best results, apply Callisto to actively growing weeds. Weeds that emerge after an application may be controlled when they absorb the herbicide

from the soil provided there is sufficient moisture for uptake. When applied post emergent, thorough coverage of emerged weeds is essential for effective control. Under unfavourable conditions, such as drought, heat, flooding or prolonged cool temperatures, adequate control may not be achieved and re-growth may occur. Active weed growth is required for optimal herbicide activity.

Temporary crop injury (bleaching) may occur if applications are made under extreme weather conditions or when the crop is under stress. Blueberry growers have observed more crop injury when applications are made under hot and/or humid conditions or when the crop is stressed from flooding. The injury is most visible where excessive rates have been applied, such as sprayer overlaps. If heavy rain is expected within 48 hours, application should be delayed. For improved crop safety, make applications under cooler conditions (early morning or evening) or when daytime temperatures are below 21 ^{o}C. Do not make a foliar post-emergent application of any organophosphate or carbamate insecticide within 7 days before or 7 days after Callisto application or severe crop injury may occur. No tank-mixes with Callisto are currently registered for use in wild blueberry. There is an increased potential for crop injury when extra surfactant is added. The use of high surfactant rates or non-labelled surfactants has caused leaf burning to the crop.

In wild blueberry production, mid-June applications have provided the most consistent weed control. This product has a more limited control spectrum than hexazinone (Velpar/Pronone) and is best used to supplement current weed control practices. Improved weed control has been shown when a hexazinone application is followed with a Callisto application post-emergence, especially on difficult to control weeds like goldenrod species. More information on the use of Callisto in wild blueberry is available in this fact sheet (C.4.6.0).

3. Casoron G-4 (dichlobenil)

Casoron is a soil-active herbicide that controls broadleaved and grassy weeds at germination and growth initiation. Casoron G-4 is a ready to use granular product. It can be spread on the soil surface by hand, using small hand-held or backpack equipment or by tractor mounted spreaders. Do not apply more than 20 kg product/day when using small handheld equipment. Do not apply more than 75 kg product/day if using push-type granular spreaders. Casoron is volatile and should be applied when the air temperature is less than 15 ^{o}C. Water is necessary to move the product into the soil. Soils should be moist after application to activate the product. Avoid application if heavy rain is expected.

Apply at a rate of 110-175 kg/ha (40-70 kg/ac) during the dormant period of the blueberry crop, typically late fall or early winter. Use the high rate for grasses and to control tough perennial weeds when entering the sprout (vegetative) year and the low rate for annual weeds or when entering the crop (fruiting) year. The preharvest interval is 100 days. This herbicide has not been frequently used by the blueberry industry. As a result, the weed spectrum controlled is not well documented.

4. Chateau (flumioxazin)

Chateau is a pre-emergence herbicide used for suppression of hair-cap moss and control of selected grass and broadleaf weeds. All applications should be made to dormant wild blueberries in the sprout year (spring and/or fall) or as a dormant post harvest (fall). Ideally, applications should be made in the late fall of the crop year, following crop pruning or complete blueberry leaf drop. Unacceptable crop injury, including yield loss, can occur if Chateau comes into contact with non-dormant blueberry plant parts, including green leaves or green bark. Research trials have shown extensive crop injury when Chateau is applied to non-dormant blueberry plants.

The application rate is dependent on soil texture and weed target. To suppress hair-cap moss apply 280 g/ha on coarse-textured soils or 420 g/ha on medium-textured soils. A lower rate is registered for control of lamb's quarters and other labelled annual weeds. Apply 140 g/ha on coarse soil and 210 g/ha on medium textured soils when controlling annual weeds (as listed on the label). Do not apply Chateau on soils with greater than 5% organic matter (OM) or on fine-textured soils like clay. A second application may be applied if required for weed control for a maximum of two applications per year. The second application must not occur until 30 days following the first application when the blueberry plants remain dormant.

Control is most effective when applied to clean, weed-free soil surfaces. Apply in adequate water volume to ensure thorough coverage. For residual weed control, moisture is required to activate the herbicide in the soil. Dry conditions following application may reduce effectiveness. Crop injury may occur from applications made to poorly drained soils or applications made under cool, wet conditions. Spray equipment must be thoroughly cleaned after Chateau use to ensure that herbicide residue in the sprayer does not harm the crop when the sprayer is next used. Only apply one treatment of a Group 14 soil-residual herbicide per season to avoid crop injury and/or soil residual issues. Soil residual Group 14 herbicides include Authority and Chateau.

5. Dicamba (Banvel II, Hawkeye, Oracle)

Dicamba is the active ingredient found in Banvel II, Hawkeye and Oracle herbicides, formulated at 480 g dicamba per litre. Other formulations and concentrations may be available. These non-selective broadleaf herbicides, when applied to the foliage, are absorbed by the leaf and translocated throughout the plant. Dicamba can be applied alone or in combination with 2,4-D L.V. (low volatile) ester as either an overall broadcast or spot spray. Dicamba or dicamba plus 2,4-D L.V. ester can cause serious damage to lowbush blueberries if applied directly on actively growing blueberry plants, or if applied improperly.

Broadcast application

Application must be made in the fall of the fruiting year when the weeds are moderately green but after **90%** of the blueberry plants have dropped their leaves. Two application rates are registered.

1. Dicamba alone. For control of lambkill and suppression of sweet fern, apply Banvel II (480 g/L), Hawkeye (480 g/L) or Oracle (480 g/L) at a rate of 4.6 to 7.1 L/ha (1.9 to 2.9 L/acre).

2. Dicamba + 2,4-D L.V. ester. For additional control of broadleaf weeds, Banvel II, Hawkeye or Oracle may be mixed with 2,4-D L.V. ester (600 g/L) and applied in the fall of the crop year. Apply Banvel II, Hawkeye or Oracle at 2.3 L/ha (0.93 L/acre) with 2,4-D L.V. ester (600 g/L) at 5.7 L/ha (2.3 L/acre).

Many different formulations of dicamba may be available. For formulations of dicamba other than 480 g/L, follow label directions for the amount of product to apply.

If possible, fall pruning should be carried out 4 to 5 weeks after spraying. In New Brunswick research, there was no change in weed control or crop injury when mowing was carried out 2 to 3 weeks after application. If spring pruning is planned, it should be done as early as possible to reduce the chance of injury to the blueberry plants by this herbicide. Dicamba should be applied in 550 L of water per hectare. Blueberry tolerance decreases with the use of lower water volumes. Rainfall within 4 hours of application may reduce effectiveness. Significant delays in emergence have been observed in the spring following a fall application, particularly where mowing has replaced burning. A longer delay of emergence and a lower blueberry plant density have been observed if mowing height is not adequate. Proper sprayer calibration and agitation in the spray

tank is essential to avoid crop injury. When working with these herbicides, growers should experiment on a small area for the first time until they become familiar with broadcast applications.

Spot spray application

During site preparation, dicamba can be applied as a spot spray to control Velpar resistant weeds such as maple, alders, willows and honeysuckle. Apply 2.1 L of dicamba per 1000 L of water. Contact with actively growing blueberry plants must be avoided or severe injury or death will result.

6. Garlon (triclopyr)

On newly cleared sites, Garlon can be used to control alder, ash, birch, poplar, pin cherry, maples, and other woody species. Some species (e.g. red maple and choke cherry), are more difficult to control and may require re-treatment the following year. Two formulations of Garlon are available for use. Garlon XRT should be mixed with oil, either vegetable or mineral oil, where 13 to 19 L of Garlon XRT is added to enough oil to make 100 L of spray mixture. Garlon RTU is ready to use and does not require any additional oil before treatment. Apply either formulation using a knapsack or backpack sprayer with a flat fan or solid cone nozzle, or with a wick attachment. Low pump pressures of 70 to 210 kPa are recommended. Blueberry plants are very sensitive and may be killed if Garlon comes in contact with the plants. Only one application per year is permitted. Rainfall within 2 hours of application may reduce effectiveness.

Garlon is registered for the control of woody weed species during field site preparation as either a basal bark or stump treatment. For basal bark application, spray the basal or lower 30 cm of trunks up to 15 cm in diameter as well as to any roots that may be exposed. To control re-sprouting of cut stumps of woody species, all exposed bark, roots and cut surfaces should be wet thoroughly either by painting or spraying. This solution can also be applied to the base of suckers or saplings with a small brush for effective control of many species. All surfaces should be coated, including individual stems when applying to clumps of trees.

7. Glyphosate (Roundup, etc.)

There are a number of commercial products currently registered for use in wild blueberry that contain the active ingredient glyphosate. These include Roundup, Roundup WeatherMax, Touchdown, Credit, Vantage, Factor, Sharpshooter and Glyfos with several formulations for each commercial product. Although glyphosate is common to each of these products, the salt formulation and surfactants present in these products may vary. In addition, the application rate and rain-fast period can differ for each type of product. Differences in weed control between these products are generally considered minimal by many weed scientists. Consult the label for additional information on the use of individual glyphosate products.

Glyphosate is effective against most broad leaved species including maple, beech and ash. Glyphosate is absorbed into the foliage and translocated throughout the plant, killing both above and below ground growing points. It is generally most effective when applied in June through August to fully expanded and actively growing foliage. To be effective, application must be made immediately after cutting the plant if used as a cut stump treatment. It is not effective as a bark treatment as it does not readily penetrate bark. Glyphosate will not have any activity on conifer species. Glyphosate has no activity when applied to the soil and provides no residual weed control.

Glyphosate can only be used in blueberry fields if it is selectively applied to the weed foliage. Glyphosate has a role in the preparation of fields for blueberry production and also as a spot or wiper treatment in established fields. Glyphosate can be applied selectively, either as a directed spot spray or as a wiping treatment. Blueberry plants are very sensitive to glyphosate treatments and contact will result in blueberry plant injury or death. Rainfall within 1 to 6 hours may reduce

effectiveness, depending on the commercial product used. Glyphosate, mixed and applied in hard water, is known to result in reduced weed control. For optimal results, glyphosate should therefore be applied in soft water. The addition of ammonium sulfate to hard water can counteract the negative action of the hard water and improve weed control.

Spot Spray

Apply as 1% to 2% solution of 356 g acid equivalent per litre of glyphosate (356 g.a.e./L – Roundup Original formulation). A 2% solution is equivalent to 2L of product in 98L of water. For Roundup WeatherMax, apply as 0.67% to 1.34 % solution. A 0.67% solution is equal to 670 mL of product with enough water to make a 100 L solution and a 1.34% solution is equal to 1.34L of product with enough water to make a 100 L solution. The mixture should be applied to the foliage of woody weeds in the sprout year. Ensure uniform coverage and apply enough product to wet the leaves but not to the point of runoff.

Roller and Wiper Treatments

The use of glyphosate in rollers or wipers is an effective way to control weeds growing above the blueberry plants. The roller or wiper should touch the weeds at a minimum 5 cm above the blueberry canopy, ideally 15 cm above the crop. Care must be taken to avoid dripping the product from the application equipment onto the blueberry crop. For roller applicators, prepare a 5 to 10% solution by mixing 0.5 L to 1.0 L of 356 g.a.e./L herbicide with enough water to make 10 L of solution. For Roundup WeatherMax, prepare a 3.3-6.7% solution (0.33 to 0.67 L with enough water to make 10 L of solution). Roller speed should be maintained at 50 to 150 rpm. For wick or other wiper applicators, mix 1L of herbicide with 2L of water to prepare a 33% solution. For Roundup WeatherMax, mix a 22% solution (0.57 L in 2 L of water). Not all glyphosate products are registered for use in rollers or wipers and rates may vary between products. Please consult the glyphosate label for more specific information before using in this manner.

Fall Roundup WeatherMax Use for Lambkill Control

This herbicide treatment pattern for Roundup WeatherMAX is only registered within newly cleared wild blueberry production. There still is a risk of crop injury when using this treatment, although this potential risk is better tolerated during early production years. Crop safety of this application pattern in mature fields was not evaluated and use in mature fields cannot be recommended at this time. Grower experience has shown better results in fields that have been managed for one or two cycles, as compared to applications made to fields just starting the land clearing process. The current recommendation is to only apply glyphosate to fields that have experienced a commercial harvest because weed control is improved and there is less risk of injury to blueberry plants. Other glyphosate formulations can still be used in wild blueberries as spot or wiping treatments in established fields but are not recommended for a late fall application for lambkill control. These glyphosate formulations were not tested using this application pattern and cannot be recommended at this time.

As the correct application conditions are a balance between the stage of development of the lambkill and blueberry plants, potential treatment areas should be monitored closely in the fall. Since harvesting the crop places stress on the blueberry plants and contributes to early leaf drop, any treatment areas should be harvested in the year of application. Applications should be made in the fall before pruning the field, when blueberry plants have 95% leaf drop. The typical timing in research evaluations was late October or November.

Apply Roundup WeatherMAX at 1.67 litres per hectare in 200-300 litres per hectare of clean water using a boom applicator. Do not add adjuvant to the spray mixture. Treat only areas of the field which have lambkill present. Do not prune for at least 14 days after application. All fields treated

with Roundup WeatherMAX must be pruned post treatment in the fall or pruned the following spring before May 15th. Any delay in pruning in the spring can decrease the level of weed control. Pruning as close as possible to the ground is recommended to improve weed control and to limit injury to blueberry plants.

Only one application of glyphosate is registered in a typical cropping cycle (2 year rotation). As a general precaution, only apply fall glyphosate once within two cropping cycles. One glyphosate application, if made under the proper application conditions, generally provides a very high level of lambkill control and follow-up lambkill control treatments are usually not required. More information on the use of glyphosate to control lambkill is available in this fact sheet (C.4.7.0).

8. Ignite SN Herbicide (glufosinate)

Ignite is a non-selective herbicide used for the burn-down of annual and perennial weeds. Ignite may be applied with ground (boom) spray equipment, high volume orchard spray guns or hand-held pump-type and backpack sprayers. The addition of an anti-foaming agent may reduce foaming, especially when using soft water.

Weeds that emerge after application will not be controlled. Apply to actively growing weeds. Speed of weed control is influenced by environmental factors. At low temperatures (below 10 ^{o}C), poor moisture and low humidity conditions, the speed of action may be reduced. Use higher rates when weed growth is dense, when weeds are mature or when environmental conditions are cool or dry. Do not make more than 2 applications of Ignite per year. Do not apply more than 6.7 L/ha total product in one season.

Avoid contact of Ignite spray, drift or mist with green bark, stems, or foliage, as this contact may injure the plants. Only sprouts with mature brown bark should be sprayed. Alternatively, blueberry plants could be pruned before application. Contact of Ignite with parts of plants other than mature brown bark can result in serious damage.

Broadcast application

Broadcast application must be made to dormant lowbush blueberry plants. Field must be entering into the sprout (vegetative) year in the season following application. Broadcast application can be made after blueberry leaf drop in the late fall of the cropping season but before blueberry sprout emergence in the spring following pruning.

Apply Ignite at 2.7-5 L/ha for the control of annual grasses, broadleaf weeds and suppression of perennial weeds. Apply in a minimum of 110 L/ha of water and ensure uniform, thorough coverage. Ignite may be tank mixed with Sinbar WDG or Velpar DF for control of weeds listed on the respective labels, including control or improved control of hawkweed, sheep sorrel and many annual and perennial grasses. Do not apply a tank mixture of Ignite + Sinbar or Ignite + Velpar more often than once per year.

Spot application

Mix Ignite at 27-50 mL of product per 10 litres of spray solution for the control of annual grasses and broadleaf weeds. Ten litres of spray solution should be used over an area of 100 m^2. Provide thorough coverage of the weeds, but not to the poing that the product ‘runs off’ the leaves. Use as a directed spray if sprouts have emerged. Avoid contact of Ignite spray, drift or mist with green bark, stems, or foliage, as injury may occur to plants. Repeat treatments may be necessary to control new germination of annual weeds. Do not make more than 2 applications of Ignite per year.

9. Kerb SC (propyzamide)

Kerb is a soil active herbicide that will control or suppress many perennial grasses, including Venture L and Velpar-tolerant fescues. It does not control poverty oat grass or woody species. It has little activity on broadleaved species, but has shown activity on sheep sorrel. Kerb is registered for use at 4.1 to 5.6 L/ha (1.7 to 2.3 L/acre) in late October and November of either the sprout or crop year. Application should be made in 300-500 L water per hectare. Applications should be made when the ground is cool but before it freezes. Rainfall is required to move Kerb into the soil where it is active. Herbicide losses are greatest when applications are made to frozen ground or when soil temperatures are high (greater than 10 ^{o}C). Weed control is best when the soil moisture level is high and soil temperatures are cool. Lowbush blueberry is very tolerant to Kerb. Variability in weed control has been found with this product, mainly attributed to poor weather at application (e.g. too dry, too warm, frozen ground).

10. Lontrel 360 EC (clopyralid)

For the control of tufted vetch apply Lontrel 360 in late spring of the sprout year when tufted vetch is in the early flowering stage. Lontrel 360 generally gives excellent control of established tufted vetch but it gives no control of seedlings that emerge after application. Research evaluations have shown control of hawkweed in both early and late spring sprout year applications, either before blueberry emergence or later in June of the sprout year. Early application provides a longer period of weed control and will prevent seed production. Often there are no obvious visible crop injury symptoms following application, but there may be a reduction in bloom and blueberry canopy the following crop year, particularly if late applications, which can interfere with the developing fruit bud, were made. Applications in July and August have resulted in blueberry yield loss. In extreme cases, there may be malformations of the blossoms. **Lontrel 360 should never be applied in fruiting blueberry fields.**

Only one application per year is permitted. Small infestations can be treated with backpack or hand-gun applicators; larger infestations can be treated with a calibrated boom sprayer. Applications should only be made to areas infested with vetch. Application to the crop should be avoided as much as possible. When using a hand gun or backpack sprayer to treat small infestations, apply Lontrel 360 herbicide at a rate of 42 ml per 1000 m^2 area in 200 L of water. When applying with a boom sprayer to treat larger infestations, apply 420 ml per hectare (2.5 acres) in 150 to 200 L of water.

11. Option 2.25 OD + UAN (foramsulfuron)

Option is registered for use in the spring of the sprout year when the targeted weeds are at the appropriate leaf stage. This herbicide will control mainly grasses in wild blueberry, including quackgrass (3-6 leaf stage), witchgrass (2-4 leaf stage) and suppress fescues (1-6 leaf stage of fine-leaf sheep fescue, sheep fescue, red fescue and tall fescue). Timing of application is very important for fescue control. The appropriate stage can vary from field to field and season to season, but typically occurs after blueberry emergence in the sprout year, but before seedhead emergence of the fescue. This timing is earlier than the typical post-emergent grass timing in wild blueberry, so proper scouting and staging is required for best results. In research evaluations for wild blueberry, Option has controlled ticklegrass and suppressed poverty oatgrass. Only a few broadleaf weeds may be controlled, including lamb's quarters and redroot pigweed. For best results, apply to emerged, young, actively growing weeds. Option will have an effect on more mature weeds, but the speed of activity and level of control will be reduced.

Apply Option at 1.56 L/ha. Option must be applied with a spray-grade liquid nitrogen fertilizer, such as 28% UAN, at a rate of 2.5 L/ha. Grassy weed control will be decreased if the fertilizer is not

used. Apply in a minimum of 150 L water per hectare and at a pressure of 175 – 275 kPa. The use of 80° or 110° flat fan nozzles is highly recommended for optimum spray coverage and canopy penetration. Use 50 mesh filter screens or larger. Do not apply Option to any field more than once per year. Apply by ground application only.

The speed of action of Option is influenced by environmental factors. Weed growth typically stops within 1-3 days following application. Warm, moist conditions promote the activity of herbicide action. Typically, the weeds will turn yellow, usually in 5-10 days. Under cool and/or dry conditions, activity may be reduced or delayed. Weed control may also be reduced if application is made when weeds are covered by dust or in the presence of heavy dew, fog or mist/rain. Option works primarily as a contact herbicide with limited soil residual activity. Uniform spray coverage is important to achieve consistent weed control. Control may be reduced if the blueberry canopy has closed over the weeds, intercepting the spray.

12. Poast Ultra + Merge (sethoxydim)

Poast Ultra can be applied broadcast in the late spring of both the sprout and fruiting year for post emergent control or suppression of certain annual and perennial grasses. Poast Ultra is a contact and a systemic herbicide. Uptake into the plant is primarily through its leaves. Thorough coverage of the foliage is important for consistent grass control. Degree of control will depend on the level of susceptibility to the herbicide and the rate applied. Once treated, susceptible grasses that were actively growing prior to treatment stop growing and undergo a burn-back. Colour changes first to a yellow, then purple and finally a brown colour. The time required for complete control is normally 7 to 21 days following treatment, depending on growing conditions and crop competition.

Control of quackgrass (and other perennial grasses) happens more slowly than control of annual grasses. Poast Ultra is translocated through the quackgrass plant to the rhizomes and kills actively growing rhizome buds, as well as above ground vegetation. Dormant rhizome buds will remain unaffected by the spray and regrowth can occur from these buds. When Poast Ultra is applied according to label directions, the regrowth of the quack grass will not be significant until 6-8 weeks after treatment, depending on growing conditions and crop competition.

Apply 0.47 L/ha Poast Ultra plus 1 L/ha Merge post emergence for the control of annual grasses at the 1 to 6 leaf stage (witch grass and fall panicum) and for ticklegrass control. Apply 1.1 L/ha Poast Ultra plus 1-2 L/ha Merge for the suppression of quackgrass, poverty oat grass, blue grasses and other perennial grasses. Apply when perennial grasses have 10 cm of new leaf growth – usually in late May or early June. These applications are useful in some grass-infested fields during the crop year to increase harvest efficiency. Assist Oil Concentrate can be substituted for Merge Adjuvant at the same rates. Poast Ultra should be applied in 100 to 200 L water per hectare. Blueberry plants are very tolerant to Poast Ultra, even during bloom.

Most effective control is achieved when application is made at the 2 to 5 leaf stage when annual grasses are small and actively growing, soil moisture is good, and the crop is small enough to permit thorough spray coverage. Applications made to grasses greater than 20 cm in height or grasses that have reached the heading stage will not give adequate control or suppression. When grasses are stressed due to drought, flooding, hot or prolonged cool temperatures (15°C or less), control can be reduced or delayed since grasses are not actively growing. Grass escapes or re-tillering may occur under prolonged stress conditions or low fertility. Do not make applications to grasses stressed longer than 20 days due to lack of moisture, as unsatisfactory control can result. If stress conditions exist at the time of application and have existed for less than 20 days, then use the higher recommended rates of Poast Ultra.

Rainfall within one hour of application may reduce the effectiveness of the spray. This product does not provide residual control. The preharvest interval is 15 days. Poast Ultra does not control rush, sedge or broadleaf weeds. Do not mix or apply Poast Ultra with any other additive, pesticide or fertilizer unless recommended on the label. Allow 4 days between application of Poast Ultra and any other chemical.

13. Princep Nine-T (simazine)

Princep Nine-T (1.5 to 2.0 kg/ha; 0.6 to 0.8 kg/acre) is registered for use in lowbush blueberries. This herbicide should be applied in a minimum water volume of 300 L/ha. This herbicide has not been frequently used within the blueberry industry. As a result, the weed spectrum controlled is not well documented. Woody weeds and most established perennial species will not be controlled with simazine. Princep Nine-T can be applied in late fall or early spring when blueberries are still dormant. Only one application is permitted per season. Apply the lower rates on coarse sandy soil and the higher rates on clay soils and soils high in organic matter. Rainfall is required to activate simazine. Crops must not be harvested within 60 days of application.

14. Sinbar WDG (terbacil)

Sinbar is recommended for grass and hay-scented fern control, but is also effective against lamb's quarters and other annual broadleaf weeds. Sinbar is residual and provides control of many later germinating weeds. It is not recommended to continuously apply Sinbar as this may promote the growth of tolerant broadleaf weeds, such as goldenrods, sheep-sorrel and asters. Apply Sinbar at 1.5 to 2.5 kg/ha (0.6 to 1 kg/acre) in the spring of the sprout year, after the pruning operation, but before new blueberry shoots emerge. Later applications may cause crop injury. Sinbar can be applied in late fall of the crop or sprout years when blueberry plants are dormant. Apply the lower rates on coarse sandy soil and the higher rates on clay soils and soils high in organic matter. Use a minimum of 200 L water per hectare. Agitation of the product in the spray tank is essential to ensure proper mixing and to avoid application issues. Apply Sinbar within 24 hours of mixing as product degradation may result. Moisture within 2 weeks of application is required to activate Sinbar. Do not tank mix with Venture. Do not apply Sinbar within the two weeks before or after an application of Venture or crop injury may result.

15. Spartan + Agral 90 (tribenuron methyl)

Broadcast applications for bunchberry control

Spartan is a post emergent herbicide that must be absorbed through emerged weed foliage to be effective. Proper application timing is critical with this herbicide and will directly influence the level of bunchberry control and crop injury. For bunchberry control, apply Spartan at 40 g/ha (16 g/acre) with 0.2%v/v Agral (200 mL per 100 L water) in 150 to 250 L water per hectare. Add Agral 90 after Spartan is well mixed and in suspension. Spartan may degrade in water and should be applied on the day it is mixed. Disperse the granules in a small amount of water before adding them to the spray tank to ensure the herbicide is thoroughly in suspension. Only one application per year is permitted. Rainfall within 4 to 6 hours after application may also reduce control.

In the year following Spartan application, some bunchberry regrowth can be expected, but densities will be much lower than pre-treatment levels. It may be necessary to use Spartan in following sprout years to maintain bunchberry control levels. When used in the manner described below, Spartan has generally resulted in 70 to 90% control of bunchberry with minimal effect on the crop. Two distinct application timings are registered, with more information available in this fact sheet (C.4.3.0). The fall timing has shown increased and easier weed control with a wider application window and should be the preferred method of treatment.

i) Spring, sprout year application

This is the original application window registered on the Spartan label. For best results, applications should be made when the majority of the emerged bunchberry plant leaves have unfolded to form a 45 degree angle, but no later than when the first white blossoms are visible on the most advanced plants. Bunchberry plants generally turn pinkish red to yellow following spraying but may take weeks to die down. If Spartan applications are made too late, bunchberry plants turn red and remain so for the entire season and reduced control can be expected. If Spartan is applied too early, bunchberry regrowth can be expected later in the season.

Spartan should also be applied before blueberry sprout regrowth exceeds 2 cm in height. Some stem height reduction, with yellowing and reddening of the blueberry leaves, might be observed for 6 to 8 weeks after application. This is more likely to occur if there have been prolonged cool temperatures or wide fluctuations in day and night temperatures just prior to or soon after treatment. Blueberry plants, however, recover and fruit bud numbers and potential yields are not generally affected. Recommended fertilizer applications before or after Spartan applications may be beneficial. Applications made at later stages of blueberry development or applications in spring-burnt fields are not recommended due to potential crop injury and potential yield reductions.

ii) Fall, crop year application

A fall application timing, evaluated through research conducted in New Brunswick, has been accepted for registration. This timing occurs one to four weeks after the completion of the blueberry crop harvest. Typically, this application would occur in September of the crop year. There are no restrictions on crop stage, although application should be made while bunchberry has active growth. Reddening of bunchberry may occur after harvest, especially in mechanically harvested areas. No effect of harvest type, either hand or mechanical harvest, was found in research trials. Higher levels of weed control in sprout year evaluations were noted following fall applications, as well as decreased visual crop injury as compared to typical spring Spartan applications. However, no difference in blueberry yield was measured between the spring and fall application timings in research trials.

Spot applications

Spartan can be used as a directed spot spray with a backpack sprayer or handgun to control alders, bracken fern, wild rose and yellow loosestrife. Mix 2.5 g of Spartan plus 20 mL Agral 90 for every 10 L of water and spray to thoroughly wet the foliage. Apply only during the summer of the sprout year when the foliage is fully expanded. Alders and wild rose can be controlled with early fall applications as they retain their leaves longer. Bracken fern shows few symptoms after application but control the following year is excellent. Foliage of the other species turns yellow or red and the stem terminals die soon after application. Control of vetch, poplars, willows, goldenrods and fly honeysuckle has been erratic and others like chokepear, bayberry, black bulrush, sweet fern, and birch, are resistant. Blueberries growing among treated weeds generally show few symptoms. However, when the crop is sprayed directly, it may be stunted, with reduced bloom and yield. Spartan may degrade in water and should be applied the same day it is mixed.

16. Ultim 75 DF + Agral 90 (nicosulfuron/rimsulfuron)

Ultim is a post-emergent herbicide registered for use with two distinct application methods in wild blueberries, discussed below. Ultim is a contact herbicide and will not provide residual control of grass or broadleaf weed seedlings that may germinate after application.

When mixing the product, disperse the granules in a small amount of water before adding them to the spray tank to ensure the herbicide is thoroughly in suspension. Add the surfactant after Ultim is well mixed and in suspension. Ultim 75 DF should always be applied with a recommended non-ionic surfatant (equivalent to 2 L per 1000 L water or 200 mL per 100 L water). Ultim spray solutions should be used within 24 hours of mixing or product degradation may occur. Mix no more than can be used in one day. Rainfall within 2 to 4 hours after application may reduce Ultim effectiveness. Do not apply within 14 months of harvest.

Broadcast applications

For control of quackgrass, annual grasses and redroot pigweed, plus suppression of poverty oatgrass, ticklegrass and black bulrush, apply one water soluble bag of Ultim (33.7 grams/ha) with a recommended non-ionic surfactant (Citowett Plus, Agral 90 or Ag-Surf) at 2.0 litres per 1,000 litres of spray solution (0.2% v/v). Apply within a minimum of 140 L water per hectare. Apply with ground equipment only. Make only one application per growing season

Apply Ultim when annual grasses have 1-6 leaves (up to early tillering) and perennial grasses have 3-6 leaves. Application must be made in the spring of the sprout year (non-bearing year) Stunting and yield losses may occur if blueberry plants are contacted by the spray. Increased crop safety will occur when applications are made before blueberry emergence.

Ultim may be tank mixed with Velpar or Sinbar to control annual grasses, quackgrass and many broadleaf weeds. Follow the recommended rates and timings outlined on the Velpar or Sinbar labels. Application must be made in the spring of the sprout year (non-bearing year) before blueberry crop emergence, or severe crop injury may result to emerged plants. Consult the tank mix partner label for additional application instructions and use precautions.

Spot applications for black bulrush

For control of black bulrush, apply Ultim 75 DF plus Agral 90 in June of the sprout year. Apply when the first flower heads begin to emerge from the bulrush tussock. Ultim 75 DF should be applied as a directed spot spray to thoroughly wet bulrush foliage. Control may be erratic or unsatisfactory from later applications or if the bulrush is under stress. Stunting and yield loss may occur when blueberry plants are sprayed directly, but with careful application, injury is minimal to those plants growing among the bulrush. Ultim 75 DF is pre-packaged in water soluble bags containing 33.7 g commercial product, or enough to mix 800 L of spray solution. This is equivalent to 4.2 g per 100 L of spray solution. Apply with 0.2% Agral 90 surfactant (equivalent to 200 mL per 100 L water).

17. Velpar DF and Pronone 10G (hexazinone)

A. Formulations

Two commercial formulations containing the active ingredient hexazinone are available: Velpar DF, a 75% dry flowable granule that is mixed with water and Pronone 10G, a 10% solid granule. Velpar DF and Pronone 10G are pre-emergence residual herbicides applied for the control of many grasses, broadleaf weeds, and woody weeds. More information on the hexazinone formulations is available in this fact sheet (C.4.1.0).

Pronone 10G consists of clay granules impregnated with the herbicide. Following rainfall, the herbicide is released by leaching. Pronone 10G is approved only for sprout year applications and is applied with a calibrated fertilizer spreader, such as the Vicon spreader, and not a conventional pesticide sprayer. Calibration information on the Vicon spreader is available here (C.4.4.0). Patchy crop injury or control indicates uneven distribution of granules. Control may therefore be poor during dry weather, but gradual release may prolong and improve control of some species.

If blueberry sprouts or leaves have emerged, the risk of crop injury is much less from Pronone 10G applications than from liquid sprays of Velpar DF. However, herbaceous weed control is generally better with pre-emergence applications of Velpar DF than with Pronone 10G. When using Velpar DF, follow label instructions to ensure the dry flowable granules completely disperse in the spray tank before application.

B. Sprout year applications

Velpar DF is registered for use in the sprout year at 1.92 to 2.56 kg/ha (0.78 to 1.0 kg/acre) and Pronone 10G at 14 to 20 kg/ha (5.7 to 8.0 kg/acre). The high rate is recommended for use in weedy or new fields to control common herbaceous and woody weeds. The low rate is recommended for maintenance weed control in relatively clean fields. Applications should be made in the spring after the pruning operation, but before new sprouts or leaves emerge. Apply Velpar DF in at least 200 litres of water per hectare. Agitation of Velpar DF in the spray tank is essential to ensure proper mixing and to avoid application issues. Do not apply to extremely sandy or gravely soils or where the terrain does not permit even and accurate application.

On mature, well-established fields, it is suggested that growers experiment with different hexazinone rates in order to determine the minimal effective rate for the weed types present. In some instances, it may be feasible to even skip hexazinone applications or just treat known problem areas. For growers who are concerned that unmanageable weed populations may result if hexazinone applications are skipped, it is suggested that only a small area of their field be left untreated. If weed levels in the area are acceptable, then the untreated area could be expanded the following cycle.

Crop tolerance to Velpar DF is generally the greatest and weed control the best when applications are made soon after pruning but before new blueberry sprout emergence or new leaf growth. Best results occur when the herbicide is present in the root zone during active growth of the target weeds. There is no difference in tolerance between mowed and burned blueberry plants. Applications made after the foliage has emerged can cause serious leaf burn. Crop injury has consistently been associated with late applications. However, blueberry plants on sandy or shallow soils, or those weakened by heavy weed competition or frost heaving, may be more prone to hexazinone injury than those in vigorous stands.

Hexazinone is principally a soil acting herbicide that is leached by rain into the root zone. Herbicide activity is affected by too little or too much rainfall and by soil texture. Lower rates are used on light textured soils and higher rates are used on heavier soils and in high organic matter soils. Hexazinone is very water soluble and subject to leaching and lateral movement. Therefore, do not apply to gravely soils or on steep slopes or to roadways or other areas subject to erosion in the absence of plant cover. Follow Best Management Practices to minimize the risk of contaminating water sources, as outlined here (C.4.5.0).

Experience has shown that blueberry rhizomes do not colonize ground kept bare by repeated hexazinone use. Hexazinone is an important tool in developing blueberry fields and managing weeds, but over-use that results in bare ground may lead to soil erosion and prevent clone expansion.

C. Velpar DF in the fruiting year

Velpar can be applied in the early spring of the crop year, although the risk of crop injury is high when applied at this time. When the crop contains weed species that could affect its development or harvest efficiency, an application of 1.3 kg/ha (0.53 kg/acre) Velpar can be made. It is recommended that this treatment be applied only to those areas of the field where weed density will cause yield losses or harvesting problems. This treatment will control or suppress most

goldenrods, asters, sheep sorrel, some annual broadleaved weeds and most grasses that have not developed hexazinone tolerance. Timing of application is critical. Applications should be made no later than the early bloom stage before the flower buds separate and show the white floral tube. This corresponds to when the bud scales are separating or the F1 and F2 developmental stages as described in the Monolinia blight control fact sheet (C.3.1.0). This stage generally occurs no later than mid May. Later applications can result in serious crop injury and much reduced yield. This treatment should only be used on soils with a well-developed organic layer and should not be used on sandy or gravely soils. Crop injury is strongly influenced by soil and environmental conditions. Velpar application in the crop year should only be used as a rescue treatment for severe weed infestations. Growers should evaluate alternative weed control options before using Velpar applications in the crop year.

D. Response of weeds to hexazinone

Repeated hexazinone use has led to many changes in the weed flora of blueberry fields. It is now difficult to predict the response of some species to hexazinone. The susceptible/tolerant ratings of common weed species in Table 1 are based on trials in fields with little or no previous exposure to hexazinone and may be most applicable to new fields. The susceptibility of some species has changed with long-term exposure to hexazinone (or reduced rates) in the following ways:

Incomplete control. Majority of seedlings and immature plants may be killed but mature plants recover from initial injury and reproduce, especially in the fruiting year. Examples of weeds which show incomplete control include many perennial herbaceous species, like black bulrush, black knapweed, St. John's wort, goldenrods, vetch, ferns, and others. The level of weeds which exhibit incomplete control increases as growers decrease the herbicide rate, as shown by the increase in sheep sorrel and narrow-leaved goldenrod in fields which have used reduced hexazinone rates.

Inherent tolerance. Like the blueberry plant, many other plant species are tolerant to labelled rates of hexazinone, e.g. bunchberry, bayberry, chokeberry, yellow loosestrife, lilies and orchids, and others. Some 'new' weeds like goat's-beard and sow-thistle appear to have inherent hexazinone tolerance.

Developed tolerance. Many native grasses have developed hexazinone tolerant populations with repeated exposure, as have some annual ones like witch grass. There is no evidence that populations of herbaceous broadleaved weeds have developed tolerance, or if the decreased control of some woody weed species (e.g. wild rose, bristly arilia, blackberry) results from decreased rates of herbicide or increased tolerance.

Germination patterns. Although residual, hexazinone may only provide several months of weed control. Many weed species germinate and establish later, like witch grass, chickweeds and others. Annual weeds germinate in both the sprout and fruiting year. When plants like lamb's quarters, witch grass, and hemp-nettle germinate in the crop year, control by sprout-year hexazinone is not achieved. Observing emergence patterns can help determine why some weed species are not controlled.

It is clear that many weed problems cannot be solved with hexazinone use. Growers must adapt their control strategy to control these escaping species.

18. Venture L (fluazifop-p-butyl)

Venture L can be applied broadcast in the late spring of both the sprout and fruiting year for post emergent control or suppression of certain annual and perennial grasses. Degree of control will depend upon their level of susceptibility to the herbicide and the rates applied. Susceptible annual grasses like witch grass or native perennials like ticklegrass (rough hair grass) can be controlled

with Venture L, but many native grasses, like poverty oat grass and blue grasses, are more tolerant and are only suppressed. Suppressed grasses are severely stunted and flowering and vigour is greatly reduced for at least one season. The presence of these suppressed species, particularly in bare areas of blueberry fields, is beneficial and may enhance expansion of blueberry clones and reduce soil erosion. Other grasses, however, are highly tolerant.

Apply 1 L/ha (0.4 L/acre) Venture L post emergence for control of annual grasses at the 2 to 5 leaf stage (e.g. witch grass and fall panicum) and for tickle grass suppression. Apply 2 L/ha (0.8 L/acre) Venture L for the suppression of quack grass, poverty oat grass, blue grasses and other perennial grasses. Apply when perennial grasses have 10 cm of new leaf growth, usually in late May or early June. These applications are useful in some grass-infested fields during the crop year to increase harvest efficiency. When applications are made to grasses greater than 20 cm in height or grasses that have reached the heading stage, the grasses will not be adequately controlled or suppressed. Venture L should be applied in 100 to 200 L of water per hectare. Blueberry plants are very tolerant to Venture L, even during bloom. Venture L requires a minimum 2 hour rain-free period after application and has no activity in the soil. The preharvest interval is 60 days. Venture L does not control rushes, sedges nor any broad-leaved weeds.

Notes on Herbicide Tables

Information provided in the following tables are provided to facilitate choosing the best treatment and are not a guarantee of performance. Producers should refer to the product label for more specific information. Factors such as weather, stage of growth, herbicide rate and difference in tolerance among plant populations can influence the information presented. Selective treatments can be applied with little risk of crop injury, provided label directions are followed. Non-selective herbicide treatments must be applied only to the weeds as blueberry plants that come in contact with the herbicide spray may be injured or killed.

Table 1. Herbicide Effect on Common Blueberry Field Weeds

Ratings s - susceptible t - tolerant sd - suppressed v - variable n/a - not applicable A - Annual P - Perennial	Life Cycle	Pre-Emergence					Post Emergence					Spot Treatments					
		Authority	Chateau	Kerb	Sinbar	Velpar/Pronone	Callisto	Option	Poast Ultra	Ultim	Venture	Casoron	dicamba	Glyphosate	Garlon	Lontrel	Spartan
Grass Type Weeds																	
Black bulrush	P			t	t	v	sd		t	s	t	sd	t	s		t	t
Browntop	P				s	s	t		s		s		t	v	t	t	t
Canada blue grass	P				s	s	t	sd	sd	v	sd		t	v	t	t	t
Fescue (*Festuca sp*)	P			s	v	v(3)	t	sd	t	v	t		t	v	t	t	t
Kentucky blue grass	P					s(3)	t		sd		sd		t	v	t	t	t
Mexican muhly grass	P				sd	v(3)	t		sd		sd		t	v	t	t	t
Poverty oat grass	P			t	s	s(3)	t	sd	sd	sd	sd		t	v	t	t	t
Quack grass	P			v	sd	sd	t	s	sd	sd	sd	sd	t	v	t	t	t
Tickle grass (Rough hair)	P				s	s(3)	t	s	s	sd	s		t	v	t	t	t
Rush Species	P					v	v		t		t	sd					
Witch grass	A				s	v(3)	t	s	s	s	s		t	v	t	t	t
Herbaceous Broadleaf																	
Asters	P			t	t	v	v		t		t	s	s	s		v	v
Bunchberry	P			t	t	t	t		t	v	t			n/a		t	s(1)
Burnweed	A					v	s		t		t			s		sd	
Cinquefoil (Rough, 5-finger)	P				s	v	v		t	v	t			n/a			v
Cow wheat	A					v	s		t	t	t			n/a			
Fireweed	P				s	s	sd		t		t			s			
Goldenrods	P			t	t	v	sd		t	sd	t		s(1)	s		v	v
Hawkweed	P				sd	v	t	v	t	sd	t			n/a		s	
Lamb's quarters	A	s	s		s	v	s	s	t	sd	t	s	s	s		t	
Old field toadflax	A,P						sd		t		t			n/a		t	
Ox-eye daisy	P				t	s			t		t		s	s		v	
Sheep sorrel	A,P	sd		sd	t	v(3)	t	v	t	v	t	sd	s	n/a		v	
Spreading dogbane	P				t	t	v	v	t	v	t	v	s	s	s	t	t
St. John's wort	P			t	t	t	v		t	t	t		s	s		t	t
Vetch	P			t	t	v	sd		t	sd	t	v	s	v		s	v
Wild lily of the valley	P				t	t			t	t	t			n/a		t	t
Yellow loosestrife	P				t	t	v		t	t	t	v	s	s		t	s
Woody Weeds																	
Alder	P			t	t	t	t		t	t	t		s	s	s	t	s
Barrenberry	P			t	t	t	v		t	t	t		s	s		t	t
Birch	P			t	t	s	v		t	t	t		s	s	s	t	t
Cherry (*Prunus* spp)	P			t	t	t	t		t	t	t		s	s	v	t	
Huckleberry	P			t	t	t	t		t	t	t		t	s	t	t	t
Lambkill	P			t	t	s(1)	t		t	t	t		s	v	v	t	t
Maple	P			t	t	t	t		t	t	t			s	s(2)	t	sd
Poplar	P			t	t	v	v		t	t	t		s	s	s	t	v
Rhodora	P			t	t	s(1)	t		t	t	t		sd	v	v	t	t
Wild rose	P			t	t	t	v		t	t	t		s	v	s	t	s
Willow	P			t	t		v		t	t	t			v	s	t	v
Non-flowering Plants																	
Bracken fern	P				t	v	s(1)		t	t	t	s		s		t	s
Hair-cap moss	P		s(1)	t	t	t	t		t	t	t		t	t	t	t	t
Sweet fern	P			t	t	t			t	t	t		s	v		t	t

(1) may require additional applications in following cycles for satisfactory control
(2) Red maple requires high rate and possible re-treatment (3) Herbicide Resistant species suspected

Table 2. Herbicides Registered for Broadcast Application						
Active Ingredient	Product	Product Rate		Water Volume	Pre Harvest Interval (Days)	Application Timing (see label for additional information/precautions)
		kg or L / ha	kg or L / ac			
Pre-emergent, before blueberry growth (Early Spring)						
glufosinate	Ignite SN	2.7-5 L/ha	1.1-2 L/ac	Min 110 L/ha (10 gal/ac)	Non crop year	Dormant spray, after blueberry leaf drop in crop season but before blueberry sprout emergence in the sprout year.
hexazinone	Pronone 10G Velpar DF	14-20 kg/ha 1.92-2.56 kg/ha	5.7-8.1 kg/ac 0.78-1.0 kg/ac	Min 200 L/ha (18 gal/ac)	None available	Spring of sprout year, before new blueberry plant growth emerges.
sulfentrazone	Authority 480	0.22-0.29 L/ha	0.09-0.12 L/ac	Min 100 L/ha (9 gal/ac)	Non crop year	Dormant spray, after blueberry leaf drop in crop season but before blueberry sprout emergence in the sprout year.
terbacil	Sinbar WDG	1.5-2.5 kg/ha	0.6-1.0 kg/ac	Min 200 L/ha (18 gal/ac)	None available	Spring of sprout year, before new blueberry plant growth emerges or late fall, when dormant.
Post-emergent, after blueberry growth (Late Spring/Summer)						
fluazifop-p-butyl	Venture L	1-2 L/ha	0.4-0.8 L/ac	100-200 L/ha (9-18 gal/ac)	60 fruit, 420 sprout	Late spring, sprout and fruiting year, control of grasses only. Low rate for annual grass control.
foramsulfuron	Option 2.25 OD	1.56 L/ha + 2.5 L/ha UAN	0.63 L/ac + 1 L/ac UAN	Min 150 L/ha (13 gal/ac)	None available	Sprout year only. One application per season after blueberry emergence.
mesotrione	Callisto 480 SC + Agral 90	0.3 L/ha + 200 ml Agral 90 per 100 L water	0.12 L/ac + 200 ml Agral 90 per 100 L water	100-200 L/ha (9-18 gal/ac)	60	Late spring of sprout or crop year, prebloom. Apply up to 8 leaf weed stage. Can be applied before weed emergence. One application per season.
nicosulfuron/ rimsulfuron	Ultim 75 DF + Agral 90	33.7 g/ha + 200 ml NIS per 100 L water	13.6 g/ac + 200 ml NIS per 100 L water	Min 140 L/ha (12 gal/ac)	14 months	Apply with approved surfactant. Crop stunting may occur when applied later in season. One application per season.
sethoxydim	Poast Ultra + Merge or Assist	0.47-1.1 L/ha + 1-2 L/ha Merge or Assist	0.19-0.45 L/ac + 0.4-0.8 L/ac Merge or Assist	100-200 L/ha (9-18 gal/ac)	15	Late spring, sprout and fruiting year, control of grasses only. Low rate for annual grass control.
Dormant application (Late Fall)						
dicamba	Banvel II/Hawkeye Oracle	4.6-7.1 L/ha	1.9-2.9 L/ac	550 L/ha (50 gal/ac)	None available	Fall of fruiting year after 90% blueberry plant leaf drop. Change rate for other formulations.
dicamba + 2,4-D ester	Banvel II/Oracle + 2,4-D LV ester 600	2.3 L/ha + 5.7 L/ha	0.93 L/ac + 2.3 L/ac	550 L/ha (50 gal/ac)	None available	Fall of fruiting year after 90% blueberry plant leaf drop. Only use low volatile formulations of 2,4-D ester.
flumioxazin	Chateau WDG	Suppress Moss: 0.28-0.42 kg/ha	Suppress Moss: 0.11-0.17 kg/ac	Min 100 L/ha (9 gal/ac)	None available	Apply to dormant blueberry, ideally late fall of crop year after pruning.
glyphosate	Roundup Weathermax	1.67 L/ha	0.68 L/ac	200-300 L/ha (18-27 gal/ac)	None available	Newly cleared land only. Fall of fruiting year after 95% blueberry plant leaf drop. Must prune after treatment.
propyzamide	Kerb SC	4.1-5.6 L/ha	1.7-2.3 L/ac	300-500 L/ha (27-45 gal/ac)	None available	Late fall of fruiting or sprout year, after blueberry plant defoliation. Best results when soil temperatures are low, but above freezing and soil moisture is high.

Table 3. Herbicides Registered for Spot Application					
Active Ingredient	**Product**	**Type of Application**	**Herbicide Mixture (g or L product)**	**Pre Harvest Interval**	**Application Timing (see label for additional information)**
Selective spot herbicide treatments					
clopyralid	Lontrel 360	Spot spray	Spot: 42 ml in 200 L water, treat 1000 m^2 Boom: 420 ml/ha in 150-200 L	10 months	Sprout year – June or when tufted vetch is early bloom. Later applications may result in yield reductions the following year.
dichlobenil	Casoron 4G	Granular	110-175 kg/ha (40-70 kg/ac) spread directly on soil	100 days	Apply during dormant period (late fall). Do not apply above 15 °C. Low rate for crop year.
glufosinate	Ignite SN	Spot spray	27-50 ml in 10 L spray solution	Non crop year	Directed spray if sprouts have emerged. Two applications may be needed, 6.7 L/ha maximum.
nicosulfuron/ rimsulfuron	Ultim 75 DF + Agral 90	Spot spray	Spot: 4.2 g plus 200 ml Agral 90 per 100 L water	14 months	Early summer of sprout year - black bulrush.
tribenuron methyl	Spartan + Agral 90	Spot spray	2.5 g in 10 L water plus 20 ml Agral 90 per 10 L water	None available	Summer or early fall of sprout year. Varies with weed targeted.
		Bunchberry	40 g/ha + 0.2% v/v Agral 90 (20 ml Agral 90 per 10 L water); Spray in 150-250 L water/ha	None available	**Spring sprout year:** Bunchberry leaves unfolded at a 45 degree angle, before blueberry re-growth more than 2 cm. **Late summer fruiting year:** apply 1-4 weeks after blueberry harvest.
Non-selective spot and wiper herbicide treatments					
2,4-D LV ester	Numerous trade names	Spot spray	Consult individual labels	None available	Site preparation, non crop.
dicamba	Banvel II / Hawkeye Oracle	Spot spray	2.1 L per 1000 L water	None available	Site preparation – brush control.
glyphosate	Roundup Original, Roundup Weathermax, Touchdown Total, Factor, Factor 540, Credit, Credit Plus, Glyfos, Vantage Plus MAX, Polaris, Traxion and others	Spot spray	1-2 % solution Roundup Weathermax: 0.67 to 1.34 % solution	Non crop year	Site preparation, sprout year, after harvest.
		Roller	5 to 10 % solution Roundup Weathermax: 3.3–6.7 % solution	Non crop year	
		Wiper	33 % solution Roundup Weathermax: 22% solution	Non crop year	
triclopyr	Garlon	Spot spray or wiper	13 – 19 % solution in mineral or vegetable oil for Garlon XRT; No mixing for Garlon RTU	None available	Site preparation, one application per year.

Pre Harvest Interval (PHI): The minimum number of days between the last application of the pesticide and harvest. **Label Information:** Information listed in this guide is provided to growers as a convenience. Pesticides must be applied according to label directions. Please refer to the product label before application and for more information on each product. Label information overrides any discrepancies between information presented in this guide and the label. Label information can be found at the Health Canada Pesticide Label Search, available on-line.

Table 4. Additional Information for Herbicides Used on Wild Blueberry

Active Ingredient	Product	Group	Hazard	Protection Equipment	Buffer Zone (metres)		Restrictions (hours)		Herbicide Activity		Leaching Potential	Bee Toxicity	Winter Storage
					Water <1m	Terrestrial Habitat	Rain-free Period	Re-Entry Interval	Foliar	Soil			
2,4-D	2,4-D	4	Warning	d f g j	1	2	2	12	yes	no	moderate	low	C
clopyralid	Lontrel	4	Caution	a f j	-	2	4	12	yes	no	low to moderate	low	B
dicamba	Banvel II /Oracle	4	Warning	d f	1	15	4	12	yes	limited	very high	low	B
dichlobenil	Casoron	20	Caution	a f g	-	-	-	12	no	yes	low	low	C
fluazifop-p-butyl	Venture	1	Caution	d f h j	1	2	2	12	yes	no	very low	low	B
flumioxazin	Chateau	14	Caution	d f g j m	5	25	0	12	limited	yes	low	low	C
foramsulfuron	Option	2	Caution	a f g	1	3	2	12	yes	limited	low	low	C
glufosinate	Ignite	10	Warning	a f j m	1	1	4	12	yes	no	high	low	A
glyphosate	Various	9	Caution	a f j	15	15	1-6	12	yes	no	extremely low	low	B
hexazinone	Pronone	5	Warning	b f	50	-	0	48	no	yes	very high	low	C
hexazinone	Velpar	5	Caution	a f j	1	5	0	48	limited	yes	very high	low	C
mesotrione	Callisto	27	Caution	a f j	1	4	3	12	yes	yes	low	low	B
nicosulfuron/ rimsulfuron	Ultim	2	Warning	a f h	1	5	2-4	12	yes	no	high	low	C
propyzamide	Kerb	15	Caution	d f h	-	10	0	24	no	yes	low	low	A
sethoxydim	Poast Ultra	1	Caution	d f h j	1	2	1	12	yes	no	low	low	B
simazine	Princep Nine-T	5	Warning	d f h j	1	5	0	12	no	yes	high	low	C
sulfentrazone	Authority	14	Caution	a f g	1	10	-	12	limited	yes	high	low	B
terbacil	Sinbar	5	Caution	a g j	10	35	0	12	limited	yes	very high	low	C
tribenuron-methyl	Spartan	2	Warning	a f j	1	10	4-6	12	yes	no	moderate	low	C
triclopyr	Garlon	4	Caution	d f h j	-	-	2	12	yes	no	low	low	B

Protection Equipment: **a** - long-sleeved shirt and long pants, **b** - coveralls or disposable spray suit, **d** - coveralls or disposable spray suit over long sleeved shirt and pants, **e** - waterproof gloves, **f** - chemically-resistant gloves, **g** - shoes plus socks, **h** - chemically resistant footwear plus socks, **j** - protective eye wear, **l** - chemically resistant head gear for overhead application, **m** - approved respirator, **n** - chemical-resistant spray suit. **Winter Storage:** Winter storage requirement codes are: **A** - Do not allow to freeze, **B** - Preferably should not freeze. If frozen, return to original state by allowing product to warm to 10-20^{0}C and agitate thoroughly before use, **C** - Not usually damaged by freezing. Store in cool dry place.

Pesticide Emergency Information

Poison Control Centres

New Brunswick	Dial 911, ask for Poison Information
Newfoundland	Dr. Charles A. Janeway Child Healthcare Centre, St. John's (709) 722-1110
Nova Scotia Prince Edward Island	The Izaak Walton Killam Hospital for Children, Halifax 1-800-565-8161

Environmental Pesticide Spill

New Brunswick Prince Edward Island Nova Scotia	1-800-565-1633
Newfoundland	1-800-563-9089

PMRA Websites

Pesticide Label Search

http://pr-rp.hc-sc.gc.ca/ls-re/index-eng.php

Drift Mitigation

Buffer Zone Calculator Link

Helpful Conversions

Units

kPa x 0.14 = pounds per square inch
hectares x 2.47 = acres
kilograms x 2.2 = pounds
1000 grams (g) = 1 kilogram (kg)
millilitres x 0.035 = fluid ounces
litres x 35 = fluid ounces
litres x 0.22 = imperial gallons
1000 millilitres (mL) = 1 Litre (L)
°F = (°C x 9/5) + 32
°C = (°F-32) x 5/9
miles per hour x 1.61 = km per hour
5 mL = 1 tsp

Volume per Area

kg per ha x 0.89 = pounds per ac
kg per ha x 0.40 = kilograms per ac
g per ha x 0.015 = ounces per ac
tonnes per ha x 0.45 = tons per ac
L per ha x 0.40 = litres per ac
L per ha x 0.09 = gallons per ac
L per ha x 14.17 = fluid ounces per ac
L per ha x 0.71 = pints per acre
mL per ha x 0.015 = fl. ounces per ac
L per ha x 0.11 = US gallons per ac
L per ha x 0.86 = US pints per ac

Abbreviations

Formulation

DF	Dry flowable
EC,E	Emulsifiable concentrate
F	Flowable
G	Granular
L	Liquid
LV	Low Volatile
SC	Suspension concentrate
Sn	Solution
SP	Soluble Powder
WDG	Water Dispersible Granule
WP,W	Wettable Powder
WSP	Water Soluble Pouches

Measurements

ac	acre
g	gram
g.a.e.	grams acid equivalent
ha	hectare
kg	kilogram
kPa	kilopascal
L	litre
m	metre
mL	millilitre
psi	pounds per square inch
% v/v	percent volume to volume

Personal Protection Equipment

Gloves

e - waterproof gloves **f** - chemical resistant gloves

Head and Lung

j - eye protection, application **m** - approved respirator

l - chemically resistant headgear for overhead application

Clothes

a - long-sleeved shirt/pants **b** - coveralls or disposable spray suit

d - coveralls or disposable spray suit over long sleeved shirt/pants

n - chemical-resistant spray suit

Footwear

g - shoes plus socks **h** - chemically resistant footwear plus socks

Herbicide Activity: Foliar – Indicates whether or not susceptible weeds will be controlled by herbicide contact with above ground plant tissue (leaves). **Soil** – Indicates whether or not late emerging susceptible weeds will be controlled for some time after application by residual herbicide activity as they germinate from the soil.

Group: Weed Science Society of America's nationally accepted grouping of herbicides based on site of action.

Bee Toxicity: Degree of toxicity to honey bees. If possible, all pesticide applications should be avoided during times of bee activity within fields, such as mid-day during bloom periods.

Hazard: The signal words Danger, Warning and Caution appear on the pesticide label and indicate the level of hazard associated with handling or using the product. Products bearing the signal word **Danger** have an extreme or high hazard rating. Products labeled **Warning** have a moderate hazard rating and a **Caution** warning is associated with a low level of hazard. The degree of hazard may be due to toxicity, flammability, explosiveness or corrosiveness.

Buffer Zones: Distance between the closest point of direct pesticide application and the nearest downwind edge of sensitive terrestrial habitats (such as grasslands, forested areas, shelter belts, woodlots, hedgerows, riparian areas and shrublands) and sensitive freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands). Water < 1m refers to wet areas with less than 1 meter of water depth. All buffer zones are for boom sprayers unless indicated. A buffer zone calculator is available here.

Rain-free Period: The recommended minimum time in hours between pesticide application and rain. If rain occurs during the rain-free period, pest control may be significantly reduced.

Restricted-Entry Interval (REI): The minimum time in hours before you can enter a field that has been treated with the pesticide.

Leaching Potential: The potential for a pesticide to be leached or carried by surface run-off is determined by characteristics of both the pesticide and the field. Surface slope, proximity to surface water, low organic matter content, depth to aquifer and heavy rainfall are some of the factors which lead to run-off and leaching problems when combined with pesticides of a moderate to high leaching potential.

Schedule "L"

Lowbush Blueberry Fact Sheet

Blueberry Grower's Code Of Practice For Pest Management

"A Growers Guide"

Wild Blueberry Growers Association of Nova Scotia

In the year 1970, a group of active blueberry growers working with representatives from the Nova Scotia Department of Agriculture and Marketing formed an organization and aptly named it "Blueberry Producers Association of Nova Scotia". The organization of this group did not take place overnight. Already two attempts at organizing had collapsed. With months of preparation, this new organization was formed and over the years has grown and developed into one of the strongest commodity organizations in Nova Scotia.

The Association has advised government on many policies affecting the industry, been active in promotional programs, and lead in support of innovative technology. During this time blueberries, in terms of acreage and exports, have become the most important horticultural crop in the province.

As we move towards the twenty-first century, one of our areas of concern is the environment. Blueberries are one of the most environmentally friendly food crops produced and we are proud to initiate this publication, *Blueberry Grower's Code of Practice For Pest Management*. Common sense is the guide for using pesticides to grow blueberries. Our goal is to promote greater use of common sense by everyone involved in the industry.

Introduction

Pesticides are best employed within a strategy of integrated pest management (IPM). IPM depends on detailed knowledge of pest and crop biology and combines natural control for pests with synthetic pesticides. Pesticides can help to attain sustainable development of the blueberry industry.

The wild Blueberry Producers Association of Nova Scotia recognizes the importance of pesticides as components of IPM. Pesticides must be registered by the federal government. The registration process involves a rigorous review of data on the products toxicity, environmental impact and degradation. Pest control products can be used safely and have no long term impact on the environment when used according to label directions! The Association developed this Grower's Guide to assist producers in improving management of pesticides within the industry.

The Association identified six concepts that are crucial to responsible use of pest control products. The philosophy of each concept should be incorporated into all decisions regarding pest management and pesticide use. These concepts are:

1. Integrated Pest Management
2. Application Technology
3. Protection of Environmentally Sensitive Zones
4. Effective Storage, Cleaning and Container Disposal
5. Applicator Safety
6. Public Information and Good Neighbor Policy

Producers can use the Guide to evaluate their own practices, identify areas for improvement and further training.

Following the Guide will allow growers to maximize value of their pesticide inputs, protect the environment, and more effectively communicate with the general public the benefits and risks of pesticide use in blueberry production.



Integrated Pest Management

IPM involves a "whole system" approach to producing a crop of blueberries and managing the associated plants, insects, disease organisms and vertebrates. IPM strives to maintain a balanced ecosystem of plants, animals and microorganisms while maintaining sufficient crop production to ensure a profitable enterprise for the grower. These concepts can be applied to controlling vegetation, insects or diseases.

IPM utilizes all possible tools and techniques to manage a pest population in an economical and environmentally safe way. Monitoring or scouting the crop to determine levels of pests and natural controls is essential. This information is used to determine appropriate pest management techniques.

IPM Requires

1. **correct identification** of both pests and beneficial organisms such as parasitic wasps, which help control span worms and leaf tiers,
2. **knowledge of pest biology**, so treatments can be applied at the most effective time,
3. ongoing **monitoring of pests**, usually on a weekly or bi- weekly basis,
4. application of an **economic threshold level or tolerance**, *ie*, the level of pest activity at which a treatment must be applied to prevent unacceptable crop losses from occurring,
5. application of a **treatment when pest populations exceed threshold levels**. This may consist of a pesticide, a biological control, physical controls such as cutting weeds or cultural controls such as plant nutrition.

Pesticides are only applied when pest populations exceed established levels or tolerances known to result in unacceptable crop loss. Accurate identification of weeds, insects and diseases is essential to IPM; growers should familiarize themselves with the major pest problems. Natural pest controls are used whenever possible. Pesticides are selected to minimize possible adverse affects and are used to augment naturally occurring controls when possible. In many years beneficial insects and other naturally occurring phenomena such as weather conditions may prevent pest populations from reaching levels that would warrant use of pesticides.

Application Technology

Pesticide use in IPM assumes accurate application of a recommended rate to a defined target. Accurate application requires determining the volume of spray or dry product delivered by equipment over a specified unit of land - usually an acre or hectare. This process of determining delivery volumes is known as calibration. Calibration of equipment is crucial for the economic well-being of the farm as well as ensuring environmental integrity. Pesticides are expensive! Excessive use through inaccurately calibrated equipment may lead to crop injury, residues that will prevent sale of the crop and loss of operating capital.

Spray droplet size is an important consideration to maximize efficient dispersal and deposition of pesticide on the target. Herbicides are usually more effective with relatively large droplet sizes, while insecticides are usually more effective when applied as mist size droplets. Choosing the correct spray and application pressure will ensure generation of the appropriate droplet size. Farm machinery dealers, private consultants, IPM and machinery engineering specialists with NSDAM can provide assistance.

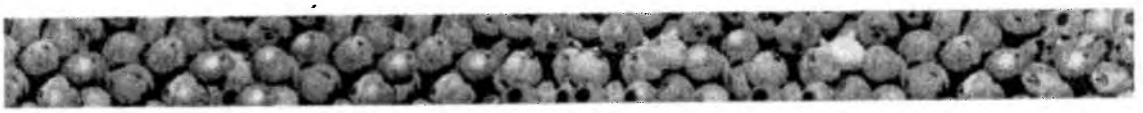
Weather conditions and terrain are factors that will also influence equipment and droplet size choices. The larger droplet sizes that should be used with herbicides are less vulnerable to off-site movement as a result of wind and air currents. Granular applicators are particularly suited to rough terrain. Spot treatments with back-pack sprayers or "wipers" are appropriate to control pest populations confined to small areas.

Protection of Environmentally Sensitive Zones

Pesticides are safe and effective tools in pest management when used according to label directions. Product labels specify use procedures and practices that will mitigate against adverse environmental effects. Users are legally required to adhere to label requirements! Failure to do so may seriously damage the environment and result in prosecution of the offender.

Contamination of ground and surface water supplies is perhaps the greatest environmental concern relative to use of pesticides. Products that are highly soluble in water and slow to degrade are more risky than products that are of low water solubility and degrade quickly. Research has shown that most contamination occurs as a result of accidents and carelessness; *ie* spills of concentrated pesticides into or near wells or bodies of water or spraying over open wells. The implication is that risk of water contamination can be minimized by taking extra precautions to ensure that spills and over-sprays do not occur. Maintenance of an appropriate width unsprayed buffer zone between treated areas and bodies of water will prevent pollution of streams and ponds.

Products that are highly soluble in water may wash down-hill and accumulate at the bottom, harming sensitive terrestrial or aquatic life found there. For this reason highly soluble pesticides should not be used on steep terrain.





Hilly fields in early stages of development may be especially vulnerable to erosion. Herbicides remove most weedy vegetation, leaving the soil bare in areas where blueberries have not completely filled in. Heavy rainfall may then wash top soil away causing exposure of sub-soil and siltation of streams. Once top soil is gone the crop may never establish in these areas. Therefore, herbicides should be used carefully in developing fields so as to maintain some grass or weedy vegetation in areas where the crop had not yet spread. Grassed waterways should be considered on particularly sloped fields.

Consider developing buffer zones of unmanaged vegetation around sensitive areas like streams and swamps or near potable water supplies. In some instances buffer zones are legally required, either by Federal or provincial law. Always consult the product label!

Understanding properties, such as toxicity, water solubility and persistence of the product is essential to assure correct use. Growers must ensure that label instruction relative to precautions and setbacks from sensitive areas are followed.

Effective Storage, Cleaning and Container Disposal

Many accidents with pesticides occur not in application, but in storage. Children and adults can inadvertently contact chemical containers and spilled concentrate when pesticides are improperly handled and stored. Children have been known to confuse pesticides with food products and consume them, when they were not stored in their original container.

Just as medicines should be kept under lock and key, so too should stored pesticides. Special storage rooms or cabinets which can be locked are mandatory. Ventilation of storage units is advisable to prevent the buildup of potentially toxic fumes. Pesticides should be stored in their original containers. Check all containers periodically for leaks. If leaks have occurred take measures to prevent additional leakage and use an absorbent material to soak-up the spilled product. Check with the Department of the Environment (NSDOE) or the manufacturer to determine how to clean up leaked material or dispose of unusable product.

Pesticide storage areas should be posted. Local fire departments should be notified when large quantities are being stored on farm. Build storages of non-combustible or fire retardant materials. Keep safety equipment and a fire extinguisher close by. Absorbant material like dry peat moss should be on hand in case of a spill or leakage.

On-farm storage for private use can be very safe with the application of common sense. The first step is to store as little as possible. Try to buy only enough pesticide to cover your land base requiring treatment. Knowledge of label rates and land measurement is necessary for this. Vendors can assist in the process of determining pesticide volumes required for a treatment.

Retail or wholesale storages are regulated under the provincial Pest Control Products Act and must meet specifications outlined in the Regulations.

Cleanup and proper disposal of application equipment and containers is essential for economic reasons and to ensure environmental integrity. Equipment should be thoroughly cleaned with large volumes of water. The rinsate should be sprayed-out over a large land area, preferably the same area treated with the pesticide in the first place. For instructions regarding decontamination of equipment when used with specific products, consult the label.

Product containers should be flushed with a spray of water and shaken vigorously a minimum of three times, This is commonly referred to as "triple-rinsing". Jet-rinsers, available from most farm chemical outlets, can be attached to the by-pass line of the sprayer and provide a very effective and efficient means for triple-rinsing. Rinsate from triple-rinsing is disposed of by adding it to the spray tank as the applications mix is being prepared.

Research has shown that the short time taken in triple-rinsing containers is much more than paid for the by product saved. Knowing that containers are clean and do not pose a health or environmental hazard will give peace of mind and a clear conscience!

Rinsed containers should be punctured to prevent re-use. Clean, dry containers can be taken to a recycling depot.

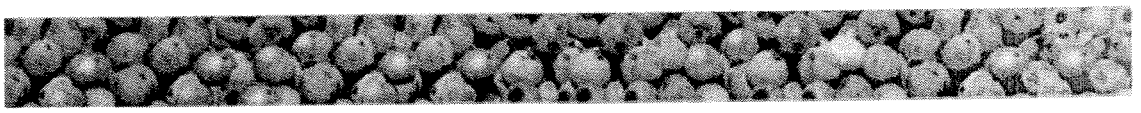
Applicator Safety

Pesticide labels all carry information regarding necessary safety precautions to be taken by applicators to minimize their exposure and risk of injury. Depending upon the toxicity (ability to poison) of the individual pesticide, differing levels of personal protection are recommended. Minimum personal protective equipment that should always be used when handling concentrates would include safety goggles, coveralls, nitrile rubber gloves and apron. Coveralls over regular clothes are a good idea for applicators. Disposable coveralls are available; however, if non-disposable clothing is used, remember to wash it in a separate cycle from the family wash. Product labels will stipulate wearing a respirator and chemical resistant clothing when necessary.

Growers must be able to recognize and respond to label safety precautions. Additional sources of information of safe use might include NSDAM specialists, technical sales representatives and staff of NSDOE.

Two facts worthy of remembering are:

1. Greatest risk of exposure occurs during handling of concentrated pesticides while measuring, mixing and filling sprayers.





2. Pesticide enters the body more readily through the skin(hands, arms, neck and face are at greatest risk) than by any means other than intentional or accidental consumption.

The Crop Protection Institute has designated sprayer filling stations as *Rubber Glove Zones*, where rubber gloves, protective coveralls, aprons and eye protection should always be worn.

Public Information and Good Neighbour Policy

A critical consideration for pesticide applications is public acceptance and understanding of the objectives of pesticide use.

Growers must recognize that neighbours, and individuals with right-of-way passage through their land, have a right to know what pesticides might be utilized in close proximity to them, and the risks of such usage. With certain applications, such as aerial, a public notification process is legally required.

If there is risk of chemical trespass (pesticide movement) to a neighbor's property it is wise to establish suitable buffer zones wherein no pesticide application takes place. Width of buffer zones will vary depending upon the product and application technology used. Staff of NSDOE or NSDAM may be helpful in suggesting appropriate buffer zones.

Formalized notification measures are counter-productive to IPM. Pest management situations often change quickly. A rapid response to a pest crisis may mean that less pesticide will be used than if the response is delayed. Therefore, use a notification procedure at the beginning of the crop protection season that will accommodate all possible outcomes.

Develop a list of potential treatments detailing product to be used, possible time span of usage, reason for usage, reentry intervals and relevant information as to the risk involved with exposure. The Association recommends approaching neighbors, individuals in close proximity or with access to your property, well in advance of the pesticide application season. Explain the products that might be used, their purpose, and the approximate time of year use might occur. This is not to say that any particular application will actually occur. But at least both parties will understand during which periods of the year pesticide applications are probable. By doing this it will be easier to work out a system of notification that is practical and a shared responsibility.

Be prepared to provide as much prior notification as possible. Perhaps a phone call will suffice. Signage at entry points to fields is a final effort to warn potential visitors of pesticide work recently done, in progress or about to happen. However, signs should not be left up indefinitely! Good communication will help prevent unnecessary problems.

Conclusion

The Grower's Guide presented 6 major concepts.

1. Integrated Pest Management
2. Application Technology
3. Protection of Environmentally Sensitive Zones
4. Effective Storage, Cleaning and Container Disposal
5. Applicator Safety
6. Public Information and Good Neighbor Policy

Adoption of these concepts should be a goal for every WBPANS member. These concepts will assist growers to be safe, cost effective and more fully sustainable. Knowledge and skill are fundamental to IPM and good pesticide management. All growers are encouraged to participate in pesticide applicator courses and training that deals with blueberry production and pest management.

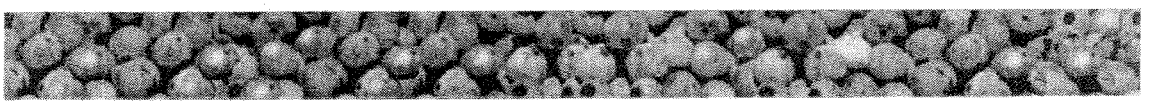
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The draft Code of Practice for Pest Management prepared by the Nova Scotia Christmas Tree Council inspired and formed a framework for this material. Other sources of information included bulletins published by the Crop Protection Institute and NSDAM

Prepared by:

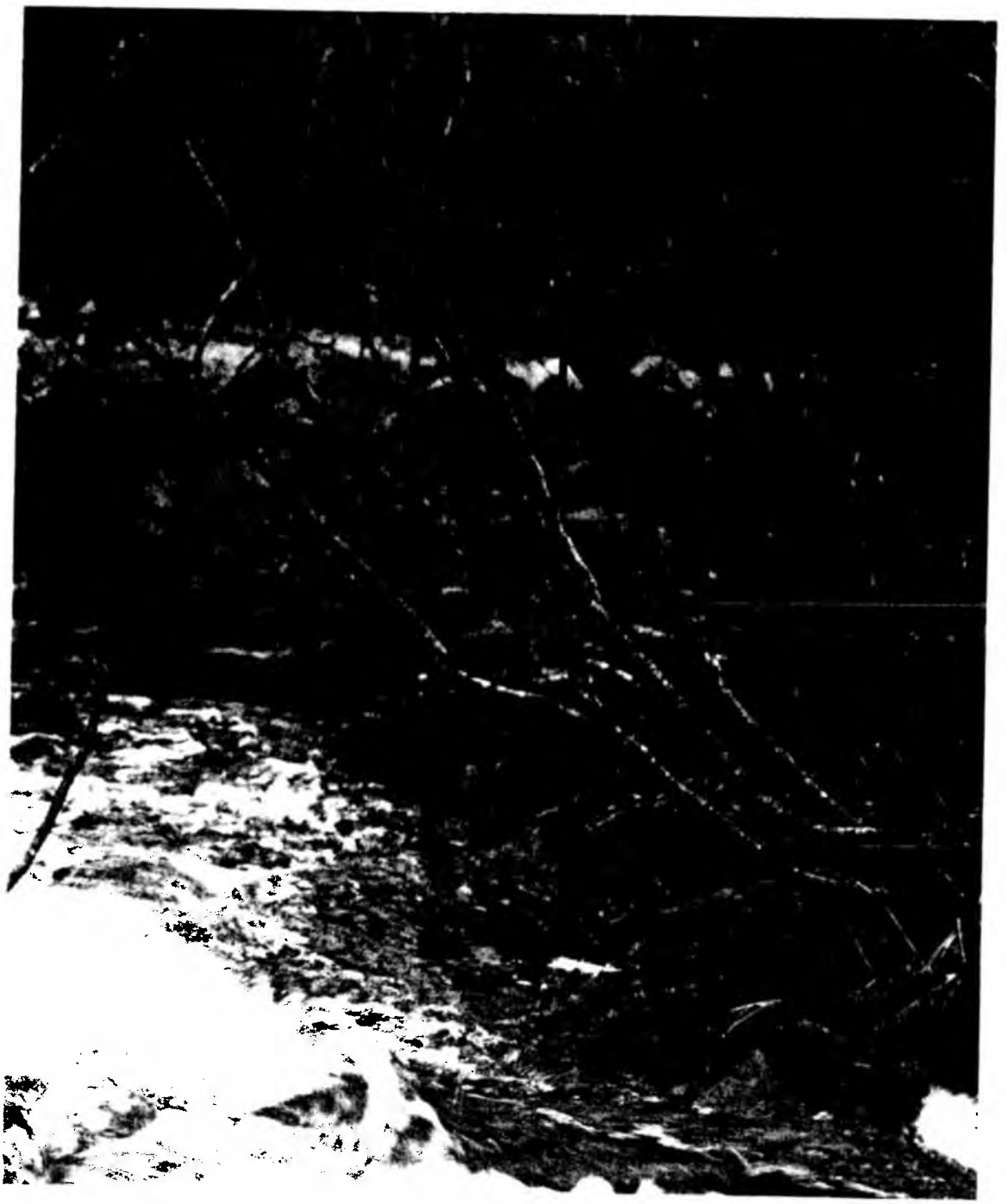
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Schedule "M"

COOPERATION AGREEMENT FOR FORESTRY DEVELOPMENT 1991-1995



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Nova Scotia

Appendix M

woodlot roads
stream crossings

Glen C. Brathwaite, P. Eng.
1992

Canada

Nova Scotia

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Introduction

Road construction has a major impact on soils, drainage and the forest ecosystem. The construction of roads, not wood harvesting, has proven to be the major cause of soil erosion and stream siltation in forest operations. Research has shown that much of the siltation in streams is the result of poorly selected and installed stream crossings. Siltation can ruin fish habitat and water quality, and measures must be taken to prevent it.

Forest Management programs are being used to guarantee an adequate supply of wood fibre in future years. These programs have resulted in the increase of road construction activities on woodlots. Good construction practices must be followed to reduce the negative impact associated with stream crossing installations on these roads.

This booklet will assist woodlot owners and operators by addressing the problems that may be encountered with stream crossings and recommending solutions. It describes selecting, locating and constructing stream crossings to help eliminate siltation. This will help ensure the protection of fish habitat and water quality in forest streams.

1.0 Selecting A Site

A stream crossing may be a culvert or a bridge. A culvert is an enclosed channel serving as a continuation of, and a substitute for, an open channel where that channel meets an artificial barrier (e.g., road embankment). In contrast, a bridge serves as a part of the road and is a definite link in a roadway surface. (Fig. 1)

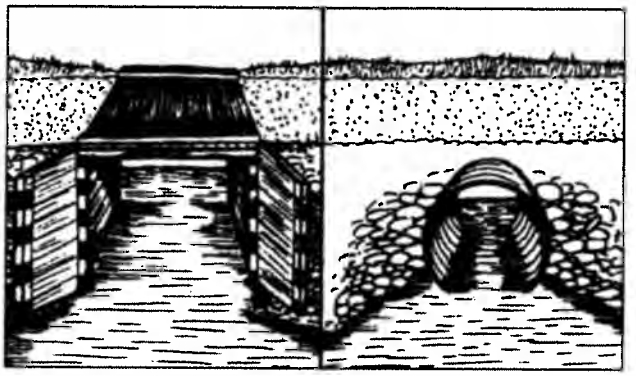


Fig. 1 Bridge Culvert

A stream is continually changing its channel, straightening or bending, scouring itself deeper, or depositing silt.

Because the crossing is a fixed link in a stream which can and often will change its location, good engineering is needed. In Nova Scotia, approval is required from the Department of the Environment before a stream crossing can be built. Engineering input at the planning stage will help in obtaining this approval.

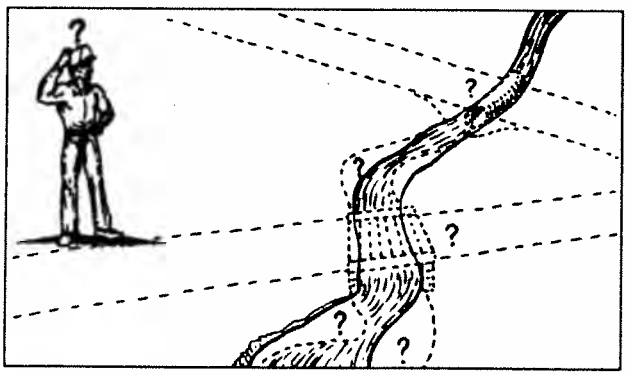


Fig. 2 Selecting a streram crossing requires good engineering.

1.1 Principles of Location

The first principle of locating a stream crossing is to provide a direct entrance and exit for water flow. Any abrupt change in the direction of water flow before or after the crossing may cause damage and create an opportunity for future washout and siltation.

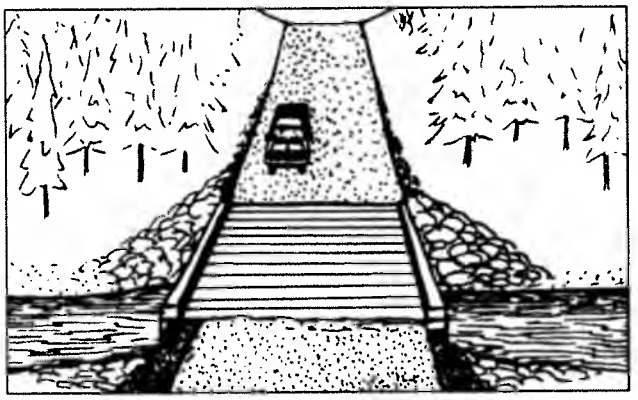


Fig. 3 Stream should enter and exit in a straight line.

The second principle is to prevent the stream from changing course immediately before it enters or immediately after it exits the structure. Otherwise, the structure may become inadequate, causing excessive scouring or ponding which can result in damage to, or washout of the structure. Such damage means expensive maintenance or replacement costs, not to mention the accompanying siltation.

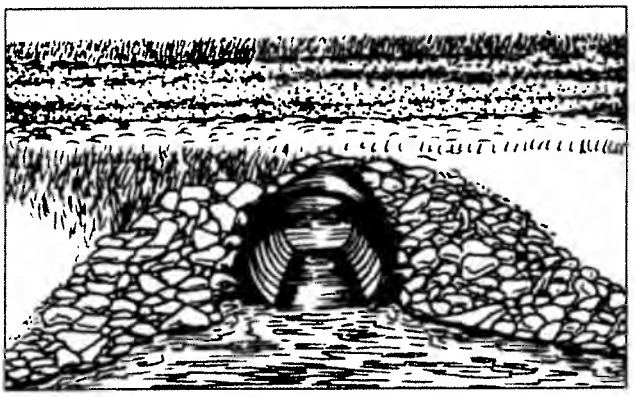


Fig. 4 Entrance and exit must be protected against erosion.

Other factors to consider when selecting a stream crossing are: type of structure, area and shape of stream, grade of stream channel, and treatment of inlet and outlet of the structure.

1.2 Characteristics of a Good Crossing

The factors that make a good crossing should be considered when selecting a possible site:

1. The crossing causes no unnecessary or excessive flooding or erosion damage;
2. The structure allows debris to flow through without any drastic change in water flow pattern above or below the structure;
3. The structure should be designed to handle storm runoff increases that could result from land clearing, land development or other change in land use;
4. The structure should be built economically, but large enough to handle peak runoff, structurally sound, and easy to maintain;
5. The outlet should be protected to prevent undermining or washout;
6. Connecting structures at the inlet and outlet should properly handle water, bed load, and floating debris at all stages of flow;
7. The structure must be positioned to allow easy entrance and a fast get-away of water flow;
8. The structure should be installed to function properly after the embankment has settled;
9. Where necessary, entrance structures should be used to screen out materials which will cause blockage and reduce water handling capacity of the structure.

The preferred type of stream crossing structures are bridges and box culverts. They allow stream velocity to remain undisturbed and reduce the risk of obstruction caused by beavers. Round culverts result in increased water velocity that restrict fish passage through the structure and cause scouring at the outlet.

1.3 Using Aerial Photographs & Maps

Various types of aerial photography and maps can be used to investigate sites for stream crossings. The most popular aerial photography available in Nova Scotia is the Vertical Colour Forest Resource Photography, flown at a scale of 1:10,000 and used primarily for forest inventory purposes.



Fig. 5 Stereo-pairs viewed with the aid of a stereoscope.

The photography is flown along planned flight lines to give a 60 per cent overlap of successive photographs and a 15 per cent overlap between adjacent flight lines. When two adjoining photographs are viewed with the aid of a stereoscope, a three dimensional model of the area can be seen.

The Photo Model allows the viewer to study large land areas. Topography, drainage pattern, vegetation, soil types and terrain can be examined and tentative stream crossing sites selected for more detailed studies and final selection in the field.

A number of maps are available for preliminary selection of stream crossings. For determining and calculating drainage areas the 1:50,000 National Topographic Series (NTS) maps are useful. Another very useful map is the Orthophoto Series Maps at a scale of 1:10,000 (Fig. 6). The Orthophoto Maps are made from aerial photographs corrected for distortion and scale.



ig. 6 Orthophoto Map.

1.4 Alignment

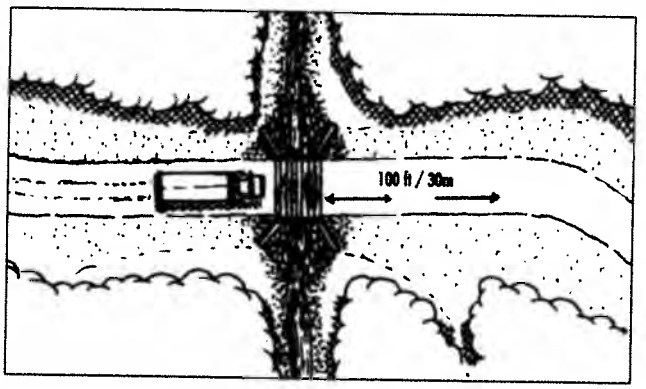


Fig. 7 Stream alignment.

Choose a site where the stream bed is straight and narrow. Such sites indicate the stream is stable and will offer the best chances of a solid base. Avoid selecting a site on or near a meander. Meanders indicate the stream bed is shifting and possibly soft based.

A recommended 100 feet (30 m) straight road approach should be provided on either side of a bridge. This makes it easier for tractor trailers to navigate the structure.

1.5 Grade

When locating and installing pipe culverts, the natural grade or slope of the stream must be maintained.

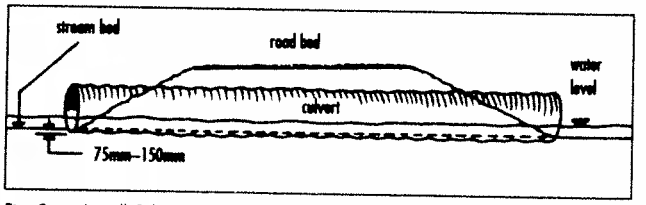


Fig. 8 Install Culvert 75 mm to 150 mm below the stream bed.

Setting the pipe 3 to 6 inches (75 mm to 150 mm) into the stream bed (Fig. 8) will maintain enough water in the bottom of the pipe at low flow to allow fish movement. Setting the pipe too low can cause it to become partially blocked with sediment. Setting too high can cause ponding. Avoid using pipes larger than 48 inches (1200 mm) in diameter. They are more difficult to install, and stream bed scouring and bank erosion is more likely. When using pipes greater than 48 inches (1200 mm), install them properly protecting against erosion and scouring. (Section 5.0)

2.0 Rainfall Runoff

Precipitation in its various forms – rain, snow, sleet or hail, is recorded as rainfall. Very intense rainfall usually occurs during storms and can result in property damage.

2.1 Hydrologic Cycle

Water is evaporated into the atmosphere and is transported over land where it condenses and falls as rain. Some of this rain is absorbed into the soil, some is intercepted by plants and animals, and some evaporates into the atmosphere. The remainder collects and flows along the earth's surface as runoff. Runoff flows into streams and rivers and will eventually find its way to lakes and oceans where it again evaporates into the atmosphere. This cycle (Fig. 9) known as the "Hydrologic Cycle" is repeated time after time.

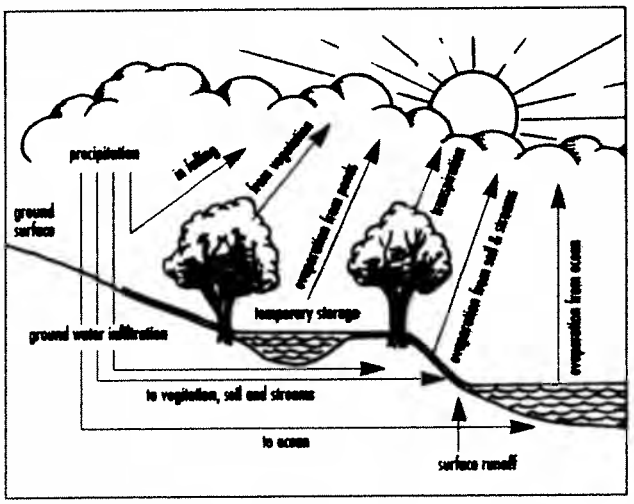


Fig. 9 The Hydrologic Cycle.

The quantity of water in the hydrologic cycle is nearly constant. Abnormally low precipitation in one area of the world is offset somewhere else by above normal precipitation. Rainfall is influenced by climate, soil and topography in an infinite variety of ways.

2.2 Peak Flow

Runoff occurs when water saturates the ground surface and exceeds the rate of evaporation.

Peak flow or maximum runoff usually occurs during the spring when melting snow creates saturated soil conditions and some runoff prior to a heavy rainfall. Records also show peak flow occurring in other seasons, the result of large rainfalls.

Peak flow can be increased by activities such as clearcutting, soil compaction by heavy equipment, land development and the creation of impermeable areas such as parking lots and buildings, and by filling depressions when land is cleared and levelled for development or agricultural purposes.

2.3 Estimating Peak Flow

A number of factors must be considered before an estimate of real storm runoff can be made.
(a) size of watershed
(b) slope of watershed
(c) type of vegetation
(d) type of soils
(e) intensity of rainfall
(f) number & size of natural reservoirs (lakes, swamps, etc.)

(a) Size of Watershed: The affective area contributing to the flood peak is the watershed area. This will be the land area draining to the crossing structure, and can be determined from a contour map. The area may be outlined by drawing a line along the height of land upstream from the crossing, and ending at the crossing, as shown in Fig. 10.

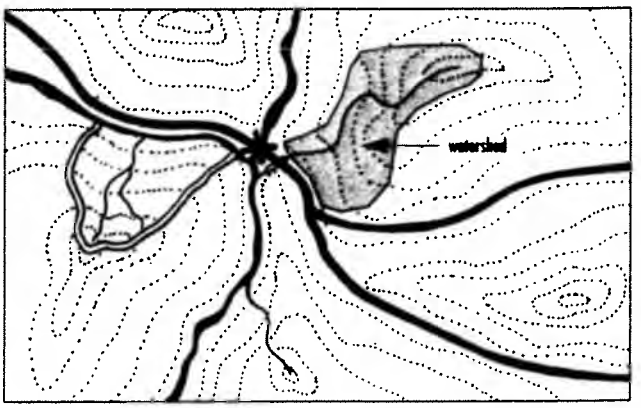


Fig. 10 Watershed Area

(b) Slope of Watershed: The average slope of the land within the watershed and the slope of the stream may be determined from a topographical map of the watershed. Storm runoff along steep slopes contributes a larger volume more quickly to the peak flow.

(c) Vegetation: Vegetation will intercept rainfall and increase evaporation. The roots of plants increase the porosity of the soil and obstruct the flow of runoff. Vegetation or ground cover will reduce the amount of runoff and in turn reduce the peak flow.

(d) Type of Soils: Some rainfall flows along the surface of the earth and some soaks into the soil. Impermeable soils will allow little or no infiltration. Runoff will therefore be higher on silts and clays and in soils where bedrock is exposed or covered with a thin layer of soil.

(e) Intensity of Rainfall: A long continuous storm of moderately heavy intensity over a large area may cause greater runoff than a more intense storm for a short period over only a portion of the drainage area. Intensity defines the quantity of the rainfall over time. *See Appendix "A".*

(f) Number & Size of Natural Reservoirs: Lakes, swamps and depressions in the watershed act as buffers and control the peak storm runoff. Some depressions don't allow drainage away from them and will reduce the quantity of runoff reaching the stream channel. Large lakes and swamps provide a large surface area for evaporation and runoff entering them can be evaporated before flowing into the stream and river system.

There are generally three methods of determining peak runoff for watershed areas:

1. Inspecting the high water mark in existing structures and along stream banks.

2. Runoff calculations relating drainage, area and the size of stream crossing.

3. Making and collecting actual flow measurements over a period of years.

Contact the local Department of Natural Resources office for help in sizing the crossing.

3.0 Bridge or Culvert

In most cases, the size of the stream will dictate the selection of the structure. Some other factors which influence the selection are environmental considerations, the passage of fish through the structure, beaver damage, and possible property damage caused by upstream flooding.

Environmental factors and fish passage encourages the choice of a bridge or box culvert installation. These structures cause less environmental damage both during and after construction.

In some situations the physical characteristics of a crossing make it more economical to install a pipe culvert. In these cases, precautions should be taken to reduce environmental damage and provide good fish passage. (Fig. 11)

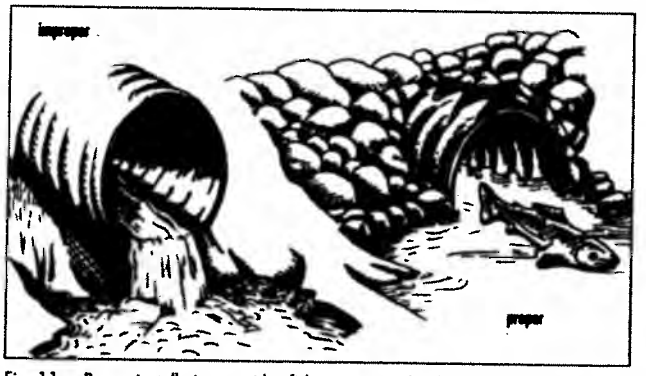


Fig. 11 Proper installation provides fish passage and reduces environmental damage.

3.1 Size of Opening

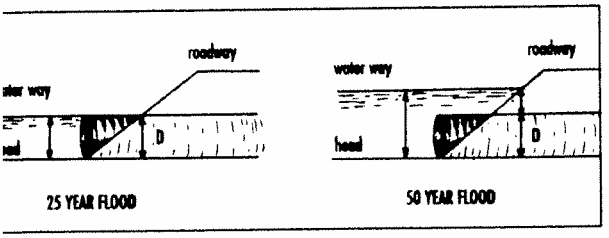
When sizing a stream crossing structure, factors such as ponding, sedimentation, debris and variable stream conditions must be considered if the structure is expected to function properly.

For woodland management roads, design of culverts should be based on a 25-year flood, where the flood water will rise a full culvert diameter at the entrance, and a 50-year flood using available head above the entrance (Fig. 12). This design would give a risk of two per cent for a storm exceeding the culvert capacity in any one year.

e will be established by the volume of water to be passed ough the culvert. The required opening can be calculated ng hydraulic formulae. A good rule of thumb is to allow a e square foot opening for every 10 cubic feet per second FS) (0.3 m^3/sec) of runoff.

ılverts for woodlot roads may be designed discharge:

)A 25-year flood without static head at the entrance.
)A 50-year flood utilizing the available head at the entrance; the head is a maximum of 1.5 diameters of the culvert used.



. 12 Criteria for Balanced Design

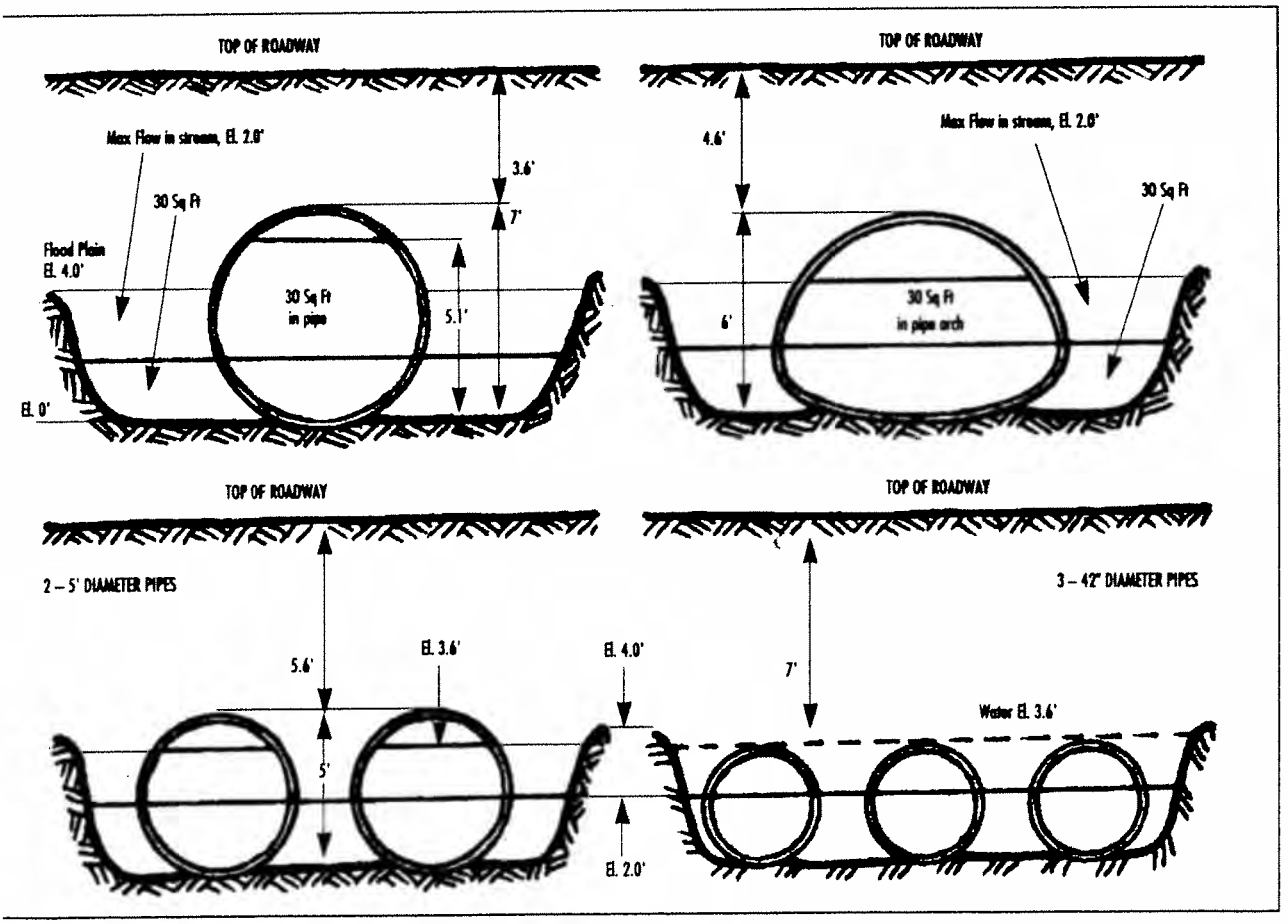
3.2 Choice of Structure

The choice of stream crossing structures should be based on the size of the stream (Quantity of Flow) and site conditions.

Normally, pipe culverts may be used for stream crossings requiring a pipe diameter of 48 inches (1200 cm) or less. For larger sizes, it is usually more economical to use a box culvert or timber bridge. Bridges are normally used for streams that are wider than 8 feet (2.4 m).

Special site conditions can make it more feasible to use large pipes. Technical assistance should be obtained for installing these, otherwise serious damage may occur.

Flood damage may result if water is forced to pond behind a culvert. This problem is critical in areas where the upstream elevation changes very little over a long distance. Forcing water to pond 2 or 3 feet (0.6 or 1 m) above the normal flood height can cause extensive flooding and property damage over a large area. In such cases a multiple pipe installation could be used to provide the required cross-section area or a bridge may be necessary. Figure 13 shows how pipe arches or multiple pipes may be used to reduce flood height.



. 13 Pipe arch or multiple pipes used to reduce flood height.

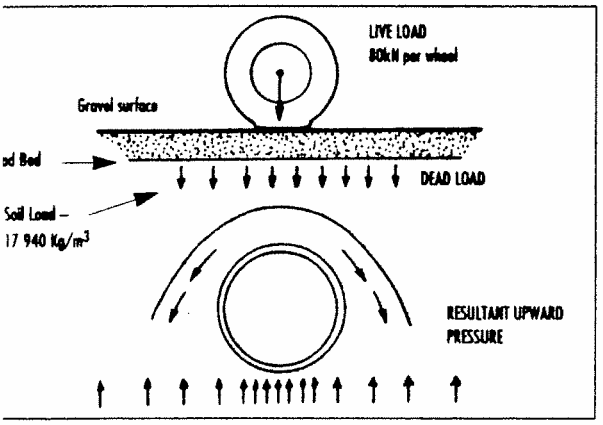
.0 Flexible Pipe Culverts

ılverts are made from a variety of materials and are ıilable in many shapes and sizes. Since the culvert is engineering structure, choose a design of the correct ckness and strength so the pipe will function properly der normal use.

ıere are basically two types of pipe culverts in use: solid and xible. The flexible pipe is corrugated and used extensively.

1 Soil Arch

ɔrrugated pipes are a flexible design and when placed in an ıbankment, are able to transfer a portion of their loading to : surrounding soil embankment (Fig. 14). The soil will ry as much as 40 per cent of the pipe loading. **Soil around ɔipe culvert should be well graded, pit-run granular il and should be compacted around the pipe.** ***See ɣpendix "B".***



14 Soil-Arch, load partially carried by surrounding soil.

5.0 Culvert Installation (Flexible Pipe)

The pipe culvert is designed to flex under load, and to build up side support in the surrounding soil backfill. The pipe culvert depends on the selection, placement and compaction of soil backfill and will determine how evenly load pressures are distributed. Section 8.0 explains the environmental protection required when installing a culvert.

5.1 Foundation

For best performance and service life, the culvert must be installed on foundation material that will evenly distribute the load to the sub-soil. The foundation must maintain grade and elevation of the culvert and prevent excessive stresses in the pipe structure due to localized concentration of pressures. Avoid having large rocks or boulders placed next to or under the pipe culvert.

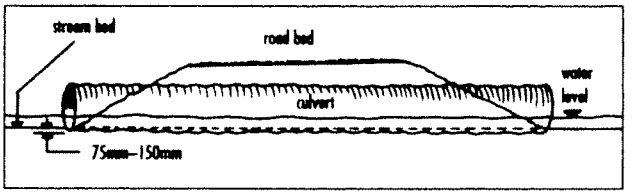


Fig. 15 Match culvert to stream grade.

The foundation material should be investigated prior to culvert installation. Muck, muskeg, peat, bedrock and rock ledge provide poor support for a culvert, and must be removed and replaced with suitable material. Avoid excessive excavation in these soil conditions whenever possible.

The type of foundation soil can be determined by inserting a metal rod or bar into the foundation (Fig. 16). The resistance to penetration will provide a good basis for assessing the soil conditions. A more accurate method will involve soil testing.

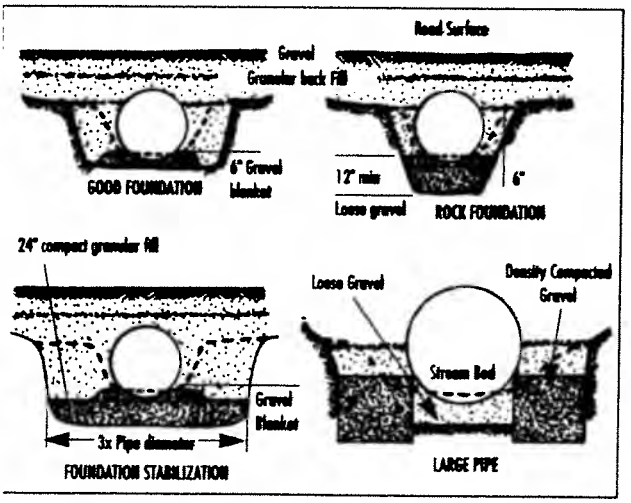


Fig. 16 Use a rod to assess foundation conditions.

5.2 Bedding

A bedding blanket of loose gravel should be used to provide uniform and continuous support for a culvert. A relatively thin mat, 6 to 12 inches (15 - 30 cm) thick, of well graded loose granular material will provide satisfactory support. In soft foundation material it may be necessary to use 24 inches (60 cm) or more of bedding to provide uniform support. **In-stream work should be done in the dry with the aid of a coffer dam and a diversion ditch. Refer to Section 8.0 before installing.**

In non-uniform or poor bearing foundation material, remove the foundation material and replace it with granular fill. The excavation should be at least three times the diameter (3xD) of the culvert in width. The depth of the excavation will depend on the bearing capacity of the soil in the foundation. The excavation can vary from a depth of 12 inches (30 cm) minimum, to 0.75xD in rocks or unyielding foundation, and 24 inches (61 cm) in soft foundation. In soft foundations, the excavation should be deep enough to equalize the upward pressure in the soil and the downward pressure of the backfill, culvert and road embankment above. A separation material such as a brush mat or geotextile fabric should be used over the foundation material before the granular bedding is placed on soft foundation, especially where high ground water is present. Fig. 17 shows how various foundation conditions are handled.



ig. 17 Bedding on foundation material.

5.3 Camber

After construction, a roadbed will go through a period of settlement. Pipe culverts installed in the embankment will settle along with the embankment material. Because of the larger volume of fill near the center line of the embankment, settlement will be greater at the center of the roadbed.

Culverts installed improperly along a flat grade will sag at the middle. The sag will often collect sediment or retain water reducing the flow capacity of the pipe. **All culverts, especially those at stream crossings, should be cambered slightly during installation.** Cambering (Fig. 19) raises the pipe slightly at the middle without restricting flow. This is achieved by placing the bedding blanket for the upstream half of the pipe on a flat grade, and the downstream half on a slightly steeper than normal grade. The pipe will settle to the desired slope after the embankment has consolidated.

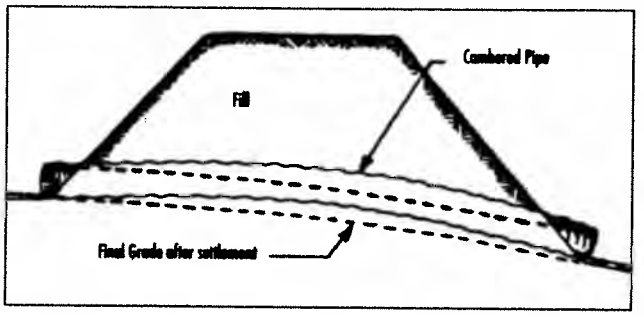


Fig. 18 Camber pipe under fill.

The amount of camber is based on soil conditions of the fill and foundation material. Some materials will settle more than others. The amount of camber should be determined for each site. A good rule-of-thumb is to provide a camber equivalent to 1 per cent of the pipe length. This estimate will usually be adequate in fair to good mineral soil.

For example, if a pipe culvert is 30 feet (9 m) long, the camber should be 30 x (1/100) = 0.3 feet or about 4 inches (10 cm). This applies to installations in good road building material.

5.4 Pipe Length

Length of the pipe for a culvert depends on roadbed width, height of road embankment and skew angle, the angle between the road and stream alignment. See Fig. 19.

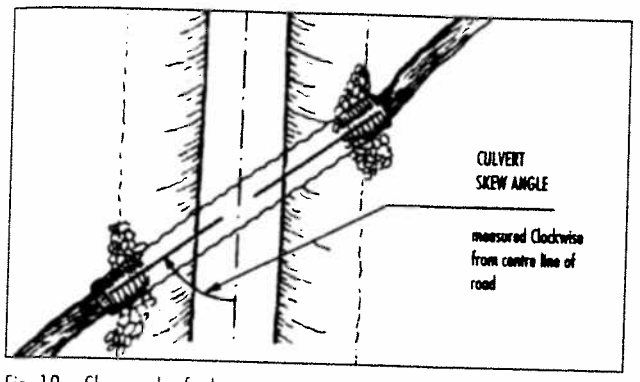
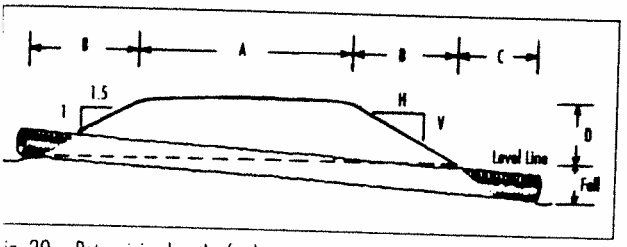


Fig. 19 Skew angle of culvert.

To ensure the end of the culvert protrudes from the embankment, 12 inches (30 cm) should be added to the calculated length. This is included in the following formula.



ig. 20 Determining length of culvert.

The length of culvert, L required as shown in Figure 21, is

= A + 2B + C + 1 (feet)

here L = Length of Culvert (feet)
A = Road Width, feet
B = (Side slope ratio) x (fill depth, D)
C = (Side slope ratio) x (fall, E)
D = Depth of fill in embankment at centerline of roadway
E = Fall or (Stream Gradient x (A + 2B))

ample: Find length of culvert required for stream crossing ere road width is 15 feet, fill depth is 4 feet, side slope is 1/2:1 and stream grade is 4 per cent.

:15 ft.; B=1.5 x 4 = 6 ft.; C=1.5 x 0.04 x (15+12)=1.62 ft.

:n, L = A + 2B + C + 1
= 15 + (2x6) + 1.62+1 = 29.62 ft.
The culvert should be 30 feet in length.

The length of the culvert can first be determined as for installation normal to road. The skew angle is then applied to the normal length to determine the skew length.

A correction must also be made to adjust the length of the pipe, depending on size of the diameter. In this case the length is:

Ls = Ln x (1/cos ø) + D Tan ø

Where Ls = Skewed Length
Ln = Normal Length (perpendicular to center line)
ø = Skew Angle
D = Culvert Diameter

The length of the culvert can be reduced if the ends are rip-rapped or if headwalls are used to protect the ends. (Section 8.5)

5.5 Structural Backfill

Backfill should be well graded material (Appendix "B") capable of supporting load. A well graded pit-run gravel with a diameter less than 2 inches (5 cm) is excellent backfill material. Cohesive type materials such as clays can also be used if careful attention is given to compaction. Very fine granular materials, such as sand and silts should be avoided. Fine material may filter into the pipe, especially where ground water is high. Also, water can filter through these fine materials and flow along the length of the pipe causing the movement of these materials, resulting in washouts.

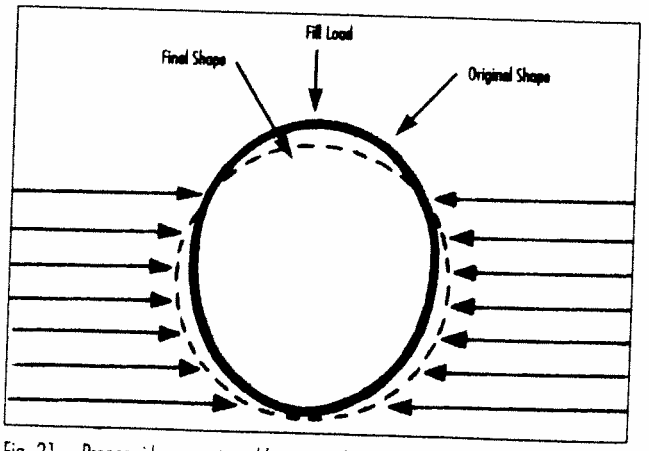


Fig. 21 Proper side support enables pipe culvert to carry load.

5.5.1 Placing Backfill

Place backfill equally on either side of the culvert. The fill should also extend at least one diameter from the face of the culvert. Material should be spread evenly in layers, 6 to 9 inches (15-23 cm) in thickness and compacted lightly, as shown in Fig. 22. Uniform compaction is essential to ensure equal distribution of pressures between culvert and soil. Place backfill in this manner until the culvert is covered. Continue placing backfill in layers and compact to road grade. Never push material under the pipe and raise it above the stream grade when starting placement of the backfill.

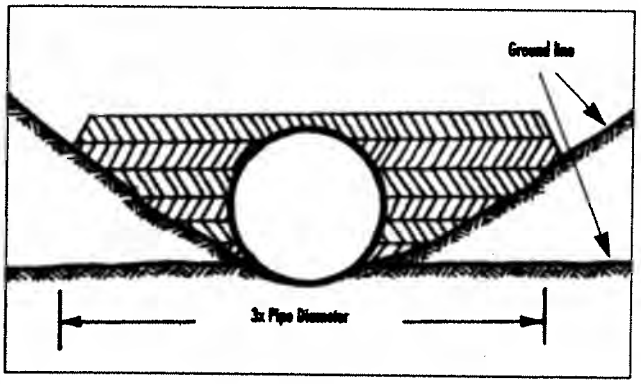


Fig. 22 Uniformly placed backfill around culvert.

Take special care to tamp backfill along the haunches (Fig. 23), the crevices formed where the pipe meets the bedding. The greatest stresses in a pipe arch are set up along the haunches.

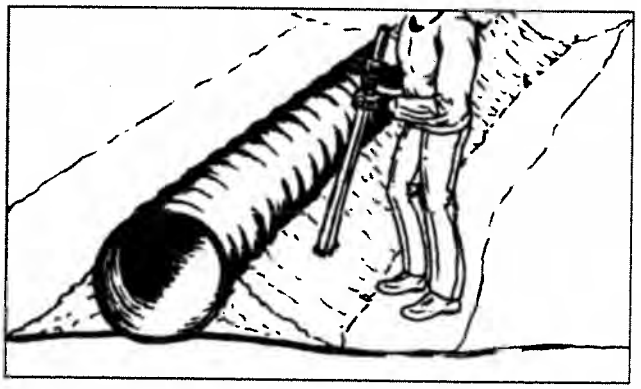


Fig. 23 Tamping under pipe haunches.

For Pipe Arches, first cover entirely with an envelope of backfill at the middle of the pipe. Placed and compacted in layers, this material will maintain the shape of the Pipe Arch and will prevent the tendency of the arch to "peak up", see Fig. 24.

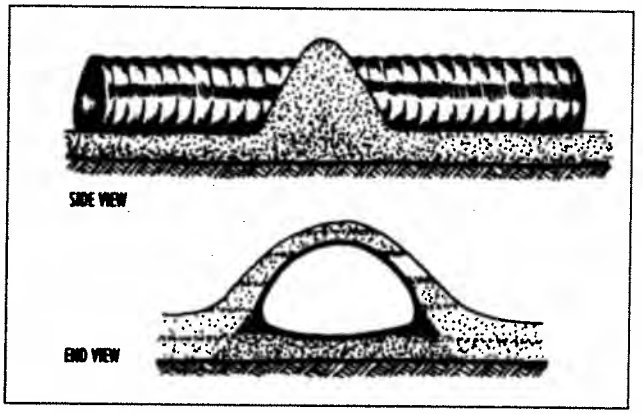


Fig. 24 Backfilling Pipe Arch.

Then place fill from the top of the arch and extend it towards each end of the culvert. Place fill evenly to ensure equal distribution on both sides of the pipe. Spread fill in layers and compact as before. The fill will help the pipe to retain its shape.

5.6 Compaction

Purchasing mechanical tamping equipment is very costly and although rental is possible, mechanical tampers may be inconvenient for site conditions. In most cases, you can do the tamping required around a culvert with easily made hand tampers. A typical hand tamper can be a simple length of 2x4 inches (38 x 89 cm); which is ideal for tamping the haunches of culverts. Hand tampers for horizontal layers should have a tamping face no greater than 6 x 6 inches (15 x 15 cm) and should weigh about 20 lbs. (9 kg).

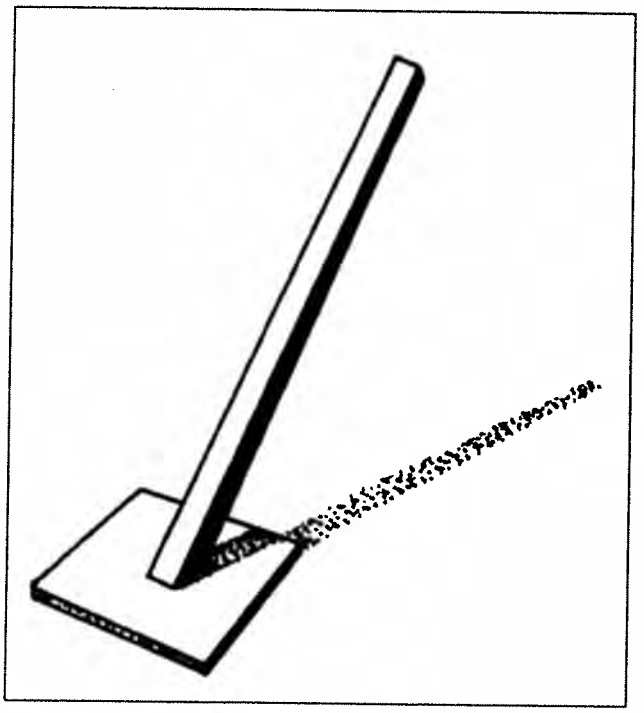


Fig. 25 Hand Tamper for compacting horizontal layers.

When mechanical tampers are used, ensure there is even compaction over the entire area. Working too near the structure should be avoided, since the tamper could damage the structure or cause the pipe to shift, lift or peak up.

When using rollers, compact the fill adjacent to the structure with a hand tamper and operate the rollers parallel to the pipe. A vibrating roller should be kept well away from the pipe.

5.7 Structural Protection

Construction equipment moving over a newly installed culvert of a new road can easily damage the culvert. The road embankment is not well compacted and settlement may not be complete enough to prevent equipment from punching through the road bed.

To prevent damage, add at least 2 feet (61 cm) of fill over culverts before construction equipment is allowed to travel over them. Failure to take this precaution will result in culverts being crushed or partially damaged. Replacement will be required after only a few years use.

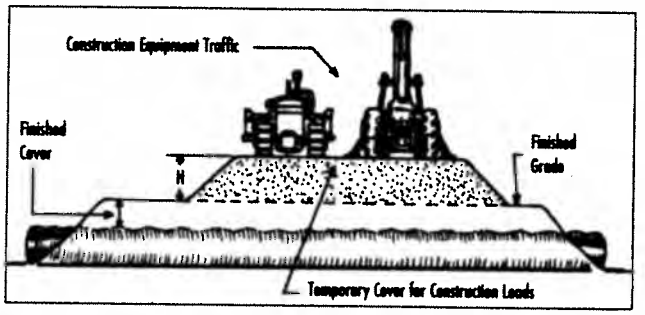


Fig. 26 Culvert Protection

5.8 Multiple Culverts

You may need to install more than one culvert in parallel at a stream crossing. Upstream flooding may limit the height of ponding water behind the culvert. The selection and installation of multiple pipes should be made carefully as there is greater risk of washouts. (If possible install a bridge or box culvert.)

Set the culverts at least 3 feet (1 m) apart to allow for good compaction between the pipes. Compaction is important in preventing washout. Set one culvert with its grade lower than the others to allow flow to concentrate in that pipe at low water flow. (Fig. 27) This will ensure ease of fish passage through the pipe. The embankment should be well protected with rip-rap to prevent erosion and possible washout. Rip-rap should also be used to protect the stream bed from scouring. (Table 8.1)

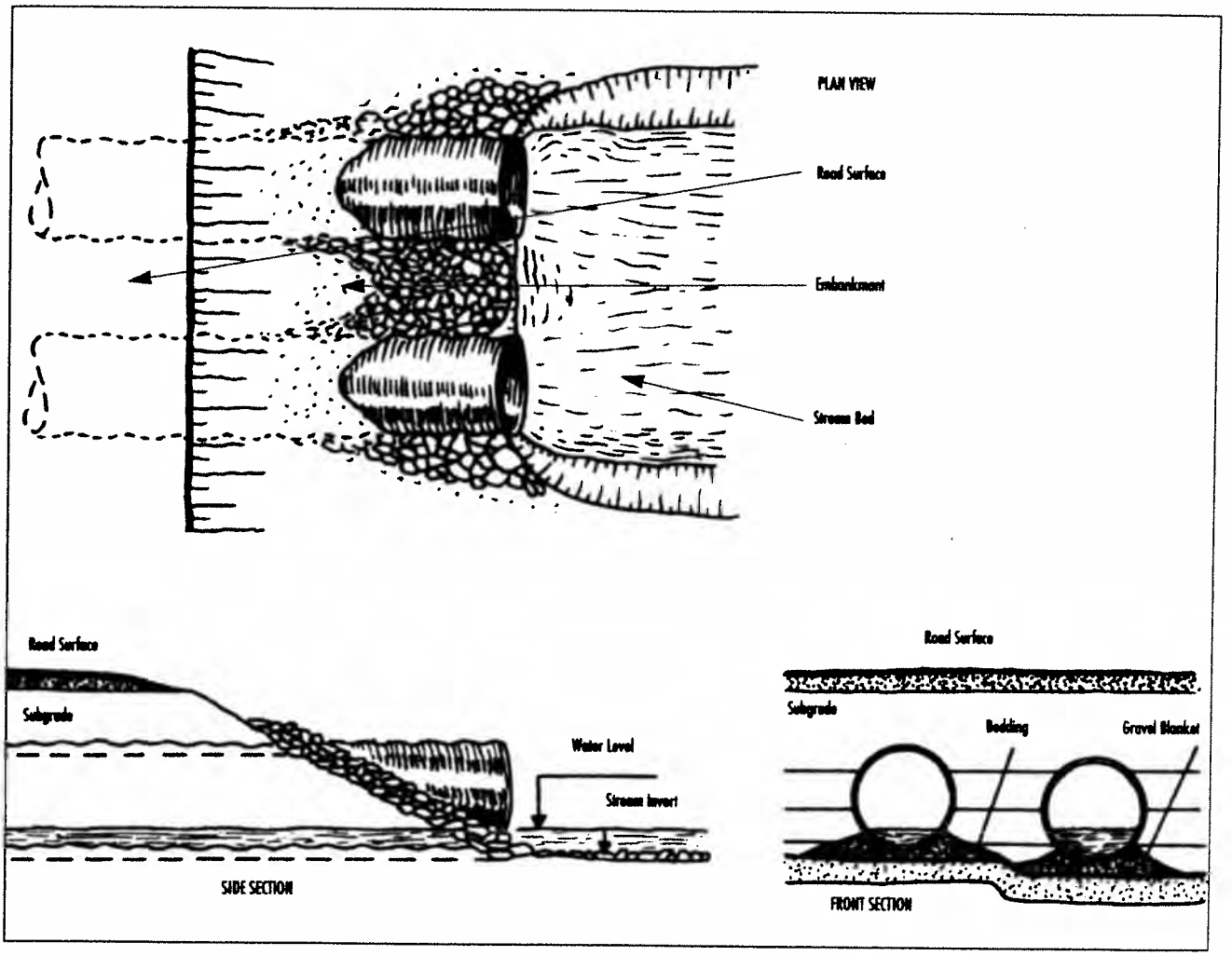


Fig. 28 Multiple Culvert Installation

6.0 Bridges and Box Culverts

Materials frequently used in the construction of bridges and box culverts are timber, steel, concrete or a combination thereof.

The design of bridges and box culverts is governed by codes which are meant to protect the public. The design must provide for a safe, reliable structure which is practical and economical to construct and maintain over its anticipated life span.

6.1 Design Code

The code in use by the Department of Natural Resources in Nova Scotia is the National Standards of Canada Code CAN/CSA-S6-88, Design of Highway Bridges. This code, prepared by the Canadian Standards Association, provides structural engineering guidelines for the design of bridges and other similar structures in timber, concrete and steel.

6.2 Loading

Bridge structures must be designed for all loads and load effects that they may be expected to carry. These loads and load effects may include:
(a) Dead Loads
(b) Live Loads
(c) Other Loads and Load Effects

(a) Dead loads refer to the permanent loading caused by the weight of the structure itself and all permanent attachments, such as the deck, stringers, and other parts.

(b) Live loads consist of the applied moving load due to vehicles and pedestrians. In the case of forest road bridges, the live load will be a tractor-trailer loaded with wood fibre.

(c) Other loads and load effects result from wind, ice, snow, earthquakes, temperature change, and settlement. The Design Code specifies how loads and load effects are to be considered in the design of the bridge structure.

6.3 Stringer Size

The size of bridge stringers varies with the length of span. The dead load of the bridge deck and stringers and all applied loads and load effects cause stresses in the stringers. The stringer must be strong enough to resist these stresses which are expressed as:
(a) Bending
(b) Shear
(c) Bearing and
(d) Buckling

6.3.1 Bending

When the deck of a bridge is loaded, the stringers will bend under the load causing stress in the stringer material. If the unit stress exceeds the unit stress resistance of the material, the stringers will break, resulting in the collapse of the bridge.

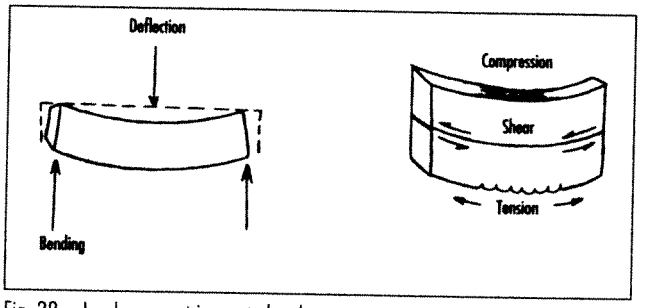


Fig. 28 Load causes stringers to bend.

Timber is often used in bridge construction for woodlot roads. All timber used in bridge construction must be visually stress graded in conformation with the National Lumber Grading Association (NLGA) Standard Grading Rules for Canadian Lumber. The allowable stresses will change with species or species group and with the specific grade of lumber. Substitution of species, species group or grade must be done only at the instruction of the design engineer.

6.3.2 Shear

A farmer when mowing hay is often stopped when a rock caught in the mower causes the shear-pin to break. On inspection, the pin appears to be sliced through by a knife. This happens when the shaft driving the mower is suddenly stopped, and the fly-wheel providing the power continues to move. The external forces acting on the pin at the plane of failure is called shear.

Similar forces are set up in the bridge stringers when a load is moved across its deck (see Fig. 29). The stringer must be strong enough to resist the shear at its supports.

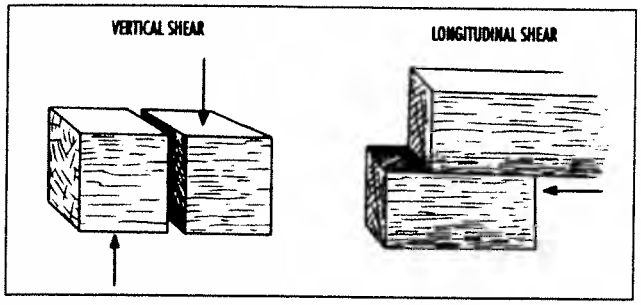


Fig. 29 Shear at plane segment.

6.3.3 Bearing

The contact area between the stringer and the abutment is called the loaded or bearing area. There is also a bearing area between the abutment and the soil. A stringer must not be crushable under the applied load.

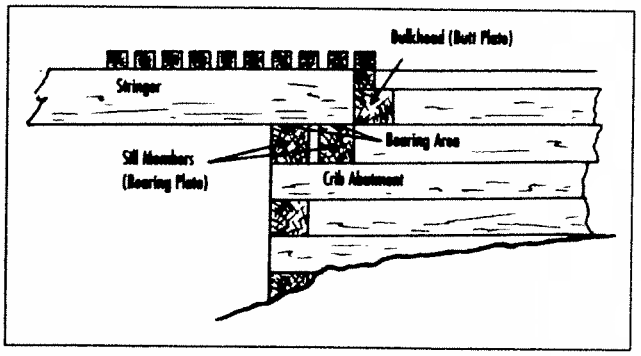


Fig. 30 Bearing area of stringer.

6.3.4 Buckling

When the depth of a beam exceeds its breadth, lateral supports are required at the points of bearing to prevent torsional rotation. If a stringer is very long, it may require lateral support at a number of points along its length to prevent rotation.

6.4 Abutment & Wing Walls

The abutments are designed to support the load of the structure plus all superimposed loads, including live load. The design must also consider resistance to overturning and sliding, and forces caused by ice floes, earthquake and hydrostatic pressure.

6.5 Deck

The deck must be rigid enough to distribute the weight of the vehicle and its load to all stringers. Each deck timber must be able to carry the total weight of a loaded truck wheel.

Woodlot road bridge decks are usually one lane width, 14 to 16 feet (4.3-4.8 m). Under normal conditions, deck timbers are 4 inches (100 mm) thick. Wheel runs are placed on the deck to protect the deck timbers from wear. Wheel runs also help distribute the truck load over the entire deck.

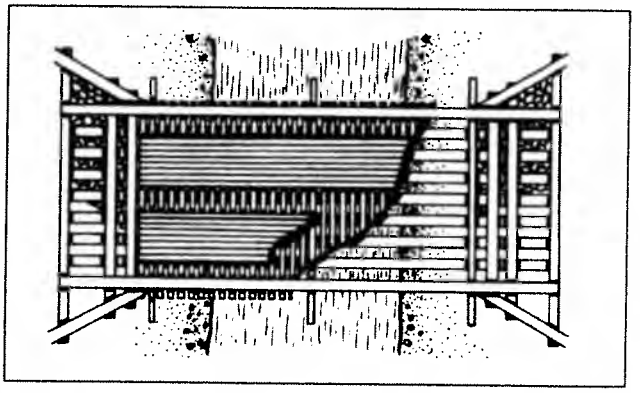


Fig. 31 Bridge Deck., Plan view

7.0 Bridge And Box Culvert Installation

Bridges and box culverts require careful installation according to the designer's specifications. Failure to adhere to guidelines can nullify the safety and versatility of the design.

Box culverts are generally used on streams that would require round culverts with diameter over 48 inches (1200 mm). The equivalent timber structure is often cheaper to install than large diameter round culverts.

Timber bridges are the popular choice for woodlot roads, and are used for spans 10 feet (3 m) and larger. Timber has been used for spans of 45 feet (14 m), but the cost of installation rises with span length because of increased stringer cost. Refer to Section 8.0 before starting installation.

7.1 Alignment and Grade

Since a bridge deck is part of the roadway, proper alignment and grade between the bridge and road approaches is necessary. Although it is best to have a road alignment intersect a stream at right angles, the roadway may intersect the stream at a skew angle. In either case, the bridge abutments must be aligned parallel to the stream banks. This may result in the abutments being staggered to match the road alignment.

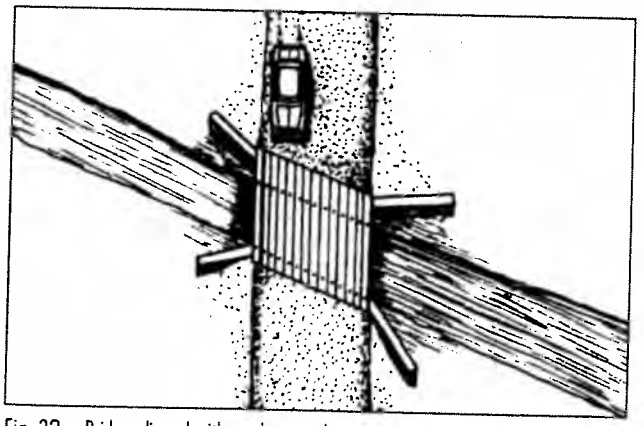


Fig. 32 Bridge aligned with roadway and stream.

A straight approach of 100 feet (30 m) minimum on either side of the bridge is recommended. This will allow vehicles, especially tractor trailers, to approach the bridge in a straight line.

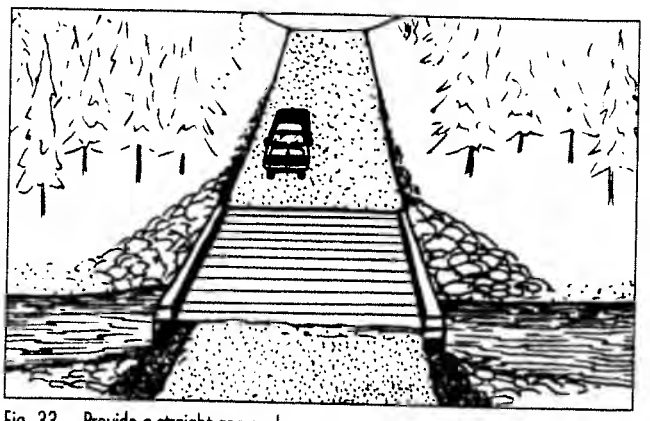


Fig. 33 Provide a straight approach.

Where possible, the grade of the bridge should be higher than the road grade. This allows flood water to cross the road under extreme flood conditions, rather than cause damage to the bridge.

7.2 Foundation

Foundation material must provide good support for the bridge abutments. In poor soil conditions, it may be necessary to increase the base area of the abutments to reduce the unit load on the foundation material. In very soft conditions, especially in areas where the ground water is high, poor foundation material can be excavated to a depth of 24 to 36 inches (60 - 90 cm) and be replaced with well graded pit run gravel or rock. Use a separation layer such as geotextile fabric before placing the gravel. Gabion mats can also be used as a base for timber abutments or for the total construction of abutments.

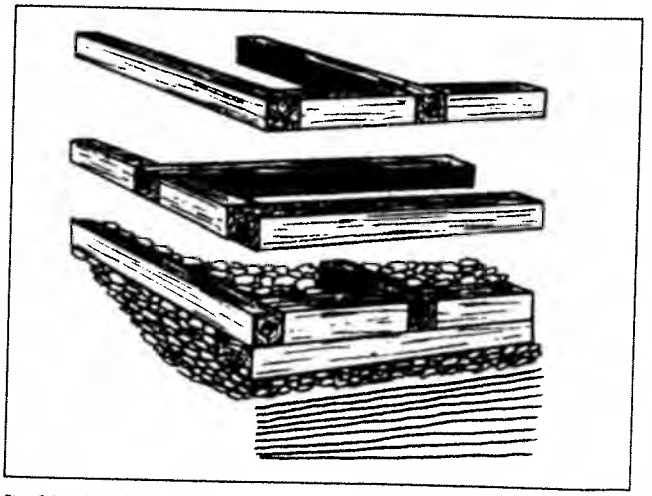


Fig. 34 Foundation

Scour damage or undercutting caused by flood water is the most common damage occurring at a bridge abutment. Where scouring may occur, the abutment should be extended at least 12 inches (30 cm) below the stream bed to provide protection. Wing walls should also start below the stream bed.

Abutments are man-made restrictions, or a bottle neck in a stream bed, that may cause flow velocity to increase and cause soil erosion. Care must, therefore, be taken to protect the stream banks near the structure. The structure will produce eddies next to the embankment which can cause soil erosion. Constructing the abutment behind the natural stream bank will negate this problem.

7.3 Bedding

At most abutments excavation will be needed to imbed the abutment in the foundation material below the bottom of the stream bed. To prevent siltation in the stream a coffer dam (Fig. 36 & 42), should be used during excavation. The excavated area should be levelled and a gravel blanket used to provide a level working surface for starting the crib work.

In bedrock, a bed can be made with concrete or timbers to provide a level footing for the crib. A sloping surface can be levelled by cutting and keying the footing into the rock to resist movement.

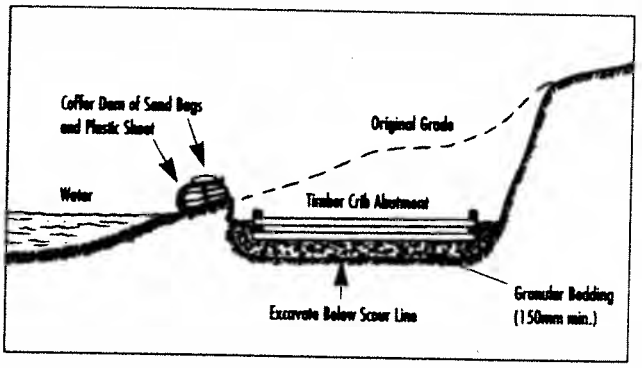


Fig. 35 Bedding and Timber Crib Abutment

7.4 Abutments

Abutments support their own weight, their share of the dead load and live load of the bridge, and the horizontal pressure of the earth backfill behind them.

The combined loads on the abutments can cause uplift at the face of the abutments, which will result in instability and possible collapse of the bridge.

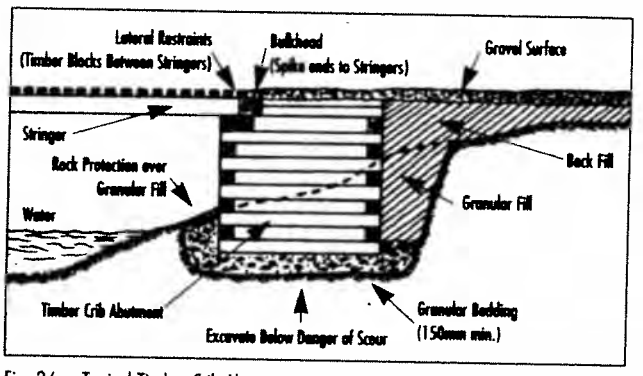


Fig. 36 Typical Timber Crib Abutment

A level footing will provide a good base for the cribs. The cribs are fastened together with drift-pins. After about 3 feet (1 m) of construction the rock backfill is started. This will help to maintain even packing of backfill throughout the construction of the cribs. See Appendix "C".

A sill is constructed at the top of the cribs to support the stringers. A butt plate should also be used to prevent the stringers from sliding over the sills. Sills are normally 18 inches (460 mm) wide, but should be constructed according to the bridge plan.

The crib can either have an open or closed face construction. When an open face is used, the rock backfill should be larger than the open space between the crib timbers. A close face construction should be used where ice floes may damage the abutments.

7.5 Stringers

For spans over 30 feet (9 m), the cost of timber stringers increase dramatically so they are used only in special cases. Hemlock, tamarack, and Douglas fir are the preferred species for stringers, but other species such as eastern fir, spruce, Jack pine, lodgepole pine and ponderosa pine can be used.

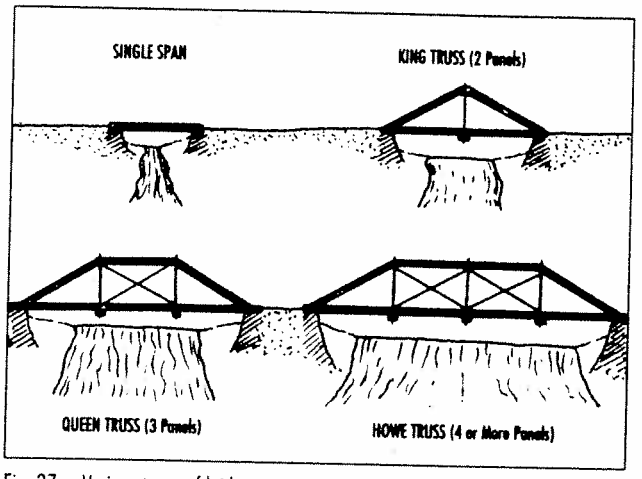


Fig. 37 Various types of bridge construction on woodlot roads.

Stringers should be placed parallel to the center line of the roadway and should extend 18 inches (45 cm) on to the sill plates. The span will be measured along the stringer from abutment face to abutment face, and should not be longer than the specified design length of span. Place diaphragms at the ends of the stringers to prevent rotation about their longitudinal axes. Stringers are equally spaced across the width of the bridge, normally with eight stringers to a 16 foot (5 m) wide timber bridge.

7.6 Deck

The deck timbers are equally spaced along the stringers, with equal overhang beyond the outside stringers as shown in Fig. 38. Rough sawn lumber can be used, but should be pressure treated. Deck timbers should be attached to each stringer with galvanized spikes which should extend into the stringers by at least 3 inches (76 mm). Sawn decking less than 4 inches (100 mm) thick is not recommended.

Use wheel runs over the deck timbers to protect the deck from wear and also to assist in distributing the load over the entire deck. Material 3 inches (75 mm) thick is recommended for wheel runs.

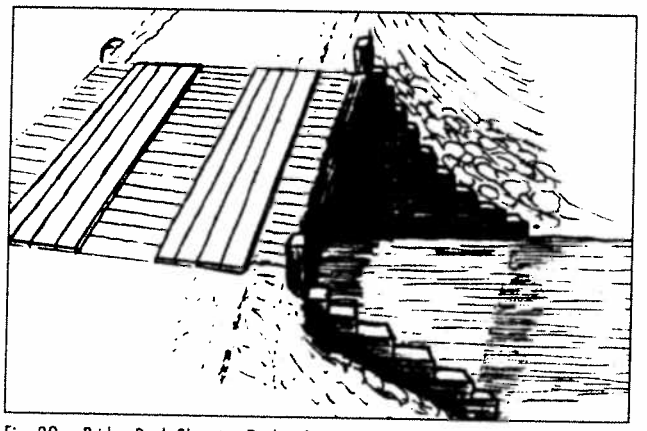


Fig. 38 Bridge Deck Showing Timber Spacing.

7.7 Backfill

Abutments should be backfilled with rock. The rock should be larger than the opening between the crib members where an open faced crib is used. For a closed face abutment, smaller rock can be included to fill the spaces between the larger rocks.

Sand or silt should not be used for backfilling bridge abutments. Even with a closed face arrangement, water can cause the backfill to be washed out from under the abutment during flood conditions, and cause bridge damage.

7.8 Box Culverts

The basic structure of a box culvert is very similar to that of a bridge (see Fig. 39). The sidewalls can be considered abutment faces without the wing walls.

This design provides for tie-backs into the embankment from the side walls, similar to a bridge abutment. The approach to construction should be similar to that for a bridge. Backfill used around the tie-backs should be granular and well packed to provide a counter-balance for the side walls.

In soft foundation conditions, a footing should be provided for the sidewall. In places where scouring is likely, the use of wing-walls is preferred.

Provisions are made for covering the deck with granular backfill. The length of the culvert will depend on the amount of fill cover over the deck. Cautions should be taken against scouring and siltation at the toe of the embankment.

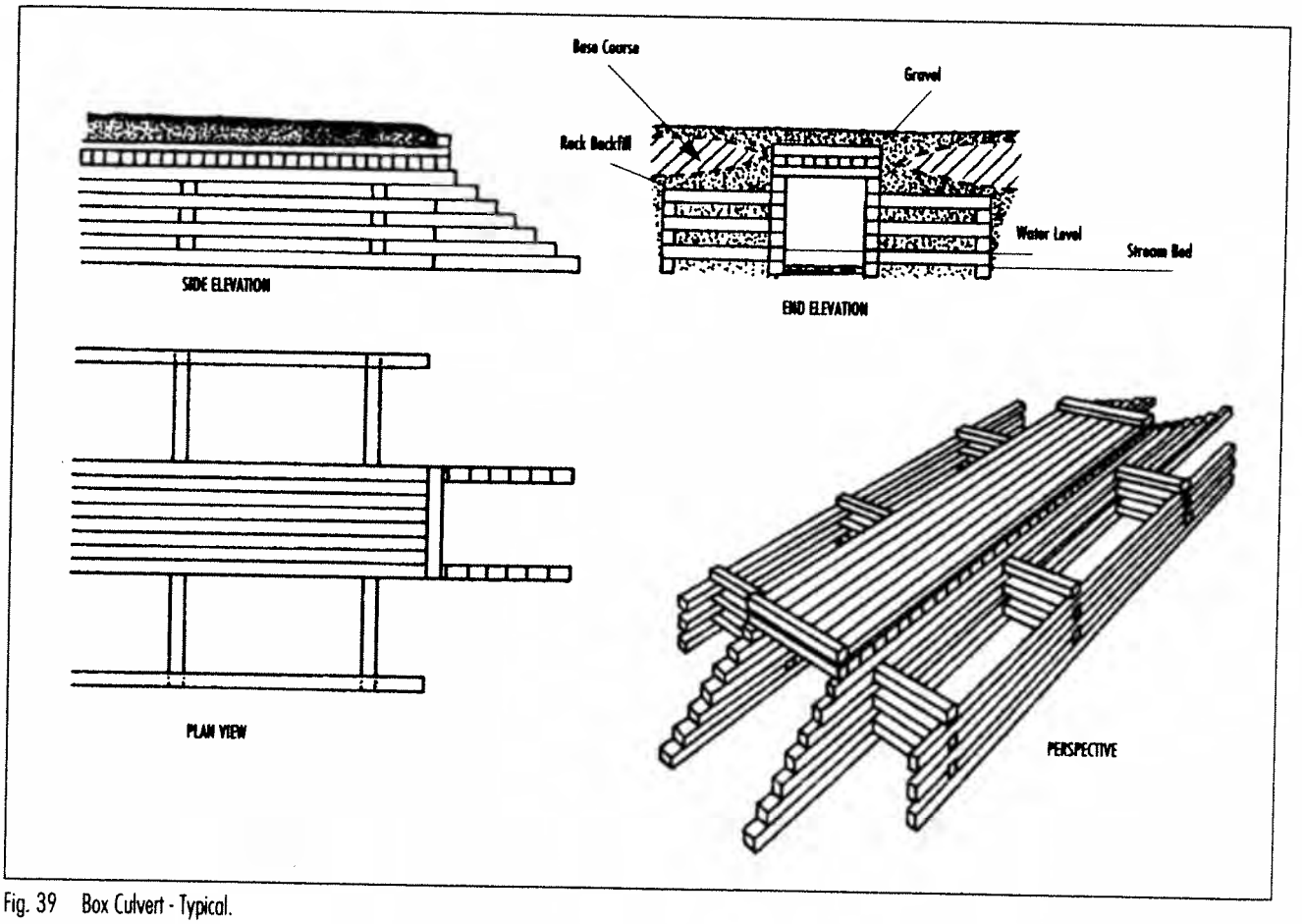


Fig. 39 Box Culvert - Typical.

7.9 Temporary Crossings

Fording streams should be avoided because of the damage that can be caused to the stream bed and banks.

In cases where it is necessary to cross a stream, but the construction of a permanent road is not feasible, a portable bridge or temporary structure may be used.

A permit may be required, therefore, the Department of the Environment should be contacted.

The temporary structure can be made of logs fastened together and placed on a mud sill constructed behind the stream banks. (See Fig. 40). Manufactured reusable structures are also available.

The approaches to the structure should be protected with gravel or a brush mat. Precautions should be taken to prevent erosion and siltation.

Temporary crossings should be used during low stream flow and should be removed immediately after access is no longer required. When the structure is removed, repair wheel ruts and any other damage that may cause siltation in the stream.

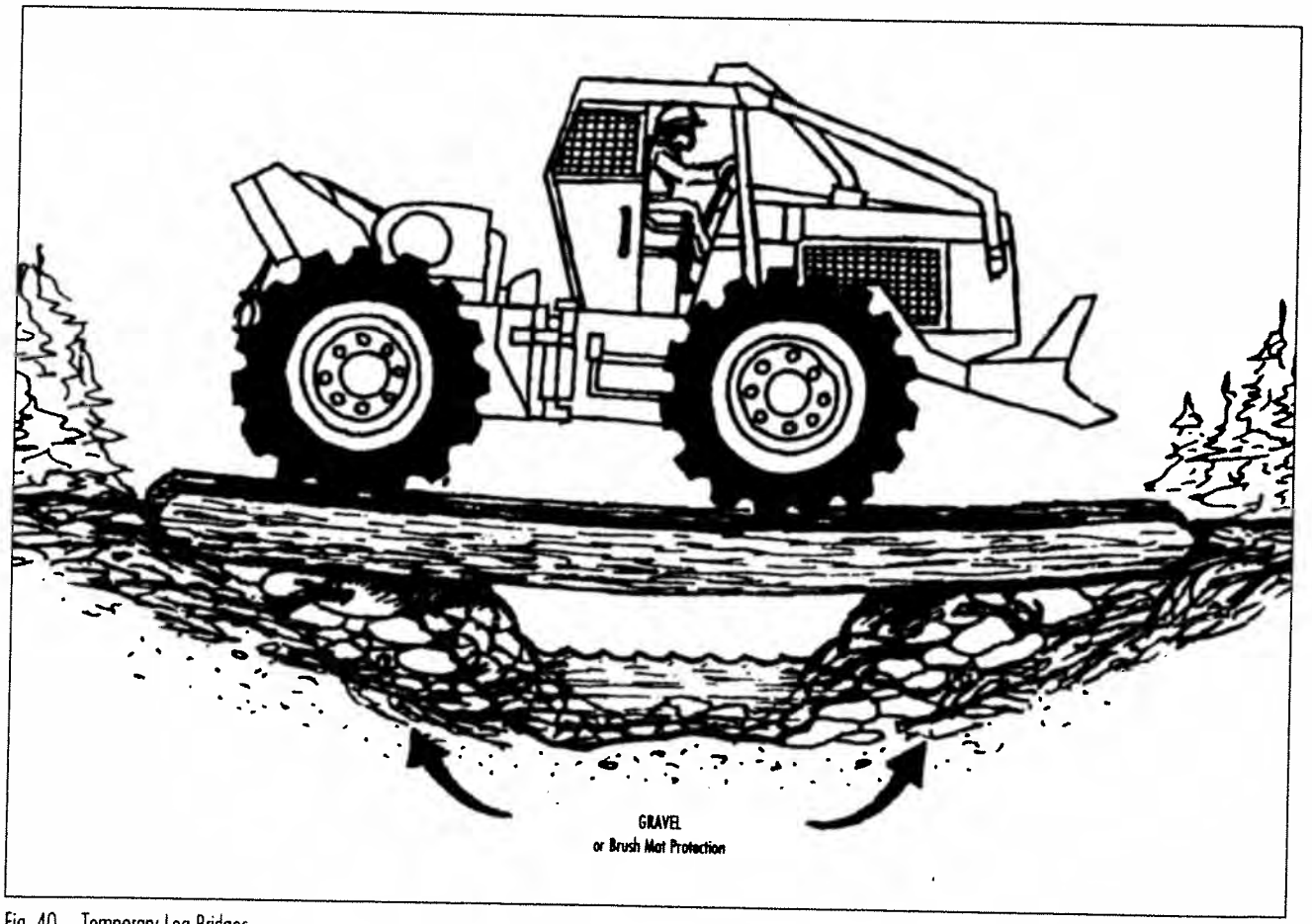


Fig. 40 Temporary Log Bridges

8.0 Environmental Protection

Contractors should be aware of the effects road construction has on the forest environment. Steps should be taken to minimize the impact of woodlot roads construction on streams. The effect of erosion and siltation is two-fold. Firstly, it causes stream pollution, destroying fish habitat and reducing water quality. Secondly, it causes road damage which results in high maintenance costs. **The booklet "Environmental Standards for the Construction of Forest Roads and Fire Ponds in Nova Scotia" published by the Department of the Environment should be read and carefully followed.**

8.1 No-Grub Zone

All grubbing activity should be stopped a minimum of 100 feet (30 m) from the banks of a stream. On smaller watercourses, grubbing should be stopped far enough back to allow silt to settle out of run-off water before it can enter the watercourse.

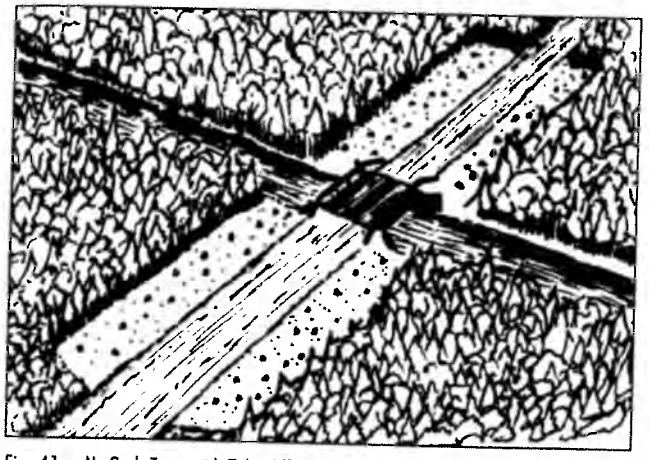


Fig. 41 No-Grub Zone with Take Off Ditches.
30m (100ft) should be clear on each side of the stream crossing.

Take-off ditches must be constructed at the beginning of the no-grub zone. Take-off ditches move storm water away from the road and deposit it onto the forest floor where silt may be filtered out before the water reaches a stream.

8.2 Coffer Dams & Stream Diversions

A coffer dam is a watertight temporary structure used in a waterway to separate the water from a work area. Coffer dams should be used to prevent silting in waterways when construction work such as building bridge abutments and culvert installation must be done in the stream bed when water is present.

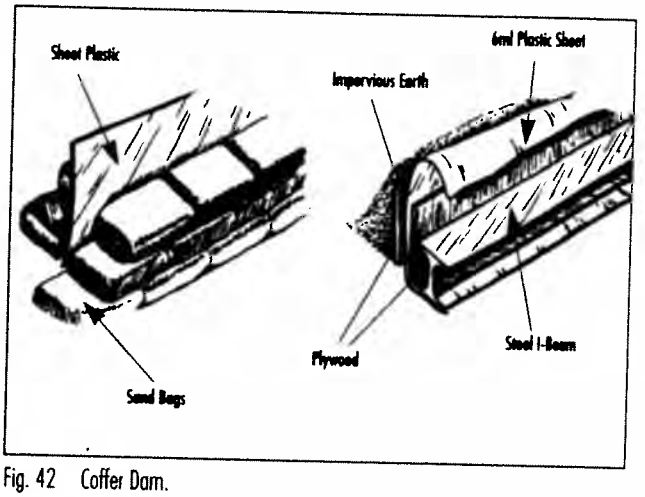


Fig. 42 Coffer Dam.

Coffer dams are to be constructed of erosion resistant material. Generally, a combination of plastic and sandbags or plastic and plywood is used. Streambed material is not to be used for constructing coffer dams.

When the coffer dam is in place, the work area is pumped dry. Any water pumped from the work area should be directed into a sediment basin or over the forest floor so the water does not re-enter the stream unfiltered.

Coffer dams should be constructed so that no more than two-thirds of the normal stream flow is cut off. In cases where it is necessary to restrict a larger area, a stream diversion should be considered.

A permit must be obtained from the Nova Scotia Department of the Environment before a stream diversion is made.

Start excavation for the diversion ditch downstream. Continue upstream leaving an earth plug between the stream and the head of the diversion ditch. The ditch must then be lined with a plastic sheet to prevent erosion. The plastic sheet should be pegged along the edge of the diversion ditch, and stones and gravel placed on the plastic along the ditch to reduce the speed of the water. Enough plastic should be left at the head of the ditch to cover the exposed earth after the earth-plug is removed. The ditch should be large enough to carry at least one-third of the water flow in the stream, but should normally match the natural channel width and depth.

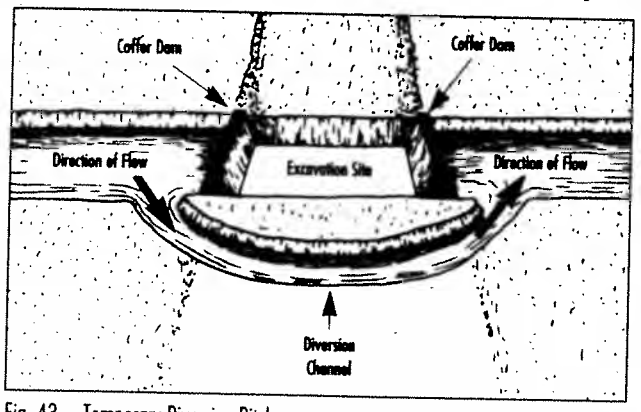


Fig. 43 Temporary Diversion Ditch.

Coffer dams are used with a temporary diversion ditch to restrict water movement into the work area. After the work is completed and measures have been taken to prevent soil erosion, the water is diverted back to the stream by removing the coffer dam and plugging the diversion ditch. All material imported for the construction of the coffer dam must be removed from the stream after the work is complete.

8.3 Fish Passage

Fish depend on streams for spawning and rearing as well as for food and nutrients. Research has shown that fish use small streams and intermittent streams more than larger streams for spawning. If their movement from larger streams to smaller streams is restricted by poorly installed culverts, debris and dams, the most productive fish spawning areas will be lost.

It is important to ensure that a large enough volume of water is present in culverts at low water flow to allow fish to move through these structures and upstream to spawning areas. Also, all debris and other material that will block water flow should be removed after a construction job is completed. All streams should be left in good condition, and disturbance caused by construction should be kept to a minimum.

8.4 Stream Bed and Bank

Sudden increases in velocity in the water flow result in eddie currents which can cause erosion. The increase in speed of water through pipe culverts causes scouring along the stream bed. This is noticeable at the outlet end of a pipe culvert if no stream bed protection is provided. (Fig. 44)

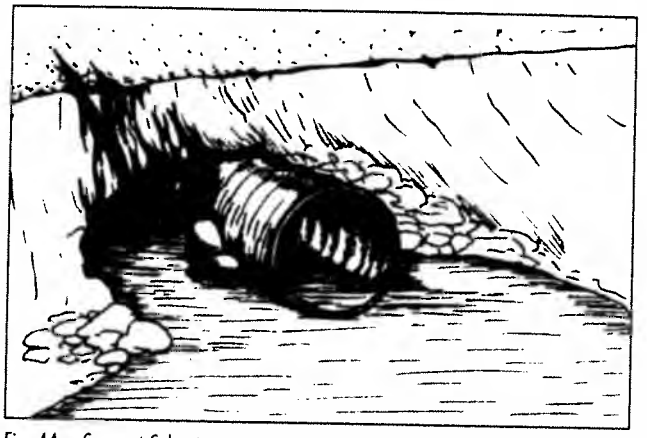


Fig. 44 Scour at Culvert

A rock apron should be placed, at the outlet end of the culvert structure, along the stream bed. The rock should be at least 6 inches (15 cm) in diameter and should extend downstream relative to the diameter of the culvert as shown in Table 8.1. The length of rock protection should be 4.5 to 6 times the diameter of a pipe culvert, or about the same as the width of a box culvert.

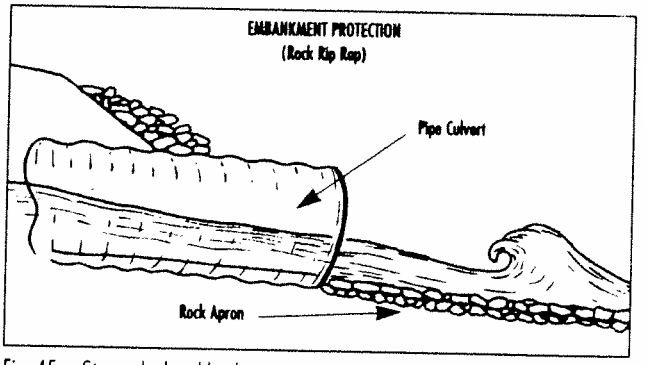


Fig. 45 Stream bed and bank protection using rip-rap.

Table 8.1 Culvert Outlet Protection

Culvert Diameter	Length of Rock Apron	Apron Thickness
18 ins. (450 mm)	7 ft. (2.1 m)	12 ins. (300 mm)
24 600	9 2.7	12 ins. (300 mm)
30 760	11 3.3	12 ins. (300 mm)
36 900	13 4.0	12 ins. (300 mm)
48 1200	18 5.5	12 ins. (300 mm)

To protect stream banks, the rock should extend up their sides. For bridge structures, it is more important to protect the fill embankment. Rock can be placed along the fill embankment from the toe of the slope to above the expected flood water level for protection. Where the soil is sandy or highly erodible, use geotextile fabric to provide a protective blanket and separation layer over the bank and bed before the rock is placed. Large boulders used for rip-rap provide little or no protection if the spaces between them are not filled with smaller rocks. **Grass seed can be planted along the slopes of the fill embankment to reduce erosion.**

8.5 End Treatment of Culverts

Culverts can be made to work better by the treatment utilized at their ends. In most cases, culverts are installed with their ends projecting from the fill. Greatly improved water handling capacity can be made by constructing headwalls around the ends of the culvert. A headwall is a vertical wall around the end of the culvert and extending back into the slopes of the road embankment. Headwalls are similar to wingwalls, but extend parallel to the road alignment. Headwalls also allow for the use of shorter culverts.

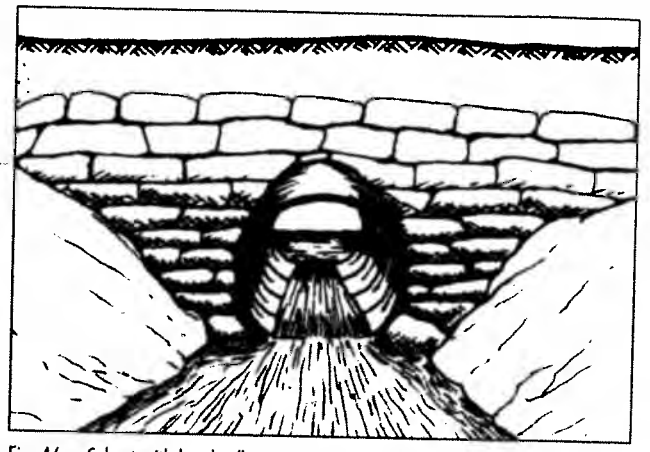


Fig. 46 Culvert with headwalls.

Wingwalls can also be constructed around the ends of culverts, and are considered a better method of end treatments than headwalls, since they facilitate better flow through the culvert.

The culvert ends can also be bevelled to conform to the fill slope. This type of treatment is often used on highway pipe culverts. Headwalls are used more often for concrete box culverts on highway roads.

8.6 Debris Control

One major problem with any culvert is the possibility of debris blocking the entrance during floods. If this occurs, water will flow over the embankment and can cause road damage or wash out the structure.

Larger culverts and more expensive installations can be protected by screens built at or near the culvert entrance. These screens should be easy to clear and be reasonably self-cleaning during periods of easy flow.

8.7 Beaver Damage

Many a forest road maintenance foreman is faced with the endless task of cleaning culverts and stream crossings plugged with a maze of sticks, leaves, and mud placed by one of the most tenacious animals known to man, the beaver. The plugged crossing will often cause water to flow over the embankment. This results in road damage and often the loss of the structure itself. Mere cleaning is not the answer, since the material is often replaced overnight.

Many methods have been used to dissuade the beaver without much success. One method that often works is the construction of an upstream barrier around the entrance of the culvert against which the beaver can build a dam far enough upstream not to cause blockage. (Fig. 47)

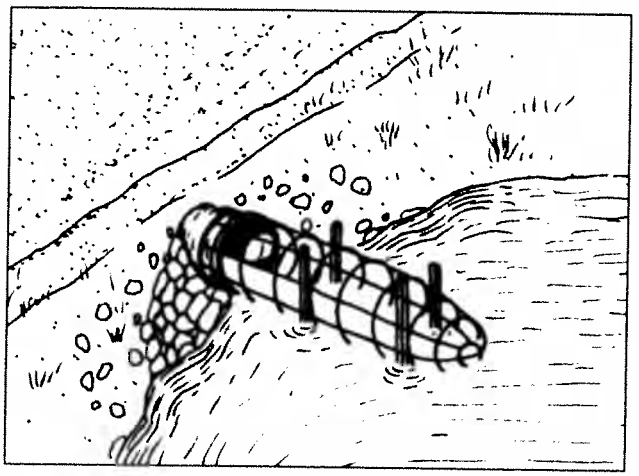


Fig. 47 Typical Beaver Barrier

Another interesting method is the use of a battery operated electric fencer and vertical control wires placed across the entrance of the culvert to discourage the beaver. This method usually takes about a week before the beaver leaves, but the wires should be left in place after the fencer is disconnected. (Fig. 48).

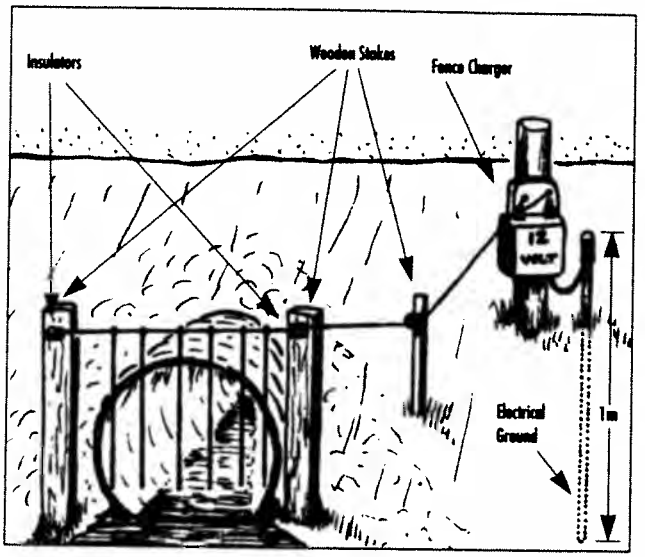


Fig. 48 Electric Beaver Repelling Device for Protecting Culvert Entrance.

Make sure the fencer is well grounded. A grounding rod or metal pipe at least 3 feet (1 m) long is recommended.

Glossary

Axis .....A real or imaginary line about which a body rotates; the line around which the parts of a thing or system are symmetrical or evenly arranged.

Backfill .....Earth or other material used to replace material removed during construction or material placed between an old structure and a new lining.

Bearing Capacity.....The ability to support a certain load or pressure without failure or deformation.

Bed Load .....Sediment in the flow that moves by rolling, sliding or skipping along the stream bed, and is essentially in contact with the stream bed.

Brush mat.....A mat made of brush and tree branches used under a road embankment, a separation layer made of brush and branches.

Dead Load.....The weight of the materials and attachments such as the embankment and pavement over a culvert or the stringers and deck material of a bridge.

Density.....The mass per unit volume of a substance; the quality or condition of being packed tightly together.

Diaphragm .....A separating member used between bridge stringers to prevent them from twisting or rotating around their length.

Embankment.....A bank of earth used to hold up a road.

Erosion.....The detachment of soil particles by the action of water, wind or temperature.

Flex.....To bend without breaking.

Foundation.....The base or lowest part of a structure.

Frequency.....The number of times an event, or activity is repeated in a given period of time.

Gabion mat .....A basket made of steel wire mesh and filled with rock to form a mat.

Geotextile.....A woven or nonwoven engineering fabric used as a separation layer between soils or as a filter for removing sediment from flowing water.

Grade .....The degree of rise or fall of a slope, as of a road or stream.

Intensity.....The relative strength or magnitude, as the amount of rainfall over a period of time.

In the dry.....Separated from water as on dry land, free from water.

Lateral support...Support along the sides.

Live Load.....The weight of any moving load or impact, as traffic moving over a bridge or road.

Longitudinal .....Running or placed lengthwise, end to end.

Meander .....To take a winding course, as a winding stream.

Normal.....At right-angle to a given line or perpendicular to a given line or surface.

Peak Flow.....Maximum flow, as a river at flood.

Ponding.....Water setting in small bodies or pools along the ditch of a road.

Rip-Rap.....Large rocks, cobble or boulders placed in or around a watercourse to prevent moving water from eroding soil.

Run-off.....The portion of precipitation on a drainage area that runs along the surface of the ground and is discharged in streams and waterways.

Saturation.....When water is thoroughly soaked into the soil.

Scouring.....The erosion of soil caused by running water, as the banks and bed of a stream channel at the outlet end of a culvert.

Tie-Backs.....Anchor timbers for securing the sidewalls of a culvert to the embankment.

Torsional Rotation.....Twisting or rotation about the longitudinal axis or length, as in a stringer twisting about its length.

Unit load.....The load per unit area such as pounds per square foot.

Vertical Photographs.....Photographs usually taken from a plane, where the camera is held in a vertical or nearly vertical position.

Washout.....The failure of a culvert, bridge, embankment or other structure resulting from the action of flowing water.

Wing-Wall.....A protective wall constructed at a bridge abutment and extending into and supporting the embankment.

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Appendix A

Rainfall Intensity

The Atmospheric Environment Services (AES) of Environment Canada is the principal source of meteorological data in Canada. Information collected from a network of observation stations throughout Canada is used to compile rainfall intensity - duration - frequency data which is used in calculating design discharge.

Typical Rainfall Intensity - Duration - Frequency Curves

The period of return simply defines the peak discharge that will occur, on the average, once in say 10 or 25 years. To be more meaningful, the probability of a storm occurring in any one year may be expressed as reciprocal of the return period. For example, a 25 year storm has a probability of 1/25 or 4 per cent chance of occurring in any one year.

Appendix B

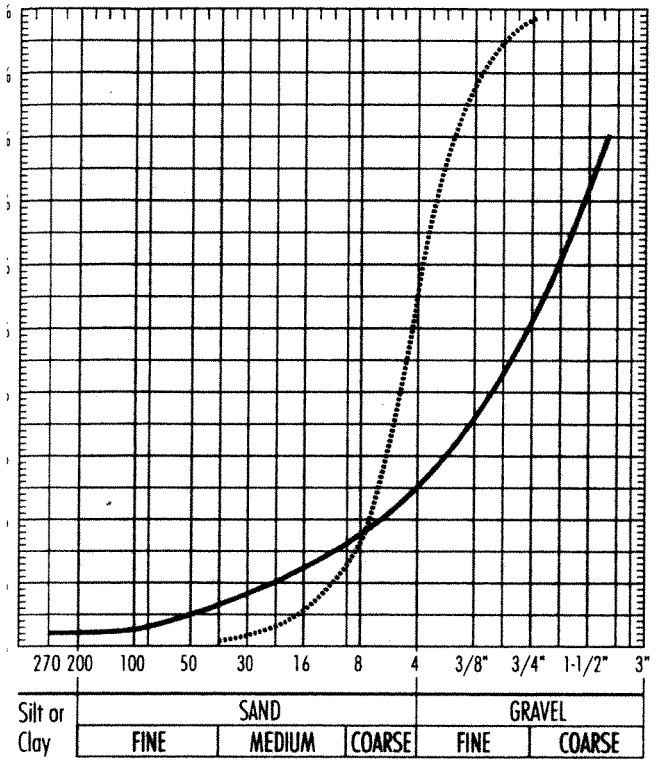
Well Graded Gravel

Gradation refers to the various sizes a soil may be separated into by the use of a series of sieves. In the Unified Soil Classification System, four soil fractions are recognized to distinguish the size range of soils. These are cobbles, gravel, sand and fines.

Component	Size Range
COBBLES	Larger than 75mm (3 in.)
GRAVEL	75mm (3 in.) to 4.75mm (No. 4 Seive)
Coarse Gravel	75mm (3 in.) to 19mm (3/4 in.)
Fine Gravel	19mm (3/4 in.) to 4.75mm (No. 4 Seive)
SAND	4.75mm (No. 4) to 75um (No. 200)
Coarse Sand	4.75mm (No. 4) to 2.0mm (No. 10)
Fine Sand	2.0um (No. 4) to 425um (No. 200)
FINES (Silt or Clay)	Smaller than 75um (No. 200)

Gravel may be defined as well graded or poorly graded. This refers to the relative gradation of the gravel. Well graded, defines a gravel that has various grain sizes in an amount that will fit together with the least amount of air voids between particles, and have little or no non-plastic fines (less than 5 per cent passing the No. 200 sieve). The present fines must not noticeably change the strength properties of the gravel.

Typical Example of Well Graded Gravel (GW)
in Percent Finer by Weight



Curve 1:
Pit Run Gravel; Nonplastic; Well-Graded; Small Percentage of Fines.

Curve 2:
Sandy Gravel; Nonplastic; No Fines.
(Curve is about the steepest one that will meet the criteria for GW Group.)

The above curves can be expressed as percentage by weight passing a particular size sieve as follows:

Sieve Size	Percentage Finer By Weight
3 inches	100 %
1 1/2 inches	67 to 100 %
3/4 inch	50 to 95 %
3/8 inch	35 to 82 %
No. 4	25 to 55 %
No. 10	12 to 16 %
No. 100	0 to 4 %
No. 200	0 to 3 %

Appendix C

Assembly of Timber Bridges by Terry Amirault, P.Eng.

Before starting:

1. Has an environmental permit been issued by the Department of the Environment?
2. Are there stipulations, restrictions outlined on the permit?
3 Is the contractor aware of Environmental Guidelines?
4. What equipment, tools will be needed?
5. Is the site readily accessible by truck, porter, skidder, backhoe?
6. Have the materials been ordered? Are they available locally? Immediately?
7. How will the construction be completed? In what order? Both abutments at same time? How will machinery, materials, reach far side?
8. Where will backfill material (rock) come from?

On-Site Planning:

1. Materials should be loaded and/or stockpiled on-site in order of use, e.g., crib material before decking.
2. Exact bridge location should be determined and abutment locations staked.
3. Decide on appropriate erosion control measures if needed. (Section 8.0)
4. Plan on building far side abutment first — this will give you additional flexibility.

Preparing Base for Abutments:

1. Use a backhoe/excavator to remove all organic and/or unsuitable material such as low bearing capacity soils from the area where abutment will be constructed.
2. If site is swampy, some coarse rock may be required to fill hole created by removal of the unsuitable material. (Section 7.3)
3. If part of excavation will be in the streambed area, provisions should be made to control damage to fish habitat, i.e., cofferdam, straw bales, silt curtain. (Section 8.2)
4. Allow for working space around crib abutment (excavate an area larger than the abutment).
5. Make sure base is as even and level as possible. Abutments built on solid rocks will probably need shims to level first layer. (Section 7.3)

Crib Construction:

STEP 1.

Place bottom face stretcher (key timber) and bottom back stretchers (1, 2 or 3 pieces depending on length available) parallel, at desired spacing and such that back stretchers extend past both ends of stretcher in equal amounts (Fig. C1). If pieces are not level, shim or excavate base to adjust the timbers.

STEP 2.

On top of initial pieces place the first two wingwall pieces and the two headers and pin these with 14" x 5/8" diameter pins (for 8" x 8" timber). One pin is to be placed at each connection. Holes, 9/16" in diameter, shall be drilled through the top layer and 6" into the second layer to accept the pins (Fig. C1).

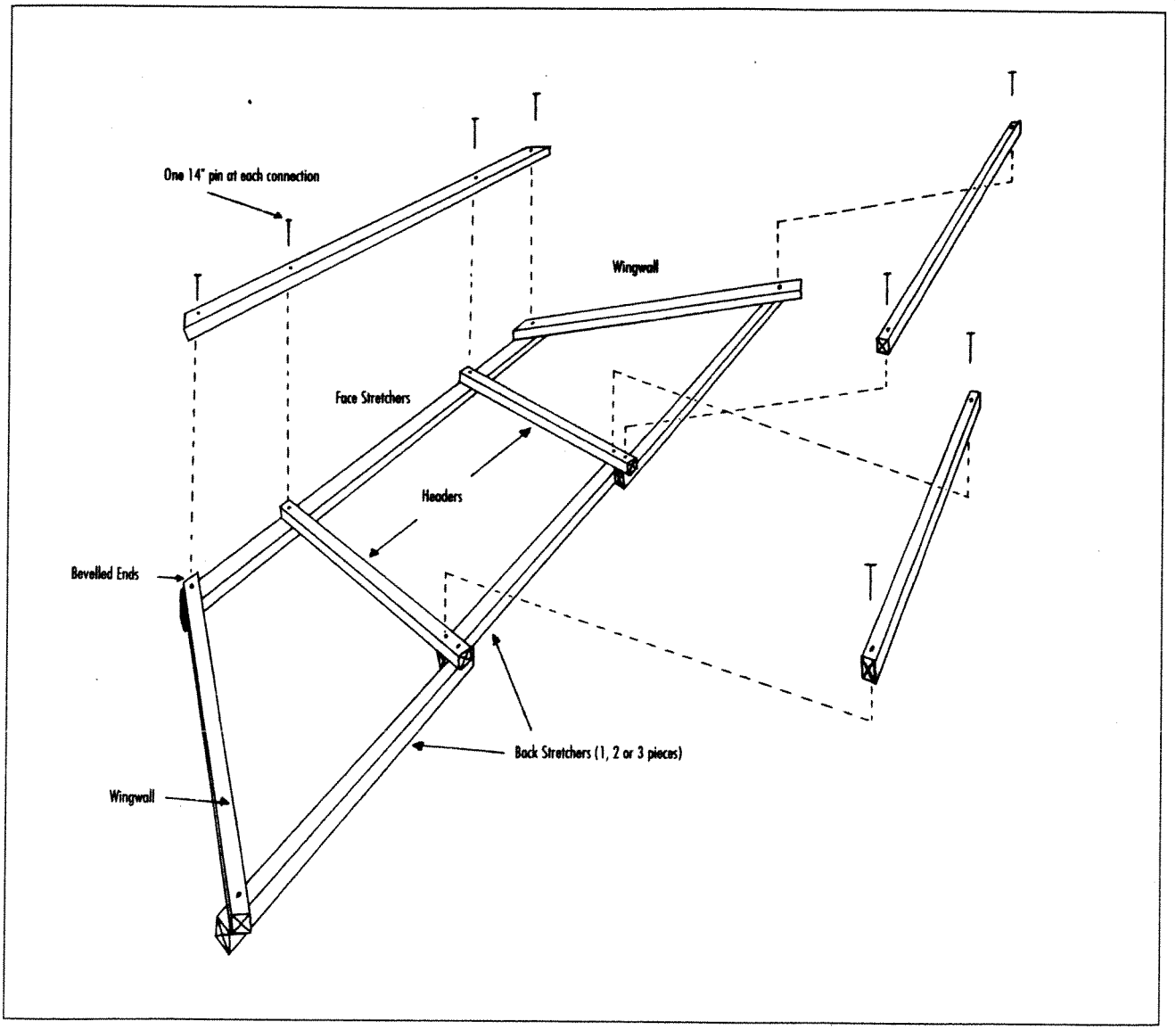


Fig. C1 First layers of Crib

STEP 3.
Steps 1 & 2 are repeated until desired height is reached (Fig. C2). Corners between face stretches and wingwalls should be bevelled. Other junctions may be left with square butts. All field sawn ends are to be treated with suitable preservative.

STEP 4.
Two bearing plates 8" x 8" are pinned to the top layer of the wingwalls and headers. Second bearing plate is longer than first to account for angle between wingwall and crib face (Fig. C2).

STEP 5.
Blocking pieces are added to top of headers and wingwalls, immediately behind rear bearing plate (Fig. C2). Each blocking piece is pinned with two fasteners and will be used to support the butt plates and the final layers of wingwall.

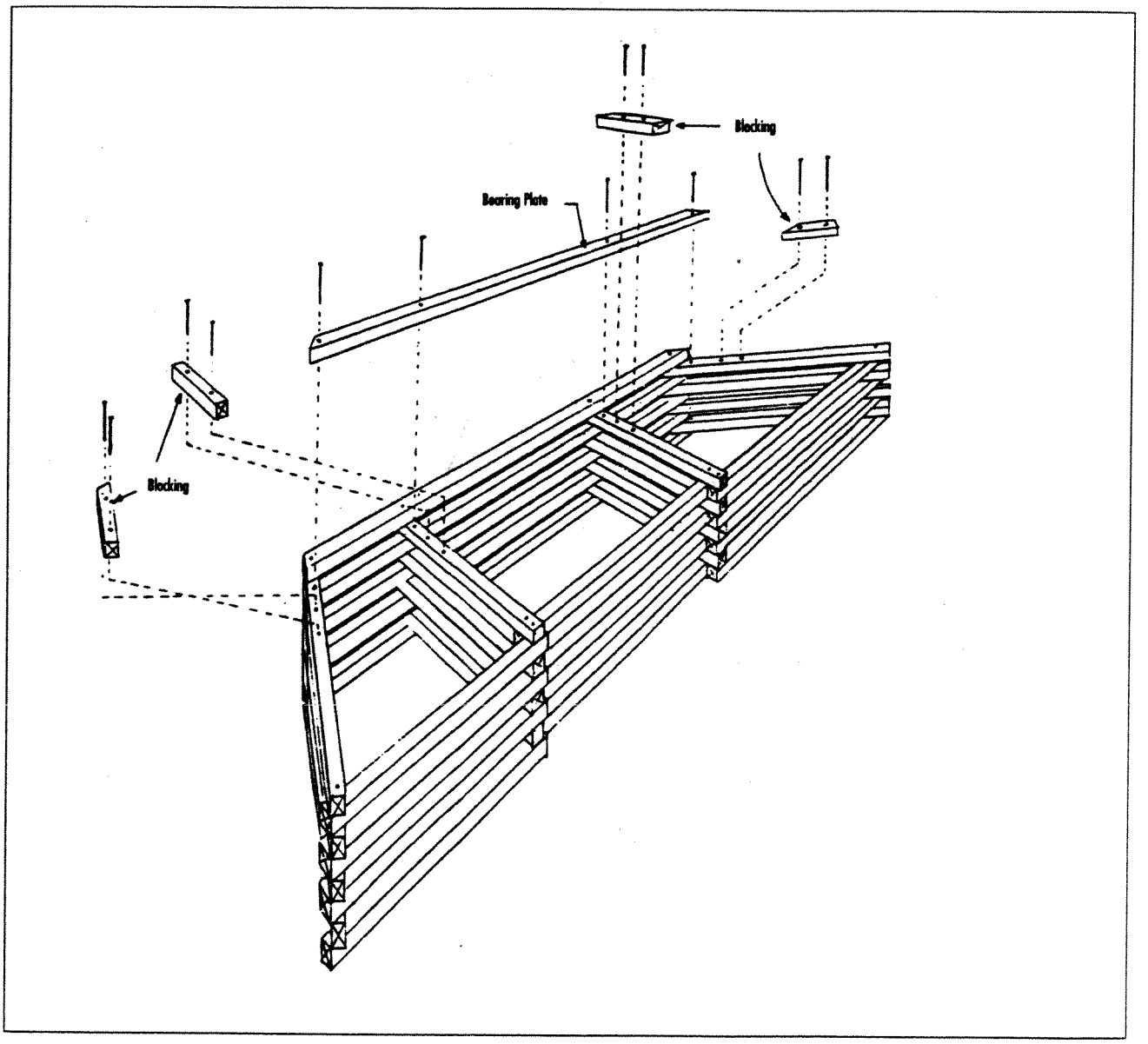


Fig. C2 Installation of Blocking Plates

STEP 6.
Stringers are placed with ends on the two bearing plates, at the specified spacing (Fig. C3). (See table for stringer sizes, species, and spacing.) Large stringers will require mechanical equipment, boom-truck, grapple loader, backhoe) to lift them in place.

STEP 7.
Each stringer is pinned to the bearing plates through predrilled holes and with fastener extending through the stringer and the plates.

STEP 8.
Attach two 4" x 8" butt plates to ends of the stringers. Nail both butt plates to each stringer with 10" spikes (Fig. C3). These butt plates serve two purposes. They restrain the stringers and they prevent the roadway backfill from falling into the stream.

STEP 9.
Remaining wingwall pieces are fastened to the blocking pieces (Fig. C3).

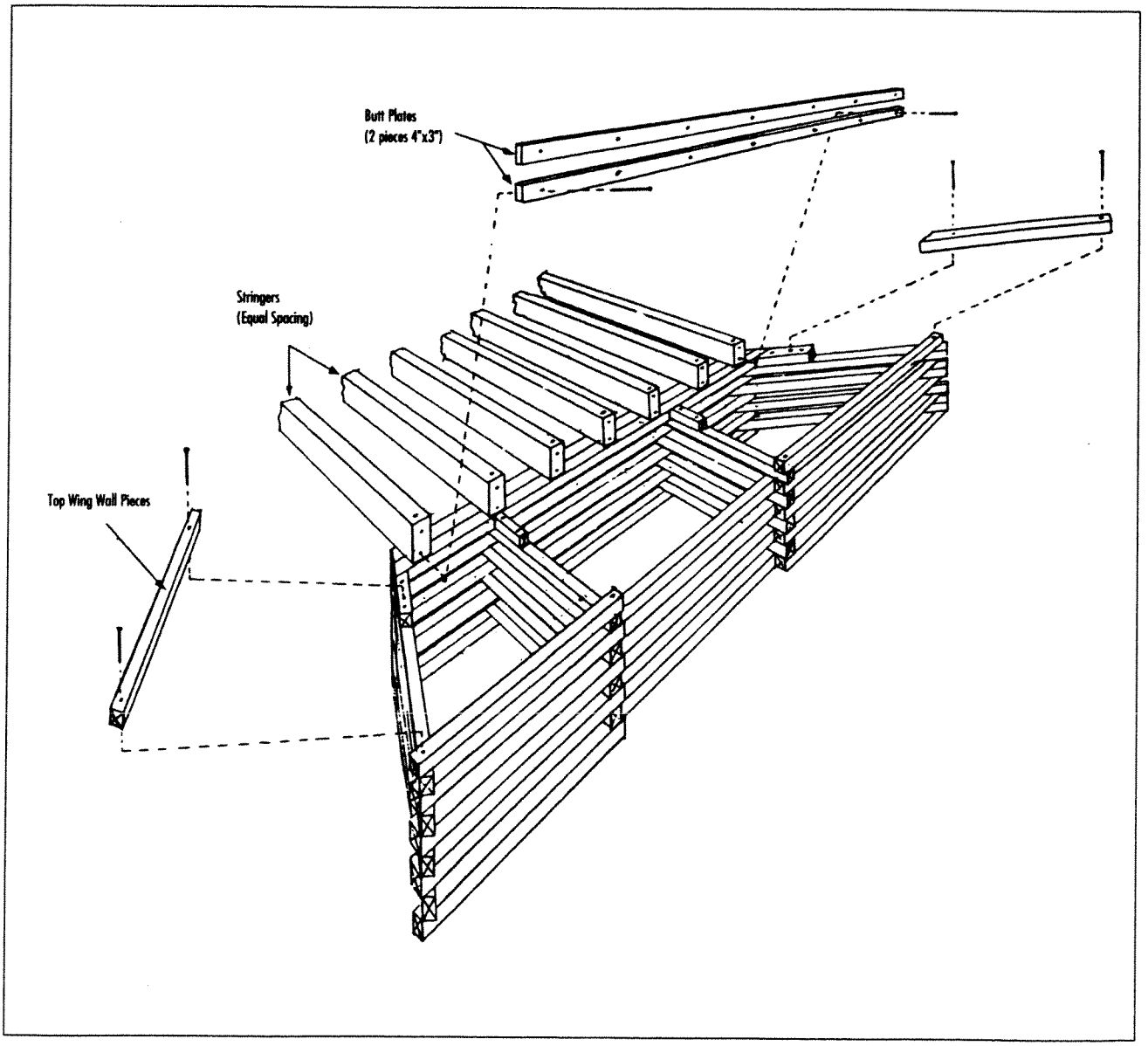


Fig. C3 Placing Stringers and Butt Plates

STEP 10. (Optional)
If crib is to be filled with fine backfill material instead of rock, crib should be lined on front face and wingwalls with 2" x 6" planks placed in an upright position on the inside of the crib. These will block all openings between crib layers, preventing the backfill from being washed away. Note: When fine material is used for backfill, crib abutment should be set far enough below surrounding grade to prevent stream flows from washing backfill from the underside of the crib.

STEP 11.
Abutment(s) may be backfilled either before or after bridge deck is placed. If backfill material is to be trucked in, near side abutment should be filled first, then deck put in place, then truck slowly backed over bridge and fill dumped into far abutment. Abutment can also be filled as the abutments are built. If front of crib is to be protected with rip rap stone, these should be put in place before bridge deck is installed.

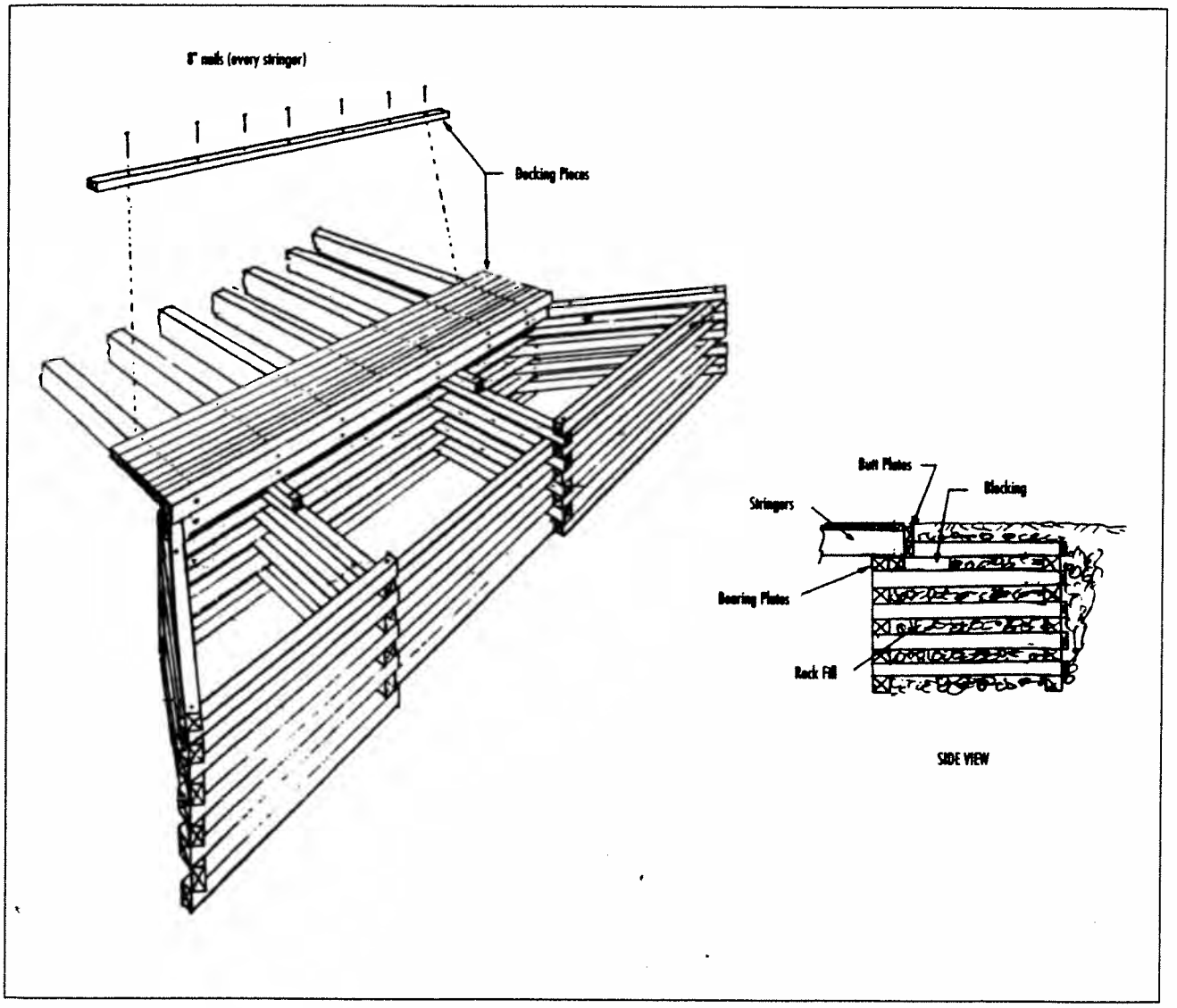


Fig. C4 Decking

STEP 12.
Nail decking pieces to each stringer with 8" nails. Decking pieces should be one piece, if possible.

STEP 13.
Install tire guard and blocking and guard rails if required.

STEP 14.
Nail running surface to bridge deck.

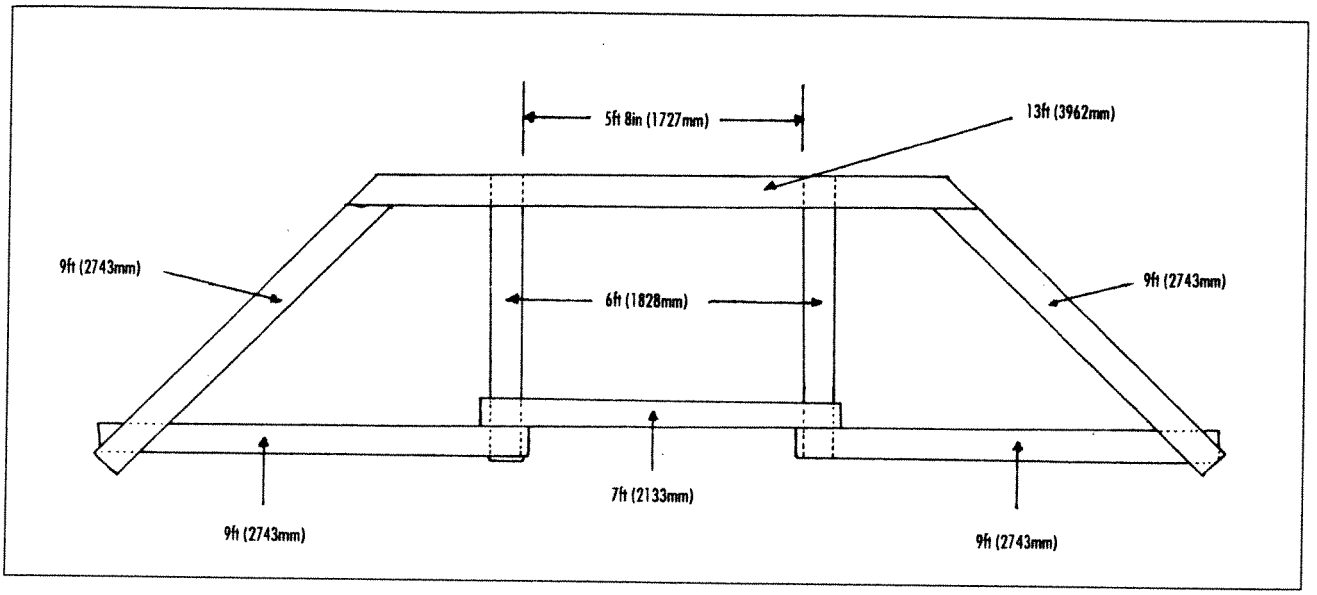


Fig. C5 Crib Dimensions

Further Reading

A Guide to Trout and Salmon Habitat for Loggers - Fish Habitat Protection, Dept. of Fisheries and Oceans Canada, P.O. Box 550, Halifax, Nova Scotia, B3J 2S7.

Environmental Standards for the Construction of Forest Roads and Fire Ponds in Nova Scotia - April 27, 1983, N.S. Dept. of the Environment et.al.

Erosion and Sedimentation Control Handbook for Construction Sites - April 1989, N.S. Dept. of the Environment, Environmental Assessment Division.

Forest Access Road Planning and Construction Manual - Steve D. Talbot, P.Eng., N. S. Dept. of Lands and Forests, 1982, Revised 1991.

This consolidatio is unofficial and is for reference only. For the official version of the regulations, consult the original documents on file with the Registry of Regulations, or refer to the Royal Gazette Part II.

Regulations are amended frequently. Please check the list of Regulations by Act to see if there are any recent amendments to these regulations filed with the Registry that are not yet included in this consolidation.

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Emergency Spill Regulations

made under Sections 74, 136, and 171 of the
Environment Act
S.N.S. 1994-95, c. 1
Order in Council 95-298 (April 11, 1995), N.S. Reg. 59/95

Citation

1 These regulations may be cited as the "Emergency Spill Regulations".

Definitions

2 In these regulations

(a) "Act" means the Environment Act;

(b) "Administrator" means a person appointed by the Minister pursuant to Section 3 to administer these regulations, and includes an acting Administrator;

(c) "C.C.M.E." means the Canadian Council of Ministers of the Environment;

(d) "contaminant" means a substance that causes or may cause an adverse effect;

(e) "Department" means the Department of Environment and Labour;

(f) "emergency responder" means a person appointed pursuant to Section 9 for the purpose of responding to and managing an environmental emergency;

(g) "environmental emergency" means an emergency situation in which there is a release or an impending release of a contaminant in such quantities that mitigation of the release is beyond the capability of the person responsible because the person responsible lacks the resources, is unknown, or is otherwise unwilling or unable to control and manage the release;

(h) "environmental emergency area" means a property, habitat, land, watercourse or other area which has been affected or is likely to be affected during an environmental emergency;

(i) "Minister" means the Minister of Environment and Labour;

(j) "process tank" means any tank which forms an integral part of a manufacturing process;

(k) "release" means to spill, discharge, dispose of, spray, inject, inoculate, abandon, deposit, leak,

seep, pour, emit, empty, throw, dump, place or exhaust;

(l) "remediate" means to clean up land which is impacted by the release of a contaminant to a level required by the Minister;

(m) "spill" means a release of a substance

(i) into the environment,

(ii) from or out of an approved containment system, structure, aircraft, vehicle, vessel, process tank, pipeline, or other container,

(iii) that is abnormal in quantity or quality in light of all the circumstances of the release, or

(iv) in excess of an amount specified in these regulations or an approval.

Administrator

3 The Minister may appoint an Administrator to administer these regulations.

Application

4 (1) These regulations apply to an environmental emergency, an unauthorized release or an impending unauthorized release of a contaminant including an environmental emergency, an unauthorized release or impending unauthorized release on lands owned or claimed by Her Majesty in the Right of Canada.

(2) A release is deemed to be an unauthorized release or an impending unauthorized release if the release is prohibited by the Act or regulations made pursuant to the Act or exceeds or does not comply with what is authorized by the Act or regulations made pursuant to the Act.

(3) The reporting requirements prescribed in these regulations do not apply

(a) to a release that is permitted in an approval issued under the Act; or

(b) where a reporting requirement for the release is described in an approval issued under the Act.

Designated contaminants

5 A contaminant listed in Column 3 of Schedule "A" is designated a contaminant under these regulations.

Duty to report the release of a contaminant

6 A person responsible under Section 69 of the Act shall forthwith report an unauthorized release of a contaminant listed in Column 3 of Schedule "A" in quantities greater than those listed in Column 4 of Schedule "A" as soon as that person knows of the unauthorized release.

Verbal reporting requirements

7 (1) A person reporting an unauthorized release under Section 6 shall notify the Department by contacting the environmental emergencies reporting centre by telephone at (902) 426-6030 or at 1-800-565-1633.

(2) No person shall make a false report of an unauthorized release.

(3) No person shall refuse to provide information required under these regulations.

Written reporting requirement

8 An Administrator may request in writing that a person responsible under Section 69 of the Act submit a written report to the Administrator within a specified time period after an unauthorized release outlining the actions taken

(a) to identify the cause of the release;

(b) to assess the adequacy of the response to the release by the person responsible under Section 69 of the Act or any other person or agency involved in the response;

(c) to remediate any lands upon which by the unauthorized release has an impact;

(d) to dispose of the contaminant; and

(e) to prevent a reoccurrence of the unauthorized release.

Training for emergency responders

9 (1) The following persons may apply to be appointed by the Minister or an Administrator as an emergency responder under these regulations:

(a) fire service personnel of a village, town, city or municipality in Nova Scotia, and

(b) police service personnel of a village, town, city or municipality in Nova Scotia.

(2) Upon a person having successfully completed the requirements of a national certification program for emergency responders, the Minister or the Administrator may appoint that person as an emergency responder.

(3) A village, town, city or municipality described in subsection (1) shall determine whether a person who wishes to be appointed as an emergency responder has successfully completed the requirements referred to in subsection (2) and provide the name of the person to the Administrator.

Powers of an emergency responder during an environmental emergency

10 (1) Pursuant to Section 72 of the Act, during an environmental emergency an emergency responder may do the following:

(a) restrict entry of any person into an environmental emergency area;

(b) control traffic in the vicinity of the environmental emergency area;

(c) determine unsafe areas;

(d) enter any land or building within the environmental emergency area, excluding a private dwelling, without a warrant;

(e) authorize entry by any person into any building or on any land within the environmental

emergency area, excluding a private dwelling, without a warrant by any person; and

(f) take such action the emergency responder considers necessary to contain, control, and manage the release, including the construction of any works.

(2) No person shall

(a) hinder or obstruct an emergency responder in the lawful performance of the emergency responder's duties;

(b) furnish any emergency responder with false information; or

(c) refuse to furnish any emergency responder with information respecting an environmental emergency.

Emergency order

11 (1) Pursuant to Section 128 of the Act, the Administrator or an emergency responder may issue a verbal or written order to a person to take any emergency actions listed in Section 10 to contain, control, or manage an unauthorized release or an impending unauthorized release.

(2) An order issued under subsection (1) shall lapse 72 hours after issuance unless it is ratified and confirmed in writing by the Minister.

(3) The Minister may at any time revoke an order made by the Administrator or an emergency responder pursuant to these regulations.

Powers of the Minister/Administrator

12 (1) Pursuant to Section 128 of the Act, during and after an environmental emergency or an unauthorized release, the Minister or the Administrator may order the person responsible for the environmental emergency or the unauthorized release to

(a) take any action required to dispose of the contaminant which has been released;

(b) remediate any lands impacted by the release; and

(c) do all things necessary to repair any injury or damage directly or indirectly caused by or resulting from the release.

(2) The Administrator may determine the size of an environmental emergency area and identify the area on the ground.

(3) The Administrator may determine when an environmental emergency is finished.

(4) If the person responsible for an environmental emergency or an unauthorized release fails to comply with an order issued pursuant to subsection (1), the Minister or the Administrator may take any action required to remediate any lands or waters impacted by the release or repair any injury or damage directly or indirectly caused by or resulting from the release.

Recovery of costs

13 (1) Pursuant to Section 169 of the Act, the Minister may recover any reasonable costs,

expenses, or charges supported by proper receipts that are incurred by the Minister, the Administrator or emergency responders while acting under the Act or these regulations

(a) by issuing an order against the person responsible for the environmental emergency, the unauthorized release or the impending unauthorized release for a claim less than $5000; or

(b) by taking an action against the person responsible for the environmental emergency, the unauthorized release or the impending unauthorized release in a court of competent jurisdiction for a claim greater than $5000.

(2) If the person described in clause (1)(a) fails to pay, the Minister or the Administrator may file the order with the prothonotary of the Supreme Court and it shall have the same effect as an order filed under subsection 132(7) of the Act.

Effective date

14 These regulations shall come into effect on, from and after April 11, 1995.

Schedule "A" - Spill Report Requirements

Column 1 Item No.	Column 2 TDGA Class	Column 3 Description of Contaminant	Column 4 Amount Spilled
1.	1	Explosives	any amount
2.	2.1	Compressed gas (flammable)	100 L
3.	2.2	Compressed gas (non-corrosive, non-flammable)	100 L
4.	2.3	Compressed gas (toxic)	any amount
5.	2.4	Compressed gas (corrosive)	any amount
6.	3	Flammable liquids	100 L
7.	4.1	Flammable solids	25 kg
8.	4.2	Spontaneously combustible solids	25 kg
9.	4.3	Water reactant solids	25 kg
10.	5.1	Oxidizing substances	50 L or 50 kg
11.	5.2	Organic peroxides	1 L or 1 kg
12.	6.1	Poisonous substances	5 L or 5 kg
13.	6.2	Infectious substances	any amount
14.	7	Radioactive substances	any amount
15.	8	Corrosive substances	5 L or 5 kg
16.	9.1 (in part)	Miscellaneous products or substances, excluding PCB mixtures	50 L or 50 kg
17.	9.1 (in part)	PCB mixtures of 50 or more parts per million	0.5 L or 0.5 kg
18.	9.2	Environmentally hazardous substances	1 L or 1 kg
19.	9.3	Dangerous wastes	5 L or 5 kg
20.	none	Asbestos waste as defined in the Asbestos Waste Management Regulations	50 kg
21.	none	Used oil as defined in the Used Oil	100 L

		Regulations	
22.	none	Contaminated used oil as defined in the Used Oil Regulations	5 L
23.	none	A pesticide in concentrated form	5 L or 5 kg
24.	none	A pesticide [in] diluted form	70 L
25.	none	Unauthorized sewage discharge into fresh water or sensitive marine water	100 L
26.	none	Ozone depleting substances as defined in the Ozone Layer Protection Regulations	25 kg

Last updated: 20-03-2009

Land Use

- RSSIDE - Residential Single Unit Dwelling Detached
- AG - Agriculture
- AGSBHA - Agriculture - Site Based - Housing Animals
- AGLBLT - Agriculture Land Based Long Term Cropping System
- MAPRWP - Manufacturing - Processing - Water Purification
- PLWA - Protected & Limited Use - Watershed
- ITVAMI - In Transition Vacant Mining
- ITVAAG - In Transition Vacant Agriculture
- ITVARC - In Transition Vacant Recreation, Culture & Entertainment
- Fire Pond
- Forestry Silviculture Treatment
- FOforestry

- Building Point
- 2007 Natural Watershed Boundary
- Prescibed Watershed Line
- Collector Road
- Local Road
- Non-addressed roads
- swamp
- Tree Line
- Building outline
- Utility
- Waterline
- Waterbody
- Property Line

2007 Natural Watershed Boundary
Area: 482.6 ha (1192.7 ac)
Prescribed Watershed Boundary
Area: 364.5 ha (900.7 ac)
(The area of the watershed boundaries were calculated using the Municiaplity's Geographic Information System. The calculation of the watershed area includes all land and water features within the polygon shown on the map, including lakes, rivers and roads)

N
W E
S

Revised: December, 2007
Municipality of the District of Lunenburg, Planning Department
C:\Data\Projects\Planning2007\DaresLake\
DaresLake_LU11x17_nov2007.mxd

0 155 310 620 930 Meters

1:13,000

Schedule "O"

Dares Lake Area:
164.3 ha (406 ac)

Northwest Rd
Kinley Farm Rd
Bulmer Rd
Highway 3
Windward Ave
Edgemount Rd
Avail Rd
O'Brien Rd

Schedule "P"

Guidelines for Monitoring Public Drinking Water Supplies

NOVA SCOTIA

Environment and Labour

Approval Date: December 12, 2005	Effective Date: December 12, 2005
Approved By: William Lahey	
Version Control:	Replaces the October 1, 2000 version as amended July 15, 2003

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GUIDELINES FOR MONITORING PUBLIC DRINKING WATER SUPPLIES

1.0 Preface

1.1 Purpose

The purpose of these guidelines is to assist an owner of a public drinking water supply with developing and implementing an acceptable water quality monitoring program. These guidelines reflect the minimum requirements under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* made pursuant to the *Environment Act*.

The objective is to ensure that consumers of water provided by a public drinking water supply in Nova Scotia have safe drinking water. Systematic water quality monitoring and immediate notification and corrective action are essential elements to a comprehensive water supply protection program.

All owners of public drinking water supplies must use these guidelines to develop and implement a water quality monitoring program that supports the maintenance and optimization of water system operations.

1.2 Authority

Regular Testing - Section 33 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* requires an owner of a public drinking water supply to regularly monitor drinking water quality for the parameters listed in the *Guidelines for Monitoring Public Drinking Water Supplies,* as well as other substances as may be required by the Minister or an Administrator. Samples are to be collected in the manner and with the frequency set out in the *Guidelines for Monitoring Public Drinking Water Supplies* or as required by the Minister or an Administrator.

Drinking water quality testing is to be completed by approved laboratories in accordance with the Policy for the Accreditation of Laboratories.

Immediate Notification and Corrective Action - Section 34 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* requires an owner of a public drinking water supply to:

- notify the department immediately upon becoming aware of not meeting health-related drinking water quality criteria; and

- take corrective action as set out in the *Guidelines for Monitoring Public Drinking Water Supplies* or as may be required by the Minister or Administrator.

Provision of Safe Drinking Water - Section 35 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* requires that an owner of a public drinking water supply ensure that the microbiological, physical and chemical characteristics of a public drinking water supply do not exceed the maximum acceptable concentration (MAC) or interim maximum acceptable concentration (IMAC) for substances listed in the most recent version of Health Canada's *Guidelines for Canadian Drinking Water Quality*, as amended from time to time.

1.3 Application

These guidelines apply to a public drinking water supply as defined herein and include municipal, commercial, industrial, institutional, and privately owned water supplies. **It should be noted that these guidelines are considered to be minimum requirements under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* and any conditions to an operating approval that the facility has or may require will always take precedence.**

2.0 Definitions

Public Drinking Water Supply (water supply) means a water supply system, including any source, intake, treatment, storage, transmission or distribution, that is intended to provide the public with potable, piped water and that:
i) has at least 15 service connections; or
ii) regularly serves 25 or more persons per day at least 60 days of the year.

Owner means a person who owns, operates or maintains a public drinking water supply.

Safe Drinking Water means water that meets the health-related criteria for substances specified in the most recent version of Health Canada's *Guidelines for Canadian Drinking Water Quality*, as amended from time to time.

Water Quality Committee means an ad hoc committee appointed at the discretion of Nova Scotia Environment and Labour (NSEL) or the Medical Officer of Health (MOH) to investigate water quality deficiencies that require a boil water advisory. In addition to representatives from NSEL and the MOH, the committee may include an owner, a representative from a water quality laboratory and other experts as required.

Approved Water Supply means a public drinking water supply that holds a municipal water works approval issued under the *Activities Designation Regulations* made pursuant to the *Environment Act* for the collection, production, treatment, storage, supply or distribution of potable, piped water to the public.

Registered Water Supply means a public drinking water supply that holds a registration with NSEL under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* made pursuant to the *Environment Act* for the collection, production, treatment, storage, supply or distribution of potable, piped water to the public. Examples of registered water supplies include: trailer parks, apartment buildings, rural developments, schools, day cares, nursing homes, industrial or commercial buildings, eating establishments, fixed roof accommodations, recreational facilities, campgrounds, etc. that are not connected to a municipal water works.

Maximum acceptable concentration means the health-related criteria specified for substances in the *Guidelines for Canadian Drinking Water Quality*, which when present above the set concentration have known or suspected adverse health effects.

Interim maximum acceptable concentration means the health-related criteria specified for substances in the *Guidelines for Canadian Drinking Water Quality*, which when present above the set concentration may have adverse health effects but there is insufficient toxicological data to set a maximum acceptable concentration.

3.0 Roles and Responsibilities

3.1 Public Drinking Water Supply Owner

An owner is responsible for delivering safe drinking water to the consumer. This responsibility includes routine monitoring of the public drinking water supply, informing the consumer and Nova Scotia Environment and Labour (NSEL) if water quality fails to meet the health-related criteria set out in the *Guidelines for Canadian Drinking Water Quality* and for correcting any deficiencies that may result. The owner is also responsible for contacting NSEL as soon as he/she becomes aware of any problem that may result in unsafe water being supplied to the consumer such as equipment failure and/or malfunction. The owner shall have contingency plans in place to deal with poor water quality, major fluctuations in system flow and/or pressure, or a prolonged interruption in the supply of water.

Owners of public drinking water supplies should refer to the appropriate section of these Guidelines, namely:

- Approved Water Supply - Section 4
- Registered Water Supply - Section 5

3.2 Nova Scotia Environment and Labour

Nova Scotia Environment and Labour (NSEL) has been designated as the lead agency to take such measures as are reasonable to provide access to safe, adequate and reliable public water supplies (*Environment Act*, Section 104(c)). To carry out this mandate, NSEL issues approvals to construct and operate water distribution and water treatment facilities, classifies facilities, requires certified operators, registers public drinking water supplies, audits facilities and ensures water quality monitoring programs are carried out and appropriate action is taken to address any problems that may arise. When a public drinking water supply owner fails to notify consumers that a public health risk exists, NSEL will cause a public notification to be issued, including the issuance of boil water advisories. NSEL may assist with non-routine or site-specific monitoring.

3.3 Medical Officer of Health (MOH)

The MOH provides advice to the Minister of Health, the Minister of Environment and Labour, the owner, NSEL and the public regarding public health concerns associated with drinking water supplies. The MOH may issue orders to protect public health, including the issuance of boil water advisories.

3.4 Water Quality Laboratory (Lab)

The lab conducts analyses of samples following procedures defined in the latest edition of *Standard Methods for the Examination of Water and Wastewater*, published jointly by the American Public Health Association, the American Water Works Association and the Water Environment Federation, or an alternative method acceptable to NSEL. The lab also participates in quality control, quality assurance and accreditation programs, as required, to ensure accurate results. All sample analyses are to be performed by a laboratory acceptable to NSEL.

The lab, when analysing water samples from a public drinking water supply, is responsible to immediately notify the water supply owner and NSEL of any sample results indicating the presence of coliforms.

4.0 Approved Water Supplies

The following sections apply to public drinking water supplies that hold a municipal water works approval issued under the *Activities Designation Regulations* made pursuant to the *Environment Act* for the collection, production, treatment, storage, supply or distribution of potable, piped water to the public (i.e. approved water supplies).

4.1 Routine Monitoring for Microbiological Quality

4.1.1 Parameters

An owner shall monitor all public drinking water supplies for total coliform and *Escherichia coli (E. coli)* bacteria. Coliform bacteria (total or *E. coli*) are indicator organisms used to determine the efficiency of treatment and the integrity of the water works system. They are surrogates for less abundant and more difficult to detect human pathogens. *E. coli* bacteria is a sub-group of total coliform bacteria and is used as a screen for fecal contamination. Thus, the presence of coliform organisms in treated water indicates that barriers are ineffective and there is an increased chance for waterborne pathogens to follow the same pathway. However, the absence of coliforms does not guarantee safe water and the presence of coliforms does not necessarily indicate an immediate hazard. Generally, the presence of total coliform indicates that treatment is not effective or that there is a secondary contamination in the water works system such as from a cross connection or biofilm growth or accumulation. The presence of *E. coli* indicates ineffective treatment and recent fecal contamination.

An owner shall ensure that all samples collected for routine bacteriological monitoring are tested for the presence of total coliform and *E. coli* organisms using methods listed in the latest edition of *Standard Methods for the Examination of Water and Wastewater.* It is recommended that the samples be analysed using the presence/absence (P/A) method that permits both total coliform and *E. coli* organisms to be determined simultaneously.

4.1.2 Sample Frequency, Number and Location

An owner of an approved water supply shall sample the public drinking water supply routinely. The minimum number of bacteriological samples an owner shall collect

from a public drinking supply water is set out in the most recent version of the *Guidelines for Canadian Drinking Water Quality* and shown in the following table:

Population Served	Minimum Number of Samples per Month
Up to 5,000	4
5,000 to 90,000	1 per 1,000 persons
More than 90,000	90 + (1 per 10,000 persons)

In many cases the number of samples necessary to obtain an accurate representation of a water works system will exceed these minimums. Sampling frequency from the system shall be at least weekly.

The sampling locations shall be chosen to be representative of the water works system and include central and peripheral locations. Buildings with prolonged periods of low or no use of water should be avoided as sampling locations.

For systems using surface water supplies, at least one water sample per week shall be collected from the point where the treated water enters the water works system.

NSEL may alter the frequencies, locations, numbers and parameters to be monitored depending on local conditions, analytical results or changes to the *Guidelines for Canadian Drinking Water Quality*.

4.1.3 Sample Collection and Preservation

All samples shall be collected and transported according to the standard procedures outlined in APPENDIX A.

4.1.4 Reporting of Sample Results

1) An owner shall ensure that results of all routine samples collected are sent from the lab to the owner. An owner shall record summaries of routine sample results in a uniform manner and make them available to NSEL upon request. The owner shall maintain records of sample results, including the original lab records, for a minimum of two years from the collection date.

2) Whenever the presence of coliforms is detected (total or *E. coli*), the lab shall immediately notify the water supply owner and NSEL and forward the results

to NSEL. The owner shall also immediately notify NSEL and forward the results to NSEL immediately after they receive the results from the lab. Receipt of any results sent electronically must be confirmed by telephone. If the local NSEL office cannot be contacted for any reason, the environmental emergencies number is to be called at 1-800-565-1633.

3) Upon receipt of sample results indicating the presence of coliforms (total or *E. coli*), the owner shall comply with Section 4.4 of this Guideline, "Corrective Actions to be Taken When Bacteria Are Present". Depending on the particular circumstances, advice may be sought from NSEL.

4) If the results indicate deficiencies that require a boil water advisory (see Section 4.5), the owner shall notify and work cooperatively with NSEL and the MOH. NSEL and the MOH may appoint a water quality committee to investigate the problem.

4.1.5 Re-sampling Procedure

The owner shall re-sample all locations showing coliforms present immediately upon receiving the results. Depending on the circumstances, NSEL may require that the owner collect additional samples throughout the water works system. The owner shall make arrangements with the lab to ensure the samples are analysed when received.

All re-samples shall be analysed by the P/A method (e.g. Colilert™, Colisure™, etc.) for a 24-28 hour result to confirm the presence of coliforms (total or *E. coli*).

4.1.6 Compliance

An owner shall ensure that the drinking water meets the bacteriological quality requirements as set out in the *Guidelines for Canadian Drinking Water Quality*.

Currently, the *Guidelines for Canadian Drinking Water Quality* require that:

> *The maximum acceptable concentration (MAC) for the bacteriological quality of approved water supplies is no coliforms detectable per 100 mL.*

However, because coliforms are not uniformly distributed in water and are subject to considerable variations in public health significance, this MAC will be applied in Nova Scotia as outlined in Section 4.4.

Section 4.4 outlines the corrective actions to be taken by the owner when coliform bacteria are present. When a boil water advisory is necessary (see Section 4.5), the owner shall comply with Section 4.6.

4.2 Routine Monitoring for Chemical and Physical Quality

4.2.1 Parameters

The owner shall monitor for general chemical and physical quality. The minimum parameters to be monitored are shown in the following table and include inorganic and physical parameters with recommended limits in the *Guidelines for Canadian Drinking Water Quality* and some with no guidelines at the present time. These parameters are included in standard general chemical analysis and metal scan packages available at most labs.

The following parameters are considered to be minimum requirements and any conditions to an operating approval that the facility has or may require will always take precedence. NSEL may require additional parameters to be monitored as part of an approval to operate.

Alkalinity	Colour	Potassium
Aluminum	Conductivity	Selenium
Ammonia	Copper	Sodium
Antimony	Fluoride	Sulphate
Arsenic	Hardness	Total Dissolved Solids
Barium	Iron	Total Organic Carbon
Boron	Lead	Turbidity
Cadmium	Magnesium	Uranium
Calcium	Manganese	Zinc
Chloride	Nitrate	
Chromium	pH	

4.2.2 Sample Frequency, Number and Location

An owner of an approved water supply shall monitor a surface water supply at least annually or a groundwater supply at least once every two years. On each occasion two samples shall be collected, one sample from the raw water source and one sample from a point after treatment. The same sample points shall be used each year.

In many cases the number of samples necessary to obtain an accurate representation of a water works system will exceed these minimums. The sampling locations shall be chosen to be representative of the water works system and include central and peripheral locations.

If there is reason to suspect the presence of other substances not listed in the table in Section 4.2.1 in a public drinking water supply, an owner shall monitor for these substances to ensure that their concentrations are below acceptable limits.

NSEL may alter the frequencies, locations, numbers and parameters to be monitored depending on local conditions, analytical results or changes to the *Guidelines for Canadian Drinking Water Quality* pursuant to Section 33 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations.*

4.2.3 Sample Collection and Preservation

An owner shall collect and transport samples according to the standard procedures outlined in APPENDIX B.

4.2.4 Reporting of Sample Results

1) An owner shall ensure that the results of samples for chemical and physical quality are sent from the lab to the owner. An owner shall record summaries of routine sample results in a uniform manner and make the results available to NSEL upon request. The owner shall maintain records of sample results for a minimum of ten years from the collection date.

2) Upon receipt of results that indicate that a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) has been exceeded, the owner shall immediately notify NSEL and forward the results to NSEL. Receipt of any results sent electronically must be confirmed by telephone.

3) Where a MAC or IMAC is exceeded, the owner shall comply with Section 4.2.5 of this Guideline, "Re-sampling Procedure". Depending on the particular circumstances, advice may be sought from NSEL.

4.2.5 Re-sampling Procedure

Where results indicate that a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) has been exceeded, the owner

shall collect a confirmation re-sample for that parameter as soon as possible after the initial results are received.

If the confirmation re-sample indicates that the MAC or IMAC is exceeded for the parameter of concern, the owner shall comply with Section 4.2.6 of this Guideline, "Compliance". Depending on the particular circumstances, advice may be sought from NSEL.

If the confirmation re-sample indicates that the MAC or IMAC is not exceeded for the parameter of concern, NSEL may require that additional samples be taken to further evaluate the need for compliance pursuant to Section 33 (2) of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations*.

4.2.6 Compliance

Any public drinking water supply in which the level of a substance is confirmed to exceed a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) is considered to be out of compliance with the health-related criteria specified in the most recent version of the *Guidelines for Canadian Drinking Water Quality*. The water supply owner, in consultation with NSEL, shall develop an action plan for addressing such non-compliance issues.

The action plan shall:

1) determine why the water exceeds the MAC or IMAC;

2) select a corrective action(s) to remove the source of contamination, provide treatment or switch to an acceptable alternate potable water supply;

3) provide a schedule for implementation of the corrective action(s) for meeting the MAC or IMAC.

After completing the corrective action(s), a water sample must be collected to demonstrate that the corrective action(s) has successfully reduced the concentration to below the MAC or IMAC given in most recent version of the *Guidelines for Canadian Drinking Water Quality*.

The action plan shall be prepared and submitted to NSEL within 30 calendar days from when the water supply owner confirmed the MAC or IMAC exceedance.

NSEL will communicate with the MOH during this process.

4.3 Daily Operational Monitoring

4.3.1 Disinfection Residual

An owner using a disinfection system shall monitor daily for disinfection residual. A disinfection residual should be continuously maintained throughout the entire water works system. Where a chlorine disinfection system is being used, the goal for a free chlorine residual at distant points in a water works system should be a minimum 0.2 mg/L. Higher chlorine residuals may be required by NSEL depending on other characteristics of the system but should not exceed 4.0 mg/L at any time.

Daily disinfection residuals should be recorded in a uniform manner and made available to NSEL upon request.

> All municipal water supplies shall be disinfected. In addition, NSEL has established minimum treatment requirements for all municipal supplies derived from surface water sources, groundwater under the direct influence of surface water and secure groundwater sources. Treatment requirements are available on the web at: www.gov.ns.ca/enla/water/municipalwaterapprovals.asp.

4.3.2 Turbidity

An owner using chemically-assisted filtration shall measure source and treated water turbidity at least once per day. An owner shall record daily turbidity measurements in a uniform manner and make them available to NSEL upon request.

4.3.3 Fluoride

An owner using fluoridation shall monitor daily for fluoride concentrations at a representative location within the water works system. At no time should fluoride concentrations exceed 1.5 mg/L with an optimum range between 0.8 and 1.0 mg/L. An owner shall record daily fluoride measurements in a uniform manner and make them available to NSEL upon request.

4.3.4 Approval to Operate

Any conditions to an operating approval that the water works system has or may require will always take precedence over the above requirements.

4.4 Corrective Actions to be Taken When Bacteria Are Present

4.4.1 Immediate Notification

An owner of an approved water supply shall contact NSEL immediately upon receipt of any sample result indicating the presence of total coliform or *E. coli*. If the local NSEL office cannot be contacted for any reason, the environmental emergencies number is to be called 1-800-565-1633.

When corrective action is to involve increased sampling (re-sampling) and/or weekend or public holiday monitoring, the lab is to be notified immediately.

4.4.2 With Total Coliform Present, *E. coli* Absent

Where total coliform are present in the absence of *E. coli*, the owner shall:

1) Immediately notify NSEL.
2) Re-sample at least the total coliform positive locations immediately.
3) Check disinfection residual:
   a) if there is inadequate residual throughout the system, increase disinfection;
   b) if there is no, or very low, disinfection residual at distant ends of the system, increase disinfection and flush water mains if necessary.

If the presence of total coliform is confirmed, the owner shall immediately begin an investigation to explain the presence of total coliform in the distribution system. NSEL, the MOH and the owner shall consider, on a case-by-case basis, one or more of the following actions to be included in the investigation:

1) Evaluate the effectiveness of treatment and the treatment plant:
   - determine if the disinfection equipment is working properly;
   - collect additional samples(s) of water leaving the treatment plant to see if it is properly disinfected (dosage/contact time);
   - analyse turbidity of water entering the water works system;
   - test for heterotrophic plate counts of raw and treated water and stressed coliform.
2) Evaluate the integrity of the water works system:
   - determine if water quality has deteriorated due to cross-connections, repairs, construction, loss of pressure, etc.;
   - collect additional samples to better characterize distribution system water quality.

3) Enumerate coliforms in samples to assess degree of contamination and possible point of entry.
4) Determine the species of coliforms retrieved from the water works system.
5) Request the MOH to survey doctor offices, hospital laboratories, etc. for increase in the incidence of waterborne gastrointestinal illness.
6) Review past history of the system and possibility of biofilm episode (see APPENDIX C).

A boil water advisory will be initiated at any time, in accordance with Section 4.6, if:

1) The owner is unable or unwilling to conduct the investigation.
2) The owner is unable or unwilling to take corrective action to remediate the cause of the positive samples.
3) The investigation indicates a problem that results in a threat to public health.
4) Any other circumstance in which it is believed that public health may be at risk from the water supply.

4.4.3 With *E. coli* Present

Where *E. coli* is present in any sample, the owner shall immediately notify NSEL. NSEL will notify the MOH. If the local NSEL office cannot be contacted for any reason, the environmental emergencies number is to be called at 1-800-565-1633.

The owner shall immediately initiate a boil water advisory, in accordance with Section 4.6, and immediately begin an investigation to explain the presence of *E. coli* in the distribution system. NSEL, the MOH and the owner shall consider, on a case-by-case basis, one or more of the following actions to be included in the investigation:

1) Resample at least the positive locations immediately.
2) Check disinfection residual:
   a) if there is inadequate residual throughout the system, increase disinfection;
   b) if there is no, or very low, disinfection residual at distant ends of the system, increase disinfection and flush water mains if necessary.
3) Evaluate the effectiveness of treatment and the treatment plant:
   - determine if the disinfection equipment is working properly;
   - collect additional samples(s) of water leaving the treatment plant to see if it is properly disinfected (dosage/contact time);
   - analyse turbidity of water entering the water works system;

- test for heterotrophic plate counts of raw and treated water and stressed coliform.

4) Evaluate integrity of the water works system:
   - determine if water quality has deteriorated due to cross-connections, repairs, construction, loss of pressure, etc.;
   - collect additional samples to better characterize distribution system water quality.
5) Enumerate coliforms in samples to assess degree of contamination and possible point of entry.
6) Consider further microbiological analysis of samples from the water works system.
7) Request the MOH to survey doctor offices, hospital laboratories, etc. for increase in the incidence of waterborne gastrointestinal illness.
8) Review past history of the system and possibility of biofilm episode (see APPENDIX C).

4.5 Boil Water Advisories

4.5.1 Deficiencies That Require a Boil Water Advisory

Deficiencies that require a boil water advisory include:

1) Fecal contamination of drinking water evidenced by sample results indicating the presence of *E. coli*.
2) Lack of disinfection or failure of key water treatment process.
3) Use of emergency water supply from an unchlorinated or inadequately chlorinated source.
4) Other circumstances which in the opinion of NSEL or the MOH constitutes a risk to public health (e.g. *Giardia*, *Cryptosporidium* contamination, etc.).
5) Evidence of an outbreak of waterborne illness as determined by the MOH (the risk to young children, elderly and immuno-compromised people should be considered in a decision).
6) A serious incident of raw water contamination.

Depending on the particular circumstances, advice may be sought from NSEL.

4.5.2 Deficiencies That May Require a Boil Water Advisory

Deficiencies that may require a boil water advisory include, but are not limited to:

1) Water that does not meet the *Guidelines for Canadian Drinking Water Quality* requirements for total coliform.
2) Suspected cross-connection or negative pressure.
3) Indicators of poor water quality such as ineffective disinfection due to high turbidity, high chlorine demand, etc. evidenced by sample results indicating the presence of total coliform in the water leaving the treatment plant and generally poor bacteriological water quality.

Depending on the particular circumstances, advice may be sought from NSEL.

4.6 Boil Water Advisory Protocol and Communication Plan

4.6.1 Initiating the Boil Water Advisory

Where one or more of the conditions described in Section 4.5.1 exists, the owner shall initiate the boil water advisory and contact NSEL immediately.

Where one or more of the conditions described in Section 4.5.2 exists, the owner may initiate the boil water advisory after consultation with NSEL.

In the event that NSEL or the MOH is aware of a potential serious health risk, NSEL will advise the water supply owner to initiate the boil water advisory.

When a boil water advisory is to be initiated, the owner shall provide a communication plan to NSEL for approval in accordance with Section 4.6.2. NSEL may approve or modify the plan depending on the seriousness of the event.

During the boil water advisory there should be frequent communication between NSEL, the MOH and the owner.

4.6.2 Procedure for Notification of Boil Water Advisory

1) The owner will inform consumers in a manner and frequency acceptable to NSEL and the MOH.
2) If the owner fails to notify the consumers, NSEL or the MOH will take appropriate steps to notify consumers.

The boil water advisory must be effectively communicated to the public. Consideration is to be given to placing the advisory in daily newspapers and in all other print media in the area. Local radio and television stations should be requested to broadcast the advisory on a frequent basis. All methods of

communication to the public are to be maintained throughout the duration of the advisory being in effect. In the case of an immediate serious public health threat other methods of notification, such as door-to-door and installation of signage, may be necessary.

4.6.3 Suggested Wording for Boil Water Advisory

"Due to water quality problems and the possibility of unsafe water, consumers are advised to boil all water for at least 1 minute before drinking, preparing infant formulas, preparing juices and ice cubes, washing fruits and vegetables, cooking, dental hygiene or any other activity requiring human consumption. This is to be done until further notice". (See APPENDIX D for recommended press release).

4.6.4 Follow up Communication Plan for Boil Water Advisory

After a boil water advisory has been issued, the owner shall keep the general public informed about the status of the advisory. A telephone hot line may be put in place by the owner during the boil water advisory. The hot line should be staffed for extended hours as needed.

Some businesses, institutions, manufacturing plants or health care facilities may have to take additional precautions during a boil water advisory. There may be circumstances where these facilities should be contacted as part of the owner's communication plan to assure compliance with these precautions.

4.6.5 Instructions for Boiling and Disinfecting Tap Water

During an advisory it is essential that all water to be used for the following activities be boiled:

1) drinking;
2) preparing infant formulas;
3) preparing juices and ice cubes;
4) washing fruits and vegetables;
5) cooking; or
6) dental hygiene.

Detailed instructions for boiling and disinfecting tap water during a boil water advisory are included in APPENDIX E. Instructions for businesses, institutions, manufacturing plants or health care facilities that may have special requirements when a boil water advisory is in effect are provided in APPENDIX F.

4.6.6 Removing the Boil Water Advisory

The boil water advisory will be removed by NSEL, in consultation with the MOH and the owner. Under normal circumstances the boil water advisory will be removed when:

a) the *Guidelines for Canadian Drinking Water Quality* for bacteriological quality are met for 2 consecutive sets of samples separated by a minimum of 24 hours; and

b) the deficiencies which led to the boil water advisory are corrected; and

c) sufficient finished water displacement has occurred in the water works system to eliminate potentially contaminated water.

5.0 Registered Water Supplies

The following sections apply to public drinking water supplies that hold a registration with NSEL under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* made pursuant to the *Environment Act* for the collection, production, treatment, storage, supply or distribution of potable, piped water to the public (i.e. registered water supplies).

5.1 Routine Monitoring for Microbiological Quality

5.1.1 Parameters

An owner shall monitor all public drinking water supplies for total coliform and *Escherichia coli (E. coli)* bacteria. Coliform bacteria (total or *E. coli*) are indicator organisms used to determine if drinking water is of good quality and free of microbial pathogens that can cause disease. Coliform bacteria are found in soil and in the intestines of warm-blooded animals, including humans. Monitoring for total coliform and *E. coli* bacteria therefore provides an indication of the degree of pollution impacting a drinking water supply source and its sanitary condition.

The presence of *E. coli* indicates that the source has been impacted by recent fecal contamination and therefore the water is unsafe to drink. The presence of total coliform in a non-disinfected well means that the well is prone to surface water infiltration and is therefore at risk of fecal contamination. The presence of total coliform in a disinfected system means the disinfection process has failed or has been overwhelmed. In the latter two cases, the water is considered unsafe to drink until the situation is remediated.

It is important to note that the absence of coliform bacteria does not guarantee safe water. Regular testing is required to check the safety of the water supply. Sampling should be carried out when the risk of contamination is greatest, such as during spring thaw, extended periods of heavy rain or drought, after lengthy periods of non-use or if the owner suspects any changes to the water quality.

An owner shall ensure that all samples collected for routine bacteriological monitoring are tested for the presence of total coliform and *E. coli* organisms using methods listed in the latest edition of *Standard Methods for the Examination of Water and Wastewater*. It is recommended that the samples be analysed using the

presence/absence (P/A) method that permits both total coliform and *E. coli* organisms to be determined simultaneously.

5.1.2 Sample Frequency, Number and Location

An owner of a registered water supply shall sample the water supply quarterly for microbiological quality. Where a water supply is not in operation year round, at least one of the samples is to be collected prior to start up.

NSEL may alter the frequencies, locations, numbers and parameters to be monitored depending on local conditions, analytical results or changes to the *Guidelines for Canadian Drinking Water Quality*.

5.1.3 Sample Collection and Preservation

All samples shall be collected and transported according to the standard procedures outlined in APPENDIX A.

The owner shall record the water supply registration number on the lab form when submitting all samples for microbiological quality analyses.

5.1.4 Reporting of Sample Results

1) An owner shall ensure that results of all routine samples collected are sent from the lab to the owner. The owner shall maintain records of sample results, including the original lab records, for a minimum of two years from the collection date. An owner shall make sample results available to NSEL upon request.

2) Whenever the presence of coliforms is detected (total or *E. coli*), the lab shall immediately notify the water supply owner and NSEL and forward the results to NSEL. The owner shall also immediately notify NSEL and forward the results to NSEL immediately after they receive the results from the lab. Receipt of any results sent electronically must be confirmed by telephone. If the local NSEL office cannot be contacted for any reason, the environmental emergencies number is to be called at 1-800-565-1633.

3) Upon receipt of sample results indicating the presence of coliforms (total or *E. coli*), the owner shall comply with Section 5.4 of this Guideline, "Corrective Actions to be Taken When Bacteria Are Present". Depending on the particular circumstances, advice may be sought from NSEL.

5.1.5 Compliance

An owner shall ensure that the drinking water meets the bacteriological quality requirements as set out in the *Guidelines for Canadian Drinking Water Quality*.

Currently, the *Guidelines for Canadian Drinking Water Quality* require that:

> *The maximum acceptable concentration (MAC) for the bacteriological quality of registered water supplies is no coliforms detectable per 100 mL.*

For clarity, this means that no sample should contain *E. coli* or other coliform bacteria. This MAC will be applied in Nova Scotia as outlined in Section 5.4.

Section 5.4 outlines the corrective actions to be taken by the owner when coliform bacteria are present. When a boil water advisory is necessary (see Section 5.5), the owner shall comply with Section 5.6.

5.2 Routine Monitoring for Chemical and Physical Quality

5.2.1 Parameters

The owner shall monitor for general chemical and physical quality. The minimum parameters to be monitored are shown in the following table and include inorganic and physical parameters with recommended limits in the *Guidelines for Canadian Drinking Water Quality* and some with no guidelines at the present time. These parameters are included in standard general chemical analysis and metal scan packages available at most labs.

The following parameters are considered to be minimum requirements. NSEL may require additional parameters to be monitored.

Alkalinity	Colour	Potassium
Aluminum	Conductivity	Selenium
Ammonia	Copper	Sodium
Antimony	Fluoride	Sulphate
Arsenic	Hardness	Total Dissolved Solids
Barium	Iron	Total Organic Carbon
Boron	Lead	Turbidity
Cadmium	Magnesium	Uranium
Calcium	Manganese	Zinc
Chloride	Nitrate	
Chromium	pH	

5.2.2 Sample Frequency, Number and Location

An owner of a registered water supply shall monitor a surface water supply at least annually or a groundwater supply at least once every two years. If a treatment device is in place to remove any chemical or physical substances, two samples shall be collected, one sample from the raw water source and one sample from a point after treatment. The sampling locations shall be chosen to be representative of the system and the same sample points shall be used when sampling.

In many cases it may be necessary to sample more frequently to obtain an accurate representation of the registered water supply.

If there is reason to suspect the presence of other substances not listed in the table in Section 5.2.1 in a public drinking water supply, an owner shall monitor for these substances to ensure that their concentrations are below the acceptable limits.

NSEL may alter the frequencies, locations, numbers and parameters to be monitored depending on local conditions, analytical results or changes to the *Guidelines for Canadian Drinking Water Quality* pursuant to Section 33 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations*.

5.2.3 Sample Collection and Preservation

An owner shall collect and transport samples according to the standard procedures outlined in APPENDIX B.

The owner shall record the water supply registration number on the lab form when submitting all samples for chemical and physical quality analyses.

5.2.4 Reporting of Sample Results

1) An owner shall ensure that the results of samples for chemical and physical quality are sent from the lab to the owner. The owner shall maintain records of sample results for a minimum of ten years from the collection date. An owner shall make sample results available to NSEL upon request.

2) Upon receipt of results that indicate a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) has been exceeded, the owner shall immediately notify NSEL and forward the results to NSEL. Receipt of any results sent electronically must be confirmed by telephone.

3) Where a MAC or IMAC is exceeded, the owner shall comply with Section 5.2.5 of this Guideline, "Re-sampling Procedure". Depending on the particular circumstances, advice may be sought from NSEL.

5.2.5 Re-sampling Procedure

Where results indicate that a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) has been exceeded, the owner shall collect a confirmation re-sample for that parameter as soon as possible after the initial results are received.

If the confirmation re-sample indicates that the MAC or IMAC is exceeded for the parameter of concern, the owner shall comply with Section 5.2.6 of this Guideline, "Compliance". Depending on the particular circumstances, advice may be sought from NSEL.

If the confirmation re-sample indicates that the MAC or IMAC is not exceeded for the parameter of concern, NSEL may require that additional samples be taken to further evaluate the need for compliance pursuant to Section 33(2) of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations*.

5.2.6 Compliance

Any public drinking water supply in which the level of a substance is confirmed to exceed a Maximum Acceptable Concentration (MAC) or an Interim Maximum Acceptable Concentration (IMAC) is considered to be out of compliance with the health-related criteria specified in the most recent version of the *Guidelines for Canadian Drinking Water Quality*. The water supply owner, in consultation with NSEL, shall develop an action plan for addressing such non-compliance issues.

The action plan shall:

1) determine why the water exceeds the MAC or IMAC;

2) select a corrective action(s) to remove the source of contamination, provide treatment or switch to an acceptable alternate potable water supply;

3) provide a schedule for implementation of the corrective action(s) for meeting the MAC or IMAC.

After completing the corrective action(s), a water sample must be collected to demonstrate that the corrective action(s) has successfully reduced the concentration to below the MAC or IMAC given in the most recent version of the *Guidelines for Canadian Drinking Water Quality*.

The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days from when the water supply is confirmed to exceed the health-related criteria (i.e. MAC or IMAC).

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed hydrogeolgoists, licensed engineers, or water treatment specialists.

NSEL will communicate with the MOH during this process.

Where a treatment device is installed to remove any chemical or physical substances, Section 5.2.2 of the *Guidelines for Monitoring Public Drinking Water Supplies* requires that two samples be collected when sampling, one sample from the raw water source and one sample from a point after treatment. The requirement to test the raw and treated water does not apply to groundwater supplies that only disinfect to meet bacteriological guidelines.

5.3 Daily Operational Monitoring

5.3.1 Disinfection Residual

An owner using a disinfection system shall monitor daily for disinfection residual. Where a chlorine disinfection system is being used, the goal for free chlorine residual should be a minimum 0.2 mg/L at the furthest tap in the system. Higher chlorine residuals may be required by NSEL depending on other characteristics of the system but should not exceed 4 mg/L at any time.

Daily disinfection residuals should be recorded in a uniform manner and made available to NSEL upon request.

5.4 Corrective Actions to be Taken When Bacteria Are Present

5.4.1 Immediate Notification

An owner of a registered water supply shall contact NSEL immediately upon receipt of any sample results indicating the presence of total coliform or *E. coli*. If the local NSEL office cannot be contacted for any reason, the environmental emergencies number is to be called at 1-800-565-1633.

5.4.2 Dug and Drilled Well Water Sources

Where total coliform or *E. coli* are present, the owner shall:

1) Immediately notify NSEL.
2) Immediately initiate a boil water advisory, in accordance with Section 5.6, or seek an acceptable alternate potable water supply until satisfactory bacteriological quality is restored.
3) Immediately re-sample the supply.

NSEL will respond within 24 hours. Based on this response, the following protocol will apply.

5.4.2.1 No Obvious Signs of Well Construction Problems

Where there are no obvious signs of well construction problems and the re-sample result confirms the presence of total coliform or *E. coli*, the owner shall:

1) Immediately disinfect the water source as per the well disinfection procedures outlined in *Disinfection of Water Wells by Chlorination* available on the website at: www.gov.ns.ca/enla/water/docs/DisinfectWaterWell.pdf.

2) Re-sample the well 5 days after the well has been disinfected or after confirmatory tests, using a chlorine test kit, indicates the absence of chlorine residual.

It is critical that there be no remaining chlorine residual prior to taking the re-sample from a well that is normally untreated (i.e. does not have a continuous chlorination system).

a) Positive Re-sample Following Disinfection

If the re-sample result indicates the presence of total coliform or *E. coli* following disinfection, the owner shall immediately seek the expertise of a person qualified under the *Well Construction Regulations* to confirm the well is constructed properly. Any upgrading of the well to address deficiencies must meet the requirements of the *Well Construction Regulations*.

Once the well is confirmed to be constructed properly and contamination persists, the owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days of the initial notification unless otherwise advised by NSEL.

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed hydrogeolgoists, licensed engineers, or water treatment specialists.

b) Negative Re-sample Following Disinfection

If the re-sample result indicates the absence of total coliform or *E.coli* following disinfection, the owner shall continue following the *Guidelines for Monitoring Public Drinking Water Supplies*.

5.4.2.2 Obvious Signs of Well Construction Problems

Where there are obvious signs of well construction problems, the owner shall immediately seek the expertise of a person qualified under the *Well Construction Regulations* to remediate the situation. Any upgrading of the well to address deficiencies must meet the requirements of the *Well Construction Regulations*.

Once the well is confirmed to be constructed properly and contamination persists, the owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days of the initial notification unless otherwise advised by NSEL.

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed hydrogeolgoists, licensed engineers, or water treatment specialists.

Where corrective measures have failed to remediate problems related to the presence of total coliform or *E. coli*, treatment shall be required pursuant to Section 34 of the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations.*

5.4.3 Surface Water Supplies

Where total coliform or *E. coli* are present, the owner shall:

1) Immediately notify NSEL.
2) Immediately initiate a boil water advisory, in accordance with Section 5.6, or seek an acceptable alternate potable water supply until satisfactory bacteriological quality is restored.
3) Immediately re-sample the supply.

NSEL will respond within 24 hours. Based on this response the following protocol will apply.

If the re-sample result indicates the presence of total coliform or *E. coli*, the owner shall submit an action plan to NSEL outlining the corrective measures that will be taken to remediate the situation. The action plan shall be prepared by a qualified professional, complete with a schedule for implementation of the corrective measures and copies of any water quality results. The action plan shall be submitted to NSEL within 30 calendar days of the initial notification unless otherwise advised by NSEL.

The proposed action plan must be acceptable to NSEL. The acceptance of the proposed action plan does not preclude the owner from having to take additional corrective measures if the proposed action plan is unsuccessful at remediating the problem or from having to submit a revised or new action plan.

Qualified professionals may include licensed engineers or water treatment specialists.

All public water supplies registered under the *Water and Wastewater Facilities and Public Drinking Water Supplies Regulations* made pursuant to the *Environment Act* that derive their supply from surface water sources shall be filtered and disinfected.

5.5 Boil Water Advisories

5.5.1 Deficiencies That Require a Boil Water Advisory

Deficiencies that require a boil water advisory include:

1) Presence of total coliform or *E. coli*.
2) Lack of disinfection, where required.
3) Ineffective disinfection, where required, due to high turbidity or high chlorine demand.
4) Suspected cross-connection or negative pressure.
5) Other circumstances which in the opinion of NSEL or the MOH constitutes a risk to public health (e.g. *Giardia*, *Cryptosporidium* contamination, etc.).
6) Evidence of an outbreak of waterborne illness as determined by the MOH (the risk to young children, elderly and immuno-compromised people should be considered in a decision).
7) A serious incident of raw water contamination.

5.6 Boil Water Advisory Protocol and Signage

5.6.1 Initiating the Boil Water Advisory

Where one or more of the conditions described in Section 5.5.1 exist, the owner shall initiate the boil water advisory and contact NSEL immediately.

In the event that NSEL or the MOH is aware of a potential serious health risk, NSEL will advise the water supply owner to initiate the boil water advisory.

During the boil water advisory there should be frequent communication between NSEL, the MOH and the owner.

5.6.2 Procedure for Notification of Boil Water Advisory

1) The owner will ensure that proper signage is posted to inform consumers of the boil water advisory. Signage must be acceptable to NSEL.
2) If the owner fails to notify the consumers, NSEL will take appropriate steps to notify the consumers.
3) Signage is to be posted for the duration of the boil water advisory.

5.6.3 Instructions for Boiling and Disinfecting Tap Water

During an advisory it is essential that all water to be used for the following activities be boiled:

1) drinking;
2) preparing infant formulas;
3) preparing juices and ice cubes;
4) washing fruits and vegetables;
5) cooking; or
6) dental hygiene.

Detailed instructions for boiling and disinfecting tap water during a boil water advisory are included in APPENDIX E. Instructions for businesses, institutions, manufacturing plants or health care facilities that may have special requirements when a boil water advisory is in effect are provided in APPENDIX F.

5.6.4 Removing the Boil Water Advisory

The boil water advisory will be removed by NSEL, in consultation with the MOH and the owner. Under normal circumstances the boil water advisory will be removed when:

a) the *Guidelines for Canadian Drinking Water Quality* for bacteriological quality are met for 2 consecutive sets of samples separated by a minimum of 24 hours; and

b) the deficiencies which led to the boil water advisory are corrected.

Dated: _____ _____

William G. R. Lahey
Deputy Minister

APPENDIX A

Sample Collection and Preservation - Microbiological Quality

Container

- Use a sterilized sample bottle containing sodium thiosulfate preservative (a chlorine neutralizer). Bottles are available from some local Nova Scotia Environment and Labour offices, water quality laboratories, and from some hospitals. A list of approved laboratories is available at: http://www.gov.ns.ca/enla/water/labs/thm.

- Keep sample containers clean and free from contamination before and after collecting the sample. Do NOT open them prior to collecting the sample.

- Examine the sample bottle for cracks, a missing seal, or other signs that its sterility may be compromised. If any of these indications are found, discard the bottle and use a suitable one.

- Label the bottle with the water supply owner's name, location of the water source and/or sampling location, date, and time.

Flush the System

- For locations at which the sample must be collected from a tap, inspect the outside of the faucet. If water leaks around the outside of the faucet, select a different sampling site.

- Remove any aerators, strainers, attachments, or purification devices from the tap.

- If necessary, remove debris and sterilize the faucet outlet, for example by swabbing with a disinfecting wipe.

- DO NOT take samples from a flexible hose or garden hose or outside hose bib. Sample from the cold water faucets only.

- If the sample is to be taken from a tap or a pump, allow the water to run for at least 5 minutes before collection. This will help to remove stagnant water from the system.

Collect the Sample

- If there is a chlorine disinfection treatment unit, measure and record chlorine residual. Normally free chlorine residual is measured, however, total chlorine residuals may be required on occasion. In either case, the chlorine residual should be recorded on the lab requisition form and be marked "F" or "T" to indicate free or total chlorine residual, respectively.

- Before taking the sample, reduce the tap flow rate to approximately the width of a pencil before taking the sample. The flow rate should be low enough to ensure that no splashing occurs as the container is filled. Do not adjust the flow rate while taking the sample. At sampling points where water runs continuously, do not adjust flow rate.

- While holding the sample container at the base, remove the seal around the cap before attempting to open the bottle.

- Remove the cap with the free hand. Be careful NOT TO TOUCH the inside of the bottle cap or bottle lip. Continue to hold the cap in one hand with the inside facing down while the bottle is being filled. Do NOT touch the interior of the cap or lay it down. Do NOT breathe on the bottle or cap.

- Do NOT rinse the bottle.

- Fill the bottle to the fill line. Do NOT allow the bottle to overflow. Carefully replace the cap.

- Complete the laboratory requisition form. Include all required information including sampling location, date, time, etc. and who took the sample. Registered water supply owners must also record the registration number. All water samples are to be analysed for total coliform and *E. coli*.

Storage and Transport

- Samples shall be kept in a refrigerator or cooler with ice packs to maintain a temperature of 4°C until delivered to the lab. Samples should not be frozen.

- Transport the sample to the laboratory as soon as possible and definitely within 24 hours of collection. Check ahead with the lab about day and/or time deadlines for sample acceptance to ensure meeting the 24-hour criterion.

APPENDIX B

Sample Collection and Preservation - Chemical and Physical Quality

Container

- For most basic parameters, use a clean polyethylene bottle available from water quality laboratories. A list of approved laboratories is available on the web at: http://www.gov.ns.ca/enla/water/labs/htm.
- For additional or specialized parameters, discuss the requirements with the laboratory or a trained professional before sampling.
- Label the bottle with the water supply owner's name, location of the water source and/or sampling location, date, and time.
- Make sure all information on the requisition is filled out completely. Registered water supply owners must also record the registration number.

Flush the System

- If the sample is to be taken from a tap or pump, allow the water to run for 10 minutes if possible before collection. This will help to remove stagnant water that may have artificially elevated metal concentrations from the system.

Collect the Sample

- Rinse the bottle and cap 2 to 3 times unless specialized sampling requires non-rinse procedures.
- Turn flow volume down so that water runs gently.
- Sample for sensitive parameters (organics, metals) first. Filtration and preservation may be necessary for metals, depending on the purpose of sampling.
- Fill bottle to top (overflow) and cap tightly with no air gap.

- If a treatment device is in place to remove any chemical or physical substances, two samples shall be collected, one sample from the raw water source and one sample from a point after treatment.

Storage and Transport

- Samples shall be kept in a refrigerator or cooler with ice packs to maintain a temperature of 4°C until delivered to the lab. Samples should not be frozen. Samples should be kept in the dark.

- Transport the sample to the laboratory as soon as possible, preferably within 24 hours.

APPENDIX C

The Growth of Biofilm in a Water Works System

Introduction

Biofilm in a water works system refers to organic or inorganic surface deposits consisting of microorganisms, microbial products and debris. Biofilm may occur on interior pipe surfaces, in sediments, inorganic tubercles, suspended particles or virtually any substratum immersed in the aquatic environment. Biofilm may be evenly distributed or occur as sporadic random patches.

Public Health Significance

Portions of a biofilm lining the interior of a water pipe may periodically slough off into the passing water thereby seeding it with microorganisms contained in the biofilm. If such bacteria are coliforms, the occurrence must be considered a public health concern until it is proven that a treatment failure or contamination has not occurred. It is difficult to distinguish between a true biofilm event and an unexplained coliform occurrence. Determination of coliform contamination due to biofilm is usually a negative conclusion; that is, there are no observable coliforms in the treatment plant effluent, no identified breakdown in treatment barriers, no apparent cross-connection or other contamination of the water works system (breaks, construction, etc.). While a true coliform biofilm event may not in itself signal a public health risk, it may mask a real contamination event and therefore must be viewed with concern. The onus is on the owner to show that these coliform occurrences are a result of biofilm release into the water supply.

Characteristic of a Situation Where Biofilm May be the Cause of Bacteria Counts Within a Water Works System

- No coliforms are detected in treatment plant effluent.
- Coliform bacteria persist in a water works system samples despite the maintenance of a disinfectant residual.
- Seasonal increase in coliform densities with highest recovery in warm summer months, decreasing in the fall.
- The duration of the coliform episode is prolonged for years.
- Growth of heterotrophic bacteria, detected using the heterotrophic plate count (HPC) method, frequently occurs before coliforms are detected.
- Coliform growth occurs as randomized pattern in the water works system.
- Some predominant coliform species can be identified, such as *Klebsiella*, *Enterobacter* or *Citrobacter*.

- Coliform occurrence persists despite proper operation and maintenance practices being carried out, including: consistently maintaining positive pressure in the water works system, implementing aggressive cross-connection control, thoroughly flushing and disinfecting pipes after construction and repair, providing efficient treatment.

APPENDIX D

Draft Press Release for Boil Water Advisory
(Revise as necessary to fit specific circumstances)

Due to apparent contamination of the _____ public drinking water supply and the possibility of unsafe water, consumers are advised to boil all water for at least 1 minute before drinking, preparing infant formulas, preparing juices and ice cubes, washing fruits and vegetables, cooking, dental hygiene or any other activity requiring human consumption. This is to be done until further notice.

The water utility is doing all it can to determine the cause of the problem and to remedy it as quickly as possible. The water utility, Nova Scotia Environment and Labour and the Medical Officer of Health are continuing to monitor the water quality closely and are working in close consultation.

Detailed instructions on water usage when a boil water advisory is in effect are available from the water utility or the local office of Nova Scotia Environment and Labour.

For further information regarding this notice call:

APPENDIX E

Instructions for Boiling and Disinfecting Tap Water During a Boil Advisory

During an advisory, it is essential that all water to be used for the following activities be boiled:

1) drinking;
2) preparing infant formulas;
3) preparing juices and ice cubes;
4) washing fruits and vegetables;
5) cooking; or
6) dental hygiene.

Holding water at a rolling boil for at least 1 minute will inactivate all waterborne pathogenic micro-organisms. Water can be boiled either in a pot or kettle on a stove, an electric kettle without an automatic shut-off or in a microwave oven. If water is boiled in a microwave, it is advisable to include a glass rod or wooden or plastic stir stick in the container to provide nucleation sites for bubble formation and energy diffusion. This will prevent the formation of superheated water.

Under most circumstances it is not necessary to boil water used for other household purposes. Adults, adolescents and older children may shower, bathe or wash using tap water but should avoid swallowing the water. Toddlers and infants should be sponge bathed. In non-outbreak situations, dishes and laundry may be washed in tap water, either by hand or by machine.

In the event of a waterborne outbreak as declared by the Medical Officer of Health, it may be necessary to advise the public to take additional precautions. In this situation, hands should be washed in a dilute solution of household bleach and water (1 mL or 20 drops per litre of water). This is particularly important before preparing or eating meals, and after using the toilet, changing diapers, and handling animals. The solution should be allowed to stand 10 minutes before use. If dishes are hand washed they should be washed and rinsed in hot tap water, soaked in a dilute solution of household bleach (20 mL of bleach in 10 litres of water) for one minute and air dried. Alternatively, dishwashers with a hot water cycle will disinfect dishes.

Additional instructions for businesses, institutions, manufacturing plants or health care facilities that may have special requirements when a boil water advisory is in effect are provided in APPENDIX F.

APPENDIX F

Users That Must Take Particular Precautions During A Boil Advisory

a) Commercial Establishments (Restaurants, Hotels, Convenience Stores, etc.)

- All water that is to be provided directly to customers for drinking purposes must be treated by boiling the tap water for at least 1 minute and then storing the water in clean, covered containers until used for serving. An alternative to this would be using commercially available "bottled water" from a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA). Commercial coffee machines that achieve boiling temperatures as part of their design are exempt (see Notes).

- All foods (e.g. fruits and vegetables) that need washing are to be rinsed or soaked in tap water that has been boiled for at least 1 minute. An alternative to this would be using commercially available "bottled water" from a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA).

- Tap water used as an ingredient in any food product that will be "ready to eat" without cooking (e.g. drink mixes, pudding, jellos, etc.) must be boiled for at least 1 minute. An alternative to this would be using commercially available "bottled water" from a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA).

- Ensure that food handlers wash and rinse hands in water that has been treated with chlorine bleach.

- It is not necessary for bakeries to boil water that is part of a recipe or ingredient in a product that is to be baked. Water for other uses must be boiled.

- Disconnect ice machines and discard any ice and crushed ice products that has been made from this ice. All ice used during the boil water advisory must originate from tap water that has been boiled for at least 1 minute or from a commercial ice supply distributor. Ice machines at the establishment must be emptied and not used for the duration of the boil water advisory. Lines to ice machines must be disinfected prior to reuse.

- All soft drink beverage lines connected directly to tap water for mixing must be disconnected for the duration of the boil water advisory. Use bottled water or canned beverages exclusively. Lines to soft drink canisters must be disinfected prior to re-use.

- Disconnect water vending machines unless the water is treated by an approved method. Disinfect lines prior to re-use.

- Disconnect vegetable spraying/sprinkler supplies. Disinfect lines prior to re-use.

- Commercial dishwashers that use hot water 82°C or above are considered satisfactory. Beverage glass washers that utilize a "cold" water rinse must not be used unless the rinse water can be changed to use hot water 82°C or above. For manually washed dishes, it is important that the sanitizer concentration be a minimum of 100 parts per million of chlorine. It is also important that dishes are allowed to air dry. Do not rinse with tap water.

- Substitute boiled/cooled water for tap water in all other uses in the kitchen such as washing and sanitizing cutting boards, counter tops, etc.

- All employees reporting that they are suffering from a diarrheal illness must be excluded from work and should be tested by their family doctor. They are not to return to work until symptoms have subsided. Good hand washing should be emphasized for all staff.

Notes:

Commercial coffee brewers generally operate at a brew temperature of 88°C - 90°C with this temperature being thermostatially maintained in the water tank. Brewing is achieved by displacement of the hot water with cold water within the tank. The temperature attained by the hot water will control bacterial and protozoic organisms of concern during a boil water advisory.

The temperature of the water should be verified using a metal stem probe thermometer by running a full cycle of the brewer with water, taking the temperature at a point below the funnel when the decanter is half full. The temperature at this point should be 72°C or higher.

The decanter used for filling the brewer with water should not be used for receiving the coffee before being washed and sanitized.

This exemption is not applicable to non-commercial or domestic type coffee brewers as there may be wide variations of temperatures in these machines.

Upon rescinding of a boil water advisory:

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer's specifications. This may vary from fixture to fixture. Consult your facility engineer and/or manufacturer when re-starting the equipment.

- Managers of large buildings with water-holding reservoirs should consult with their facility engineer about draining the reservoir.

- Follow the directions of your water utility or, as general guidance, run cold water faucets and drinking fountains for 3 minutes each.

- Run water softeners through a regeneration cycle.

- Drain and refill hot water heaters if set at a low temperature (below 64.2^{o}C) taking all necessary precautions to avoid electrical shocks.

- Consult your facility engineer regarding pool and/or whirlpool operations.

b) Food Production

- Dairy Plants - The contaminated water must not contact products following the pasteurization procedure and water used in clean-in-place procedures and in cleaning of product related equipment must be properly chlorinated.

- Bottling Plants - Pre-superchlorination and chlorine removal must be a part of production procedure.

- Ice Making - It is prohibited to make ice for domestic purposes or for cooling or preservation of food for the duration of the boil water advisory unless the water has undergone proper treatment to inactivate microbial pathogens.

c) Hospitals, Clinics, Long Term Care Facilities, Nursing Homes, etc.

- Boil water or use an acceptable alternate potable water supply in all applications of tap water intended for human consumption or treatment procedures where a risk of infection is possible. **Assess all water usage in consultation with infection control personnel.**

- Patients and employees should not consume tap water that has not been disinfected, ice or drinks made with tap water that has not been disinfected, or raw foods rinsed with tap water that has not been disinfected.

- Disconnect ice machines and discard any ice and crushed ice products that has been made from this ice. All ice used during the boil water advisory must originate from tap water that has been boiled for at least 1 minute or from a commercial ice supply distributor. Ice machines at the establishment must be emptied and not used for the duration of the boil water advisory. Lines to ice machines must be disinfected prior to re-use.

- For other food preparation and hand washing guidance, refer to the information provided under the "commercial establishments" (see Appendix F, Section a).

- Disinfect water by:
  - Boiling at a rapid, rolling boil for 1 minute; or
  - Filtering through a reverse osmosis filter, an "absolute 1 micron" filter.

  An alternate to this would be using commercially available "bottled water" from a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA).

- All employees reporting that they are suffering from a diarrheal illness must be excluded from work and should be tested by their family doctor. They are not to return to work until symptoms have subsided. Good hand washing should be emphasized for all staff.

- Restrict burn patients and patients with open sores or wounds from whirlpool treatments.

- Monitor patients closely for signs and symptoms of gastrointestinal illness.

- Sanitize dishes by washing in dishwashing machines that have a hot water cycle at 82 ^{o}C or above. For manually washed dishes, it is important that the sanitizer concentration be a minimal of 100 parts per million of chlorine. It is also important that dishes are allowed to air dry. Do not rinse with tap water.

Notes:

Renal dialysis units are routinely treated with water using reverse osmosis. This is considered an acceptable treatment process for publicly supplied water under a boil water advisory.

Upon rescinding of a boil water advisory:

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer's specifications. This may vary from fixture to fixture. Consult your facility engineer and/or manufacturer when re-starting the equipment.

- Managers of large buildings with water-holding reservoirs should consult with their facility engineer about draining the reservoir.

- Follow the directions of your water utility or, as general guidance, run cold water faucets and drinking fountains for 3 minutes each.

- Run water softeners through a regeneration cycle.

- Drain and refill hot water heaters if set at a low temperature (below 64.2^{o}C) taking all necessary precautions to avoid electrical shocks.

- Resume usual bathing practices and care for patients with breaks in the skin.

- Consult your facility engineer regarding pool and/or whirlpool operations.

d) Day Care Facilities

- Day care facilities in areas where a boil water advisory is in effect should be contacted and advised to use boiled or disinfected water for drinking, preparing infant formulas, preparing juices and ice cubes, washing fruits and vegetables and for all hand washing and dental hygiene.

- Children and employees should not consume tap water that has not been disinfected, ice or drinks made with tap water that has not been disinfected, or raw foods rinsed with tap water that has not been disinfected.

- Disinfect water by:
  - Boiling at a rapid, rolling boil for 1 minute; or
  - Filtering through a reverse osmosis filter, an "absolute 1 micron" filter.

An alternate to this would be using commercially available "bottled water" from a supplier who is a member of the Canadian Bottled Water Association (CBWA) or the International Bottled Water Association (IBWA).

- All employees reporting that they are suffering from a diarrheal illness must be excluded from work and should be tested by their family doctor. They are not to return to work until symptoms have subsided. Good hand washing should be emphasized for all staff.

- Sanitize dishes by washing in dishwashing machines that have a hot water cycle at 82°C or above. For manually washed dishes, it is important that the sanitizer concentration be a minimum of 100 parts per million of chlorine. It is important that dishes be allowed to air dry. Do not rinse with tap water.

Upon rescinding of a boil water advisory:

- Re-start and flush any water-using fixture or piece of equipment in accordance with the manufacturer's specifications. This may vary from fixture to fixture. Consult your facility engineer and/or manufacturer when re-starting the equipment.

- Managers of large buildings with water-holding reservoirs should consult with their facility engineer about draining the reservoir.

- Follow the directions of your water utility or, as general guidance, run cold water faucets and drinking fountains for 3 minutes each if they have not been used in the last 24 hours.

- Run water softeners through a regeneration cycle.

- Drain and refill hot water heaters if set at a low temperature (below 64.2°C) taking all necessary precautions to avoid electrical shocks.

e) Dental Offices

- Dentists, in areas where a boil water advisory is in effect, should be contacted and advised to use boiled or bottled water for patients to drink or rinse and for all hand washing.

- It is also recommended that the high/low speed turbines run dry and a hand syringe of boiled water or sterile saline be used for cooling/rinsing the tooth and/or oral tissues.

- Regular hand piece maintenance (i.e. oiling and sterilizing) should continue per the manufacturer's instructions.

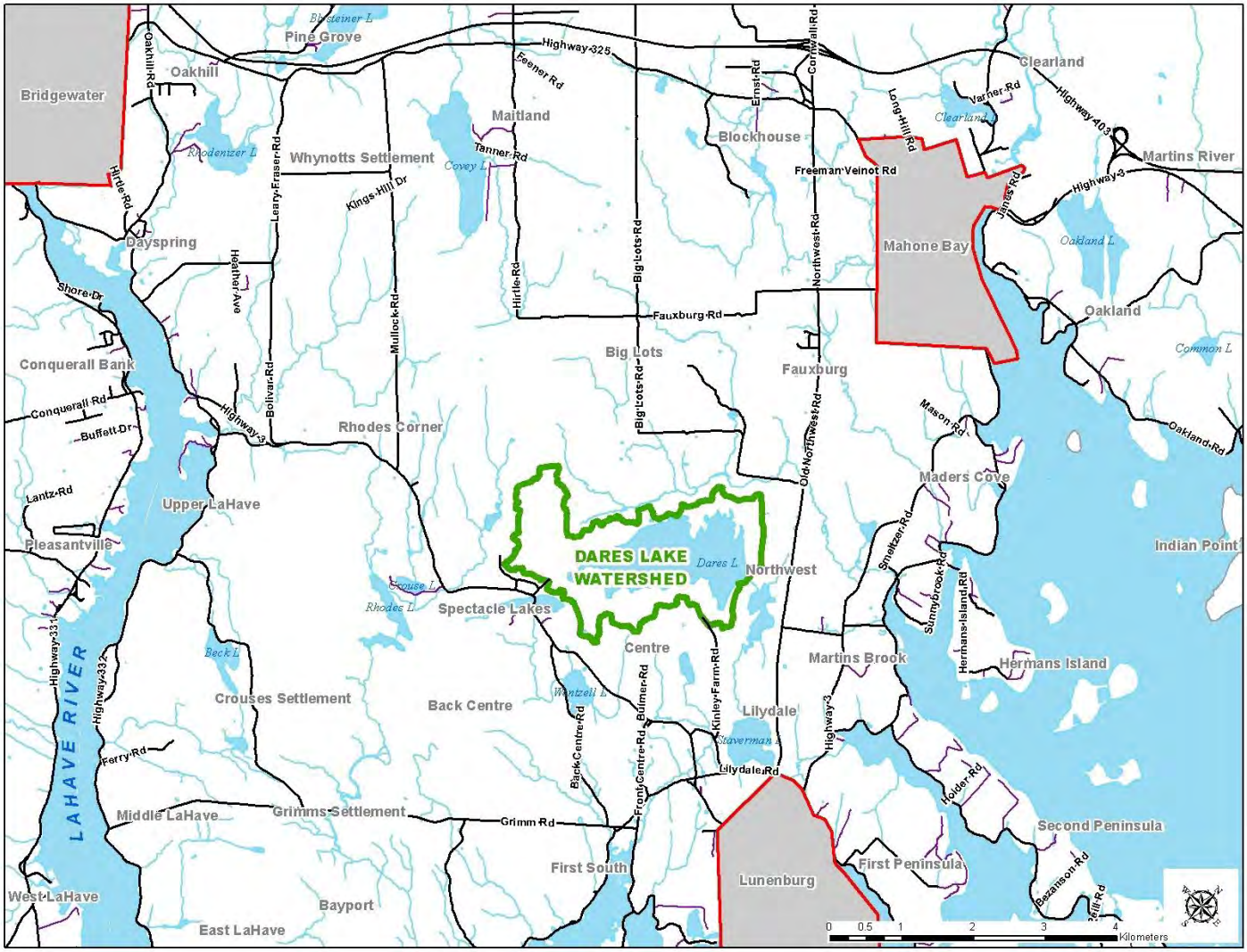
- To avoid any potential risk of contamination from the water supply that could occur from and during inadvertent use of dentist equipment with contaminated water during the advisory, dentists are advised to turn off the water supply to their dental units and sinks. If this is not possible, covering or taping the controls or outlets may be indicated (e.g. triplex syringe, water dispenser, cavitron, etc.).

f) Water Vending Outlets (Includes Wine and Beer Vending)

Assess each system individually.

Appendix "Q"

Location of Dares Lake



Kelly Jardine

From: Peter Baker
Sent: Wednesday, September 23, 2020 10:11 AM
To: Heather McCallum; Ian Tillard
Cc: Bea Renton; Paul Bracken
Subject: RE: COUNCIL SEP 8: LGBTQ+ Crosswalk Painting

Hi Heather the cost would be no more than $ 500.00 paint would be approximately $350.00, roughly two hours to set up and paint for to 2 employees @ $32.00 per hour and I would say the crosswalk on Lincoln at King .
Thanks
Peter Baker

Peter Baker
Superintendent
Town of Lunenburg
902-634-8992 ext1

AUDIT COMMITTEE MEETING MINUTES

THURSDAY, SEPTEMBER 17, 2020 AT 12:00 P.M.

(VIA AUDIO/VIDEO CONFERENCE DURING COVID-19 PANDEMIC

PRESENT: Mayor Rachel Bailey
Deputy Mayor John McGee
Councillor Ronnie Bachman
Councillor Danny Croft
Councillor Peter Mosher
Councillor Matt Risser
Jamie Green, Citizen Appointment (arrived at 12:07 p.m.)

ALSO PRESENT: Paul Belliveau, FCPA, FCA, Belliveau Veinotte Inc., Chartered Professional Accountants
Michael Belliveau, CPA, CA, Belliveau Veinotte Inc., Chartered Professional Accountants
Lisa Dagley, CPA, CGA, Finance Director
Kathleen Rafuse, Accountant
Bea Renton, Chief Administrative Officer

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1. Call to Order

The Mayor called the meeting to order at 12:04 p.m. and welcomed everyone.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Mayor gave introductory remarks respecting the unceded territory of the Mi'kmaq People on which Lunenburg is situated.

3. Agenda

Motion: moved and seconded to approve the agenda. Motion carried.

4. Approval of June 4, 2020 Audit Committee Meeting Minutes

Motion: moved and seconded to approve the June 4, 2020 minutes. Motion carried.

12:07 p.m. – Mr. Green joined the meeting.

5. Business arising from the Minutes/Unfinished Business

   a. Municipal Audit 2019/20 – Town Auditor/Belliveau Veinotte Inc. Chartered Accountants presentation of Town's 2019/20 audited Financial Statements to March 31, 2020 and review of Auditor's management letter (will be circulated on or before September 11)

The Auditors expressed condolences on the September 15 passing of former Mayor Laurence Mawhinney.

The Auditors provided a summary of the audited financial statements for the Town (Schedule “A”).

They next reviewed their management and internal control letters (Schedule “B”) noting in particular the importance of continuity of service and safe work practices during the COVID-19 pandemic.

b. Receive and authorize Mayor and CAO to sign the 2019/20 audited Town of Lunenburg Financial Statements

Motion: moved and seconded to authorize the Mayor and CAO to sign the 2019/20 audited Town of Lunenburg Financial Statements (Schedule “A”). Motion carried.

6. New Business

(Nil.)

7. Adjournment

Motion: moved and seconded to adjourn the meeting. Motion carried.

The meeting was adjourned at 12:37 p.m.

_____

Bea Renton, CAO

Schedule "A"

TOWN OF LUNENBURG

Financial Statements

Year Ended March 31, 2020

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS
Member of The AC Group of Independent Accounting Firms

TOWN OF LUNENBURG

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Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG

Consolidated Financial Statements

Year Ended March 31, 2020

Section A

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG

SECTION A

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Management's Responsibility for the Consolidated Financial Statements

The accompanying consolidated financial statements of the Town of Lunenburg (the "Town") are the responsibility of the Town's management and have been prepared in compliance with legislation, and in accordance with Canadian public sector accounting standards established by the Public Sector Accounting Board of the Chartered Professional Accountants of Canada (CPA Canada). A summary of the significant accounting policies are described in Note 1 to the consolidated financial statements. The preparation of financial statements necessarily involves the use of estimates based on management's judgement, particularly when transactions affecting the current accounting period cannot be finalized with certainty until future periods.

The Town's management maintains a system of internal controls designed to provide reasonable assurance that assets are safeguarded, transactions are properly authorized and recorded in compliance with legislative and regulatory requirements, and reliable financial information is available on a timely basis for preparation of the consolidated financial statements. These systems are monitored and evaluated by management.

The audit committee meets with management and the external auditors to review the consolidated financial statements and discuss any significant financial reporting or internal control matters prior to their approval of the consolidated financial statements.

The consolidated financial statements have been audited by Belliveau Veinotte Inc., independent external auditors appointed by the Town. The accompanying Auditor's Report outlines their responsibilities, the scope of their examination and their opinion on the Town's consolidated financial statements.

Bea Renton
Chief Administrative Officer (CAO)/Clerk

Lisa Dagley, CPA, CGA
Finance Director

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS
Member of The AC Group of Independent Accounting Firms

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INDEPENDENT AUDITOR'S REPORT

September 17, 2020

Her Worship the Mayor and
Members of the Council
Town of Lunenburg
Lunenburg, Nova Scotia

Opinion

We have audited the accompanying consolidated financial statements of the Town of Lunenburg (the "Town"), which comprise the consolidated statement of financial position as at March 31, 2020 and the consolidated statement of financial activities, changes in financial position and changes in net financial assets (liabilities) for the year then ended, and the related notes, which comprise a summary of significant accounting policies and other explanatory information.

In our opinion, these consolidated financial statements present fairly, in all material respects, the financial position of the Town of Lunenburg as at March 31, 2020, and the results of its operations and the changes in its financial position for the year then ended in accordance with Canadian Public Sector Accounting Standards.

Basis for Opinion

We conducted our audit in accordance with Canadian generally accepted auditing standards. Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Consolidated Financial Statements section of our report. We are independent of the Town in accordance with ethical requirements that are relevant to our audit of the financial statements in Canada, and we have fulfilled our other ethical responsibilities in accordance with these requirements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Other matters

Our audit was conducted for the purpose of forming an opinion on the consolidated financial statements taken as a whole. The supplementary information included in Section B is presented for purposes of additional information and is not a required part of the consolidated financial statements. Such supplementary information has been subjected to the auditing procedures applied, only to the extent necessary to express an opinion on the audit of consolidated financial statements taken as a whole.

Responsibilities of Management and Those Charged with Governance for the Consolidated Financial Statements

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

In preparing the consolidated financial statements, management is responsible for assessing the Town's ability to continue as a going concern, disclosing, as applicable, matters relating to going concern and using the going concern basis of accounting unless management either intends to liquidate the Town or to cease operations, or has no realistic alternative but to do so.

Those charged with governance are responsible for overseeing the Town's financial reporting process.

Auditor's Responsibility for the Audit of the Consolidated Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not a guarantee that an audit conducted in accordance with Canadian generally accepted auditing standards will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements. As part of an audit in accordance with Canadian generally accepted auditing standards, we exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Town's internal control.

- Evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.

- Conclude on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Town's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Town to cease to continue as a going concern.

- Evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Belliveau Veinotte Inc.

Bridgewater, Nova Scotia
September 17, 2020

REGISTERED MUNICIPAL AUDITORS
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG

Consolidated Statement of Financial Position

Year Ended March 31, 2020

	2020	2019
ASSETS		
Financial assets		
Cash and bank balances	**$5,613,223**	$ 4,389,399
Taxes receivable (less allowance for doubtful accounts) *(Note 13)*	**230,650**	224,670
Other receivables (less allowance for doubtful accounts- 2020 - $168,571; 2019 - $156,431) *(Note 14 – A-19 – A-21)*	**2,356,120**	2,339,553
Due from Hillcrest Cemetery Perpetual Care Fund	**80,040**	15,000
	$ 8,280,033	$ 6,968,622
LIABILITIES		
Financial liabilities		
Temporary borrowing *(Note 5 – A-11)*	**$ 154,000**	$ 847,114
Due to Governments	**51,521**	19,307
Payables	**2,248,451**	1,933,724
Long-term debt *(Note 5 – A-11)*	**4,172,245**	3,986,547
Other liabilities	**261,358**	284,799
	$6,887,575	7,071,491
NET FINANCIAL ASSETS (LIABILITIES)	**$1,392,458**	$ (102,869)
NON FINANCIAL ASSETS		
Tangible capital assets *(Note 6 – A-12, A-13)*	**$37,774,243**	$37,492,722
Inventory not held for resale	**179,385**	172,367
Prepaid expenses	**247,208**	279,263
	38,200,836	37,944,352
NET ASSETS	**$39,593,294**	$37,841,483
MUNICIPAL POSITION		
Surplus	**$ 720,100**	$ 719,396
Reserve funds	**5,425,195**	4,463,025
Investment in capital assets	**33,447,999**	32,659,062
TOTAL MUNICIPAL POSITION	**$39,593,294**	$37,841,483

Commitments *(Note 7 – A-14, A-15)*
Contingencies *(Note 8 – A-15)*
Subsequent Event *(Note 16 – A-23)*

See accompanying notes to the consolidated financial statements

On behalf of the Town of Lunenburg

Rachel Bailey Mayor _____ Town Manager/Clerk

TOWN OF LUNENBURG

Consolidated Statement of Financial Activities

Year Ended March 31, 2020

	2020 Budget	2020 Actual	2019 Actual
REVENUES			
Assessable property taxes (net of school board appropriations)	$4,819,200	$4,889,489	$ 4,706,731
Grants in lieu of taxes	237,300	237,200	233,320
Sales of services	8,304,500	8,582,294	8,377,376
Other revenue from own sources	2,731,200	1,170,645	957,401
Unconditional transfers from other governments	50,100	88,076	75,889
Conditional transfers from federal or provincial governments or agencies	2,345,000	1,255,101	945,902
Conditional transfers from other local governments	226,000	159,082	152,214
	18,713,300	16,381,887	15,448,833
EXPENDITURES			
General government services	495,516	486,323	475,242
Protective services	1,764,501	1,665,171	1,638,897
Transportation services	1,781,802	1,261,883	1,180,921
Environmental health services	2,270,400	1,711,995	1,697,252
Public health services	96,100	90,777	96,320
Environmental development services	2,096,595	596,930	535,573
Recreational and cultural services	991,586	958,526	893,781
Water utility services	1,671,600	1,367,279	1,319,362
Electric utility services	7,545,200	6,491,192	6,693,132
	18,713,300	14,630,076	14,530,480
NET REVENUES FOR THE YEAR	$ -	1,751,811	918,353
Municipal Position, beginning of year		37,841,483	36,923,130
MUNICIPAL POSITION, END OF YEAR		$39,593,294	$ 37,841,483

See accompanying notes to the consolidated financial statements

TOWN OF LUNENBURG

Consolidated Statement of Changes in Financial Position

Year Ended March 31, 2020

	2020	2019
OPERATING ACTIVITIES		
Net revenues for the year	**$1,751,811**	$ 918,353
Amortization of tangible capital assets	**1,653,459**	1,713,745
Loss on write down of tangible capital assets	**22,057**	282,517
Items not affecting cash:		
Taxes receivable	**(5,981)**	(123,554)
Other receivables	**(16,567)**	701,204
Hillcrest Cemetery Perpetual Care Fund	**(65,040)**	65,000
Inventory	**(7,018)**	(8,864)
Prepaid assets	**32,054**	(238,648)
Payables	**346,942**	309,302
Other liabilities	**(23,441)**	180,416
Changes in non-cash working capital	**260,949**	884,856
Cash flow from (used by) operating activities	**3,688,278**	3,799,471
FINANCING ACTIVITIES		
Short-term debt issued	**154,000**	640,655
Short-term debt redeemed	**(847,114)**	(910,180)
Long-term debt issued	**720,655**	925,580
Long-term debt redeemed	**(534,959)**	(454,149)
Cash flow from (used by) financing activities	**(507,418)**	201,906
CAPITAL ACTIVITIES		
Purchase of tangible capital assets	**(1,957,036)**	(2,455,152)
Cash flow from (used by) capital activities	**(1,957,036)**	(2,455,152)
INCREASE IN CASH AND BANK BALANCES	**1,223,824**	1,546,225
Cash and cash equivalents - beginning of year	**4,389,399**	2,843,174
CASH AND BANK BALANCES – END OF YEAR	**$5,613,223**	$ 4,389,399

See accompanying notes to the consolidated financial statements

TOWN OF LUNENBURG

Consolidated Statement of Changes in Net Financial Assets (Liabilities)

Year Ended March 31, 2020

	2020 Budget	2020 Actual	2019 Actual
Annual Surplus (Deficit)	$ -	$1,751,811	$ 918,353
Acquisition of tangible capital assets	(4,506,000)	(1,957,036)	(2,455,152)
Amortization of tangible capital assets	497,750	1,653,459	1,713,745
Loss on write down of tangible capital assets	-	22,057	282,517
Consumption (acquisition) of inventory	-	(7,018)	(8,864)
Consumption (acquisition) of prepaid expenses	-	32,054	(238,648)
INCREASE (DECREASE) IN NET FINANCIAL ASSETS	$(4,008,250)	1,495,327	211,951
Net financial assets (liabilities), beginning of year		(102,869)	(314,820)
NET FINANCIAL ASSETS (LIABILITIES), END OF YEAR		$1,392,458	$ (102,869)

See accompanying notes to the consolidated financial statements

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICING AND REPORTING PRACTICES

These consolidated financial statements of the Town of Lunenburg ("Town") are the representations of management and are prepared in accordance with generally accepted accounting principles for local governments established by the Public Sector Accounting Board ("PSAB") of the Chartered Professional Accountants of Canada (CPA Canada).

Reporting Entity

These consolidated statements reflect the assets, liabilities, revenues, expenditures and changes in fund balances and financial position of the reporting entity. The reporting entity is comprised of all organizations and enterprises accountable for the administration of their financial affairs and resources to Town Council and which are owned or controlled by the Town of Lunenburg.

(a) Consolidated Entities
In addition to the general Town of Lunenburg departments, the reporting entity includes the following where deemed material:
The Town of Lunenburg Electric Utility
The Town of Lunenburg Water Utility
Hillcrest Cemetery
Inter-departmental and organizational transactions have been eliminated.

(b) Non-Consolidated Entities
The following local boards, commissions and agencies are not consolidated:
South Shore Regional Enterprise Network
South Shore Housing Authority
South Shore Regional Library Board

(c) Hillcrest Cemetery Perpetual Care Fund (Page B-25)
This fund and its related operations administered by the Town are not consolidated, but are reported separately on the trust funds' statement of continuity and statement of financial position. The total of these funds as of March 31, 2020 are $228,025; (2019, $238,920).

Fund Accounting

In accordance with practices common to public sector entities, the Town follows the fund basis of accounting. The capital fund is used principally to account for assets acquired or obligations incurred which are to be financed from the future revenue of the Town and it is the annual interest cost of this financing that is paid from current (operating fund) operations. Reserve funds are generally created by appropriations from current (operating fund) operations. The use of these funds are restricted to the purposes for which the reserve funds are created.

Taxes and Other Receivables

Taxes and other receivables are reported net of any allowance for doubtful accounts.

Inventories

Inventories held by the Town are not viewed as financial assets. The inventory on hand will be used for future operational or capital purposes, and accordingly have been reflected as non-financial assets in the consolidated statement of financial position.

(continues)

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICING AND REPORTING PRACTICES *(cont'd)*

Tangible Capital Assets

Effective April 1, 2009, the Town adopted Section 3150 of the Public Sector Accounting Handbook of CPA Canada with respect to the disclosure of tangible capital assets of local governments. Prior to April 1, 2009, the Town previously recorded tangible capital assets at cost in the period they were acquired on the statement of financial position and as an expenditure within the capital fund. Assets were not amortized and they were written off at the end of their estimated useful life.

As of April 1, 2009, tangible capital assets are recorded at cost in the period they are acquired and recorded as expenditures within the capital fund. Donated tangible capital assets are capitalized and recorded at their fair value upon acquisition. If historical cost information was not available during adoption of PSAB 3150, tangible capital assets were recorded using historical appraisal values. The Town does not capitalize interest as part of the costs of its tangible capital assets.

Amortization recorded on tangible capital assets in the general capital fund is calculated on a straight line basis over the asset's estimated useful life. Amortization recorded on assets of the electric and water utilities are calculated based on the Nova Scotia Utility and Review Board approved rates.

Estimated useful lives are as follows:

Buildings - municipal	40 years
Buildings - plants	20 - 25 years
Land improvements	20 - 25 years
Land	Not amortized
Machinery and equipment	10 - 15 years
Office equipment and furniture	5 years
Sewer lines	50 years
Sidewalks	20 - 25 years
Streets, roads and curbs	25 - 30 years
Vehicles	5 years
Electric utility, all assets	28.5 years
Water utility	
Structures and improvements	25 - 75 years
Equipment	5 - 20 years
Mains (Transmission and distribution)	75 years
Meters	20 - 25 years

Capital assets that are classified as work in progress are not amortized until the asset is available for productive use.

Use of Estimates

The preparation of financial statements in conformity with the Canadian Public Sector Accounting Standards of CPA Canada requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenue and expenditure during the period. Where measurement uncertainty exists, the financial statements have been prepared within reasonable limits of materiality. Actual results could differ from those estimates.

2. FINANCIAL INSTRUMENTS

The Town's financial instruments consists of cash and bank balances, amounts receivable, accounts payable and accrued liabilities, deposit liabilities, temporary borrowings and long-term debt. It is management's opinion that the Town is not exposed to significant interest or currency risks arising from these financial instruments.

The Town is subject to credit risk with respect to taxes and grants in lieu of taxes receivables and trade and other receivables. Credit risk arises from the possibility that taxpayers and entities to which the Town provides services may experience financial difficulty and be unable to fulfill their obligations. The large number and diversity of taxpayers and customers minimizes credit risk.

Unless otherwise noted, the carrying value of the financial instrument approximates fair value.

3. CONTRIBUTIONS TO NON-CONSOLIDATED JOINT BOARDS, AGENCIES AND COMMISSIONS

The following contributions were made by the Town to non-consolidated board, agencies, and commissions:

	2020 Budget	**2020 Actual**	2019 Actual
South Shore Housing Authority (a)	$22,000	**$15,710**	$ 19,307
South Shore Regional Library Board (b)	14,800	**14,796**	14,760
South Shore Regional Enterprise Network (c)	-	**-**	3,240
	$36,800	**$30,506**	$ 37,307

(a) South Shore Housing Authority
The Town is required to finance its share of the operating deficit in the South Shore Housing Authority out of its current year's operations, based on a loss sharing ratio agreed upon by all participating units. The Town is responsible for approximately 10% of the annual deficit of the Housing Authorities projects in the Town's jurisdiction.

(b) South Shore Regional Library Board
The Town is responsible for its share of the South Shore Library Board's operations based on a per capita funding formula.

(c) South Shore Regional Enterprise Network
The SSREN wound up as of September 30, 2018.

4. MUNICIPAL POSITION

The consolidated statement of financial position reflects the following fund balances:

	2020	2019
Surplus Funds		
General	**$ 361**	$ 997
Water	**252,737**	251,881
Electric	**467,002**	466,518
Reserve Funds		
Town Operating	**339,907**	370,239
Town Capital	**1,873,743**	1,261,596
Town Capital - Solid Waste Closure	**7,927**	12,010
Water Capital	**2,275,946**	1,961,287
Electric Capital	**927,672**	857,893
Investment in Capital Assets		
Town Capital	**20,793,424**	20,002,099
Cemetery Capital	**12,301**	12,301
Water Capital	**10,509,312**	10,608,904
Electric Capital	**2,132,962**	2,035,758
	$39,593,294	$37,841,483

5. LONG-TERM DEBT

The balance of the net long-term liabilities reported on the consolidated statement of financial position is made up of the following Town agencies. Further details are reported on Page B-30 and B-31.

	2020	2019
Town General (including temporary borrowings)	**$3,137,245**	$ 3,503,911
Water Utility	**489,000**	529,750
Electric Utility	**700,000**	800,000
	$4,326,245	$ 4,833,661

Principal repayments required for the next five (5) years are as follows:

2021	$ 698,187
2022	$1,026,389
2023	$ 389,949
2024	$ 332,749
2025	$ 305,764

6. TANGIBLE CAPITAL ASSETS 2020

TOWN	Opening Cost	Additions	Disposals	Write-Downs	Ending Cost	Amortization	Accumulated Amortization	Net book Value
Land	$ 286,697	$ -	$ -	$ -	$ 286,697	$ -	$ -	$ 286,697
Land Improvements	141,328	-	-	-	141,328	5,492	99,519	41,809
Buildings	12,303,433	758,306	22,246	30,998	13,008,495	372,998	3,782,157	9,226,338
Engineered Structures	23,216,233	697,395	-	-	23,913,628	571,542	11,039,796	12,873,832
Furniture & Equipment	577,116	19,031	-	-	596,147	37,649	477,502	118,646
Heritage & Cultural Equipment	177,097	8,385	-	-	185,482	5,575	174,818	10,663
Machinery & Equipment	2,606,005	122,213	-	-	2,728,408	126,496	1,634,267	1,094,141
Parks & Playgrounds	781,027	-	-	-	781,027	38,866	502,491	278,536
Work in Progress	-	-	-	-	-	-	-	-
ELECTRIC								
Land	2,371	-	-	-	2,371	-	-	2,371
Transmission	2,676,729	-	-	-	2,676,729	90,188	1,345,385	1,331,344
Distribution	1,739,626	83,397	-	-	1,823,023	45,574	1,465,641	357,383
Highway Lighting	237,149	8,222	-	-	245,371	2,820	179,992	65,379
Transformers	1,120,305	70,350	-	1,120	1,189,535	34,311	633,787	555,748
Services	281,252	31,762	-	-	313,014	6,985	153,144	159,870
Meters	309,068	2,504	-	-	311,572	8,586	119,890	191,682
Buildings	93,329	-	-	-	93,329	1,704	74,371	18,959
Equipment	273,978	-	-	-	273,978	8,863	123,747	150,231
Work in Progress	-	-	-	-	-	-	-	-
WATER								
Land & Land Rights	133,454	-	-	-	133,454	-	-	133,454
Structures & Imrovements	6,211,002	135,461	-	-	6,346,463	103,979	1,165,356	5,181,108
Equipment	2,421,868	11,852	15,730	-	2,417,990	124,895	1,173,909	1,244,081
Mains	5,162,913	-	-	-	5,162,913	61,126	964,881	4,198,032
Services	179,734	4,145	-	-	183,878	3,595	38,619	145,259
Meters	55,785	-	-	-	55,785	678	12,204	43,580
Hydrants	116,014	4,013	-	-	120,026	1,536	67,227	52,799
Work in Progress	-	-	-	-	-	-	-	-
CEMETERY		-						
Land	12,301	-			12,301	-	-	12,301
Equipment	-	-			-	-	-	-
	$ 61,115,815	$ 1,957,036	$ 37,976	$ 32,118	$ 63,002,945	$ 1,653,458	$ 25,228,703	$ 37,774,243

AC Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

6. TANGIBLE CAPITAL ASSETS 2019

TOWN	Opening Cost	Additions	Disposals	Write-Downs	Ending Cost	Amortization	Accumulated Amortization	Net book Value
Land	$ 286,697	$ -	$ -	$ -	$ 286,697	$ -	$ -	$ 286,697
Land Improvements	141,328	-	-	-	141,328	5,492	94,024	47,304
Buildings	11,361,136	942,295	-	-	12,303,432	331,639	3,440,157	8,863,276
Engineered Structures	21,947,827	1,273,649	5,243	-	23,216,233	682,699	10,468,254	12,747,980
Furniture & Equipment	564,037	13,079	-	-	577,116	35,545	439,852	137,264
Heritage & Cultural Equipment	177,097	-	-	-	177,097	5,575	169,244	7,853
Machinery & Equipment	2,579,497	28,204	-	-	2,607,701	120,559	1,507,770	1,099,930
Parks & Playgrounds	781,027	-	-	-	781,027	38,866	463,625	317,403
Work in Progress	-	-	-	-	-	-	-	-
ELECTRIC								
Land	2,371	-	-	-	2,371	-	-	2,371
Transmission	2,649,389	27,340	-	-	2,676,729	89,064	1,255,197	1,421,532
Distribution	1,640,858	98,768	-	-	1,739,626	42,117	1,420,067	319,560
Highway Lighting	221,186	15,964	-	-	237,149	8,227	177,172	59,977
Transformers	1,148,159	18,164	-	46,018	1,120,306	33,765	600,596	519,709
Services	276,190	5,063	-	-	281,252	6,807	146,160	135,093
Meters	345,883	4,802	-	41,617	309,068	8,418	111,304	197,764
Buildings	93,329	-	-	-	93,329	1,704	72,667	20,663
Equipment	757,417	-	483,439	-	273,978	9,310	114,884	159,094
Work in Progress	-	-	-	-	-	-	-	-
WATER								
Land & Land Rights	133,454	-	-	-	133,454	-	-	133,454
Structures & Improvements	6,205,739	5,264	-	-	6,211,002	103,822	1,061,377	5,149,626
Equipment	2,399,308	22,560	-	-	2,421,868	123,172	1,064,744	1,357,124
Mains	5,298,146	-	9,399	125,834	5,162,913	61,126	903,756	4,259,158
Services	179,734	-	-	-	179,734	3,595	35,024	144,710
Meters	55,785	-	-	-	55,785	707	11,526	44,259
Hydrants	116,015	-	-	-	116,015	1,536	65,691	50,324
Work in Progress	-	-	-	-	-	-	-	-
CEMETERY								
Land	12,301	-	-	-	12,301	-	-	12,301
Equipment	-	-	-	-	-	-	-	-
	$ 59,373,909	$ 2,455,152	$ 498,081	$ 213,468	$ 61,117,513	$ 1,713,744	$ 23,623,089	$ 37,494,423

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

7. COMMITMENTS

(a) Garbage Collection
The Town is committed to a four-year contract for garbage collection, 2020/21, $211,800; (2021/22, $216,600; 2022/23, $221,400; 2023/24, $226,400).

(b) Garbage Disposal Site
Commencing April 1, 1991, the Town entered into an agreement with the Town of Bridgewater, Town of Mahone Bay and the Municipality of the District of Lunenburg to share in the capital cost of the site and withdrew from this agreement on March 31, 2012. Negotiations are unresolved to determine any future obligation for Site Closure Liability and the Town's share of the Solid Waste Site's assets.

The Town of Lunenburg can no longer control or derive any future economic benefit associated with its share of the capital assets at the garbage disposal site. According to PSAB 3150, these are no longer considered assets of the Town for financial statement reporting purposes. As such, the value of these assets were reduced to $Nil in the 2012/2013 consolidated financial statements.

The Town's share of these assets has not been reduced in the non-consolidated financial statements which are not subject to PSAB accounting rules. Capital assets recorded to date are estimates based on the last known value at March 31, 2013. They are recorded as expenditures in accordance with note 1 in regard to the cost of this site which were allocated as follows:

Apportionment of capital costs	
Town of Bridgewater	$ 3,455,616
Town of Lunenburg	1,062,115
Town of Mahone Bay	436,260
Municipality of the District of Lunenburg	8,122,619
	13,076,610
Other Municipal units' vested interest	(12,014,495)
Town of Lunenburg vested interest	$ 1,062,115

(continues)

7. COMMITMENTS *(cont'd)*

On October 10, 2004, the Town, together with the Town of Bridgewater, Town of Mahone Bay and the Municipality of the District of Lunenburg entered into a twenty year agreement with the District of Chester, commencing January 2, 2006, and terminating on March 31, 2026, to ship all second generation waste resources ("solid waste") from the Lunenburg Regional Community Recycling Centre ("LRCRC") to the second generation solid waste disposal site at Kaizer Meadow Landfill, located in the District of Chester.

The price per metric tonne is subject to an annual escalation clause effective April 1, 2006, which shall be the lesser of the amount of the increase in the consumer price index for all items for Nova Scotia for the previous calendar year, or the sum of 2.5% per annum. The agreement also guarantees a minimum tonnage delivered to the District of Chester's disposal site of 10,000 tonnes.

As a result of this agreement, if at the end of any year, the amount paid by the LRCRC is less than the minimum amount based on the minimum tonnage clause, the LRCRC is obligated to pay the District of Chester the difference to make up the minimum annual payment.

This agreement was not re-negotiated as Chester will continue to add the Town of Lunenburg's solid waste tonnage to that of the LRCRC. Tonnage shortages will be addressed only if the need arises.

8. CONTINGENCIES

As previously noted, the Town, in partnership with the Municipality of the District of Lunenburg and the Towns of Bridgewater and Mahone Bay operated the solid waste disposal site at Whynott's Settlement. The closure of the site was substantially complete at March 31, 2014. The Town has a balance of $7,927 left in reserve funds after $132,209 of Site Closure and well monitoring costs were recorded, which Council has not yet agreed to pay. There is an estimated potential liability of $25,750 remaining for site closure.

The Town has given the Municipal Finance Corporation a guarantee in support of the Lunenburg Home for Special Care Corporation's loan, not to exceed $908,000 and has agreed to share in the operating deficit of the expansion to the Home that was completed in 1984. No provision for the operating deficit has been made in these statements as the Home adjusts its rates to recoup any deficit so incurred.

Environment Canada investigated a Town waste water pump over flow under the Fisheries Act. As of year end any potential liability is unknown and therefore has not been recorded in the consolidated financial statements.

9. LUNENBURG DISTRICT'S 1 AND 2 FIRE COMMISSION (THE "DISTRICT")

In 1996, the Town entered into an agreement with the District to provide fire protection services to their area. Under the agreement the District pays for 50% of the approved operating costs plus 6.5% administration fee. This contribution is shown as Town revenues as detailed on page B-7, #7 of these statements.

The District has also contributed towards or directly purchased fire protection assets.

Only the Town's equity in the new fire hall, fire fighting vehicle and equipment has been reported in these financial statements. The District's equity is noted below.

The summary of equity in all firefighting assets is as follows:

	2020	2019
Building, net of accumulated amortization	**$ 848,942**	$ 897,217
Equipment, net of accumulated amortization	**1,014,984**	1,021,691
Training area, net of accumulated amortization	**25,694**	27,479
Total Equity	**1,889,620**	1,946,387
Lunenburg District's 1 & 2 Fire Commission equity	**(576,996)**	(589,847)
Town of Lunenburg Equity	**$1,312,624**	$ 1,356,540

10. PENSION PLAN, POST-EMPLOYMENT AND RETIREMENT BENEFITS

The Town of Lunenburg has a defined contribution pension plan consisting of an employee chosen mix of pension and RRSP funds at matched employer contribution rate of 6%.

The Town provides retirement (minimum age is 55) benefits in the form of a cash award equal to 1 ¼ days of the employee's daily rate of pay at the time of retirement multiplied by the number of complete years of service that the employee has served with the Town. Additionally, existing employees will receive a payout of accumulated sick leave at a rate of 1 day's pay for every 2 days of unused sick leave. Sick leave is accumulated at a rate of 1 ½ days per month to a maximum accumulation of 140 days.

In 2015, the Town adopted accrual accounting for these retirement benefits. Prior to that date the Town recognized benefit expenses equal to its payments for the actual costs incurred by the retirees and no liability for retirement benefits was recorded in the statement of financial position. An annual accrual is now made for employees who are within 5 years of retirement. No actuarial valuation is made; the accrual is based on the qualifying employees' current rate of pay.

11. REMUNERATION, TRAINING, HOSPITALITY AND OTHER APPROVED EXPENSES

Remuneration of Council and the Chief Administrative Officer (CAO)/Clerk were as follows:

	2019/20 Total Honorarium	2019/20 Expenses	Total Remuneration
Mayor Rachel Bailey	$29,463	$ 5,058	$34,521
Deputy Mayor McGee	23,568	280	23,848
Councillor Ronald Bachman	14,620	-	14,620
Councillor Joseph Carnevale	14,620	1,542	16,162
Councillor Danny Croft	14,620	1,257	15,877
Councillor Peter Mosher	14,620	-	14,620
Councillor Matthew Risser	14,620	-	14,620
Sub-total	126,131	8,137	134,268
Chief Administrative Officer (CAO)/Clerk (Salary $117,878; car allowance $480; meeting pay $1,240)	119,598	2,000	121,598
(See B-34 for more information)	$245,729	$10,137	$255,866

Hospitality expenses

Commencing January 1, 2019, the Province of Nova Scotia requires that Municipal Units report any hospitality expenses. For the period of April 1, 2019 to March 31, 2020 one hospitality expense, in the amount of $81.08, was paid for a film location meeting.

12. SEGMENT DISCLOSURE (SEE A-22 FOR BREAKDOWN)

The Town of Lunenburg is a diversified municipal government that provides a wide range of services to its citizens. For management reporting purposes, the Government's operations and activities are organized and reported by Fund. Funds were created for the purpose of recording specific activities to attain certain objectives in accordance with special regulations, restrictions or limitations.

Municipal services are provided by departments and their activities are reported in these funds. Functional activities of certain departments have been separately disclosed in the segmented information to identify key areas of accountability:

General Government Services:
Activities that provide for the overall operation of the Town and that are common to or affect all of the services provided by the Town. This includes the activities of Council as well as the following administrative activities: human resources, legal services, facilities management, finance and administration, communications and technology.

Protective Services:
Activities that provide for the public safety of the citizens of the Town of Lunenburg. These services include police and fire protection as well as by-law enforcement, building inspection services and EMO.

Transportation Services:
The activities performed by Public Works and include management, maintenance and development of a wide variety of municipal infrastructure. This Department's activities include but are not limited to road maintenance, sidewalk maintenance, snow removal and salting. Activities also include the operation of a sewer treatment facility and a water treatment facility.

Environmental Health Services:
The activities provide provincially regulated environmental services for the Town of Lunenburg. These service include the collection of solid waste materials, and the sanitary wastewater collection and treatment facility and infrastructure.

Environmental Development Services:
The activities include the support and management of the Municipality's physical and economic development. These activities include activities related to land use planning, zoning and development and other services to support the business community.

Recreation and Cultural Services:
Activities related to the Town of Lunenburg's recreation and cultural facilities, including the operation and maintenance of the Lunenburg War Memorial Community Centre and Arena facilities, parks, trails and various other facilities including a library. This also includes the expenditures for various recreational programming and special events as well as support of volunteer organizations.

Water Treatment and Distribution:
Activities related to the treatment and distribution of drinking water residents and businesses of the Town of Lunenburg following the Province of Nova Scotia regulations.

Electric Utility:
The Town of Lunenburg owns and operates its own electric utility providing residential and commercial services. The Lunenburg Electric Utility distributes electricity in its service district extending to Mason's Beach and Blue Rocks in the Municipality of the District of Lunenburg.

13. DETAILED BREAKDOWN OF TAXES AND VALUATION ALLOWANCES

Property taxes

	Beginning	Tax Billings	Collected	**2020 Ending**	2019 Ending
Prior Year Billings	**$116,186**	**$ -**	**$ 42,442**	**$ 73,744**	$ 71,469
Current Year Billings	**-**	**4,552,250**	**4,416,052**	**136,198**	134,238
	$116,186	**$4,552,250**	**$4,458,494**	**$209,942**	$ 205,707
Interest				**30,198**	28,453
Total Outstanding				**$240,140**	$234,160
Less: Allowance for Doubtful Accounts				**(9,490)**	(9,490)
Net Taxes Receivable				**$230,650**	$224,670
Prepayments				**$(133,360)**	$(117,927)

14. DETAILED BREAKDOWN OF OTHER RECEIVABLES AND VALUATION ALLOWANCES

Sewer Charges

	Beginning	Sewer Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	**$36,209**	**$ -**	**$ 28,859**	**$ 7,350**	$ 5,137
Current Year Billings		**953,590**	**905,951**	**47,639**	28,998
	$36,209	**$953,590**	**$934,810**	**$54,989**	34,135
Interest				**3,900**	2,074
Total Outstanding				**58,889**	36,209
Add: Accrued Receivable for Sewer Revenue				**148,268**	135,538
Less: Allowance for Doubtful Accounts				-	-
Net Sewer Charges Receivable				**$207,157**	$ 171,747

Miscellaneous Other Town Receivables

	Beginning	Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	**$77,637**	**$ -**	**$ 76,528**	**$ 1,109**	$ -
Current Year Billings		**3,660,996**	**3,021,836**	**639,160**	77,499
	$77,637	**$3,660,996**	**$3,098,364**	**$640,269**	77,499
Interest				**280**	138
Total Outstanding				**640,549**	**77,637**
Less: Allowance for Doubtful Accounts				-	-
Net Miscellaneous Receivables				**$640,549**	$ 77,637

Arena and Community Centre Receivables

	Beginning	Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	**$ 21,416**	**$ -**	**$21,416**	**$ -**	$ 571
Current Year Billings		**296,090**	**287,806**	**8,284**	20,590
	$21,416	**$296,090**	**$309,222**	**$ 8,284**	21,161
Interest				**191**	255
Total Outstanding				**8,475**	21,416
Less: Allowance for Doubtful Accounts				-	-
Net Arena and Community Centre Receivables				**$ 8,475**	$ 21,416

(continues)

14. DETAILED BREAKDOWN OF OTHER RECEIVABLES AND VALUATION ALLOWANCES *(continued)*

Cemetery Receivables

	Beginning	Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	$2,582	$ -	$ 1,861	$ 721	$ 721
Current Year Billings	-	23,795	22,498	1,297	1,458
	$2,582	$23,795	$24,359	$2,018	2,179
Interest				433	403
Total Outstanding				2,451	2,582
Less: Allowance for Doubtful Accounts				(721)	(721)
Net Cemetery Receivables				$1,730	$ 1,861

Water Billings

	Beginning	Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	$264,058	$ -	$258,505	$ 5,553	$ 3,890
Current Year Billings		1,528,215	1,285,657	242,558	254,676
	$264,058	$1,528,215	$1,544,162	$248,111	258,566
Interest				6,165	5,492
Total Outstanding				254,276	264,058
Less: Allowance for Doubtful Accounts				(23,553)	(15,386)
Net Water Billings Receivable				$230,723	$ 248,672

(continues)

14. DETAILED BREAKDOWN OF OTHER RECEIVABLES AND VALUATION ALLOWANCES *(continued)*

Electric Billings

	Beginning	Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	$711,494	$ -	$ 654,370	$ 57,124	$ 51,208
Current Year Billings		6,519,491	5,786,006	733,485	612,494
	$711,494	$6,519,491	$6,440,376	$790,609	663,702
Interest				53,797	47,792
Total Outstanding				844,406	711,494
Add: Accrued Receivable for Electric Revenue				245,805	261,085
Less: Allowance for Doubtful Accounts				(129,359)	(127,359)
Net Electric Billings Receivable				$960,852	$ 845,220

Miscellaneous Electric Receivables

	Beginning	Billings	Collected	2020 Ending	2019 Ending
Prior Year Billings	$16,071	$ -	$ 5,387	$10,684	$ 10,684
Current Year Billings		102,453	80,847	21,606	(7,915)
	16,071	102,453	86,234	32,290	2,769
Interest				4,909	2,334
Total Outstanding				37,199	5,103
Less: Allowance for Doubtful Accounts				(15,338)	(12,965)
Miscellaneous Electric Receivables				$21,861	$(7,862)

Total Other Receivables

Total Outstanding Other Receivables	$2,524,691	$ 2,495,984
Less:		
Total Allowance for Doubtful Accounts	(168,571)	(156,431)
Total Net Other Receivable	$2,356,120	$ 2,339,553

15.CONSOLIDATED SCHEDULE OF SEGMENT DISCLOSURE

Town of Lunenburg Consolidated Schedule of Segment Disclosure For the Year Ended March 31, 2020	General	Protective	Transportation	Environmental	Environmental	Recreation and	Water	Electric	
Revenues	**Government**	**Services**	**Services**	**Health Services**	**Development Services**	**Cultural Services**	**Utility**	**Utility**	**2020**
Property Taxes	$3,935,898	$ -	$ -	$953,590	$ -	$ -	$ -	$ -	$4,889,488
Grants in Lieu of Taxes	231,775	5,019	406	-	-	-	-	-	237,200
Sales of Service	7,778	-	172,984	15,941	1,698	254,255	1,529,414	6,600,224	8,582,294
Other Revenue from Own Sources	135,582	72,566	7,177	106,627	478,151	268,561	43,540	58,435	1,170,639
Unconditional Tran other govts	77,825						10,251		88,076
Conditional Transfer from Fed & Prov		11,000		812,413	391,688	40,000			1,255,101
Cond Trans from other local Govt	-	159,082	-	-	-	-			159,082
	4,388,858	247,667	180,567	1,888,571	871,537	562,816	1,583,205	6,658,659	16,381,880
Expenditures									0
Salaries, Benefits	243,534	118,355	440,644	165,512	138,890	420,458	482,238	332,419	2,342,050
Interest	1,870	9,608	18,275	22,973	11,801	9,413	19,855	34,674	128,469
Materials and Other Operating	135,879	-	540,853	896,245	330,753	264,063	538,595	5,923,781	8,630,169
Amortization	35,898	125,444	260,374	386,094	182,566	168,242	295,810	199,030	1,653,458
Utilities	9,334	14,949	1,737	241,171	23,696	74,293	30,781	1,288	397,249
Grants	21,471	-					-	-	21,471
Fire Department		175,250					-	-	175,250
Fire Protection Rate		325,360					-	-	325,360
Policing & Corrections		837,979					-	-	837,979
Other Protective Services		58,226					-	-	58,226
Reduced Taxes	38,337	-					-	-	38,337
Assets Retired	-	-	0	0	-	22,057	0	0	22,057
	486,323	1,665,171	1,261,883	1,711,995	687,706	958,526	1,367,279	6,491,192	14,630,075
	$ 3,902,535	-$ 1,417,504	-$ 1,081,316	$ 176,576	$ 183,831	-$ 395,710	$ 215,926	$ 167,467	$ 1,751,805

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

16. SUBSEQUENT EVENT

COVID-19

The outbreak of the novel strain of coronavirus, specifically identified as "COVID-19", has resulted in governments worldwide enacting emergency measures to combat the spread of the virus. These measures, which include the implementation of travel bans, self-imposed quarantine periods, social and physical distancing, have caused material disruption to businesses globally resulting in an economic slowdown. Global equity markets have experienced significant volatility and weakness. Governments and central banks have reacted with significant monetary and fiscal interventions designed to stabilize economic conditions. The duration and impact of the COVID-19 outbreak is unknown at this time, as is the efficacy of the government and central bank interventions. It is not possible to reliably estimate the length and severity of these developments and the impact on the financial results and condition of the Town in future periods.

TOWN OF LUNENBURG

Supplementary Financial Information

Non-Consolidated Financial Statements

Year Ended March 31, 2020

Section B

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG

SECTION B

SUPPLEMENTARY FINANCIAL INFORMATION

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TOWN OF LUNENBURG
Supplementary Financial Information
General Section –Statement of Operations
Year Ended March 31, 2020

	Page	Budget	2020 **Actual**	2019 Actual
REVENUE				
Taxes	B-6	$ 5,623,300	**$ 5,712,465**	$ 5,513,115
Grants in lieu of taxes	B-6	237,300	**237,200**	233,320
Sales of services	B-6	543,400	**452,656**	454,924
Other revenue from own sources	B-7	354,600	**445,692**	365,930
Unconditional transfers from Federal and Provincial governments and agencies	B-7	69,100	**77,938**	69,096
Conditional transfers from Federal and Provincial governments and agencies	B-7	1,500	**1,000**	1,000
Conditional transfers from other local governments	B-7	176,000	**159,084**	152,214
Other transfers	B-7	5,300	**10,502**	41,567
		7,010,500	**7,096,527**	6,831,166
EXPENDITURES				
General government services	B-8	454,400	**450,425**	440,616
Protective services	B-9	1,576,300	**1,539,914**	1,519,752
Transportation services	B-9	972,300	**1,001,846**	999,947
Environmental health services	B-10	1,193,800	**1,325,901**	1,193,215
Public Health services	B-10	65,300	**59,975**	65,386
Environmental development services	B-10	411,500	**414,364**	372,967
Recreational and cultural services and education	B-11	808,000	**767,397**	749,792
Fiscal services	B-11	1,528,900	**1,536,344**	1,488,494
		7,010,500	**7,096,166**	6,830,169
EXCESS OF REVENUE OVER EXPENDITURES		-	**361**	997
Accumulated Surplus, Beginning of Year			**997**	168,376
Transfer of Surplus to Operating Reserve			**(997)**	(168,376)
SURPLUS – END OF YEAR			**$ 361**	$ 997

TOWN OF LUNENBURG
Supplementary Financial Information
General Section – Operating Fund Statement of Financial Position
Year Ended March 31, 2020

	2020	2019
ASSETS		
Cash	$ 1,400	$ 1,424
Bank balance	601,321	188,494
Receivables		
Taxes and accrued interest (less allowance for doubtful accounts 2020, $9,490; 2019, $9,490)	230,650	224,670
Due from Federal Government and its agencies	268,165	36,856
Due from Provincial Government and its agencies, conditional transfers	285,060	80,410
Due from other Local Governments	62,573	13,126
Sewer receivables	208,433	171,747
Due from Cemetery Fund	12,555	4,423
Due from Perpetual Care	80,040	15,000
Due from Operating Reserve	42,939	-
Other	279,606	900,226
	2,072,742	1,636,376
Inventories of materials and supplies, at cost	49,244	37,711
Prepaid expenses	200,007	242,456
	$ 2,321,993	$ 1,916,543
LIABILITIES		
Payables		
Trade balances	$ 821,706	$ 608,396
Employee benefits – short term	234,623	224,011
Due to Electric Utility	277,133	64,168
Due to Water Utility	332,066	460,172
Due to Capital Reserve	368,639	56,632
Due to Operating Reserve	-	213,271
	2,034,167	1,626,650
Other liabilities		
Funds received and held for special projects	9,267	7,938
Deferred revenue	134,015	168,602
Employee benefits – long term	144,183	112,356
	2,321,632	1,915,546
NET ASSETS		
Surplus	361	997
	$ 2,321,993	$ 1,916,543

On behalf of the Town of Lunenburg

Rachel Bailey Mayor _____ Town Manager/Clerk

TOWN OF LUNENBURG
Supplementary Financial Information
General Section – Capital Fund Statement of Financial Position
Year Ended March 31, 2020

	2020	2019
ASSETS		
Due from Town	**$ -**	$ -
Property and equipment *(page B-5)*	**24,960,058**	24,535,403
	$24,960,058	$ 24,535,403
LIABILITIES		
Temporary borrowings	**$ 154,000**	$ 847,114
Long-term debt		
Due to Perpetual Care Fund	**215,200**	163,820
Due to Municipal Finance Corporation	**2,768,045**	2,492,979
	3,137,245	3,503,913
EQUITY		
Investment in capital assets *(page B-4)*	**21,822,813**	21,031,490
	$24,960,058	$ 24,535,403

On behalf of the Town of Lunenburg

Rachel Bailey Mayor _____ Town Manager/Clerk

	2020	2019
BALANCE - BEGINNING OF YEAR	**$ 21,031,490**	$ 20,263,291
Contributions, other	**229,762**	227,654
Capital from revenue, fiscal services	**152,863**	127,487
Grants for capital purposes:		
Federal Gas Tax	**121,485**	168,672
Nova Scotia Department of Communities, Culture and Heritage	**-**	160,857
Nova Scotia Clean Water Waste Water	**232,780**	578,337
Nova Scotia Emergency Services Providers Grant	**10,000**	-
Federal - ACOA	**168,119**	-
Parks Canada	**100,000**	157,686
Department of Housing & Municipal Affairs – Beautification Grant	**23,570**	-
Municipality of the District of Lunenburg	**40,000**	-
Canadian Heritage	**100,000**	-
Department of Housing & Municipal Affairs – PCAP	**36,142**	-
Temporary debt repayment	**206,459**	-
Long-term debt retired	**394,209**	313,399
Transfer from Capital Reserve Fund	**156,611**	180,481
Capital assets retired	**(22,245)**	(5,998)
Capital assets revalued	**187**	80,000
Depreciation expense	**(1,158,619)**	(1,220,376)
INCREASE (DECREASE) IN INVESTMENT IN CAPITAL ASSETS	**791,323**	768,199
Balance, end of year	**$ 21,822,813**	$ 21,031,490

TOWN OF LUNENBURG
Supplementary Financial Information
General Section – Capital Assets
Year Ended March 31, 2020

	Buildings	Plant Equipment	Other	**2020 Total**	2019 Total
General government					
Services	$ 1,470,269	$ 104,129	$ -	**$ 1,574,398**	$ 1,556,858
Protective services					
Fire	2,241,254	1,009,401	46,855	**3,297,510**	3,229,470
Transportation services					
Common services	132,979	780,825	-	**913,804**	873,516
Road transport					
streets and sidewalks	-	-	7,318,955	**7,318,955**	7,246,372
Parking lot	-	-	15,102	**15,102**	15,102
Heritage signage	-	-	107,378	**107,378**	98,993
Parking meters	-	-	135,912	**135,912**	121,838
Tanyard sea wall	-	-	62,382	**62,382**	47,147
Flying Fish Sculptures Project	-	-	22,356	**22,356**	22,356
UNESCO Plaza	-	-	24,940	**24,940**	24,940
Interpretive KIOSKS	-	-	30,807	**30,807**	30,807
Boat launch	-	-	350,540	**350,540**	339,259
Environmental health services					
Sewage collection					
and disposal	-	-	16,166,651	**16,166,651**	15,568,355
Pollution abatement system			692,624	692,624	692,624
Garbage site	1,085,728	350,398	490,476	**1,926,602**	1,926,602
Environmental development services					
Lunenburg Academy	6,829,066	-	-	**6,829,066**	6,252,256
New Town School (Annex)	12,500	-	-	**12,500**	12,500
Recreation and community services					
Community Centre/Arena	1,717,600	1,066,373	-	**2,783,973**	2,600,986
Library	-	135,476	-	**135,476**	188,721
Public washrooms	122,252	-	-	**122,252**	122,252
Capt. Angus J. Walters					
House Museum	245,436	128,872	-	**374,308**	374,308
Parks, common lands, etc.	-	-	517,837	**517,837**	517,837
Victoria Road – Blue Barn	101,662	-	-	**101,662**	101,662
Playground	-	-	50,778	**50,778**	50,778
	13,958,746	3,575,474	26,033,593	**43,567,813**	42,015,539
Accumulated amortization	(4,229,134)	(2,442,221)	(11,936,400)	**(18,607,755)**	(17,480,134)
	$ 9,729,612	$ 1,133,253	$ 14,097,193	**$ 24,960,058**	$ 24,535,405

	2020	2019
1. TAXES		
Assessable property		
Residential	**$ 3,122,396**	$ 2,978,338
Commercial	**1,422,965**	1,415,185
Resource	**6,890**	6,941
	4,552,251	4,400,464
Business property		
Based on Revenue (Aliant)	**17,983**	19,195
Other		
Sewer annual charge	**953,590**	869,982
Deed transfer tax	**188,641**	223,474
	1,142,231	1,093,456
	$ 5,712,465	$ 5,513,115
2. GRANTS IN LIEU OF TAXES		
Provincial Government		
Provincial building (DNR)	**$ 231,775**	$ 227,533
Property of supported institutions (TIR)	**406**	768
Fire Protection (Museum)	**5,019**	5,019
	$ 237,200	$ 233,320
3. SALES OF SERVICES		
Parking meters	**$ 138,683**	$ 109,306
Transportation services	**34,300**	27,201
Miscellaneous	**25,755**	26,936
	198,738	163,443
Recreational services		
Admissions	**23,694**	23,173
Rentals and concessions	**161,780**	193,100
Rentals – School Board	**30,049**	31,371
Grants	**37,424**	43,473
Sundry	**971**	364
	253,918	291,481
	$ 452,656	$ 454,924

	2020	2019
4. OTHER REVENUE FROM OWN SOURCES		
Licenses and permits	$ 13,647	$ 13,882
Fines	15,468	10,833
Rentals	266,098	237,209
Interest on investments	19,289	17,555
Interest on taxes	78,826	83,190
Insurance Settlements	48,559	-
Miscellaneous including donations	3,805	3,261
	$ 445,692	$ 365,930
5. UNCONDITIONAL TRANSFERS FROM FEDERAL AND PROVINCIAL GOVERNMENTS AND AGENCIES		
HST offset grant	$ 27,825	$ 18,985
Equalization grant	50,000	50,000
Farm acreage	113	111
	$ 77,938	$ 69,096
6. CONDITIONAL TRANSFERS FROM FEDERAL AND PROVINCIAL GOVERNMENTS AND AGENCIES		
Provincial government		
Emergency Measures Organization	$ 1,000	1,000
	$ 1,000	$ 1,000
7. CONDITIONAL TRANSFERS FROM OTHER LOCAL GOVERNMENTS		
Municipal Fire District 1 and 2 Commission		
Fire protection reimbursements	$ 159,084	$152,214
8. OTHER TRANSFERS		
Prior Years Surplus	$ 997	$ -
Transfer from Operating and Capital Reserves	9,505	41,567
	$ 10,502	$ 41,567

	2020	2019
9. GENERAL GOVERNMENT SERVICES		
Legislative		
Stipend		
Mayor	$ 8,624	$ 7,867
Councillors	29,400	26,709
Travel	483	555
Other legislative services	7,792	6,008
	46,299	41,139
General administrative		
Salaries and benefits	167,528	149,779
Office buildings	59,866	65,703
Legal and other professional service	12,681	14,364
Financial management	31,229	30,807
Interest on capital loan	1,870	2,582
Tax rebates or exemptions (low income)	3,833	4,933
Tax exemptions (Section 71 MGA)	34,505	34,061
Transfer to Assessment Services	47,722	47,067
Other general administrative services	9,320	11,031
	368,554	360,327
Other general government		
Insurance	8,607	8,233
Grants to organizations including in-kind services	21,471	25,606
Other general services	5,494	5,311
	35,572	39,150
	$ 450,425	$ 440,616
10. PROTECTIVE SERVICES		
Police Protection		
RCMP	$ 796,902	$ 789,040
By-Law Enforcement		
Contracted services	3,148	3,143
Legal	7,683	12,399
Supplies and expense	-	349
Transfer to Correction Service	41,077	41,051
	$ 51,908	$ 56,942

(continues)

	2020	2019
10. PROTECTIVE SERVICES *(cont'd)*		
Fire Protection		
Fire fighting force	$ 103,509	$ 75,305
Water supply and hydrants	325,360	325,360
Training	13,195	12,441
Fire stations and buildings	84,327	80,809
Firefighting equipment	87,837	115,287
Other	29,481	19,753
	643,709	628,955
Emergency Measures Organization	11,603	7,282
Building Inspector and other	35,792	37,533
	$ 1,539,914	$ 1,519,752
11. TRANSPORTATION SERVICES		
Common services		
Administrative	$ 180,758	$ 173,740
General equipment	138,772	124,460
Small tools and equipment	3,425	4,891
Workshop, yards and other buildings	14,895	8,284
Worker's Compensation	9,720	10,153
	347,570	321,528
Roads and streets		
Labour	261,850	224,289
Supplies	35,216	42,939
Street cleaning	14,258	20,672
Snow and ice control	98,451	143,324
Street and sidewalk maintenance	76,107	81,658
Interest on loans	19,811	19,056
Street lighting	111,457	107,525
Traffic services	12,365	14,111
Parking meters	24,761	24,845
	654,276	678,419
	$ 1,001,846	$ 999,947

	2020	2019
12. ENVIRONMENTAL HEALTH SERVICES		
Transfer to Capital Reserve for Solid Waste and Solid Waste Landfill costs	**$ 159,268**	$ 168,049
Labour, benefits and supplies	**163,456**	141,196
Sewer lift stations	**77,002**	85,689
Sewage treatment plant	**657,077**	549,825
Interest on sewer loans	**24,351**	15,523
	921,886	792,233
Garbage and waste collection and disposal		
Collection contract and other	**244,747**	232,933
	244,747	232,933
	$ 1,325,901	$ 1,193,215
13. PUBLIC HEALTH SERVICES		
Public Health		
Cemetery	**$ 44,265**	$ 46,079
Housing		
Deficit of Regional Housing Authority	**15,710**	19,307
	$ 59,975	$ 65,386
14. ENVIRONMENTAL DEVELOPMENT SERVICES		
Environmental planning and zoning		
Salaries and benefits	**$ 92,368**	$ 90,078
Advertising and other	**6,934**	3,240
Legal	**13,267**	1,708
	112,569	95,026
Community development		
South Shore Regional Enterprise Network Costs	**-**	3,282
Old Fire Hall	**32,041**	30,828
CNR station	**20,999**	19,624
Lunenburg Academy	**208,828**	183,752
Annex – 17 Tannery Road	**4,459**	1,211
Tourism – general	**11,286**	12,416
Communications	**10,238**	10,000
Visitors service centre	**13,944**	16,828
	301,795	277,941
	$ 414,364	$ 372,967

	2020	2019
15. RECREATIONAL AND CULTURAL SERVICES AND EDUCATION		
Recreational facilities		
Salaries, wages and benefits	$ 318,410	$ 314,726
Administration	11,903	13,592
Maintenance, fields and grounds	3,470	4,702
Maintenance, community centre	35,760	40,396
Maintenance, arena	117,382	109,519
Small tools	1,544	1,546
Program costs	17,357	15,528
Parks and playgrounds	70,545	57,064
Interest on capital loans	9,412	6,662
	585,783	563,735
Cultural buildings and facilities		
Library, local branch	47,193	45,290
Transfer to Regional Library	14,796	14,760
Heritage projects	110,710	115,534
Capt. Angus J. Walters House Museum	2,487	1,883
Other services and public celebrations	6,427	8,590
	181,613	186,057
	$ 767,396	$ 749,792
16. FISCAL SERVICES		
Principal instalments		
Debenture principal	$ 394,209	$ 313,399
	394,209	313,399
Transfer to own reserves, funds and agencies		
Reserve Fund, Operating Reserve	3,997	62,640
Reserve Fund, Capital Reserve	315,057	305,960
	319,054	368,600
Education		
Appropriation to South Shore Regional Centre for Education	823,080	806,494
	$ 1,536,343	$1,488,493

TOWN OF LUNENBURG
Supplementary Financial Information
Cemetery Fund – Statement of Operations
Year Ended March 31, 2020

	2020 Budget	2020 **Actual**	2019 Actual
REVENUE			
Sale of lots	$ 1,600	**$ 2,955**	$ 1,890
Burials	22,300	**20,840**	20,690
Bases for headstones, etc.	1,000	-	930
Interest on cemetery trust and care payments	5,900	**7,007**	7,424
Donations	-		-
Appropriations from town general funds	43,300	**44,265**	46,079
	74,100	**75,067**	77,013
EXPENDITURES			
Labour and benefits	34,300	**39,471**	59,622
Mowing Contract	20,000	**20,857**	-
Legal fees	500	**1,359**	499
Supplies and repairs to equipment	14,500	**10,052**	12,529
Lighting and water	1,300	**1,236**	1,280
Sundry, insurance and portable radio	900	**909**	844
Flowers and trees	-		-
Audit fees	1,100	**1,183**	1,043
Provision for doubtful accounts	-		-
Road maintenance	1,500	-	1,196
	74,100	**75,067**	77,013
EXCESS OF REVENUE OVER EXPENDITURES	$ -	**$ -**	$ -

TOWN OF LUNENBURG

Supplementary Financial Information

Cemetery Fund – Statement of Financial Position

Year Ended March 31, 2020

	2020	2019
ASSETS		
Cash	$ 12,721	$ 3,441
Accounts receivable (less allowance for doubtful accounts 2020 $721; 2019 $721)	1,730	4,938
Due from Town Departments	1,003	-
	15,454	8,379
Cemetery and improvements	12,301	12,301
	$ 27,755	$ 20,680
LIABILITIES		
Accounts payable – trade	$ 1,000	$ 1,000
Deferred revenue	1,489	2,156
Due to Perpetual Care Fund	410	800
Due to Town General	12,555	4,423
	15,454	8,379
NET ASSETS		
Investment in capital assets	12,301	12,301
	$ 27,755	$ 20,680

On behalf of the Town of Lunenburg

Rachel Bailey Mayor

Town Manager/Clerk

TOWN OF LUNENBURG
Supplementary Financial Information
Water Utility – Statement of Operations
Year Ended March 31, 2020

	Page	Budget	2020 Actual	2019 Actual
OPERATING REVENUE				
Metered sales		$ 510,000	$ **526,591**	$ 505,330
Flat rate sales		645,000	**658,509**	656,372
Public fire protection		325,400	**325,360**	325,360
Sprinkler service		7,000	**6,600**	6,800
Other		12,600	**12,354**	13,662
		1,500,000	**1,529,414**	1,507,524
OPERATING EXPENDITURES				
Source of supply	B-19	27,300	**25,030**	22,883
Pumping	B-19	53,700	**43,012**	38,538
Water treatment	B-19	298,800	**283,089**	262,542
Transmission and distribution	B-19	222,500	**184,169**	173,092
Administrative and general	B-19	413,100	**422,836**	379,895
Depreciation		294,250	**295,809**	293,957
Taxes		43,000	**43,479**	42,987
		1,352,650	**1,297,424**	1,213,894
NET OPERATING REVENUE		147,350	**231,990**	293,630
NON-OPERATING REVENUE				
Interest earned		4,500	**7,120**	5,484
Grants from Province of Nova Scotia		7,000	**10,251**	6,904
Miscellaneous		500	**100**	360
		12,000	**17,471**	12,748
NON-OPERATING EXPENDITURES				
Interest charges – short-term		-	-	(46)
Debt charges				
Principal		40,750	**40,750**	40,750
Interest and discount		19,900	**19,855**	21,115
Transfer to capital fund		17,700	**107,000**	138,500
Transfer to Reserve				
Reserve for land purchase		5,000	**5,000**	5,000
Reserve for membrane replacement		26,000	**26,000**	26,000
		109,350	**198,605**	231,319
NET NON-OPERATING REVENUE (EXPENDITURES)		(97,350)	**(181,134)**	(218,571)
EXCESS OF REVENUE OVER EXPENDITURES		$ 50,000	**50,856**	75,059
Surplus, beginning of year			**251,881**	251,822
Dividend to Town Capital Reserve		(50,000)	**(50,000)**	(75,000)
SURPLUS, END OF YEAR			$ **252,737**	$ 251,881

TOWN OF LUNENBURG
Supplementary Financial Information
Water Utility – Operating Fund Statement of Financial Position
Year Ended March 31, 2020

	2020	2019
ASSETS		
Bank balances	$ 38,303	$ 33,857
Receivables		
Consumer accounts (less allowance for doubtful accounts 2020, $23,553; 2019, $15,385)	230,723	248,672
Accounts Receivable – Town General	332,066	460,171
Accounts Receivable – Electric Utility	1,485	-
Other Governments	364	67
	602,941	742,767
Inventories of materials and supplies, at cost	45,841	50,356
Prepaid expenses	15,091	10,012
	$ 663,873	$ 803,135
LIABILITIES		
Trade Payables	$ 131,794	$ 101,860
Due to Cemetery Account	1,003	-
Due to Electric Light Utility	-	17,161
Due to Water Capital Reserve	278,339	432,233
	411,136	551,254
EQUITY		
Surplus	252,737	251,881
	$ 663,873	$ 803,135

On behalf of the Town of Lunenburg

Rachel Bailey Mayor

Town Manager/Clerk

TOWN OF LUNENBURG
Supplementary Financial Information
Water Utility – Capital Fund Statement of Financial Position
Year Ended March 31, 2020

	2020	2019
ASSETS		
Bank (Book Balances)	**$ 1,997,607**	$ 1,529,055
Due from Operating Fund	**278,339**	432,233
	2,275,946	1,961,288
Waterworks plant in service *(page B-17)*	**10,998,314**	11,138,653
	$13,274,260	$13,099,941
LIABILITIES		
Long-term debt, Municipal Finance Corporation	**$ 489,000**	$ 529,750
Reserve for capital purchases *(page B-18)*	**2,275,946**	1,961,287
	2,764,946	2,491,037
NET ASSETS		
Investment in capital assets *(page B-18)*	**10,509,314**	10,608,904
	$13,274,260	$13,099,941

On behalf of the Town of Lunenburg

Rachel Bailey Mayor _____ Town Manager/Clerk

Supplementary Financial Information

Water Utility - Plant and Equipment

Year Ended March 31, 2020

	2020	2019
Land and land rights	**$ 133,454**	$ 133,454
Structures and improvements	**6,346,464**	6,211,002
Equipment		
Electric pumping equipment	**512,020**	512,020
Other pumping equipment	**71,144**	71,144
Purification equipment	**1,651,143**	1,651,143
Office furniture and equipment	**13,728**	13,728
Transportation equipment	**69,270**	69,270
Shop equipment	**23,680**	27,558
Tools and work equipment	**11,842**	11,842
Other equipment	**65,162**	65,162
Mains		
Transmission mains	**190,144**	190,144
Distribution mains	**4,972,768**	4,972,768
Services	**183,878**	179,734
Meters	**55,785**	55,785
Hydrants	**120,027**	116,015
	$ 14,420,509	14,280,769
Accumulated amortization	**(3,422,195)**	(3,142,116)
	$ 10,998,314	$ 11,138,653

Supplementary Financial Information
Water Utility – Statement of Investment in Capital Assets
Year Ended March 31, 2020

	2020	2019
BALANCE - BEGINNING OF YEAR	**$10,608,904**	$ 10,843,686
Term debt retired	**40,750**	40,750
Capital from operating funds/Future Capital	**(295,810)**	(293,957)
Transfer from Capital Reserve Fund	**155,470**	27,824
Fixed assets written off	**-**	(9,399)
	(99,590)	(234,782)
BALANCE - END OF YEAR	**$10,509,314**	$10,608,904

Supplementary Financial Information
Water Utility – Statement of Capital Reserve
Year Ended March 31, 2020

	General and Equipment	Land	Depreciation Funds	**2020 Total**	2019 Total
BALANCE - BEGINNING OF YEAR	$ 566,195	$ 119,572	$ 1,275,520	**$ 1,961,287**	$ 1,504,397
Interest earned	10,485	2,214	23,621	**36,320**	21,257
Transfer from Operating Fund	133,000	5,000	295,809	**433,809**	463,457
Transfer to Capital Fund	-	-	(155,470)	**(155,470)**	(27,824)
	143,485	7,214	163,960	**314,659**	456,890
BALANCE- END OF YEAR	$ 709,680	$ 126,786	$ 1,439,480	**$ 2,275,946**	$ 1,961,287

Supplementary Financial Information

Water Utility – Schedules to Statement of Operations

Year Ended March 31, 2020

	2020	2019
Source of supply		
Supervision and engineering	$ 15,646	$ 15,685
Operation and labour	2,028	2,229
Maintenance of plant	7,356	4,969
	$ 25,030	$ 22,883
Pumping		
Supervision and engineering	$ 14,700	$ 14,739
Operation labour	3,031	1,675
Power	23,929	20,909
Maintenance	1,352	1,215
	$ 43,012	$ 38,538
Water treatment		
Supervision and engineering	$ 17,621	$ 18,019
Operation labour	78,651	61,093
Supplies and expenses	167,356	158,046
Maintenance of structures and improvements	19,461	25,384
	$ 283,089	$ 262,542
Transmission and distribution		
Supervision and engineering	$ 54,818	$ 53,116
Operation labour	5,261	4,840
Maintenance of reservoirs	16,025	3,521
Maintenance of mains	24,369	16,571
Maintenance of other distribution plant	23,235	32,646
Stores expenses	46,194	41,990
Transportation expenses	14,267	20,408
	$ 184,169	$ 173,092
Administration and general		
Supervision	$ 38,935	$ 37,500
Salaries and wages	232,075	205,503
Consumer billing and accounting	59,969	50,041
General office expenses	30,523	23,710
Insurance	25,795	24,777
Audit and legal	29,594	32,372
Regulatory expenses	1,645	1,592
Rent	4,300	4,400
	$ 422,836	$ 379,895

TOWN OF LUNENBURG
Supplementary Financial Information
Electric Utility – Statement of Operations
Year Ended March 31, 2020

	2020 Budget	2020 **Actual**	2019 Actual
OPERATING REVENUE			
Residential, commercial and industrial electric energy sales	$6,318,200	**$6,399,822**	$6,227,971
Street lighting – town and others	123,400	**124,664**	121,738
Customers' late charges	23,000	**37,628**	30,321
Miscellaneous	34,600	**38,110**	34,898
	6,499,200	**6,600,224**	6,414,928
OPERATING EXPENDITURES			
Power purchased	5,175,200	**5,212,593**	5,057,616
Substations	77,500	**37,915**	26,458
Transmission and distribution	406,300	**428,629**	410,190
Administration and general	586,600	**578,351**	613,146
Depreciation	203,500	**199,030**	199,412
	6,449,100	**6,456,518**	6,306,822
NET OPERATING REVENUE	50,100	**143,706**	108,106
NON-OPERATING REVENUE			
Interest earned	4,000	**12,218**	5,922
Miscellaneous	30,000	**21,722**	26,351
Expired Deposits & Other Settlements	-	**1,511**	-
	34,000	**35,451**	32,273
NON-OPERATING EXPENDITURES			
Interest on debt	36,600	**34,674**	39,192
Principal repayments	100,000	**100,000**	100,000
Transfer to capital reserve	-	**44,000**	-
	136,600	**178,674**	139,192
NET NON-OPERATING REVENUE (EXPENDITURES)	(102,600)	**(143,223)**	(106,919)
EXCESS (DEFICIENCY) OF REVENUE OVER EXPENDITURES	(52,500)	**483**	1,187
Surplus - beginning of year	-	**466,519**	465,332
SURPLUS - END OF YEAR	-	**$ 467,002**	$ 466,519

TOWN OF LUNENBURG
Supplementary Financial Information
Electric Utility – Operating Fund Statement of Financial Position
Year Ended March 31, 2020

	2020	2019
ASSETS		
Bank balance	**$ 191,863**	$ 578,951
Power billings (less allowance for doubtful accounts 2020, $144,697; 2019, $127,359)	**969,852**	858,185
Due from Provincial Government	**28,165**	23,024
Due from Town General Fund	**277,133**	64,166
Due from Water Utility Operating	-	17,161
Other (less allowance for doubtful Accounts 2020, $15,338, 2019 $12,965)	**21,860**	3,106
	1,488,873	1,544,593
Inventories of materials and supplies, at cost	**84,300**	84,300
Prepaid expenses	**32,110**	26,795
	$1,605,283	$1,655,688
LIABILITIES		
Trade payables	**$ 965,600**	$ 905,121
Due to Federal Government	**866**	83
Due to Electric Capital Reserve	**53,543**	177,659
Due to Water Operating Fund	**1,485**	-
Due to Town	-	-
	1,021,494	1,082,863
Consumers' deposits and accrued interest	**116,787**	106,307
	1,138,281	1,189,170
NET ASSETS		
Surplus	**467,002**	466,518
	$ 1,605,283	$1,655,688

On behalf of the Town of Lunenburg

Rachel Bailey Mayor

Town Manager/Clerk

TOWN OF LUNENBURG

Supplementary Financial Information

Electric Utility – Capital Fund Statement of Financial Position

Year Ended March 31, 2020

	2020	2019
ASSETS		
Bank (book balances)	**$ 874,129**	$ 680,234
Due from Operating fund	**53,543**	177,659
	927,672	857,893
Utility plant and equipment in service *(page B-23)*	**2,832,962**	2,835,758
	$3,760,634	$ 3,693,651
LIABILITIES		
Long-term debt, Municipal Finance Corporation	**$ 700,000**	$ 800,000
Reserve for capital expenditures *(page B-24)*	**927,672**	857,893
	1,627,672	1,657,893
EQUITY		
Investment in capital assets *(page B-24)*	**2,132,962**	2,035,758
	$ 3,760,634	$ 3,693,651

On behalf of the Town of Lunenburg

Rachel Bailey Mayor

Town Manager/Clerk

Supplementary Financial Information

Electric Utility – Plant and Equipment

Year Ended March 31, 2020

	2020	2019
Tangible plant		
Sub-station equipment	**$ 2,642,591**	$ 2,642,591
Right-of-way land	**2,371**	2,371
Transmission		
Overhead conductors	**10,057**	10,057
Poles, towers and fixtures	**24,081**	24,081
Distribution		
Overhead conductors	**867,979**	820,534
Poles and fixtures	**955,043**	919,091
Street and highway lighting system	**245,371**	237,149
Transformers and installations	**1,189,536**	1,120,307
Services	**313,015**	281,254
Meters and installations	**311,572**	309,068
Buildings	**93,329**	93,329
Shop equipment	**37,432**	37,432
Mobile equipment – trucks	**45,823**	45,823
Communications equipment	**21,674**	21,674
Computer and office equipment	**100,528**	100,528
Computer programs	**28,305**	28,305
Miscellaneous equipment	**40,215**	40,215
	6,928,922	6,733,809
Accumulated amortization	**(4,095,960)**	(3,898,051)
	$ 2,832,962	$ 2,835,758

Supplementary Financial Information
Electric Utility – Statement of Investment in Capital Assets
Year Ended March 31, 2020

	2020	2019
BALANCE – BEGINNING OF YEAR	**$ 2,035,758**	$ 2,312,191
Term debt retired	**100,000**	100,000
Other transfers	**6,748**	8,568
Transfer to Capital Reserve	**(9,544)**	(37,879)
Fixed assets written off	**-**	(347,122)
	97,204	(276,433)
BALANCE - END OF YEAR	**$ 2,132,962**	$ 2,035,758

Supplementary Financial Information
Electric Utility – Statement of Capital Reserve
Year Ended March 31, 2020

	Depreciation Funds	Equipment	Substation	2020 Total	2019 Total
BALANCE – BEGINNING OF YEAR	$ 700,554	$ 133,746	$ 23,593	**$ 857,893**	$ 673,904
Interest earned	13,258	2,531	447	**16,236**	14,110
Contributions, other				**-**	132,000
Transfer from (to) Capital Fund	(189,487)			**(189,487)**	(161,533)
Transfer from Operating Fund	199,030	44,000	-	**243,030**	199,412
	22,801	46,531	447	**69,779**	183,989
BALANCE - END OF YEAR	$ 723,355	$ 180,277	$ 24,040	**$ 927,672**	$ 857,893

TOWN OF LUNENBURG
Supplementary Financial Information
Perpetual Care Funds Statement of Financial Position
Cemetery Care Deposits
Year Ended March 31, 2020

	2020	2019
ASSETS		
Bank (book balances)	$ 92,455	$ 74,300
Due from Cemetery Fund	410	800
Due from Operating	-	-
Loans		
Town Capital Fund – 3.07% March 2024	47,600	59,500
Town Capital Fund – 1.83% March 2021	11,280	16,920
Town Capital Fund – 3.7% March 2028	64,000	15,400
Town Capital Fund – 2.35% March 2023	12,320	72,000
Town Capital Fund – 2.35% March 2029	80,000	-
	215,200	163,820
	308,065	$ 238,920
LIABILITIES		
Due to Town Capital Fund	$ 80,040	$ 15,000
NET ASSETS		
Perpetual Care Funds Reserve	228,025	223,920
	$ 308,065	$ 238,920

On behalf of the Town of Lunenburg

Rachel Bailey Mayor _____ Town Manager/Clerk

Supplementary Financial Information
Perpetual Care Fund – Statement of Reserve
Year Ended March 31, 2020

	2020	2019
BALANCE – BEGINNING OF YEAR	$ 223,920	$ 221,165
Perpetual care receipts and donations	4,105	2,755
BALANCE – END OF YEAR	$ 228,025	$ 223,920

TOWN OF LUNENBURG
Supplementary Financial Information
Operating Reserve Funds Statement of Financial Position
Year Ended March 31, 2020

	Streets Sewers & Others	Recreation	LAFF	Pro Kids	Operating Surplus Reserve	Region 6 Diversion Spec Projects	**2020 Total**	2019 Total
ASSETS								
Bank balances	$ 123,908	$ 53,668	$ 15,033	$ 16,504	$ 171,361	$ 2,372	**$382,845**	$156,969
Due from Town General	(42,200)	-	(2,000)	264	997	-	**(42,939)**	213,270
	$ 81,708	$ 53,668	$ 13,033	$ 16,768	$ 172,358	$ 2,372	**$339,907**	$370,239
LIABILITIES								
Due to Town General	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**	$ -
NET ASSETS								
Operating Reserve	$ 81,708	$ 53,658	$ 13,033	$ 16,768	$ 172,358	$ 2,372	**$339.907**	$370,239

On behalf of the Town of Lunenburg

Rachel Bailey Mayor _____ Town Manager/Clerk

AC Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG
Supplementary Financial Information
Statement of Operating Reserve Funds
Year Ended March 31, 2020

	Streets Sewers & Others	Recreation	LAFF	Pro Kids	Operating Surplus Reserves	Region 6 Diversion Spec. Projects	**2020 Total**	2019 Total
BALANCE – BEGINNING OF YEAR	$ 129,843	$ 47,746	$ 10,390	$ 11,554	$ 168,377	$ 2,331	**$ 370,241**	$ 150,752
Donations	-	5,000	-	5,510	-	-	**10,510**	12,967
Interest earned	2,301	922	216	-	2,984	41	**6,464**	2,804
Contributions, other	-		4,427	-	-	-	**4,427**	4,000
Transfer, from Town General	3,000	-	(2,000)	1,000	997	-	**2,997**	232,016
Transfer (to) Town General	(53,436)	-	-	(1,296)	-	-	**(54,732)**	(32,300)
	(48,135)	5,922	2,643	5,214	3,981	41	**(30,334)**	219,487
BALANCE- END OF YEAR	$ 81,708	$ 53,668	$ 13,033	$ 16,768	$ 172,358	$ 2,372	**$ 339,907**	$ 370,239

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG
Supplementary Financial Information
Capital Reserve Fund Statement of Financial Position
Year Ended March 31, 2020

	Solid Waste Site Closure	Other Equipment	Fire Equipment	Fed/Prov Gas Tax Funds	Provincial Capital Funds	Deed Transfer Tax	**2020 Total**	2019 Total
ASSETS								
Bank balances	$ 12,842	$ 372,506	$ 33,117	$ 387,164	$ 172,765	$ 534,638	**$1,513,032**	$1,216,974
LIABILITIES								
Due to (from)								
General Operating	4,915	(23,063)	(500)	(251,055)	(135,000)	36,065	**(368,638)**	(56,632)
	4,915	(23,063)	(500)	(251,055)	(135,000)	36,065	**(368,638)**	(56,632)
EQUITY								
Capital Reserve	7,927	395,569	33,617	638,219	307,765	498,573	**1,881,670**	1,273,606
	$ 12,842	$ 372,506	$ 33,117	$ 387,164	$ 172,765	$ 534,638	**$1,513,032**	$1,216,974

On behalf of the Town of Lunenburg

Rachel Bailey Mayor

Town Manager/Clerk

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG
Supplementary Financial Information
Statement of Capital Reserve Fund
Year Ended March 31, 2020

	Solid Waste Site Closure	Academy/ Other Equipment	Fire Equipment	Fed/Prov Gas Tax Funds	Provincial Capital Funds	Deed Transfer Tax	**2020 Total**	2019 Total
BALANCE, BEGINNING OF YEAR	$ 12,595	$ 330,594	$ 32,480	$ 341,098	$ 169,444	$ 387,395	**$ 1,273,606**	$1,306,470
Donations	-	9,000	500	-	-	-	**9,500**	-
Interest earned	247	6,988	637	10,116	3,321	9,522	**30,831**	23,996
Sale of Lands and Equipment	-	265,000	-	-	-	-	**265,000**	64
Deed transfer tax	-	-	-	-	-	188,631	**188,631**	223,474
Conditional transfers from, Provincial government	-	-	-	408,490	135,000	-	**543,490**	208,879
Transfer from Town General Fund	-	125,926	-	-	-	-	**125,926**	82,486
Transfer to Town Capital Fund	-	(328,113)	-	(121,485)	-	(86,975)	**(536,573)**	(548,196)
Transfer, other	(4,915)	(13,826)	-	-	-	-	**(18,741)**	(23,567)
	(4,668)	64,975	1,137	297,121	138,321	111,178	**608,064**	(32,864)
BALANCE – END OF YEAR	$ 7,927	$ 395,569	$ 33,617	$ 638,219	$ 307,765	$ 498,573	**$1,881,670**	$1,273,606

AC Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG
Supplementary Financial Information
Schedule of Debt Charges and Long-term Debt
Year Ended March 31, 2020

B-30

	Due	Opening Balance	Issued	Redeemed	Closing Balance	Interest	Interest Rate
General Capital							
Temporary Borrowing		$ 847,114	$154,000	$ 847,114	**$ 154,000**	$ -	Prime Less-1% BA +50pts
Paving							
Debenture – Municipal Finance Corporation	2020	18,143	-	9,071	**9,072**	554	3.87%
Debenture – Municipal Finance Corporation	2021	25,649	-	8,550	**17,099**	778	3.256% - 3.654%
Debenture – Municipal Finance Corporation	2023	31,200	-	7,800	**23,400**	827	2.65% - 3.160%
Debenture – Municipal Finance Corporation	2027	53,100	-	5,900	**47,200**	1,003	1.350% - 2.653%
Town of Lunenburg – Hillcrest Cemetery	2024	59,500	-	11,900	**47,600**	1,644	3.07%
Debenture – Municipal Finance Corporation	2019	26,000	-	26,000	**-**	106	2.24%
Debenture – Municipal Finance Corporation	2025	73,500	-	10,500	**63,000**	1,645	1.394% - 2.894%
Debenture – Municipal Finance Corporation	2027	174,600	-	19,400	**155,200**	4,344	1.93% - 3.073%
Debenture – Municipal Finance Corporation	2034	-	210,000	-	**210,000**	1,942	2.015% -2.829%
Parking Meters							
Town of Lunenburg – Hillcrest Cemetery	2021	5,940	-	1,980	**3,960**	91	1.83%
Town of Lunenburg – Hillcrest Cemetery	2023	8,000	-	1,600	**6,400**	169	2.35%
Town Hall Building							
Debenture – Municipal Finance Corporation	2020	10,399	-	5,199	**5,200**	318	3.87%
Debenture – Municipal Finance Corporation	2021	51,208	-	17,068	**34,140**	1,552	3.26% - 3.645%
Community Centre							
Town of Lunenburg – Hillcrest Cemetery	2029	-	80,000	-	**80,000**	-	3.256% - 3.645%
Arena Building							
Debenture – Municipal Finance Corporation	2021	15,543	-	5,182	**10,361**	471	3.256% - 3.645%
Debenture – Municipal Finance Corporation	2027	32,400	-	3,600	**28,800**	806	1,93% - 3.073%
Town of Lunenburg – Hillcrest Cemetery	2023	7,400	-	1,480	**5,920**	157	2.35%
Public Works Building							
Debenture – Municipal Finance Corporation	2023	15,600	-	3,900	**11,700**	413	2.65% - 3.160%
Recreation-Boat Launch							
Debenture – Municipal Finance Corporation	2027	271,440	-	27,144	**244,296**	7,979	2.49% - 3.389%
Public Works Equipment							
Debenture – Municipal Finance Corporation	2027	112,500	-	12,500	**100,000**	2.799	1.93% - 3.073%
Town of Lunenburg – Hillcrest Cemetery	2027	72,000	-	8,000	**64,000**	1,959	2.88%
Fire Equipment							
Debenture – Municipal Finance Corporation	2020	2,662	-	1,334	**1,328**	82	3.87%
Debenture – Municipal Finance Corporation	2023	70,000	-	17,500	**52,500**	1,855	2.65% - 3.160%
Debenture – Municipal Finance Corporation	2019	4,480	-	4,480	**-**	18	2.24%
Debenture – Municipal Finance Corporation	2026	359,109	-	44,889	**314,220**	7,653	1.599% - 2.925%
Sewers							
Debenture – Municipal Finance Corporation	2020	4,394	-	2,196	**2,196**	134	3.87%
Debenture – Municipal Finance Corporation	2023	112,000	-	28,000	**84,000**	2,968	2.65% - 3.160%
Debenture – Municipal Finance Corporation	2019	11,000	-	11,000	**-**	45	2.24%
Debenture – Municipal Finance Corporation	2033	578,716	-	38,581	**540,135**	18,083	2.49% - 3.551%
Debenture – Municipal Finance Corporation	2034	-	188,455	-	**188,455**	1,743	2.015% - 2.829%
Old Fire Hall Building							
Debenture – Municipal Finance Corporation	2023	60,024	-	12,005	**48,019**	1.564	2.49% - 3.048%

Continues

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

Lunenburg Academy							
Debenture – Municipal Finance Corporation	2025	51,800	-	7,400	**44,400**	1,159	1.394% - 2.894%
Town of Lunenburg – Hillcrest Cemetery	2021	10,980	-	3,660	**7,320**	167	1.83%
Debenture – Municipal Finance Corporation	2027	81,180	-	9,020	**72,160**	2,020	1.93% - 3.073%
Debenture – Municipal Finance Corporation	2027	246,330	-	27,370	**218,960**	4,651	1.350% -3.073%
Debenture – Municipal Finance Corporation	2034	-	242,200	-	**242,200**	2,240	2.015% - 2.829%
		$ 3,503,911	$ 874,655	$ 1,241,323	**$ 3,137,243**	$ 73,939	
Water Capital							
Water Treatment Plant							
Debenture - Municipal Finance Corporation	2026	$ 529,750	$ -	$ 40,750	**$ 489,000**	$ 19,855	3.256%-4.026%
		$ 529,750	$ -	$ 40,750	**$ 489,000**	$ 19,855	
Electric Capital							
Substation Upgrades							
Debenture – Municipal Finance Corporation	2026	$ 800,000	$ -	$ 100,000	**$ 700,000**	$ 34,674	4.53 - 4.59%
		$ 800,000	$ -	$ 100,000	**$ 700,000**	$ 34,674	
		$ 4,833,661	$ 874,655	$1,382,073	**$4,326,243**	$ 128,468	

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

TOWN OF LUNENBURG
Supplementary Financial Information
Statement of Capital Financing
Year Ended March 31, 2020

	2020	2019
SOURCE		
Federal and Provincial grants	$ 802,097	$ 1,065,552
Capital expenditures from revenue	149,226	127,487
Contributions, other organizations	318,863	236,221
Temporary borrowings	234,000	656,054
Withdrawal from Capital and Operating Reserve Funds	505,206	369,838
	$ 2,009,391	$ 2,455,152
APPLICATION		
Capital asset acquisitions	$ 2,009,391	$ 2,455,152
	$ 2,009,391	$ 2,455,152

	Total Capital Cost	Federal & Provincial Grants	Borrowings	Transfer From Reserves	Contributions - Other Organizations	Expenditure From Revenue
General Capital						
Town Hall Snow Load Assessment	$ 12,941	$ -	$ -	$ -	$ -	$ 12,941
Lunenburg Academy Interpretive Panels	4,333	-	-	4,333	-	-
Lunenburg Academy – Lot Development Plan	32,107	16,054	-	16,054	-	-
Lunenburg Academy Building Heritage Classroom	34,549	17,274	-	-	17,274	-
Lunenburg Academy Building Exterior	505,821	350,844	-	154,977	-	-
Fire Department – Turnout Gear	120,205	20,000	-	8,236	42,353	49,616
Streets and sidewalks	87,818	-	72,500	15,235	-	83
Street equipment	40,288	-	40,000	-	-	288
Boat Launch site	11,281	3,325	-	7,956	-	-
Sewer system	598,296	390,407	41,500	71,169	57,511	37,709
Parking Meter Upgrades	14,075	-	-	9,075	-	5,000
Coin Roller-Sorter	4,599	-	-	-	-	4,599
Welcome signage	8,385	4,193	-	4,192	-	-
Arena Brine Repair	14,432	-	-	-	-	14,432
Community Centre Bathroom Renovations	47,230	-	-	28,330	-	18,900
Community Centre Structural Roof Repairs	121,325	-	80,000	-	40,000	1,325
	1,657,685	802,097	234,000	160,247	312,115	149,226
Water Utility						
Replace Oil Tank	11,852	-	-	11,852	-	-
Repairs to Dares Lake Spillway	11,037	-	-	11,037	-	-
Hydrants	4,013	-	-	4,013	-	-
Water Storage Tank upgrades	124,424	-	-	124,424	-	-
Services	4,145	-	-	4,145	-	-
	155,471	-	-	155,471	-	-
Electric Utility						
Overhead Conductors	47,445	-	-	47,445	-	-
Poles and Fixtures	35,952	-	-	35,952	-	-
Street Lighting	8,222	-	-	8,222	-	-
Transformers Line	70,350	-	-	67,342	3,008	-
New Services	31,762	-	-	28,023	3,739	-
Meters	2,504	-	-	2,504	-	-
	196,235	-	-	189,488	6,747	-
	$ 2,009,391	$ 802,097	$ 234,000	$ 505,206	$ 318,862	$ 149,226

Federal/Provincial Grants

Town: (1) Province of Nova Scotia CWWF - $578,337; Communities/Culture & Heritage - $160,857
(2) Government of Canada – Gas Tax $168,672, Parks Canada $157,686

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS

Position	Wage Range		
Accountant	$59,358	-	$75,150
Assistant Municipal Clerk	$50,426	-	$54,966
Business Coordinator	$41,708	-	$49,067
Comm. Centre Attendant	$42,951	-	$50,834
Comm. Centre Attendant - Seasonal	$17.55 per hour		
Facilities Superintendent	$59,072	-	$70,799
Finance Clerk	$31,672	-	$35,192
Finance Officer Accounts Payable	$48,419	-	$56,842
Finance Officer Accounts Receivable	$40,810	-	$48,011
Finance Officer Electric Coordinator	$48,419	-	$56,842
Finance Director	$87,994	-	$106,276
Fire Hall Superintendent	$45,990	-	$59,841
Heritage Manager	$73,015	-	$80,883
Planning & Development Manager	$58,050		$61,320
Public Works Superintendent	$67,364	-	$76,387
Recreation Director	$66,421	-	$74,897
Secretary/Receptionist	$41,339	-	$51,219
Secretary II	$38,873	-	$44,235
Town Engineer	$89,926	-	$112,587
Town Manager/Clerk	$95,985	-	$119,302
Public Works - Laborer	$48,277		+OT
Public Works - Operator	$51,064		+OT
Public Works - Heavy Equip/Draftsman	$53.373		+OT
WRO I - Operator in Training Certificate	$51,979		+OT
WRO I Certificate Level I	$57,221		+OT
WRO I Certificate Level II (a)	$58,552		+OT
WRO I Certificate Level II (a) Operator in Overall Direct Responsible Charge	$64,958		+OT
WRO I Certificate Level II (b)	$60,715		+OT
WRO I Certificate Level II (b) Operator in Overall Direct Responsible Charge	$67,122		+OT

N.B - Some employees also receive overtime pay, time in lieu, mileage allowance, and meeting pay not reflected in the above chart

Schedule "B"

Belliveau Veinotte Inc.
CHARTERED PROFESSIONAL ACCOUNTANTS
Member of The AC Group of Independent Accounting Firms

PO Box 29
11 Dominion St
Bridgewater NS B4V 2W6
Canada

Tel: 902-543-4278
Fax: 902-543-1818
bridgewater@bvca.ca
www.bvca.ca

September 17, 2020

Mayor Rachel Bailey and Council
Town of Lunenburg
PO Box 129
Lunenburg, Nova Scotia
B0J 2C0

Dear Mayor Bailey:

We have completed our audit of the Town of Lunenburg for the year ended March 31, 2020. We wish to provide you with the following comments.

During our audit process we do make enquiries of management and employees to determine if they are aware of any fraudulent or illegal acts carried on by any of the Town employees. Management advised us they were not aware of any such acts.

We have performed tests to determine if controls are being effectively carried out, such as ensuring proper rates are charged for taxes, water, electricity, that paid invoices are properly authorized and approved, employees are paid approved rates, etc. Management has been very conscientious in ensuring that proper procedures are followed and have ensured there is as much segregation of duties as possible, considering the limited size of your staff.

Annually the Audit Committee must review the annual summary of Remuneration and Expenses for Reportable Individuals. For the Town of Lunenburg, reportable individuals include Council and the CAO/Clerk. This review is to ensure remuneration agrees to the salary scales set out by Council, and that expenses are reasonable. As a committee you are also required to review the annual hospitality expenses, in the current year there were hospitality expenses incurred. The remuneration and expense details can be found in Note 11 of the financial statements. (Financial Reporting and Accounting Manual 3(3)(b) vi and3(3)(c) vi)

Environment Canada investigated a Town waste water pump over flow under the Fisheries Act. As of year end any potential liability is unknown and therefore has not been recorded in the consolidated financial statements.

The primary purpose of our examination is to enable us to form an opinion on the financial statements of the Town of Lunenburg for the year ended March 31, 2020. We reviewed and tested the Town's financial system and related accounting controls to the extent we considered necessary to evaluate the system as required by generally accepted auditing standards. Our study and evaluation with respect to

these financial systems was not designed for the purpose of expressing an opinion on the internal accounting control, and it would not necessarily disclose all weaknesses in the system.

If you have any questions regarding any of the items listed above, please do not hesitate to contact our office.

Yours very truly,

Paul F. Belliveau, FCPA, FCA
Partner

PFB/dm

cc Beatrice Renton – Chief Administrative Officer (CAO)/Clerk
Lisa Dagley – Finance Director
Department of Municipal Affairs

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Belliveau Veinotte Inc.
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September 17, 2020

Mayor Rachel Bailey and Council
Town of Lunenburg
PO Box 129
Lunenburg, Nova Scotia
B0J 2C0

Dear Mayor Bailey:

In connection with the audit of the Town of Lunenburg (the "Town") financial statements as of March 31, 2020 and for the year then ended, the Canadian Auditing Standards require that we advise management and the audit committee (hereinafter referred to as "those charged with governance") of the following internal control matters identified during our audit.

Our responsibilities

Our responsibilities, as prescribed by the Canadian Auditing Standards, is to plan and perform our audit to obtain reasonable assurance about whether the financial statements are free of material misstatements, whether caused by error or fraud. An audit includes consideration of internal control over financial reporting (hereinafter referred to as "internal control") as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the financial statements, but not for the purpose of identifying deficiencies in internal control or expressing an opinion on the effectiveness of the Town's internal control.

Internal Control Matters

We have not identified any significant internal control matters that merit your attention.

COVID-19 and the work environment

As we have all learned over the last several months every workplace has changed significantly as staff and management have implemented processes to meet health and safety protocols that require potential changes in timing, locations and nature of the work performed.

We commend staff on their abilities to adapt throughout the last several months, while implementing processes to safeguard the integrity of the financial system. We encourage the Town to continue its progressive work to address the following matters.

Technology

COVID-19 created a tremendous reliance on technology and has expanded our thinking on what technology can be used for in the workplace. On-going technology investments are an important part of a pandemic plan. We understand that staff have begun exploring the use of electronic/digital signatures and other technologies that could enhance the organization's remote operations which we support.

Confidentiality

Protection of confidential information is paramount for Council, management, and staff. The Town has appropriate policies, procedures and agreements concerning confidentiality and sensitive information in place. In response to provincial COVID-19 health and wellness protocols some offsite work may be required. We recommend that employees annually sign a confidentiality agreement and ensure the agreement is appropriate to Council, management, and staff's circumstances as a reminder to maintain the integrity of the data and information that is processed.

Risk assessment

We support the Town's ongoing risk assessments to identify individuals and processes that are integral to the continual day to day operations of the Town.

For example it is important to the Town's operations to ensure employees are paid on a timely basis. Processing customer payments and the payment of vendor invoices is also an important function. These functions would take priority in the accounting department as part of a pandemic or emergency plan.

Another important example is the need to always have one elected and one non-elected signing authority to sign cheques or documents in an event of a quarantine. Which is why safe work practices are so critical to the continued operation of the Town.

We would be pleased to discuss these matters in more detail with you.

Yours very truly,

Paul F. Belliveau, FCPA, FCA
Partner

PFB/dm
cc Beatrice Renton - Chief Administrative Officer (CAO)/Clerk
Lisa Dagley – Finance Director
Department of Municipal Affairs

PROTECTIVE SERVICES COMMITTEE

MEETING RECOMMENDATIONS – SEPTEMBER 17, 2020

To recommend to Lunenburg Town Council to approve funding for replacement of the existing #6 Tanker truck on a 50/50 basis on the understanding that Fire Districts 1 and 2 Commission agreed to cost share the aerial ladder truck on a 40 Commission/60 Town basis up from a previously agreed cost sharing arrangement of 20/80.

PROTECTIVE SERVICES COMMITTEE MEETING MINUTES

THURSDAY, SEPTEMBER 17, 2020 AT 2:00 P.M.

VIA AUDIO/VIDEO CONFERENCE DURING COVID-19 PANDEMIC

PRESENT: Councillor Danny Croft, Chair
Deputy Mayor John McGee
Councillor Peter Mosher
David Afford, Fire Districts 1 and 2 Commission Board Member
David Baugil, Fire Districts 1 and 2 Commission Board Member
Brian Keizer, Fire Districts 1 and 2 Commission Board Chair

ALSO PRESENT: Lisa Dagley, Finance Director
Kathleen Rafuse, Accountant
Bea Renton, CAO
Dave Robb, Deputy LDFD Fire Chief and Truck Committee member
Darren Romkey, LDFD Fire Chief and Truck Committee member

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1. Call to Order

Councillor Croft called the meeting to order at 2:05 p.m.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Chair acknowledged that the Town of Lunenburg is located on the unceded territory of the Mi'kmaq People.

3. Agenda

Motion: moved and seconded to approve the agenda as circulated. Motion carried.

4. Protective Services Committee March 12, 2020 meeting minutes

Motion: moved and seconded to approve the March 12, 2020 meeting minutes. Motion carried.

5. Business Arising from the Minutes/Unfinished Business

6. New Business

   a. Fire Chief's monthly reports March – August 2020

The Fire Chief's reports (Schedule "A") were received for information. It was noted that the two surplus fire trucks were earlier sold as surplus. In response to questions he

advised that local firefighting training has resumed. COVID-19 pandemic protocols are to maintain physical distance amongst members and wear masks for medical calls.

b. Request for Town Council and Districts 1 & 2 Fire Commission 2022/23 Budget pre-approval approval to order a heavy rescue truck #4 replacement – Fire Chief report and offer to arrange a time to view this and other trucks in person

The Committee discussed the Fire Chief's report (Schedule "B"). The Fire Chief and Deputy Fire Chief advised that the existing truck has 26,000 kms. on it. A new 16' truck will cost $650,000 approx.

Fire Districts 1 and 2 Commission Board members advised that they would like to resolve issues relating to the future funding of the #6 Tanker truck before considering another truck purchase. When the current Aerial Ladder Truck was purchased they did not initially agree with the funding of the aerial ladder truck at 40% and were prepared to make a 20% cost contribution. The Commission is of the understanding that they subsequently agreed to a 40% contribution for the Aerial Ladder Truck as the Town agreed to a 50/50 cost sharing for future replacement of the #6 Tanker truck purchase by a motion of the Commission in 2014. They are seeking to confirm this before another truck purchase is considered. The Commission will provide the Town with the documentation they have regarding this for consideration at a future Council meeting (see: attached Schedule "C").

Motion: moved and seconded that it be recommended to Town Council to approve funding for replacement of the existing #6 Tanker truck on a 50/50 basis on the understanding that Fire Districts 1 and 2 Commission agreed to cost share the aerial ladder truck on a 40 Commission/60 Town basis up from a previously agreed cost sharing arrangement of 20/80. Motion carried.

It was agreed to consider the purchase of a heavy rescue truck at the next Committee meeting.

Appreciation was expressed to Councillor Croft for his many years of service as a Committee Chair and member as he is retiring from Council.

7. Next Meeting Date

The next scheduled Committee meeting date is Thursday, December 10, 2020 at 2:00 p.m.

8. Adjournment

Motion: moved and seconded to adjourn the meeting. Motion carried.

The meeting adjourned at 2:50 p.m.

_____

Bea Renton, CAO

SCHEDULE "A"

Lunenburg & District Fire Department

25 Medway Street, P.O. Box 1478
Lunenburg, Nova Scotia
634-8343 Fax –634-4145
Chief Darren Romkey
Cell- 212-0476 dromkey@eastlink.ca

Chief Report for March 2020

Training

March 3-Junior fire fighter practice. Group trained on basic Ice Rescue techniques in our station.
March 8-Annual in house Officers training.
LDFD Officers spend the day reviewing general operations of the department such as training, GOGs etc.
March 16-All non emergency activities including training has been suspended due to the Covid19 .

Misc

March 7-Hosted the annual Chowder Cup hockey game with the RCMP. This tradition has been going on for over 40 years.
RCMP won

March 9-#5 Tanker had a complete pump overhaul.

March 11-Accepted Gerry Demont as a probationary member.
March 12-Protective Services meeting
March 16-Due to the COVID 19 all rentals, meetings, training of the department will be cancelled.
-Emergency calls will still be responded to.
March 18-Myself and Don Heckman met with Calvin Ripley, dealer for our new truck.
-All conferences and shows have been cancelled, Because of this the extra hose, nozzles and helmets will not be included in the truck.
They are still going to give us the Decon unit and pay for the extra detailed paint job.
He will keep us updated on the status of the new truck and delivery schedule
March 21-#3 Engine participated in a parade by the SSRH where Bridgewater fire fighter Todd Arenburg is an inpatient with terminal cancer.
27 trucks from around the region drove past his window and we all said a few words to him via radio letting him know we are thinking of him.
March 23-EHS MFR services announced a change in fire departments response to medical calls.
Instead of us going automatic to MVCs, cardiac arrests, and at the request of the responding paramedics, we will only respond to MVCs and problematic patient extrications.

Members have respected the closure of the station and have only entered for emergency calls or special duties required and OK'd by me.
Extra cleaning of the trucks post calls is being done.
Post call, all door handles and areas that may have been touched are being disinfected.
The Superintendent than goes over the trucks again.
The Superintendent has been instructed to make the extra effort to wipe down areas especially prone to exposure. (door handle, phones etc)
Members are doing the best they can to perform social distancing both on the scene and at the call.
Members are instructed to inform me if they have been exposed away from the hall and are to stay away until the proper times lapses.
They are also to stay away if they are showing any symptoms.
We have a couple members who have chosen to take a LOA due to family risks.

Lunenburg & District Fire Department

25 Medway Street, P.O. Box 1478
Lunenburg, Nova Scotia
634-8343 Fax –634-4145
Chief Darren Romkey
Cell- 212-0476 dromkey@eastlink.ca

Chief Report for April 2020

Training

All training has been suspended

Misc

April 6th-9th-Truck checks have been performed on all vehicles to ensure all equipment is there and in working order.
We took a different approach. Instead of all 8 crews doing all 8 vehicles on the same night, it was split up in 4 nights.
2 crews per night. Social distancing was maintained.

April 16th- Officers meeting required going over several issues.
Social distancing was maintained throughout the meeting.
I will evaluate come mid May to see if we have to hold some training to keep fire fighters up to date and equipment in working order.
Similar procedures may take place as was done for truck checks.
Crews come in on separate nights to limit the amount of members in the hall and allow for easier social distancing.

Members continue to respect the closure of the station and have only entered for emergency calls or special duties required and OK'd by me.
Cleaning supplies added throughout the apparatus floor and Comm room to ensure disinfecting is being done.
Extra cleaning of the trucks post calls is being done.
Post call, all door handles and areas that may have been touched are being disinfected.
The Superintendent than goes over the trucks again.
The Superintendent has been instructed to make the extra effort to wipe down areas especially prone to exposure. (door handle, phones etc)
Members are doing the best they can to perform social distancing both on the scene and at the call.
Members are instructed to inform me if they have been exposed away from the hall and are to stay away until the proper times lapses.

April 1st-Flag lowered half mast for the passing of Former Town Councillor Barbara Zwicker

April 21st-We positioned our ladder truck with the ladder up and blue ladder lights on, accompanied by 2 RCMP vehicles and Officers for a quiet memorial for the victims of the Colchester County shooting tragedy

April 22nd-We took part in a province wide “10 second sounding of our sirens” in respect for the weekend shooting.

April 23th-A parade of local fire apparatus and members from our station to the RCMP station in appreciation and memory of the fallen Officer took place.

At the request of the FSANS, and Dr Strang, we will not be participating in any more parades or memorials until the bans have been lifted.

Lunenburg & District Fire Department

25 Medway Street, P.O. Box 1478
Lunenburg, Nova Scotia
634-8343 Fax –634-4145
Chief Darren Romkey
Cell- 212-0476 dromkey@eastlink.ca

Chief Report for May 2020

Training

May 27-General monthly fire practice consisting of basic hose lays, new training on gated wyes for tanker to pumper supply and drone training
This gave the trucks a much needed running of the pumps
Crews were well spread out and social distancing was possible most of the time

Misc

-hall remains closed to all members for non emergency, training or maintenance events.
-May 5th- the new washing machine has been delivered
-May 6th- question from Brian Kaizer regarding the use of a tanker to public works.
-They did borrow one to clean out a catch basin.
-It was explained to former Town Engineer Lee last year, when a tanker was used on a daily basis, that when we get our new truck, and one of the tankers will be sold, leaving us with only one, that the remaining tanker will not be available as much.
-It was suggested that the town look at keeping either the tanker or pumper for public works.
-I also spoke to Peter Baker about it this month as well.
-May 14-hose for the new Engine has been delivered to the station
May 19th-Truck committee met virtually with Chris Kerr of Mic Mac Fire and Safety to discuss the design and logo placement on the new Engine
-Truck is still looking to be on schedule for the mid July delivery date
-final inspection will most likely not happen at the Quebec facility. This will be decided as the date gets nearer
-

Lunenburg & District Fire Department

25 Medway Street, P.O. Box 1478
Lunenburg, Nova Scotia
634-8343 Fax –634-4145
Chief Darren Romkey
Cell- 212-0476 dromkey@eastlink.ca

Chief Report for June 2020

Training
June 24th-General practice consisting of pump operations, SCBA, Boat Operations and Drone

Misc

-We have resumed filling pools for the residents of Lunenburg and the District.
We have had requests to fill pools outside our coverage area but have denied that.
-June 1st- The washing machine for washing bunker gear and coveralls has been placed in service. This was purchased 100% by funds raised by the LDFD Auxiliary.
-June 3st- Honorary Engineer George Feener passed away.
-June 3rd- The Drone has been placed into service
-June 5th- Parts of the station have reopened to the members with restrictions.
-the Clubroom is open to members only to a maximum of 10 and social distancing will be done
-the Exercise room is open to a maximum of 2 members at a time
-the apparatus floor and personal washing of vehicle is opened
June 7th-Members "Took a Knee" against racism for 8 m 47sec in front of the station.
June 12th- A couple trips to the city have been done to complete the annual visual testing of our SCBA bottles
June 18th-Our flag was place half staffed in honor of the passing of active town councillor Joesph Carnevale
June 22nd/23rd-Annual pump testing performed on all the trucks
All trucks have passed with minor repairs and general maintenance.
June 25th-Lt Hunt and FF Romkey assisted with parking at the LCLC for Parkview graduation ceremonies.
June 26th-#6 Tanker required repairs to the exhaust system.

New truck is still running pretty well on schedule.
We will be doing the final inspection virtually on July 9th, instead of traveling to Quebec.
Once this is complete we should have a delivery date.
We will have to strip all the equipment off both trucks prior to delivery and we will be without a second Engine (pumper) for a couple weeks.
Automatic mutual aid agreements will be in effect.
These include;
For confirmed structure fires in the district
-Dayspring for a tanker directly to the scene

Mahone Bay for a pumper to the station.

Lunenburg & District Fire Department

25 Medway Street, P.O. Box 1478
Lunenburg, Nova Scotia
634-8343 Fax –634-4145
Chief Darren Romkey
Cell- 212-0476 dromkey@eastlink.ca

Chief Report for July 2020

Training

-July20-several members attended the orientation and training on the new engine.
-Other members attended equipment orientations on hose TIC and other equipment from Mic Mac Safety Source, the dealers of the new truck and fire equipment.
-July 22-General monthly training on SCBA, hose and ladder operations, training on the new Engine
-Continuous training on the new Engine
-Continuous boat operator training throughout the month
-2 members took extra training and are now certified to operate the ladder

Misc

-filled several pools throughout the month
-several hours have been put in on the new engine moving equipment, training and mounting
-Mike Hull and Noah Romkey have completed their probationary period and are now active fire fighters. They actually completed it in May but due to Covid wasn't accepted until July meeting.
-July 8th- We have resumed our general monthly meetings with social distancing when possible
-July 9th-Virtual final inspection of the new truck. All went well. Truck will have the few minor changes done at the Quebec plant than driven to the Que/NB border where the sales Rep and LeBlancs will pick it up on July 16th and take it to their Moncton facility to give it a mechanical overhaul and install our TIC and Flashlights.
July 8th-Adam Dzarenowski has been accepted into the department as a probationary fire fighter. This makes our membership at 49 out of a maximum of 50.
It will be delivered to our station on July 20th at Noon
July 15th-Myself and Donnie Heckman met with members of the Neils Harbour FD to look at our #5 Tanker
July 16th-29 members showed up to remove the hose and equipment off #2 and #5 to prepare for the change over
As of 5pm Dayspring FD will automatically respond directly to the scene of a confirmed structure or grass/woods fire in the District. Blockhouse will respond to our station with a Tanker, and Mahone Bay with an Engine and BA crew to our station for back up.
Bridgewater FD will respond with their ladder and BA crew to confirmed structure fires in town.
Chester FD will respond directly to the scene to any boat rescue calls.
July 20th-The new engine arrived at noon time.
Councillors, Fire Commission members, fire fighters, CKBW, staff of the Bluenose office and Captain Watson of the Bluenose II attended.

After the viewing, and BBQ supplied by Mic Mac, members attended the training and orientation of the new Engine, as well as other equipment training.
Once training was done, members started placing equipment on the new engine.
Most members were there until 8pm.
July 23rd-myself and several members trained the Bluenose II crew on fire extinguishers, medical and SCBA

Lunenburg & District Fire Department

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Lunenburg, Nova Scotia
634-8343 Fax –634-4145
Chief Darren Romkey
Cell- 212-0476 dromkey@eastlink.ca

Chief Report for August 2020

Training
-Continuous training on the new Engine
-Continuous boat operator training throughout the month
-August 1-The boat and crew went to Chester to do some combined training. Chester will be responding automatic with their boat and crew to all our boat calls. We are also on automatic call out for Chester.
August 12th-monthly truck checks and general meeting
August 15-Pump Operator training
August 19-Medical First Responder training
Aug 26-Monthly practice-Boat Ops, SCBA, Vehicle Extrication and water operations

Misc

-continuing to fill pools upon request.
-With the arrival of the new engine, and elimination of 1 tanker, we now have Dayspring Fire on automatic call out for any confirmed structure or grass/brush fires in the district.
Mahone Bay will respond with an Engine, and Blockhouse with a Tanker to the station.
-For confirmed structure fires in town, Bridgewater will be automatic to our station with their ladder truck and crew.
-filled several pools throughout the month
-several more hours spent on the new engine mounting equipment.
Aug 6-the new Engine has been placed in service. We had the first call within 2 hours for an illegal burn.
The Farm Credit of Canada, an organization that makes charitable donations to non profit organizations donated up to $25 000 for the installation of heat pumps to the auditorium
The installation of heat pumps has been discussed with the Paul Bracken and was going to be suggested to be placed into the town operating budget with the next few years.
This system should greatly reduce the fuel consumption of the station to heat in the winter, as well as entice more rentals in the summer months where the lack of a cooling system made it very uncomfortable due to the heat.
We invited several companies to come in to view the building and give us a quote. We hope to have a company picked early September.
Servicing will be the placed in the town operating budget.
August 19-during pump operator practice we developed an issue with the ladder truck.
With the new regen system in the trucks, they aren't being run enough to build up enough heat to burn off the excess exhaust in the truck.

We will have to have the trucks run out on the 103 up to a couple times a month for this to happen. While the truck was at Silvers garage, we discovered there were a couple recalls on the engine that the dealer did not pass on to us. These will be dealt with when the part for the ladder truck arrives.

August 20-Members of the Neils Harbour Fire department came and picked up the 2000 GMC Tanker that they purchased
August 28-Members of River Herbert FD came and picked up the 1998 Freightliner Engine

SCHEDULE "B"

Lunenburg & District Fire Department

25 Medway Street, P.O. Box 1478
Lunenburg, Nova Scotia
Darren Romkey, Fire Chief
902-212-0476
dromkey@eastlink.ca

To the Protective Services Committee
Re-2002 Rescue replacement

Since we purchased the 2002 #4 Heavy Rescue we have added services such as vehicle extrication, Ice Rescue, Rehab, drone to name a few.
With these extra services we have out grown our current rescue truck.
Some of our equipment has to be left outside the truck at the station, and others is jammed into the truck, possibly delaying our response.

This truck responds to all of our calls in the town and district, and is our back up for medical calls when our first out medical truck is out running errands.
It also responds to Mutual Aid calls for SCBA personal, SCBA bottle filling.
It carries a wide range of equipment needed at most fire, haz mat, water, ice, MVCs, drone etc that can't be carried on our Engines and Ladder Truck. As well as an additional 4 fire fighters, (not including the driver and Officer who remain with the truck on scene).

We run Incident Command from this truck on all calls, and also carry a Cascade system that allows us to refill up to 35 SCBA bottles on scene, as well as up to 15 extra SCBA bottles.
The uses of this truck are endless, and it is basically a mobile tool box.

This truck was originally scheduled to be replaced when it becomes 20 years old, in the 2021/22 budget year. This has already been pushed back to the 2022/23 budget year.

Production of these trucks are now over 1 year from the time of the order, to delivery.
When we replaced our Engine this year, we were able to get pre-approval in the 2019/20 budget year for delivery and payment in the 2020/21 budget year.
Being able to begin the order process by having it pre-approved has many advantages.
It allows us to have more control of the actual delivery date, and gives us an opportunity to possibly work with the winning bidder to allow it to be displayed at the Fire Chiefs convention prior to delivery, and possibly get some equipment donated by equipment supply companies.
As you know, we had agreed to have our 2020 Engine displayed and was going to get $12000-$15 000 worth of hose, $4-5000 worth of nozzles, a decon unit, and helmets.

Close to $25 000 worth of free equipment that was unfortunately scrapped due to the Covid pandemic. This obviously is not guaranteed, but more likely if the delivery date is around the convention.

I am asking Protective Services to pass at the September meeting to recommend to Lunenburg Town Council to pre approve the replacement of the 2002 #4 Heavy Rescue this budget year for the delivery in the 2022/23 budget year.
It is my hope that this can be done at a Council meeting this fall, (October or November) to allow the committee to begin work on designing the truck and have RFP's go out early spring of 2021.

Working on designing a new truck first involves meetings with Officers and members of the department to see what we want to see on the truck, and what its uses are, or could be in the future.
Once we have an idea of what we are looking for, it gets handed over to the truck committee where their work begins which involves research, endless conversations with manufacturers, other departments, and site visits to those departments who recently purchased a similar truck.

Thank you on behalf of the Truck Committee,

Darren Romkey
Cory Hodder
Don Heckman
Trevor Lohnes
Donnie Parks
Brian Church

SCHEDULE "C"

Ann Covey

Subject: Protective Services meeting minutes additional documents
Attachments: Scan2020-09-22_134831.pdf

From: Dawn and Brian Keizer [mailto:dbkeizer@outlook.com]
Sent: September-22-20 1:59 PM
To: Bea Renton <brenton@explorelunenburg.ca>
Cc: Danny Croft <DCroft@explorelunenburg.ca>
Subject: Meeting items

Hi Bea

I have attached copies of documents that were part of the discussion at the last Protective Services Committee meeting (via Zoom on Sept 17/20).

I hope these documents will be helpful to bring the future Tanker replacement funding to a conclusion. The documents include the request from TOL for 60/40 funding on the new aerial, up from the 80/20 of the first aerial, and also the motion of the commission responding to your request...

Thanks

Brian

TOWN of LUNENBURG
A World Heritage Site
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Canada B0J 2C0

www.explorelunenburg.ca

ELECTRIC UTILITY
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FIRE DEPARTMENT
902 634-8343

PUBLIC WORKS
902 634-8992

RECREATION
902 634-4006

TOWN OFFICE
902 634-4410

FACSIMILE
902 634-4416

April 7, 2014

Mr. Brian Keizer
Municipal District #1 & #2 Fire Commission
11437 Centre
RR#2, Lunenburg, NS
B0J 2C0

Dear Brian:

Re: Cost Sharing for New Aerial Apparatus

The draft truck report, as well as the possible purchase of a new aerial fire truck and assessment completed on the existing truck were all discussed at a recent Town Council meeting. At that time a motion was passed requesting the District #1 & #2 Fire Commission (Commission) contributing 40% to the purchase of a new aerial ladder truck.

At this time a decision has not been made on the timing of such a purchase and whether the new aerial truck will be a new truck or a new to the Lunenburg and District Fire Department truck. A decision has not yet been made as to what extent repairs should be completed on the existing vehicle, which as you know would vary depending on whether we wanted to keep the vehicle one year, two years or three to five years.

The Town is first interested to discuss the cost sharing of this particular piece of equipment with the Commission.

In support of the value of a piece of aerial apparatus for not only in Town, but also use in the District, we would ask you to consider the following points:

- That it is important for Lunenburg and District Fire Department to have more than one pumper and that the aerial ladder truck is considered a second pumper and therefore has a function, not only as an aerial ladder truck, but also as a pumper.

- An important part of fire fighting is being able to properly ventilate buildings to release hot gases and smoke from a burning structure, allowing Fire Fighters in the structure to extinguish the fire much sooner and much safer. A ladder truck provides a very effective way of doing ventilation and in some cases is the only way to properly ventilate a building. A ladder truck allows this work to be done quickly and safely, saving both Fire Fighters time, water and foam resources, and increasing safety for Fire Fighters and the opportunity to reduce damage to a burning structure.

The use of a ladder vehicle reduces Fire Fighter risk, as they no longer need to go on roofs of buildings in most cases, and further reduces the need to have two ladders set up for a roof for a second means of egress for Fire Fighters safety. As noted, this improves Fire Fighters safety and also speeds up the fire fighting process.

- It is much easier to save adjacent buildings whether they be garages, barns, out buildings or other houses with a ladder vehicle, as using a pump and hose from an elevated ladder makes this work quicker and safer.

- With the increasing number of people switching to alternative heat sources, burning wood has increased as a heat source and with this more fire calls, most of which are in rural areas where wood burning is more common than in the Town.

- By having an aerial truck chimney fires can be fought much quicker and much safer, without Fire Fighters needing to access the roof in sometimes very difficult conditions, as well much easier to get hose and water to the top of the chimney.

- Aerial apparatus, because of its mobility, height and other reasons outlined above, makes fire fighting quicker and in most cases reduces the amount of time Fire Fighters are required to fight fires. This not only is a savings for water and foam, but also is less physically demanding for Fire Fighters, and as well as volunteers, reduces the amount of time that they are on a fire scene as opposed to at work or at home.

- Although uncommon, aerial apparatus is a very effective piece of equipment for higher structure rescue, whether it be buildings or scaffolding, etc.

These are some points to consider although I'm sure there are more.

We do understand your concerns that it is not always possible to have a piece of aerial apparatus to get into all areas in the district. We understand the current vehicle goes to most fire calls and is able to be used effectively in the desired location in most cases, and in other cases is used as the number 2 pumper. In 2012 the aerial truck was used in 85% of calls to the District including 3 chimney fires.

Based on the information noted above, we would ask that you reconsider your contribution offer of 20% increasing this amount to 40% and that we sit down, just Town and District to discuss this further. We do acknowledge that the aerial truck would be of more value in the Town than in the District for things like protection of other buildings and feel this is acknowledged with a 40% rather than a 50% contribution.

Thank you for your continued support and we look forward to hearing from you.

Yours truly,

Peter J. Haughn
Deputy Town Manager/Clerk

PH:ac

this request went to the May 6, 2014 Commission meeting

This information would have been passed on to Peter

It was noted that the aerial apparatus has a limited application in the District because of its size and weight, and in many places where power lines are installed alongside the highway.

After consideration of the Town's refusal to contribute to the Districts tanker/pumper and that they look to the Commission to increase their contribution from 20% to 40% towards an aerial apparatus it was moved by Kevin Rhodenizer and seconded by David Baugil, that the Commission agree to increase their contribution to an aerial apparatus if the Town agrees to contribute 50% of the cost of a new tanker/pumper when requested. **Motion carried.**

It was further noted that the present aerial apparatus could require repairs up to $100,000.00. Should this be the case consideration should be given to replacing the unit.

Fire Tax Rate

The Fire Tax rate for the past year was $0.06 /$100.00 assessment and since the overall assessment in the District of Lunenburg has increased somewhat and since we have a considerable reserve, it was moved by David Baugil and seconded by David Afford that the tax remain at $0 .06/$100.00 of assessment. **Motion carried.**

The Chairman indicated that burning season, outdoor fire regulations have changed considerably and that he would revise the flier which the Commission mails out to box holders in the District served by the Commission.

Annual Meeting

Moved by Kevin Rhodenizer and seconded by Mike Tanner that the annual meeting of the Commission be held on June 3, 2014 at 7:00 p.m. in the Lunenburg & District Fire Department. **Motion Carried.**

The Chairman noted that the terms of the Commissioners for District 4, 5, & 6 have expired. The areas were represented by the following Commissioners:

(4)	Blue Rocks & Stonehurst:	Elroy Tanner
(5)	First South:	David Afford
(6)	Second Peninsula:	Wilfred Stevens

The Bridgewater Fire Department Band has been invited to Ottawa to play and since one of our Commissioners plays in the Band they have requested a donation from the Commission. Each year a special service is held to acknowledge those who lost their lives fighting fires during the year.

The matter was discussed and a motion was made by David Baugil and seconded by Kevin Rhodenizer that we donate $200.00 to the Department Band. **Motion carried.**

b. LDFD fire truck replacement schedule – ongoing agenda item from September 12, 2019 Committee meeting

Mr. Keizer advised that some of the proposed purchase dates (Schedule "A") may need to be revisited with the Fire Department to accommodate future financing requirements.

5. New Business

a. Fire Chief's monthly reports September 2019 – February 2020

The LDFD Fire Chief's monthly reports September 2019 – February 2020 were received for information (Schedule "B ").

Motion: moved and seconded to accept the Fire Chief's reports for the period September 2019 - February 2020 (Schedule "B"). Motion carried.

b. Surplus bunker gear donation to Martins River Fire Department

Chief Darren Romkey reported for information that the surplus LDFD bunker gear has been donated to the Martins River Fire Department.

c. Draft 2020/21 budget – including an overview of Workers Compensation Board coverage for LDFD volunteer Firefighters

The FD and Accountant reviewed the draft 2020/21 budget (Schedule "C") with Committee members. Added to the capital budget is a $3,800 metal garbage storage unit which is needed to deter rodents. It will be a locked unit to avoid public access.

Motion: moved and seconded to recommend approval of the draft Protective Services operating and capital 2020/21 budgets (Schedule "C") to Lunenburg Town Council and Districts 1 and 2 Fire Commission. Motion carried.

Mr. Keizer will provide information about additional Firefighters insurance there may be for Municipality of the District of Lunenburg firefighters. A presentation by a WCB official will be arranged with the assistance of Mr. Keizer at the next meeting if possible.

6. Next Meeting Dates – Thursdays, June 11, September 10 and December 10, 2020 at 4:30 p.m.

7. Adjournment

Motion: moved and seconded to adjourn the meeting. Motion carried.

The meeting adjourned was at 4:57 p.m.

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Bea Renton, CAO

HERITAGE ADVISORY COMMITTEE MEETING RECOMMENDATIONS SEPTEMBER 21, 2020

1. It is recommended that Council rescind the current Substantial Alteration Guidelines as per Attachment A, and concurrently adopt the new revised Substantial Alteration Guidelines as per Attachment B (Schedule “D”).

HERITAGE ADVISORY COMMITTEE MEETING MINUTES

MONDAY, SEPTEMBER 21, 2020 AT 5:15 P.M.

Via Audio/Video Conference

PRESENT: Councillor Peter Mosher, Chair
Councillor Ronnie Bachman
Stephen Ernst
Nathalie Irving
David John Lobb
Oliver Osmond

ALSO PRESENT: Arthur MacDonald, Heritage Manager
Heather McCallum, Assistant Municipal Clerk

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1. Call to order

The Chair called the meeting to order at 5:16 p.m., followed by a moment of silence in honour of Former Mayor Laurence Mawhinney.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Chair spoke of Lunenburg's location on the unceded territory of the Mi'kmaq People.

3. Agenda

Motion: moved and seconded to approve the agenda as circulated. Motion carried.

4. July 20th, 2020 Heritage Advisory Committee meeting minutes - *motion to approve*.

Motion: moved and seconded to approve the July 20, 2020 meeting minutes. Motion carried.

5. Public Hearings and Presentations

Nil.

6. Unfinished Business

a. Consideration of Revised HCD Background Study and Review of Boundaries

The HM reviewed his report (Schedule "A").

The HM noted that the intention behind creating an Area 2 of the HCD was for industrial lands following the wishes expressed at the Public Information Meetings in 2019. The guidelines for Area 2 will outline scale and massing but allow for minimal controls and maximum flexibility; e.g., materials will not be prescribed and Area 1 triggers for public hearings would not apply.

The Committee expressed a concern about new lands being incorporated into Area 1 of the HCD, as these property owners have never had controls before and to be put into the most stringent category could prove problematic. The HM noted that all property owners must be notified by letter and a public hearing held about the incorporation of new lands into the HCD. He further suggested that Area 1 consist of the existing HCD while the new lands be incorporated into Area 2.

The Committee approved by consensus that the HM will revise the boundary definitions to include the existing HCD only in Area 1 and new lands as Area 2.

The Committee discussed the application from the owners of 82 Kempt Street to be removed from the HCD referenced in this report, brought forward from the July 20, 2020 meeting of the HAC (Schedule "B"). The Committee agreed by consensus that the HM will make a table of pros and cons regarding the request that will be provided to Council for a final decision.

b. Revised HCD Plan and By-law – Review of the Triggers for Public Hearings

The HM reviewed his report (Schedule "C").

Motion: moved and seconded to advise staff to continue with the HCD Plan and By-law review with the revised triggers for a public hearing as outlined in Attachment B (Schedule "C"). Motion carried.

c. Consideration of Revised Substantial Alteration Guidelines

The HM reviewed his report (Schedule "D").

Motion: moved and seconded to recommend that Council rescind the current Substantial Alteration Guidelines as per Attachment A, and concurrently adopt the new revised Substantial Alteration Guidelines as per Attachment B (Schedule "D"). Motion carried.

7. New Business

Mr. Ernst asked about the status of the heat pump screen at 112-118 Lincoln Street that still has not been replaced. The HM reported another letter was sent extending the deadline to the end of August 2020, but it has not been complied with as yet.

8. Adjournment

The next meeting is scheduled for Monday, November 16 at 5:15 p.m. (in-person or online TBA).

Motion: moved and seconded to adjourn the meeting. Motion carried.

The meeting was adjourned at 6:14 p.m.

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Heather McCallum, Assistant Municipal Clerk

Schedule "A"

Document No: 4(a)
Meeting: Sept. 21, 2020
Circulate: BR,HM
File:

M E M O R A N D U M

TO: **HERITAGE ADVISORY COMMITTEE - TOWN COUNCIL**

FROM: **HERITAGE MANAGER**

DATE: **SEPTEMBER 10, 2020**

RE: **CONSIDERATION OF REVISED HCD BACKGROUND STUDY AND REVIEW OF BOUNDARIES**

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1. FACTS

The Heritage Advisory Committee (HAC) met on July 20, 2020 and discussed a report regarding the consideration of a revised Heritage Conservation District (HCD) Background Study and the proposed boundaries for the revised district. The Committee reviewed a chart outlining questions as to the areas to be included or excluded from the revised district. The following table summarizes those discussions:

Questions:	
Should the UNESCO World Heritage Site (WHS) be included in the HCD?	Yes
Should the Architectural Control Area of the Town's MPS Future Land Use Map be included in the HCD?	Yes
Should Linden Avenue and Lower Street be included in the HCD?	Yes – particularly as a connector to Dufferin Street and lands of the Foundry with Level 1 controls
Should the waterfront lands of Lunenburg Foundry be included in the HCD?	Yes – however with Level 2 controls
Should the waterfront lands of ABCO be included in the HCD?	Yes – however with Level 2 controls
Should lands west of WHS be included in HCD?	Yes
Should lands north of WHS be included in HCD?	Yes
Should lands east of WHS be included in HCD?	Yes – particularly with regards to Block House

	Ruins – requires further discussion
Should portions of the Lunenburg Golf Course be included in the HCD?	No – policy with CCP and the MPS should be sufficient to recognize the open space landscape significance of Kaulbach Head

During the discussions of July 20, 2020 the HAC had questions concerning why the Architectural Areas of the Municipal Planning Strategy (MPS) were not included as part of the Heritage Conservation District (HCD) back in 2000. The 1994 Background Study for the 2000 HCD does not shed much light on the subject other than that it was decided that as the Architectural Controls were developed and approved by Council as part of the MPS, they would not be part of the HDC. On page 1 of the 1994 Background Report it notes, “By agreement with the Town, the report is limited to discussion of the Old Town area only. Other districts may be considered in future reports.” Further information from the 1994 Background Study is provided in **Attachment A** and additional information from the MPS is provided in **Attachment B**.

Staff has also reached out to Peter Haughn and Bill Plaskett who advised that the main focus was to protect Old Town as a National Historic Site. The process which was initiated in the early 90's was put on hold for the UNESCO designation to see if the Town needed to do more as a designated World Heritage Site. When the progress resumed the Town wanted to concentrate on Old Town to have that part completed.

2. ISSUES AND OPTIONS ANALYSIS

Attachment C shows a proposed boundary concept plan for the revised HCD. The proposal to include the Foundry No. 1 lands in Area 2 enables Council to create provisions where industrial developments are afforded the opportunity to develop with minimal architectural controls. It is recommended that the area east of Old Town, known as the Foundry No. 2 lands, also be included in the proposed Area 2. Triggers for Public Hearings in Area 2 would not apply. In addition, a Certificate of Appropriateness will not be required for demolitions in Area 2 to eliminate the need for a Public Hearing process according to the provisions of the Heritage Property Act. The goal for Area 2 is to enable developments that are compatible with Lunenburg’s traditional waterfront vernacular that are sympathetic and sensitive to the built environments of Area 1.

The proposed boundary concept plan (**Attachment C**) does not include Lot A-1 (Dufferin Street) nor 82 Kempt Street. Lot A-1 has been recently removed from the Architectural Control Area of the MPS and as such has not been included. Council has received a request for the removal of 82 Kempt Street from the HCD and the boundaries have been altered to indicate its removal while maintaining the ruins of Blockhouse Hill.

Options:

1) To keep the existing approved 2018 Heritage Conservation District Background Study District Boundaries and proceed with the development of the HCD Plan and By-law; or

2) To proceed with the development of a new Background Study in keeping with the above with the proposed Boundary Concept Plan (Attachment C); or

3) To proceed with the development of a new Background Study with an alternative proposed Boundaries Concept Plan.

Council and members of the public are encouraged to review the previous report to the HAC, July 20, 2020 - Item 5b, for background information on the development of a revised HCD boundary plan entitled "Consideration of Revised HCD Background Study and Review of the Triggers for Public Hearings" available at https://www.explorelunenburg.ca/index.php?option=com_docman&view=list&slug=heritage-advisory-committee-agendas-and-agenda-packages-2020-1&Itemid=966&layout=table

3. FINANCIAL IMPACT

There are no direct financial impacts to the Municipality associated with the HCD boundaries extension, other than possible increase in costs associated with the required notifications, map reproduction and administration costs for a larger HCD area.

4. STRATEGIC PLAN RELEVANCE

This project is in keeping with:

Strategic Plan Goal #1 – To enhance appreciation of Lunenburg's heritage;
Strategic Plan Goal #2 – To promote our UNESCO designation;

5. RECOMMENDATION AND DRAFT MOTION

It is recommended that Council approves a motion establishing the proposed HCD boundaries as shown in Attachment C and directs staff to proceed with the development of a revised Background Study.

It is recommended that Council direct staff to forward a copy of this memo to the owners of the Foundry and the ABCO lands for their information.

Motion: Moved by ____, Seconded by ____ that Council approves a motion establishing the proposed HCD boundaries as shown in Attachment C and directs staff to proceed with the development of a revised Background Study.

Motion: Moved by ____, Seconded by ____ that Council directs staff to forward a copy of this memo to the owners of the Foundry and the ABCO lands for their information

Attachments

- **A.** Notes from Background Study 1994;
- **B.** MPS Policies;
- **C.** Proposed Boundary Concept Map.

Acknowledged only by:

Bea Renton
Town Manager/Clerk

ATTACHMENT A
NOTES FROM BACKGROUND STUDY 1994

Page 1:

By agreement with the Town, the report is limited to discussion of the Old Town area only. Other districts may be considered in future reports.

7.0 OLD TOWN HERITAGE CONSERVATION DISTRICT BOUNDARIES.

There appear to be two reasonable options for heritage conservation district boundaries in the existing context, given that a proposed "architectural control area" has already been tentatively decided upon, and that the original 1753 town plan has been designated as a National Historic District and is currently proposed for World Heritage Listing. These options are illustrated on Map 2.

Option 1: Conform with existing designations and proposals.

This option would include the designated National Historic District (the original town plan) plus the shipyard area south of Montague and part of Pelham. This is the area currently proposed as the "architectural control area".

One disadvantage of this boundary is that it would exclude the portion of Pelham Street between Kempt Street and Shipyard Hill. Although not a part of the original town plan, this area contains twenty-one (21) tum-of-the-century houses, of which eleven (11) have the unique Lunenburg Bump style, in one variation or another. When travelling along Pelham Street, this area is experienced as part of the Old Town because of the continuity of historic architectural styles. In all respects it is as much worth conserving as the rest of the Old Town and should probably be included in the heritage conservation district. The same can perhaps be said of the eastward extensions of Lincoln and Cumberland with their distinctive 1920's California Bungalow architecture, and the areas immediately to the west of Kaulback Street, where there are a number of old, Lunenburg-style buildings (including the Academy).

Option 2: Old Town plus buffer area.

The UNESCO criteria for inclusion of historic towns in the World Heritage List (s.29.iii) suggest that protective measures should apply not only to the historic centre itself (in this case the Lunenburg Old Town) but also to its immediate surroundings. This corresponds with the notion of protection of "the setting" which is embodied in the Nova Scotia Heritage Property Act.

The 1991 report to the National Historic Sites and Monuments Board notes that part of the Old Town's significance results from the fact that the original town plan is still easily discernible on the ground. This is due, in part, to the intact open spaces which surround it and which provide dearly defined edges, i.e., Blockhouse Hill, Gallows Hill, the Academy grounds and Hillside cemetery. These open spaces are largely Town-owned and could easily be included within the heritage conservation district. Inclusion of Town-owned land in the district, with appropriate policies articulated in the heritage conservation district plan, would also serve to demonstrate the Town's commitment to heritage conservation in partnership with private property owners.

Map 2 shows a possible boundary for Option 2. The buffer area around the Old Town could include all adjacent historic areas, including houses on the north side of Creighton Street, some Town-owned land and the old French cemetery. Other boundary options or preferences may become apparent in the course of planning for the heritage district, should the Town decide to proceed with the exercise.

ATTACHMENT B
MPS Policies

10.0 ARCHITECTURAL HERITAGE

BACKGROUND

Lunenburg has a distinct heritage rooted in the Germanic origins of its first settlers, its unique architectural character, and its historical association with the growth of the Atlantic fishery and the bygone age of sail. This strong heritage is recognized as an important element of community life, important not only to residents of the Town but to the growing tourism industry as well. The term "heritage" encompasses many things, from vernacular forms of speech, to local food, traditional skills, crafts, and means of livelihood, and the historic built environment. Most aspects of Lunenburg's heritage are protected, preserved, and promoted through the activities of the Fisheries Museum of the Atlantic, the South Shore Genealogical Society, the German Canadian Cultural Society of Lunenburg, the Lunenburg Heritage Society and the Lunenburg Academy Foundation, the latter two organizations focusing particularly on the preservation of historic buildings.

The Town's architectural character is perceived as being a particularly important component of its heritage and Town Council has taken a number of initiatives to conserve, maintain, and improve that character. Involvement in the Provincial Main street Program from 1979 to 1994, in cooperation with the downtown merchants, facilitated both public and private sector improvements to the built environment in the designated downtown Business Improvement District. Although the Main Street Program no longer exists, the Town will continue to seek similar programs to assist the business community.

In 1981, the Heritage Property By-law was adopted under the Heritage Property Act, enabling Council to designate historic buildings, streetscapes, and areas in the Town and to control any substantial alteration to them. Implementation of the By-law began in 1982 when research was undertaken to document the historic and architectural character of the Town. This research culminated, in February 1984, in the publishing of an inventory of historic buildings, which laid the groundwork for subsequent designations of Municipal Heritage Properties under the Heritage Property By-law. Additional information collected in 1992 and subsequent years will be used to update the Heritage Inventory when funds become available.

In 1991, Lunenburg received the distinction of having Old Town designated as a National Historic District.

In 1994, with the assistance of the Provincial Department of Housing and Municipal Affairs and a consultant, a background study was undertaken on the possible establishment of the Old Town as a heritage conservation district under

the Heritage Property Act, with the district consisting of the National Historic District plus adjacent historic areas. A working group of residents assisted in the preparation of a draft conservation plan and bylaw that included policies restricting demolition of historic (pre-1940) buildings and design guidelines for new buildings, alterations to existing buildings, and signs, fences, and utility structures. The establishment of the heritage conservation district was also intended to qualify property owners for conservation assistance programs available from the provincial government.

A series of opinion surveys, public meetings, workshops, and media presentations on the proposed district were subsequently conducted. Establishment of the district was significantly delayed, however, by the need for certain prior amendments to the Heritage Property Act and the Provincial Regulations for Heritage Conservation Districts, and by uncertainties about funding for a Heritage Officer to administer the conservation plan and bylaw. These amendments and funding uncertainties were not fully settled until late 1999, and the establishment of the heritage conservation district and the adoption of the conservation plan and bylaw remained on hold for the intervening years.

In 1995, the Old Town was designated as a World Heritage Site by the United Nations Educational, Scientific and Cultural Organization (U.N.E.S.C.O.).

In 1996, following the Five-Year Review, limited architectural controls were introduced into the municipal planning strategy and land use bylaw. Three architectural control areas were established, one encompassing the Old Town National Historic District / World Heritage Site, another in the Dufferin Street and Falkland Street area, and a third in the Tannery Road area. Within these areas, architectural controls regulated the design of new main buildings and alterations to pre-1920 main buildings.

In 1997, with assistance from the Federal and Provincial Governments, the Town commissioned a Strategic Plan for conservation and management of the Town as a World Heritage Site. The resulting Lunenburg World Heritage Community Strategy, adopted by Council in 1998, identified numerous initiatives relating to cultural preservation and economic development. It also affirmed the need for the establishment of a heritage conservation district, comprehensive architectural controls, and financial incentives. Implementation of the strategy began in 1999 with the creation of a new Heritage Project Manager position within the Town staff, whose responsibilities include administration of the heritage conservation district plan and bylaw.

In early 2000, following formal notification of all affected property owners, the heritage conservation district was established and the conservation plan and bylaw were adopted by Council, along with concurrent amendments to the architectural control policies of this Municipal Planning Strategy.

ARCHITECTURAL CONTROL

Council recognizes the potential social and economic benefits of preserving the heritage of Lunenburg and is committed to its protection. The designation of the Old Town as a National Historic District and World Heritage Site also imposes upon Council significant responsibility for its protection and management as a cultural resource of national and international importance. At the same time, Council recognizes that the Town is a living community, not a museum, and that architectural change must be accommodated.

In order to ensure the protection of Lunenburg's built heritage, Council has adopted a three-fold approach to architectural control:

- **Voluntary designation of individual Municipal Heritage Properties under the Heritage Property Bylaw.**

- **Establishment of architectural control areas in the Dufferin Street, Falkland Street, and Tannery Road areas, with limited architectural controls implemented through the Land Use Bylaw. These architectural controls will continue the regulatory approach originally adopted in 1996 with the exception that the cut-off date for architectural reference will be changed from 1920 to 1940. Within the architectural control areas, architectural controls will apply only to new main buildings and alteration of pre-1940 main buildings.**

- **Establishment of a heritage conservation district comprised of the Old Town National Historic District & World Heritage Site and adjacent historic areas, with architectural controls implemented through the policies and design guidelines of the conservation plan and bylaw. Architectural controls in the heritage conservation district will apply to demolition of any pre-1940 building; the design of new buildings, including outbuildings; the alteration of any existing building, regardless of age; the design of fences and signs, and the placement and screening of utility structures.**

Council will also consider the future possibility of extending the heritage conservation district to include the Dufferin Street, Falkland Street, and Tannery Road architectural control areas and other historic parts of the Town by future amendment of the conservation plan and bylaw and this municipal planning strategy.

POLICIES
It shall be the policy of Council to:

Registered Heritage Properties

10.1 regard the Heritage Property By-law as the principal means of control of substantial alteration to registered Municipal Heritage Properties.

Architectural Control Area Designation
10.2 designate the areas shown as Architectural Control Areas on Map 2, the Future Land Use Map, as the areas in which the appearance of buildings will be controlled through the Land Use Bylaw. These areas include the areas of Dufferin Street, Falkland Street, and Tannery Road.

Architectural Control Area Provisions

10.3 incorporate special provisions in the Land Use By-law for the area designated Architectural Control with respect to:

(a) new buildings; and
(b) additions or alterations to buildings built prior to 1940, in order to ensure the compatibility of new buildings and additions and alterations with the established character of the Town.

These special provisions shall control architectural style, building length to width ratio, the appearance of exterior cladding and roofing materials, height, shape and the size and ratio of windows and doors.

Heritage Conservation District

10.4 designate the area shown as Heritage Conservation District on Map 2, Future Land Use Map as the area within which demolition of pre-1940 buildings, the architectural design of new buildings and alterations to existing buildings, including outbuildings, and the design and placement of signs, fences, and utility structures will be controlled through the heritage conservation district plan and bylaw with design guidelines. This area includes the Old Town National Historic District and World Heritage Site and adjacent historic areas.

Heritage Conservation District Plan and Bylaw

10.5 regard the heritage conservation district plan and bylaw with design guidelines as a guiding policy and regulatory document with regard to architectural conservation and architectural change in the designated heritage conservation

district, in parallel with the applicable provisions of this municipal planning strategy.

Future Expansion of Heritage Conservation District

10.6 consider the future expansion of the heritage conservation district outside of the Old Town to include other historically and architecturally significant areas including the Falkland Street, Dufferin Street, and Tannery Road architectural control areas, the remainder of the historic New Town and adjacent parts of Green Street, and the eastward extension of Pelham Street. The inclusion of such areas shall be preceded by background studies and public consultation, as required by sections 6 and 7 of the Regulations for Heritage Conservation Districts and shall be governed by the applicable policies of the conservation plan.

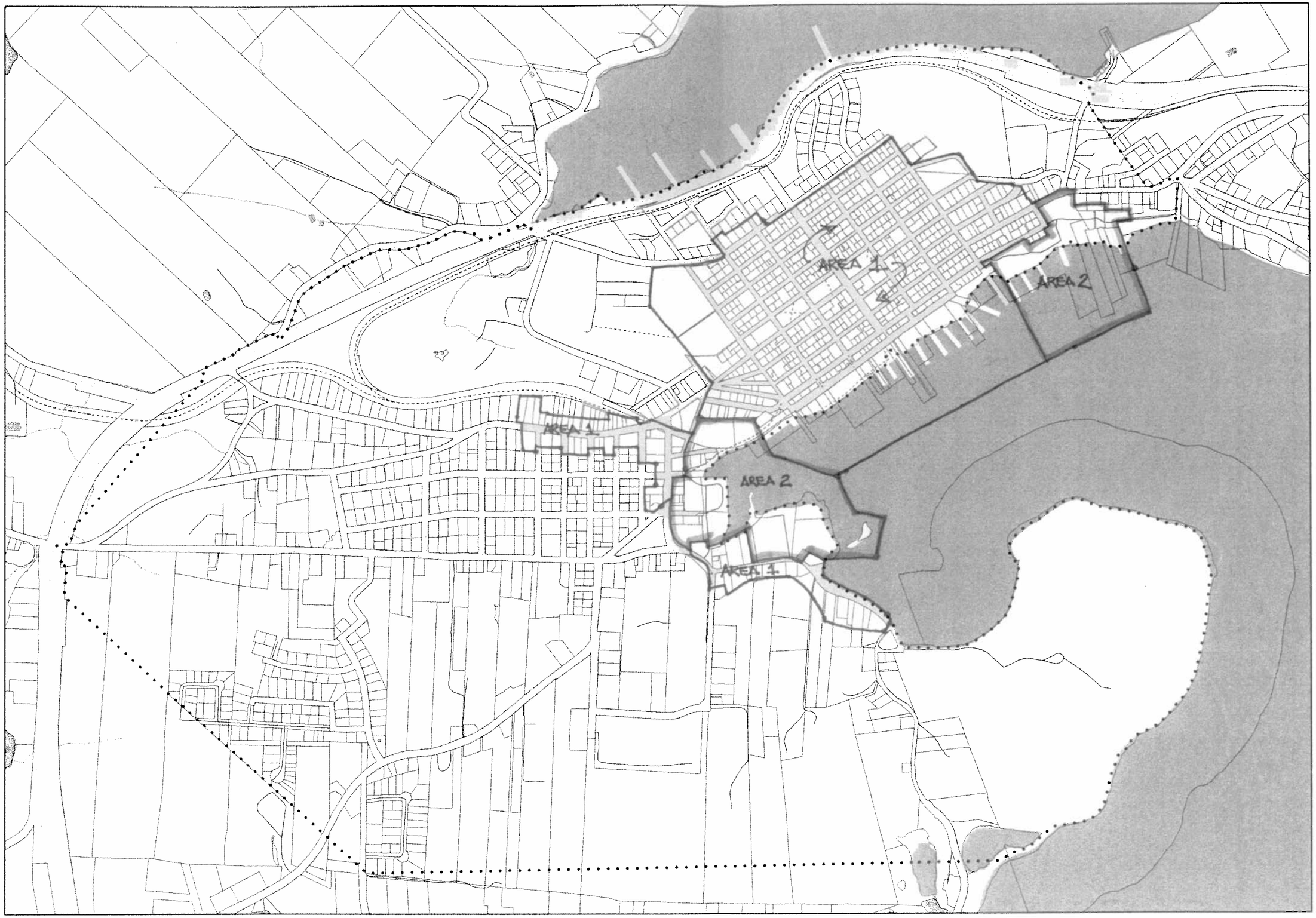
General Policies

10.7 encourage the preservation of Lunenburg's heritage through cooperation with the Fisheries Museum of the Atlantic, the Lunenburg Heritage Society, the Lunenburg Academy Foundation, and other heritage and cultural organizations and through continued involvement in programs similar to the Provincial Main Street Program.

10.8 maintain Town owned public buildings, streets and signs in a state of good repair and to carry out any alterations to them in a manner which enhances the historic character of the Town.

10.9 ensure that when considering development agreements, the architectural character of any proposed new main building, or addition to or alteration of a main building will be compatible with the established architectural character of other buildings in the area in terms of relationships of height, bulk, scale, roof shape, materials, relationships of windows and doors and architectural details.

ATTACHMENT C-1



UPLAND

53 King Street,
Dartmouth,NS B2Y 2M7
+1 902 423 0545
uplandstudio.ca

TITLE

Basemap

PROJECT

Project Lunenburg

CLIENT

CREATED BY

REVIEWED BY

APPROVED BY

DATE

4/22/2020

NOTES

Town of Lunenburg Boundary

AREA 1

AREA 2

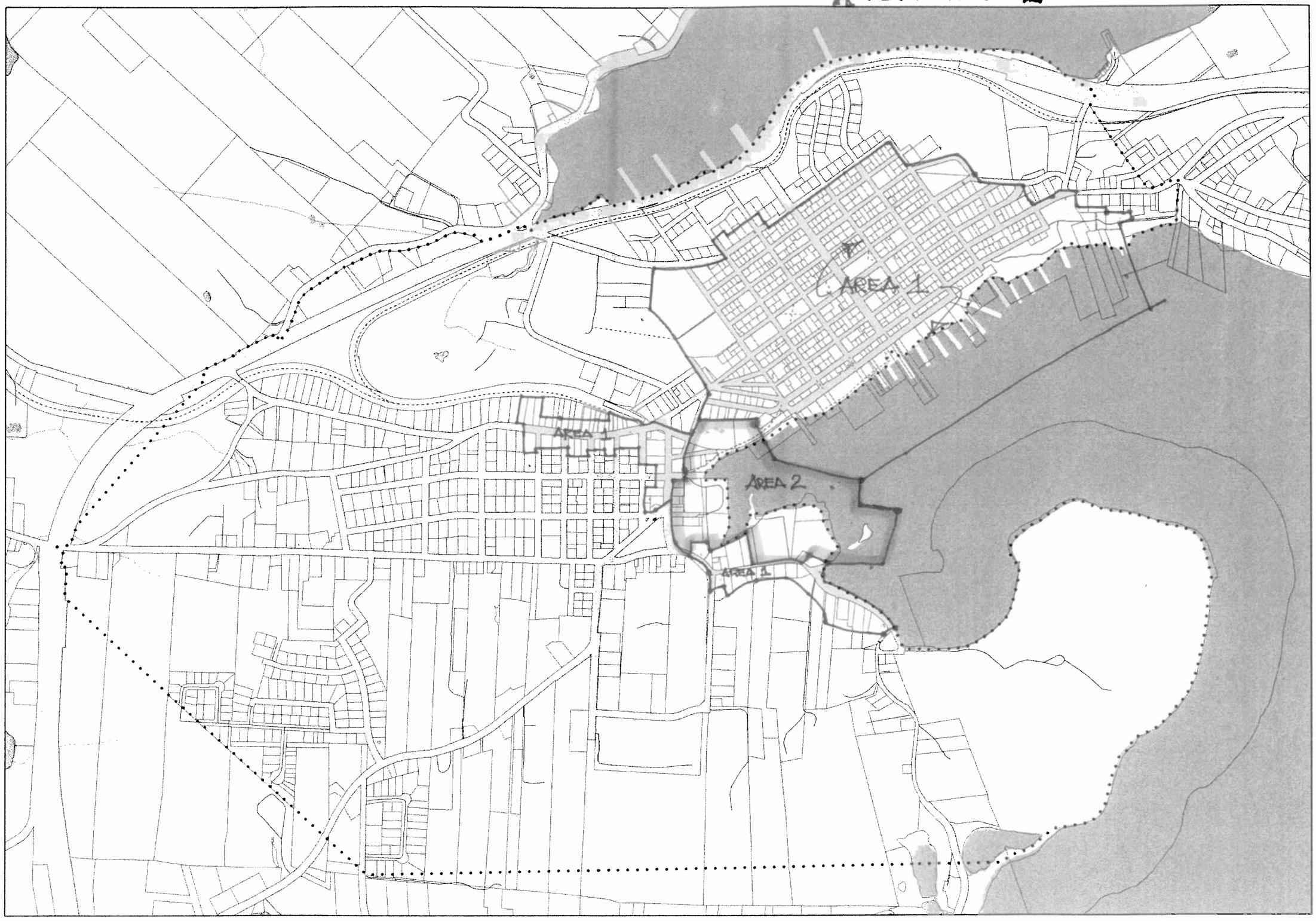
NORTH

SCALE

1 cm = 90 m

0 250 m

ATTACHMENT C-2



UPLAND

83 King Street,
Dartmouth, NS B2Y 2R7
+1 902 422 0649
upland@upland.ca

TITLE
Basemap

PROJECT
Project Lunenburg

CLIENT

CREATED BY

REVIEWED BY

APPROVED BY

DATE
4/22/2020

NOTES
Town of Lunenburg Boundary

AREA 1
AREA 2

NORTH

SCALE
1 cm = 90 m
0 250 m

Schedule "B"

1 May 2020

Edward J. Kelly
82 Kempt St
Lunenburg NS
B0J 2C0

RECEIVED
MAY - 5 2020
Town of Lunenburg
in mail slot

Mayor & Council
Town of Lunenburg
PO Box 129
Lunenburg NS
B0J 2C0

Re: 82 Kempt Street

Dear Mayor & Members of Town Council;

Please accept this letter as a request to have my property at 82 Kempt Street removed from the Heritage Conservation District (HCD). My reasons for this request are:

1. the boundaries of the Heritage Conservation District seem to have been established arbitrarily, without consistently applied rationale;

2. the structure that was on the property when the HCD was established had no architectural merit; and

3. the restrictions of the Heritage Conservation District By Law unjustly infringes on the property rights of ownership.

I will be pleased to speak to the foregoing reasons at your convenience.

Yours truly,

E. J. Kelly

MEMORANDUM

TO: **Lunenburg Town Council**

FROM: **Ted Kelly**

Date: **May 19, 2020**

RE: **Request to remove 82 Kempt St from HCD**

This Memorandum is generally intended to be an expansion of reasons given for the referenced request in my letter dated 1 May 2020. More specifically it will address the assertions made by the Heritage Manager in his Memorandum of May 20, 2020.

General

1. In the time we have lived in Lunenburg, my wife Sue and I have actively supported the heritage of this community – particularly the old town, where we worked to restore three properties. Like many residents we assumed that the conservation measures that were brought into force over a period of time were confined to the National Historic District/World Heritage Site. Indeed it was not until I undertook the re development of the property at 82 Kempt St in 2008 that I learned that although outside the boundaries of the World Heritage Site, it was part of the Heritage Conservation District and as such, Council permission was necessary to demolish the building. The process for which was estimated by the then Development Officer to take a year.

2. In his Memorandum dated May 20, 2020 on the subject of this request, Mr. MacDonald, the Heritage Manager references Attachment F to his report "Policy 3.3 Old Town heritage conservation district boundary which holds that

    a. The subject property being adjacent to the Old Town National Historic District (NHD) and World Heritage Site (WHS and is deemed to have "----an architectural, historical and contextual continuity with the old town and for all intents and purposes part of it even though they were not part of the original 1753 town site and are not included in the NHD or WHS-----shall be included within the HCD as a "buffer" to ensure that the Old Town and its surroundings are protected from unsympathetic development.

    b. A photo of the structure that was on the property until 2009 is attached. I submit that this building, which was apparently constructed in 1954 with a shed dormer added to the back of the house in 1989, cannot be regarded as having any "architectural, historical or contextual continuity with the old Town". If it is not the building but the lot that is to be given those attributes, then why are not all the properties on the north side of Creighton Street and the slope going down to the Back Harbour also included? If the rationale for an HCD is not applied to all properties with the same characteristics then the boundary becomes, as I stated in my letter, arbitrary.

Issues and Options Analysis

3. In the analysis section of his report, the Heritage Manager states that

the removal of the 82 Kempt St. property from the HCD will have an impact on the WHS, because it "would remove architectural controls that would ensure sympathetic developments adjacent to the WHS". This is an unsupported assertion, which begs the question as to why removal of this property from the HCD would be any different from those other adjacent properties that were never included in the HCD when it was established? All properties adjacent to the WHS should be equally subject to the same requirements. 'Sympathetic' development is not achieved by restricting the architectural form to that which mirrors nearby properties. Rather, it is accomplished through the Zoning regulations. These can incorporate all the he tools necessary to govern the nature, height, size, use and other necessary restrictions necessary to facilitate the conservation of Heritage, without stifling the opportunity for a creative design appropriate to the setting,

4. Mr. MacDonald also states that the removal of 82 Kempt St from the HCD would necessitate a report to the World Heritage Convention pursuant to the Operational Guidelines for the Implementation of the World Heritage Convention, which he attaches to his report. The invitation to report in Guideline 172 clearly applies only to "--- major restorations or new constructions which may affect the Outstanding Universal Value---- " I submit that the removal of 82 Kempt St from the HCD hardly fits those criteria.

5. Mr. MacDonald's report expresses concern that it the removal would "poke a hole" in the HCD. This request should rather be looked at as an opportunity to consider the rationale for the HCD to get it soundly and sustainably established.

6. Under "Financial Impact" the Heritage Officer's report raises the prospect that approval of my request may trigger a flood of similar requests with cost implications that are unknown. This assertion is grossly speculative and should have no place in Council's consideration. There is surely a 'cost of doing business', but it is infinitely more costly in not getting it right in the first place.

7. Finally, though it is only a related matter to my specific request, let me add that throughout my examination of all the background documents for the HCD, I did not once see any mention of the subject of "private property rights". I expect that Councilors are well aware that property rights have been hard fought for through the ages. They have been the basis for wars and revolutions. Their existence is well established in common law, yet they have been given short shrift in the determination of the HCD.

   I do not suggest that private property owners have absolute rights. There are circumstances when they must give way to greater public good and there is a strong case that those properties within the NHD and WHS fall into that category. Courts have generally accepted heritage preservation as justifiable grounds for public infringement. However the literature indicates they have maintained a high threshold. I suspect the notion, that protection of heritage in the old town can only be achieved by surrounding it with "artificial heritage", would be a tough sell. Real diamonds are not readily recognized or appreciated in a necklace of fake ones.

Respectfully submitted,

Ted Kelly

22 May 2020
Lunenburg NS

Attachment A to
Memorandum to Lunenburg Town Council
Re: Request to remove 82 Kempt St. from the HCD
Dated 19 Ma

I am fully aware that Mr. Ted Kelly and Sue Kelly have requested that their property at 82 Kempt St. be removed from the old town Heritage Conservation District (HCD). I wish to attest that I have no concerns in respect of the removal of this property from the HCD and unequivocally support their request.

Janet & Lorne Johansen
201 Lawrence St

Brian & Sherry Church
202 Lawrence St

Maureen Slaby
205 York St

Robin Crickmer
201 York St.

Alice & Dave Patrick
206 York St.

6 June 2020

Edward Kelly
82 Kempt St.
Lunenburg NS
B0J 2C0

Mayor & Town Council
Town of Lunenburg
PO Box 129
Lunenburg NS
B0J 2C0

Dear Mayor Bailey and Members of Council:

Re: Removal of 82 Kempt St from Old Town Heritage Conservation District (HCD)

No doubt you are as weary of receiving correspondence on this subject as I am in sending it. However having given thought to how my request was dealt with at the May 26 Council Meeting, I feel the principle at stake is too important to have it effectively set aside. Referring it to the Heritage Advisory Committee is neither appropriate nor productive. This is particularly so given that it is recognized as some sort of "Kangaroo Proceeding", the result of which even the Deputy Mayor acknowledged is already known.

My request, simply put, contends that 82 Kempt St does not satisfy the criteria established for its inclusion in the HCD. The reasons I cited were not addressed in the Staff Report, which was designed to obfuscate the issue with unsupported assertions and inaccurate claims. I respectfully submit that there are two options

1. Council accepts the validity of my reasons and takes necessary action to remove the property, or
2. Does not accept them and refuses the request. In which case, Council is confirming the arbitrary decision made originally and I will then pursue resolution of the issue with higher authority.

Yours truly,

OSB

E. J. Kelly

Schedule "C"

Document No: 4(b)
Meeting: Sept. 21, 2020
Circulate: BR,HM
File:

M E M O R A N D U M

TO: **HERITAGE ADVISORY COMMITTEE - TOWN COUNCIL**

FROM: **HERITAGE MANAGER**

DATE: **SEPTEMBER 10, 2020**

RE: **REVISED HCD PLAN AND BY-LAW – REVIEW OF THE TRIGGERS FOR PUBLIC HEARINGS**

1. FACTS

The Heritage Advisory Committee (HAC) met on July 20, 2020 and discussed a report regarding the triggers for public hearings as envisioned in the proposed Heritage Conservation District (HCD) Plan and By-law. The Committee suggested some revisions to the proposed revised triggers and the HM advised that he would undertake a further review for the Committee's consideration at the next meeting.

Attachment A outlines the originally proposed triggers for a Public Hearing as drafted for the revised HCD Plan and By-law. These triggers are aligned with those that are currently established under the current HCD Plan and By-law.

As outlined in the July 20, 2020 Committee meeting report it was recommended that the triggers be reviewed to see if any of them could be deleted or altered to enable more developments to proceed without the necessity of Council's approval through a public hearing process.

In light of Project Lunenburg, and the goal of increasing the number of dwelling units, new residential dwellings should be able to proceed as-of-right provided the provisions of the HCD are complied with. Currently new dwellings greater than 2 units requires Council's approval through the public hearing process. During the HAC meeting of July 20th, the Committee agreed with deleting Part 4.3(3).

The HAC also felt it would be appropriate to enable new commercial buildings, new industrial buildings and new institutional buildings, including public buildings, to proceed without the necessity of Council's approval through a public hearing process. In light of this Part 4.3 (5) has been deleted.

The HAC also discussed the percentages of demolitions (removals) and additions as they applied to the triggers for the public hearing process. Upon reflection, the Committee was uncomfortable with increasing these percentages as they may hinder the historic streetscape of the area as well as the heritage asset itself with an overwhelming addition or deletion. The Committee felt that these percentages should remain in place and such developments should only be approved by Council through the public hearing process.

A Proposed Revised Triggers for Public Hearings (Part 4.3) is enclosed in **Attachment B** for your review and consideration.

2. ISSUES AND OPTIONS ANALYSIS

The proposed triggers for a public hearing process as outlined in **Attachment B** will reduce the potential number of applications requiring Council's approval. The removal of the requirement of having more than 2 dwelling units go through the process will be more in keeping with the policies of the Comprehensive Community Plan (Project Lunenburg).

Attachment B also notes a change from the draft with regards to additions. The existing HCD Plan and By-law places the 25% addition limitation only on residential dwellings. **Attachment A** proposes that this restriction applies to all buildings with the exception of those located in the Waterfront Buildings Area Map. **Attachment B** amends **Attachment A** to revert back to the existing HCD Plan and By-law and limits this restriction solely to residential buildings, and clarifies that additions to any existing commercial building, any existing industrial building, any institutional (public buildings) building as well as those located in the Waterfront Buildings Area are exempt from this provision.

Options:

1) To continue with the HCD Plan and By-law review with the existing proposed triggers for a public hearing as outlined in Attachment A; or

2) To continue with the HCD Plan and By-law review with the revised triggers for a public hearing as outlined in Attachment B; or

3) To continue with the HCD Plan and By-law review with an alternate proposal.

Note no formal recommendation to Council is required at this time. Upon receiving the Committee's direction, staff will incorporate their decision in the draft HCD Plan and By-law.

3. FINANCIAL IMPACT

There are no direct financial impacts to the Municipality associated with this memo.

4. STRATEGIC PLAN RELEVANCE

This project is in keeping with:

Strategic Plan Goal #1 – To enhance appreciation of Lunenburg's heritage;
Strategic Plan Goal #2 – To promote our UNESCO designation;

5. RECOMMENDATION AND DRAFT MOTION

It is recommended that HAC approved the following motion:

Motion: Moved by ____, Seconded by ____ that HAC advised staff to continue with the HCD Plan and By-law review with the revised triggers for a public hearing as outlined in Attachment B.

Attachments

- **A.** Triggers for Public Hearing (As proposed in the existing draft HCD Plan and By-law)
- **B.** Proposed Revised Triggers for Public Hearing

Acknowledged only by:

Bea Renton
Town Manager/Clerk

ATTACHMENT A
Triggers for Public Hearings (As proposed in the existing draft HCD Plan and By-law)

4.3 Types of Development Requiring Public Hearing

Applications for a Certificate of Appropriateness for the following types of development shall be referred by the Heritage Officer to Council for consideration at a Public Hearing:

(1) The demolition or removal of

a) more than 10 % of the total usable floor area of all floors of the main building including the usable floor areas of any basement and attic; or

b) any part of a main building for which the cumulative sum of all areas of its horizontal dimensions exceeds 25% of the area of the existing footprint of the main building.

(2) The demolition or removal of

a) more than 10 % of the total usable floor area of all floors of the

Anderson Barn (45 Montague Street);
Benjamin Knock Cobbler Shop (56 Prince Street);
Maurice Lohnes Barn (160 Tannery Road);
James Edwin Schwartz Barn (120 Tannery Road);

including the usable floor areas of any basement and attic; or

b) any part of the

Anderson Barn (45 Montague Street);
Benjamin Knock Cobbler Shop (56 Prince Street);
Maurice Lohnes Barn (160 Tannery Road);
James Edwin Schwartz Barn (120 Tannery Road);

building for which the cumulative sum of all areas of its horizontal dimensions exceeds 25% of the area of the existing footprint of the building.

(3) Any new building containing more than two (2) dwelling units;

(4) Any addition to a building which is greater than 25% of the area of the existing building's footprint, or any addition where the cumulative sum of the area of additions over time is greater than 25% of the existing building's footprint, as it existed on September 4th, 2000 (either as an addition to the sides of the building or on top such as an additional storey). Notwithstanding the foregoing, those buildings located in the Waterfront Buildings Area as identified on Schedule "B", Waterfront Buildings Area Map are exempt from this provision;

and

(5) Any new commercial buildings, any new industrial buildings, or any new institutional buildings including public buildings.

ATTACHMENT B
Proposed Revised Triggers for Public Hearing

4.3 Types of Development Requiring Public Hearing

Applications for a Certificate of Appropriateness for the following types of development shall be referred by the Heritage Officer to Council for consideration at a Public Hearing:

(1) The demolition or removal of

c) more than 10% of the total usable floor area of all floors of the main building including the usable floor areas of any basement and attic; or

d) any part of a main building for which the cumulative sum of all areas of its horizontal dimensions exceeds 25% of the area of the existing footprint of the main building.

(2) The demolition or removal of

c) more than 10% of the total usable floor area of all floors of the

Anderson Barn (45 Montague Street);
Benjamin Knock Cobbler Shop (56 Prince Street);
Maurice Lohnes Barn (160 Tannery Road);
James Edwin Schwartz Barn (120 Tannery Road);

including the usable floor areas of any basement and attic; or

d) any part of the

Anderson Barn (45 Montague Street);
Benjamin Knock Cobbler Shop (56 Prince Street);
Maurice Lohnes Barn (160 Tannery Road);
James Edwin Schwartz Barn (120 Tannery Road);

building for which the cumulative sum of all areas of its horizontal dimensions exceeds 25% of the area of the existing footprint of the building.

(3) Any addition to a building which is greater than 25% of the area of the existing residential building's footprint, or any addition where the cumulative sum of the area of residential additions over time is greater than 25% of the existing building's footprint, as it existed on September 4th, 2000 (either as an addition to the sides of the building or on top such as an additional storey). Notwithstanding the foregoing, those existing buildings located in the Waterfront Buildings Area as identified on Schedule "B", Waterfront Buildings Area Map; any existing commercial building's additions, any existing industrial building's addition or any existing institutional (public buildings) building's additions are exempt from this provision.

Schedule "D"

Document No: 4(c)
Meeting: September 21, 2020
Circulate: BR,HM
File:

M E M O R A N D U M

TO: **HERITAGE ADVISORY COMMITTEE - TOWN COUNCIL**

FROM: **HERITAGE MANAGER**

DATE: **SEPTEMBER 11, 2020**

RE: **CONSIDERATION OF REVISED SUBSTANTIAL ALTERNATION GUIDELINES**

---

1. FACTS

In an effort of minimizing applications that are required to be reviewed and approved by Council it is recommended that Council consider adopting a new policy respecting the Town's Substantial Alteration Guidelines as shown in **Attachment B**.

This policy is not with regards to the Heritage Conservation District (HCD). This policy is strictly in reference to those properties registered as Municipal Heritage Properties under the provisions of the Heritage Property Act (HPA). The location of these properties are throughout Town. Though some may be within the HCD others are not.

Pursuant to the Heritage Property Act (HPA) any substantial alteration to a registered Municipal Heritage Property requires the issuance of a Heritage Permit approved by Council. This is a separate permit from a Certificate of Appropriateness issued pursuant to the HCD approved by the Heritage Officer.

2. ISSUES AND OPTIONS ANALYSIS

In instances where a development conforms with the Design Guidelines of the HCD, the proposed revised Substantial Alteration Guidelines (**Attachment B**) will enable the Heritage Officer to declare to the applicant that their development is not a substantial alteration and in essence, no approval from Council is required and no Heritage Permit is required. In this case the Heritage Officer advises the applicant by letter that no Heritage Permit is required provided the development proceeds as submitted, in essence the issuance of the letter by the Heritage Officer enables the applicant to proceed to the Development Permit and Building Permit stage. As shown in **Attachment B** any development to a registered

Municipal Heritage Property that conforms with the Design Guidelines of the HCD By-law will fall within this category. This will significantly reduce the number of applications requiring Council's approval.

For example, under the current Substantial Alteration Guideline, "change in style or design of railing or guards on porches or stairs" would be deemed a substantial alteration requiring Council's approval even when the change conforms with the Design Guidelines of the HCD By-law (recent example – 10 Falkland Street). Another example would be "re-shingling of roofs where not required for maintenance, including changes in the type of shingle" would be deemed a substantial alteration requiring Council's approval even when the change conforms with the Design Guidelines of the HCD By-law (recent example - 111 Townsend Street, the Presbyterian Church).

The proposed Substantial Alteration Guidelines (**Attachment B**) also limits the size of additions or demolitions (removal) on registered municipal heritage properties in the same fashion as the proposed provisions of the HCD. If a proposed addition or demolition (removal) exceeds the percentages as described in the revised Substantial Alteration Guidelines, Council's approval would be required.

For your information, demolitions (total removal) of registered Municipal Heritage Properties will still require the approval of Council in accordance with Section 17 the Heritage Property Act (notwithstanding Section 18 – the three year but not more than four year rule). The Act is available at the following link: https://www.nslegislature.ca/sites/default/files/legc/statutes/heritage.htm

If Council is concerned about relaxing these Substantial Alteration Guidelines and wishes to continue the practice of approving these substantial alterations, then staff would recommend maintaining the status quo and maintain the existing Substantial Alteration Guidelines as shown in **Attachment A**.

Options:

1) To provide a notice of motion to consider the rescinding of the current Substantial Alteration Guidelines (Attachment A) and the adoption of a new revised Substantial Alteration Guidelines (Attachment B); or

2) To maintain the status quo by keeping the existing Substantial Alteration Guidelines (Attachment A).

3. FINANCIAL IMPACT

There are no direct financial impacts associated with the proposal to adopt a revised Substantial Alteration Guidelines.

4. STRATEGIC PLAN RELEVANCE

This project is in keeping with:

Strategic Plan Goal #5 - Operate the Town efficiently and effectively.

5. RECOMMENDATION AND DRAFT MOTION

It is recommended that Council approves the following motion.

Moved by _____, Seconded by _____ that Council rescinds the current Substantial Alteration Guidelines (Attachment A) and concurrently adopts the new revised Substantial Alteration Guidelines (Attachment B).

Attachments

- **A.** Existing Substantial Alteration Guidelines
- **B.** Proposed Revised Substantial Alteration Guidelines

Acknowledged only by:

Bea Renton
Town Manager/Clerk

ATTACHMENT A
EXISTING SUBSTANTIAL ALTERATION GUIDELINES

Alteration Guidelines for Municipally Registered Heritage Properties
Town of Lunenburg
As Recommended by HAC and Approved by Council February 13, 2006

1.0 Scope

These guidelines apply to all municipally registered heritage properties in the Town of Lunenburg, whether located outside of or inside the Heritage Conservation District.

2.0 Background

The Heritage Property Act allows municipalities to identify and protect structures of heritage significance. The Lunenburg Heritage Advisory Committee, established in March of 1981, has registered sixty-one (61) properties following a request from the owner and investigation by the Heritage Advisory Committee. These properties are located throughout Town, including within the Heritage Conservation District. The adoption of the Heritage Conservation Plan and By-law in 2000 effectively registered all of the buildings within the Heritage Conservation District, so further individual registrations within the Heritage Conservation District are not possible.

For those individually registered properties within the District, both a Heritage Permit and a Certificate of Appropriateness issued under the Heritage Conservation By-law are required for any external alterations.

3.0 Process

All applications to alter a registered heritage property shall made to the Heritage Officer, who will review each application and determine whether the proposed change is a substantial or non-substantial alteration. If the Heritage Officer is unable to determine whether a proposed change is substantial or non-substantial, the application shall follow the process for a substantial change.

If the proposed changes are determined by the Heritage Officer to be non-substantial, the Heritage Officer will send a letter to the applicant advising that a Heritage Permit is not required.

If the proposed changes are determined to be substantial, a report will be prepared by the Heritage Officer for consideration by the Heritage Advisory Committee and recommendation to Council.

4.0 Substantial and Non-Substantial Alterations

For clarity, both substantial and non-substantial alterations are listed. Any non-substantial alteration must meet the criteria of the Heritage Conservation District Guidelines.

The following shall be considered substantial alterations:

- additions, including porches, verandas, entries, stairways and dormers
- addition or removal of windows or window openings
- changes to the openings for doors or windows
- change in roof pitch or style (including pitch or style of a dormer)
- removal of porches, verandas, entries, stairways, dormers, windows, trim materials of any type, or chimneys

- change in style or design of railing or guards on porches or stairs
- addition of an accessory building
- addition of utilities such as air conditioning units, kitchen vents
- landscaping elements such as stairways which are not connected to the main building
- re shingling of roofs where not required for maintenance, including changes in the type of shingle
- the installation of turf stone (added by motion of Council May 25, 2006)
- the addition of utility structures (added by motion of Council March 27, 2008)

The following shall be considered non-substantial alterations:

- changes in storm windows from painted wood to aluminum
- fences which meet the criteria of the Heritage Conservation District Guidelines
- replacement/repair where no changes are intended
- use of vinyl window inserts if no other changes taking place
- replacement of shingles with clad board with the same exposure, and clad board with shingles
- placement of commercial advertising signs
- items which the Heritage Officer considers to be maintenance (ie. reshingle roof if needed)
- replacement of doors or storm doors with doors which meet the Heritage Conservation Guidelines
- replacement of non-traditional elements with traditional (ie clad concrete steps with wood; shingle a wall now covered in plywood)
- addition of glass doors inside wooden storm doors (added by motion of Council September 28, 2006)
- wooden rain barrels and other minor accessory structures (added by motion of Council November 10, 2006)
- the installation of wooden gutters (September 29, 2009)

ATTACHMENT B

Proposed Revised Substantial Alteration Guidelines

Alteration Guidelines for Municipally Registered Heritage Properties
Town of Lunenburg
Approved by Council on _____

1.0 Scope

These guidelines apply to all municipally registered heritage properties in the Town of Lunenburg, whether located outside of or inside the Heritage Conservation District.

2.0 Background

The Heritage Property Act allows municipalities to identify and protect structures of heritage significance. The Lunenburg Heritage Advisory Committee, established in March of 1981, has registered sixty-one (61) properties following a request from the owner and investigation by the Heritage Advisory Committee. These properties are located throughout Town, including within the Heritage Conservation District. The adoption of the Heritage Conservation Plan and By-law in 2000 effectively registered all of the buildings within the Heritage Conservation District, so further individual registrations within the Heritage Conservation District are not possible.

For those individually registered properties within the District, both a Heritage Permit and a Certificate of Appropriateness issued under the Heritage Conservation By-law are required for any external alterations.

3.0 Process

All applications to alter a registered heritage property shall made to the Heritage Officer, who will review each application and determine whether the proposed change is a substantial or non-substantial alteration. If the Heritage Officer is unable to determine whether a proposed change is substantial or non-substantial, the application shall follow the process for a substantial change.

If the proposed changes are determined by the Heritage Officer to be non-substantial, the Heritage Officer will send a letter to the applicant advising that a Heritage Permit is not required.

If the proposed changes are determined to be substantial, a report will be prepared by the Heritage Officer for consideration by the Heritage Advisory Committee and recommendation to Council.

4.0 Substantial and Non-Substantial Alterations

For clarity, both substantial and non-substantial alterations are listed. Any non-substantial alteration must meet the Design Guidelines of the Heritage Conservation District.

The following shall be considered substantial alterations:

- additions, including porches, verandas, entries, stairways and dormers unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- addition or removal of windows or window openings unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

* addition or removal of doors or door openings unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- changes to the openings for doors or windows unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- change in roof pitch or style (including pitch or style of a dormer) unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- removal of porches, verandas, entries, stairways, dormers, windows, trim materials of any type, or chimneys unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- change in style or design of railing or guards on porches or stairs unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- addition to an existing accessory building or the erection or placement of a new accessory building unless said development is in conformance with the Design Guidelines of the Heritage Conservation District (in cases where the land as well as the main building have been registered as a Municipal Heritage Property);

- addition of utilities structures such as, but not limited to, air conditioning units, kitchen vents and heat pumps unless said development is in conformance with the Design Guidelines of the Heritage Conservation District;

- accessory structures such as, but not limited to, fences, stairways, decks, garden trellises, pergolas, awnings, pavilions, and similar items which are connected or otherwise not connected to the main building unless said development is in conformance with the Design Guidelines of the Heritage Conservation District; and

- re-shingling of roofs where not required for maintenance, including changes in the type of shingle unless said development is in conformance with the Design Guidelines of the Heritage Conservation District.

Notwithstanding anything herein contained above, the following shall be considered substantial alterations:

• any development that does not conform to the Design Guidelines of the Heritage Conservation District By-law;

• any demolition or removal of

a) more than 10 % of the total usable floor area of all floors including the usable floor areas of any basement and attic; or

b) any part of a building for which the cumulative sum of all areas of its horizontal dimensions exceeds 25% of the area of the building's existing footprint.

Usable Floor Area means the floor area that has a minimum height clearance of 1.2 m (4 ft.) or higher.

and

• any addition to a building which is greater than 25% of the area of the existing building's footprint either as an addition to the sides of the building or on top such as an additional storey.

For the sake of clarity the following shall be considered non-substantial alterations:

- changes in storm windows from painted wood to aluminum;
- replacements or repairs where no changes are intended;
- use of vinyl window inserts if no other changes taking place;
- replacement of shingles with clapboard with the same exposure, and replacement of clapboard with shingles with the same exposure;
- the erection or placement of signage;
- items which the Heritage Officer considers to be maintenance (ie. re-shingle roof if needed);
- replacement of doors or storm doors with doors which meet the Design Guidelines of the Heritage Conservation District;
- replacement of non-traditional elements with traditional (ie clad concrete steps with wood; shingle a wall now covered in plywood) which meet the Design Guidelines of the Heritage Conservation District;
- addition of glass doors inside wooden storm doors;
- rain barrels and other minor accessory structures; and
- the installation of gutters and downspouts which meet the Design Guidelines of the Heritage Conservation District.

JOINT OCCUPATIONAL HEALTH AND SAFETY COMMITTEE MEETING MINUTES

THURSDAY, OCTOBER 1, 2020 AT 11:00 A.M.

VIA ZOOM VIDEO CONFERENCE

PRESENT: Paul Bracken, Facilities Superintendent/Safety Officer, Public Works (Co-Chair)
Bobby Cleveland, Facilities Attendant, Recreation (Co-Chair)
Cali Beck, Finance Officer/Electric Utility Coordinator, Corporate Services
Trevor Lohnes, Operator, Public Works
Heather McCallum, Assistant Municipal Clerk, Corporate Services
Gary Mossman, Fire Hall Superintendent, Fire Department

ALSO PRESENT: Laura Langille, Construction Safety Nova Scotia
Katie MacMillan, Business Coordinator
Bea Renton, CAO

ABSENT: Taylor Rombaut, Water Resource Operator, Public Works

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1. Call to order

The Co-Chair and Safety Officer, Paul Bracken, called the meeting to order at 11:02 a.m.

2. Acknowledgement of Mi'kma'ki the ancestral and unceded territory of the Mi'kmaq People

The Co-Chair noted that the Town is located on unceded territory of the Mi'kmaq People.

3. Agenda

The meeting agenda approved by consensus.

4. July 9, 2020 Joint Occupational Health and Safety Committee meeting minutes - *motion to approve*.

The July 9, 2020 meeting minutes were approved by consensus.

5. Unfinished Business

   a. COR Certification gap assessment audit for Town from Construction Safety Nova Scotia - *complete*

Mr. Bracken recapped that the Town has been working with Construction Safety Nova Scotia (CSNS) for nearly two years on revamping our Safety Program. This includes

updating the Safety Program manual, comprehensive hazard assessments, policies, and safe work practices towards the goal of having the Town COR (Certificate of Recognition from CSNS) certified.

The first step toward certification was the internal audit conducted by CSNS in August. There are 15 criteria, which were reviewed in each Department. An evaluation report was delivered from Ms. Langille (Schedule "A") that outlines observations and corrective actions. Ms. Langille noted that the Town has made further advancements with its occupational health and safety program and with some final work should achieve COR status. The next step, after revisions to the draft document are completed, is the external inspection. Mr. Bracken is targeting mid-December for the external audit and will tentatively schedule a date.

6. New Business

a. COVID-19 Update – Departments' overview by JOHSC reps

Public Works

- At a department safety meeting last week they agreed to start using the staff lunch room again, but are still following Provincial standards to maintain social distance and increase sanitization. They will monitor and will revisit as necessary.

Recreation

- The arena now has a re-opening date of October 26th so staff are all back. There are guidelines from Hockey Nova Scotia that staff are working through as the ice is being put in over the next few weeks. Provincial Medical Officer Order protocols are observed.

Corporate Services

- Town Hall is open to the public for payments and inquiries from 9:00 a.m. to 4:00 p.m., closed for lunch from 1:00-2:00 p.m.
- Additional Plexiglas panels have been installed in Finance between the desks.
- Town Hall staff are still wearing masks outside of our offices, bathrooms have been separated, etc. as required for all public buildings.
- Sanitation supplies are in stock for all Departments' use.
- The in-person poll station for the Municipal Election's advance polling days (October 8 and 13) will be handled from the Finance office front counter.
- Town Council will be trying another in-person/livestream hybrid meeting for their October 13th meeting following Provincial Health Orders for mask wearing and physical distancing.

Fire Department

- They are continuing the COVID-19 prevention practices at the Fire Hall. People have to wear masks if they come the Fire Hall Superintendent's office.
- The maximum capacity allowed in the Fire Hall is 50 people with social distancing. There have been few rentals.

Ms. Langille noted that what many workplaces are considering now is how to deal with symptoms with cold and flu season now underway. If an employee or family member

has the sniffles, what as employers do we want people to do? CSNS is working on guides. The CAO advised that if Town staff or a family member is sick, they should discuss this with their supervisor to determine if they should be at work, or if alternate arrangements can be made.

b. Department bi-monthly safety inspections

Mr. Bracken reminded departmental representatives to complete these.

c. Incident Reports – Town Hall Fire Escape and Fire Department Truck Driving

Town Hall fire escape "Near Miss Report": children were playing on the fire escape. A staff member saw them and asked the parents to remove the children from the fire escape for safety and they did so. A chain at the bottom of the fire escape stairs and some signage will be installed by the Facilities Superintendent as authorized by the Town Fire Inspector.

Fire Department: there was a minor vehicle collision with a Fire Department truck and a passenger vehicle near the hospital. They have dealt with the incident by bringing in a professional driving trainer for the Fire Department member.

d. Safety and Wellness Training Schedule

Training was put off for some months due to the pandemic. CSNS came down and looked at the Fire Hall and how training could be accommodated there. Since then, Public Works courses in excavation and confined space has taken place, and first aid is scheduled for later in October. Mr. Bracken will reach out to staff in other Departments who need a First Aid refresher course as well.

e. Other

Mr. Bracken led a roundtable safety discussion.

Public Works: Mr. Lohnes suggested installing a truck turnaround sign at the Wastewater Treatment Plant. Mr. Bracken agreed to install it.

Recreation: A citizen undertook to fix up the skate park through the summer, but there are questions about the status for the partially-dismantled half pipe. This has been roped off. Mr. Bracken is discussing this with the Recreation Director.

Trails: Mr. Cleveland reported that there is a spot with erosion near Sawpit Road with an open pipe that may be a safety hazard. He will submit photos of the area for the reference of Public Works. Mr. Bracken noted that Public Works staff will be working on the Trail laying down crusher dust in the next few weeks.

Ms. McCallum noted that the Provincial State of Emergency is due to expire this coming weekend; if extended again this will likely happen on October 2nd. UPDATE: It was extended again to October 16th.

LDFD: Mr. Mossman noted an incident in which a trucker parked at the Fire Hall, saying his landlord told him he could park his truck overnight there. The CAO and Fire Department both asked the driver to make alternate arrangements.

Ms. Beck noted that a Daycare worker spoke to her about crosswalk safety near the Foundry when walking junior elementary students to school because not all drivers stop for pedestrians there. She advised the Daycare Supervisor to contact the RCMP for traffic enforcement.

The Co-Chair spoke of a recent risk management seminar managers attended. The Town insurer recommended that any staff members who are contacted by a member of the public or notice a safety concern themselves are requested to bring it to the attention of their Supervisor. The member of the public should be thanked for bringing this to their attention and assured that the Supervisor will be notified for follow-up. Offering comments about potential municipal or other liability is discouraged by the insurer as it is their role to make a determination about.

7. Next Committee meeting dates – *Thursday, November 5, 2020 at 11:00 a.m. Location (TBA online or in-person).*

8. Adjournment

The meeting was adjourned by consensus at 11:51 a.m.

_____

Heather McCallum, Asst. Municipal Clerk

SCHEDULE "A"

Construction Safety Nova Scotia Internal COR Evaluation Report

Company Name: Town of Lunenburg

Location(s): Lunenburg Public Works

Review Date: August 18, 2020

Conducted By: Laura Langille and Paul Bracken

Current Number of employees: 32 (plus mayor and council)

Size classification: Standard

Overview

The instrument used for The Town of Lunenburg was the Construction Safety Nova Scotia's COR Evaluation Instrument revision #8, FM 9.16. The document was used as a guide. The evaluation included documentation review and interview.

Company Description

The Town of Lunenburg is divided up into five key areas. They are Public Works (which includes Water treatment and Wastewater), Parks and Recreation, Corporate Services (Town Hall), Electric Utility and Fire Services. The Public Works provides installation and maintenance services in all aspects of the town. They have a fleet of vehicles and heavy equipment which are maintained inhouse. They are often working around excavations and trenches and are within confined spaces. They may also work at heights for various building repairs or tasks. The Water Treatment plant is operated by one person, as designed. Tests and maintenance of the water and equipment are conducted as determined by regulations. The Wastewater Treatment plant is operated by one to two persons, as designed. Tests and maintenance in this area are also regulated. Corporate Services is staffed by 11 employees. The public often comes to Town Hall for various services and inquiries. The Electric Utility subcontracts all critical activity to Nova Scotia Power. This is managed under their subcontractor program. Fire Services is staffed by one full time employee. The remainder are volunteers. There is also a Town Mayor and Council. The Town regularly subcontracts services for various activities as needed.

Summary

The attached outlines suggested opportunities for improvement, program maintenance and areas which require corrective action prior to certification.

Company Name: Town of Lunenburg

COR Evaluation Results

Section	Observations/Findings	Corrective Actions
Section **1** Health and Safety Policy	Policy is in manual and posted at each location. Policy and manual are in the process of being updated	Update OH&S manual. Finish revising the safety manual and have all policies signed and dated. Ensure updated policy is posted at all locations.

Company Name: Town of Lunenburg

Section	Observations/Findings	Corrective Actions
Section **2** Hazard Assessment, Analysis and Control	PW- A comprehensive hazard assessment has been compiled and includes all areas of activity. Some hazard and controls have not been identified. Water Treatment and Wastewater Treatment are brief and have not been completed. Site hazard assessments are completed for daily jobs on site. Covid 19 protocols have been considered. Water Treatment and Wastewater treatment do not have any site/task hazard assessments on file. P&R- A comprehensive hazard assessment has been compiled and includes all areas of activities. Site/task hazard assessments have not been completed. CS- A comprehensive hazard assessment has been compiled and includes all areas of activity. There have not been any site hazard assessments documented. EU- A comprehensive hazard assessment has been compiled. It is brief. There have not been any site hazard assessments documented. FS- A comprehensive hazard assessment was not available for review.	PW- Complete the tasks, hazards and controls on your comprehensive hazard assessment. Complete the comprehensive hazard assessment for the Water Treatment plant. Complete the comprehensive hazard assessment for the Wastewater Treatment plant. Complete site or task hazard assessments at both the Wastewater and Water Treatment plants. Assessments should be completed for any task with a high hazard. An assessment should also be completed for any task that is completed on a low frequency (monthly, quarterly, annually, etc.). Additional controls may need to be implemented when considering emergency response in the event of an incident. P&R- Review comprehensive hazard assessment to ensure that all tasks are documented. Complete site or task hazard assessments. This should be done frequently for most tasks as conditions and the environment change. A checklist may be helpful. An assessment should also be completed for tasks that are done infrequently, such as those associated with the arena. CS- Complete site hazard assessments when visiting any site. A hazard assessment should also be completed for any events. EU- Review your comprehensive hazard assessment to ensure it covers all areas of activity. A site hazard assessment should be completed when visiting the sites. FS- Complete the comprehensive hazard assessment for Fire Services. Be sure to include all areas of activity including those at the hall as well as on sites (ie. Working at heights, ladders, traffic control, working around the public, etc.)

Company Name: Town of Lunenburg

Section	Observations/Findings	Corrective Actions
Section **3** Safe Work Practices (SWPs)	There are some basic safe work practices available. All safe work practices have not been created. They should always be made available and reviewed with employees.	Obtain/create safe work practices as identified on your comprehensive hazard assessments. Review with employees Ensure that they are available, as applicable.
Section **4** Safe Job Procedures (SJPs)	There are some basic safe job procedures available. All safe job procedures have not been created. Fire Services utilizes General Operating Guidelines.	Obtain/create safe job procedures as identified on your comprehensive hazard assessments. Include Fire Services General Operating Guidelines in your program. Review with employees Ensure that they are available, as applicable.
Section **5** Company Rules	Company rules are available with a discipline policy in place. Discipline records are on file.	Ensure your company rules are posted at each location.
Section **6** Personal Protective Equipment (PPE)	Policy is in place. All PPE is provided as required. Fall protection equipment was inspected in June. Confined space equipment was inspected in June. Confined space generic training, as well as confined space rescue training is needed.	Train all applicable employees in Confined Space and Confined Space Rescue.

Company Name: Town of Lunenburg

Section	Observations/Findings	Corrective Actions
Section **7** Preventative Maintenance Program	The majority of maintenance is conducted inhouse. Ladders and lifting equipment was inspected by an outside provider in June. Boilers and compressors were recently inspected by DOLAE. Corrective actions are in the process. Fire alarms and sprinkler systems are certified annually by an outside contractor. PW-The employee conducting maintenance is not a certified mechanic. Records of preventative maintenance and repairs are on file. All equipment receives detailed maintenance on an annual basis. Building maintenance is conducted on 5 buildings owned by the town. P&R- Larger repairs and maintenance is conducted at Public Works. Smaller items are repaired and maintained at the Parks & Rec shop. Records are not available. FS- Maintenance is conducted by an outside provider. Records were not available.	PW- Have the employee conducting maintenance complete the process for becoming a certified mechanic. P&R- Develop a schedule for preventative maintenance of all equipment. Keep records of all maintenance and repairs. FS- Keep records of all maintenance conducted on equipment.

Company Name: Town of Lunenburg

Section	Observations/Findings	Corrective Actions
Section **8** Training and Communication	Orientations are being conducted as required. Training is conducted and records are maintained. Tool box meetings are being held weekly in Public Works. Other departments were not confirmed. An annual general meeting has not yet been completed. (This is a COR requirement.)	Schedule, conduct and document your annual general safety meeting. Keep minutes and attendance. Ensure all departments are having and documenting tool box meetings/safety meetings. The frequency should be different for each department, depending on risks and activity.
Section **9** Inspections	An inspection policy is in place that includes a frequency for inspections for each area. Bi-weekly department inspections are being completed. PW-Worksite inspections are completed however, they have not been documented. Vehicle inspections are being completed. P&R- Playground inspections are completed and documented. Worksite and facility inspections are not completed.	PW- Document worksite inspections. A checklist may be helpful. P&R- Conduct and document worksite and facility inspections on a regular basis, as per policy. Involve employees in this process. Be sure to cover all areas.
Section **10** Investigations and Reporting	An investigation policy is in place. Incident reports and investigations are on file. They are well thought out and include root cause and corrective actions. There are some recorded near misses.	Encourage the reporting of near misses. This is a good tool box talk topic for all departments.

Company Name: Town of Lunenburg

Section	Observations/Findings	Corrective Actions
Section **11** Emergency Preparedness	Emergency planning is in place. The emergency plan has not been tested (fire drills). Fire extinguishers have been serviced. Safety data sheets are available and up to date. All employees have WHMIS 2015 training. WHMIS was recently reviewed with employees. Some employees do not have current emergency first aid training.	Train all required employees in emergency first aid training.
Section **12** Statistics & Records	Safety summaries have not been compiled.	Compile summaries for safety activities. Analyze for trends and areas for improvement.
Section **13** Legislation	Legislation is available at the office. Employees knowledge of their legislative rights and responsibilities was not confirmed.	Ensure all employees have knowledge of their legislative rights and responsibilities. This is a good tool box talk topic for all departments.

Company Name: Town of Lunenburg

Section	Observations/Findings	Corrective Actions
Section **14** Supplementary	A JOHSC is in place. Meetings occur monthly. Attendance and minutes are kept. Minutes outline topics discussed and action items. All members have received training for their role. Required postings are at each location. There is a basic environmental policy/procedure in place. There is a Return to Work policy/procedure available.	Ensure all required information is posted at each location. Review your environmental procedures and update as required. Review your Return to Work procedures and update as required.
Section **15** Constructors	Subcontractors are often required for various tasks and jobs. There is a subcontractor policy in place. Documentation is collected prior to the subcontractor starting work. There is a kick off meeting followed up by an initial site visit to discuss hazards and town requirements. Inspections are conducted daily, however they are not documented.	

Company Name: Town of Lunenburg

Closing Statement:

The Town of Lunenburg strives to operate safely every day. The employees are beginning to incorporate practices into their daily activities that support management's commitment and OH&S policies. A lot of hard work has been completed and everyone involved should be commended. COR certification is close and will validate the ongoing hard work and dedication. The above corrective actions along with the items outlined in the COR Review document (July 6, 2020) will allow the Town of Lunenburg to achieve their first of many COR certifications. Please reach out to me with questions on any of the items above if you require clarification, or an idea to implement a user friendly process. I have enjoyed working with everyone over the past 18 months and I'm excited to see you complete this step.

Prepared by:

Laura Langille **Date: August 18, 2020**

South Shore Public Libraries
Read. Discover. Learn. Share.

Library Administration
135 North Park St., Unit B,
Bridgewater, NS B4V 9B3

902 543-2548
info@southshorepubliclibraries.ca
southshorepubliclibraries.ca

September 28, 2020

Town of Lunenburg

110 Cumberland Street

Lunenburg, NS

Mayor and Council,

Please accept this letter as an application have the usage fee of $60 waived for the use of Heritage Band Stand on September 24.

South Shore Public Libraries and the Lunenburg Lit Festival hosted the Grade 8 and 9 classes from Bluenose Academy to hear local author Jo Treggiari read from her Governor General Award finalist young adult novel "Grey Sisters". It was the first school outing during the COVID 19 pandemic and all present practiced public health guidelines by wearing masks and sitting in cohorts physically distanced from other cohorts. The students were a great audience and asked several excellent questions. At the end of the presentation, on their way to walk back to school, each student received a copy of the book.

The Bandstand was the perfect spot to host a gathering like this in the times in which we find ourselves in, we could not have had this event if not for this fantastic outdoor community space.

Thank you to your staff particularly Bea Renton and Paul Bracken for helping us arrange the Event at such short notice.

Waiving the usage fee for this community event would be much appreciated.

Sincerely,



Christina Pottie

Community Engagement Lead

South Shore Public Libraries

Kelly Jardine

From: Jan Johnsson Sara Lochhead <ekebo2010@hotmail.com>
Date: September 28, 2020 at 10:12:04 AM ADT
To: Rachel Bailey <RBailey@explorelunenburg.ca>
Cc: Peter Mosher <PMosher@explorelunenburg.ca>, John McGee <JMcGee@explorelunenburg.ca>, Ronnie Bachman <RBachman@explorelunenburg.ca>, Danny Croft <DCroft@explorelunenburg.ca>, Matt Risser <MRisser@explorelunenburg.ca>, Patrick Hirtle <Patrick.Hirtle@bridgewater.ca>, "troy@ssplibraries.ca" <troy@ssplibraries.ca>, Bea Renton <brenton@explorelunenburg.ca>
Subject: Town of Lunenburg Library Representative

Dear Mayor Bailey,

I hope you and yours are keeping well. I am writing to tell you I have decided to step down, effective immediately, from my role as the Library Representative for the Town of Lunenburg on the South Shore Regional Library Board. I have enjoyed this role for the last five years but it is time for someone new. With the fall election coming up, this seems the right time to step down. Thank you for the opportunity to serve on the Library Board. Thank you as well for your on-going support of the Lunenburg Library. The Library we have now is a wonderful service and it is located in a wonderful place.

The last meeting of the South Shore Regional Library Board was held on September 21st. The next is scheduled for November 16 at noon. I suggest that, after the election, one of the town councillors take on this responsibility. The schedule of meetings has changed. They are now bimonthly, normally on Wednesday evenings; the average length of the meetings is about 45 minutes. During 2020, because of the virus, many Board members have phoned in to the meetings and the meeting dates and times have been much more flexible. If the new Town representative has any questions about the role, they can certainly contact me and I will do my best to answer them.

Thank you again for your support of the Library and, my very best wishes,

Sara Lochhead

Circulated: _____

Document No:
Meeting: Council October 13, 2020
Circulate To: Council, LD, KR
File: Budget 2020/21

M E M O R A N D U M

TO: **TOWN COUNCIL**

FROM: **LISA DAGLEY, CPA, CGA - FINANCE DIRECTOR**

DATE: **OCTOBER 6, 2020**

RE: **FALL 2020 – MUNICIPAL DEBENTURE ISSUE**

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1. FACTS

On September 8, 2020 Council approved a temporary borrowing to finance the following 2019/20 Capital Projects:

• Asphalt Roller (ride-on)	$40,000
• WWTP Biofilter	41,500
• Chipseal Kissing Bridge Rd.	72,500
	$154,000

A Temporary Borrowing Resolution in the amount of $154,000 was approved by Council at that time and has been forwarded to the Minister for approval. The Ministerial approval will be received by the debenture deadline and is good for one year only unless Council asks for an extension.

It is now time to secure permanent financing through the Municipal Finance Corporation.

In addition during the summer months the Town received two pieces of equipment that were budgeted to be financed with a Capital Borrowing totaling $514,650.

- Public Works International Truck $187,100
  (2019/20 Budget, Tender awarded Nov.12, 2019, Delivered July 9, 2020)

- Pierce Fire Truck (Pumper #2) $327,550
  (2020/21 Budget, Tender awarded June 25, 2019, Delivered July 20, 2020)

Staff have spoken with our Municipal Advisor and have been advised that should Council approve a TBR for these 2020/21 capital equipment purchases the Town would be able to receive Ministerial approval for same in time to allow us to participate in the Fall Debenture issue for these purchases as well.

2. ISSUES AND OPTIONS

Municipal Finance has streamlined the debenture issue process. If Council, by Resolution, pre-approves the amount of funding required, the period of the debenture and the upper limit of an interest rate, it saves time and substantially reduces the number of documents that must be signed by the Mayor and CAO. Municipal Finance has suggested that an upper limit on interest costs is an average interest rate of 5.5%. In the Spring 2020 Debenture issue a similar upper limit was required but the MFC secured loans at a rate of 1.27% - 2.24% based on a 5 to 25 year term.

Municipal Finance Corporation finances as a Provincial entity and can obtain a better interest rate. Municipal Finance Corporation exists to give Municipal Units access to low cost borrowing.

The Town's existing debt ratio is 8% and the Town's policy maximum is 12%.

Staff are recommending the following borrowing terms:

2019/20 Capital Projects – 10 years
Public Works Truck – 15 years
Fire Truck (Pumper#2) – 20 years

Based on the above terms the estimated debt ratio for 2021/22 will be 9%. The estimated impact to the tax rate will be $0.02.

3. FINANCIAL IMPACT

As noted above.

4. STRATEGIC PLAN RELEVANCE

This report supports Strategic Goal #5: Operate Town business efficiently and effectively.

5. RECOMMENDATION AND DRAFT MOTION

It is recommended that Council approve the following draft motions:

Moved by _____ and seconded by _____ that a Temporary Borrowing Resolution is approved in the amount of $514,650 as outlined in Schedule 1.

Moved by _____ and seconded by _____ that a Resolution for Pre-Approval of Debenture Issuance Subject to Interest Rate in the amount of $154,000 for a term of 10 years as outlined in Schedule 2.

Moved by _____ and seconded by _____ that a Resolution for Pre-Approval of Debenture Issuance Subject to Interest Rate in the amount of $187,100 for a term of 15 years as outlined in Schedule 3.

Moved by _____ and seconded by _____ that a Resolution for Pre-Approval of Debenture Issuance Subject to Interest Rate in the amount of $327,550 for a term of 20 years as outlined in Schedule 4.

Acknowledged only by:

_____
Bea Renton
CAO

Attachments –

$514,650 Temporary Borrowing Resolution (Schedule 1)
$154,000 Debenture Resolution (Schedule 2)
$187,100 Debenture Resolution (Schedule 3)
$327,550 Debenture Resolution (Schedule 4)

MUNICIPAL COUNCIL OF THE

Town of Lunenburg

TEMPORARY BORROWING RESOLUTION

Amount: $ 514,650 Purpose: Capital Budget Projects

WHEREAS Section 66 of the Municipal Government Act provides that the Council of the Town of Lunenburg, subject to the approval of the Minister of Municipal Affairs and Housing, may borrow to expend funds for a capital purpose as authorized by statute;

WHEREAS the Council of the Town of Lunenburg has adopted a capital budget for this fiscal year as required by Section 65 of the Municipal Government Act and are so authorized to expend funds for capital purposes as identified in their capital budget; and

WHEREAS the specific amounts and descriptions of the projects are contained in Schedule "A" (attached);

BE IT THEREFORE RESOLVED

THAT under the authority of Section 66 of the Municipal Government Act, the Council of the Town of Lunenburg borrow a sum or sums not exceeding Five hundred fourteen thousand six hundred fifty Dollars ($ 514,650) for the purpose set out above, subject to the approval of the Minister of Municipal Affairs and Housing;

THAT the sum be borrowed by the issue and sale of debentures of the Council of the Town of Lunenburg to such an amount as the Council deems necessary;

THAT the issue of debentures be postponed pursuant to Section 92 of the Municipal Government Act and that a sum or sums not exceeding Five hundred fourteen thousand six hundred fifty Dollars ($ 514,650) in total be borrowed from time to time from any chartered bank or trust company doing business in Nova Scotia;

THAT the sum be borrowed for a period not exceeding Twelve (12) Months from the date of the approval of the Minister of Municipal Affairs and Housing of this resolution;

THAT the interest payable on the borrowing be paid at a rate to be agreed upon; and

THAT the amount borrowed be repaid from the proceeds of the debentures when sold.

THIS IS TO CERTIFY that the foregoing is a true copy of a resolution read and duly passed at a meeting of the Council of the Town of Lunenburg held on the _____ day of _____, 2020.

GIVEN under the hands of the Clerk and under the seal of the Town of Lunenburg this _____ day of _____, 2020.

_____

Clerk

MUNICIPAL COUNCIL OF THE

Town of Lunenburg

TEMPORARY BORROWING RESOLUTION

Amount: $514,650.00

Purpose: Capital Budget Projects

SCHEDULE "A"

		$
Heading:		
Item	Public Works Dump Truck (International)	187,100.00
Item		
Item		
Item		
Heading Sub Total:		**187,100.00**
Heading:		
Item	Fire Truck Pumper #2 (Pierce)	327,550.00
Item		
Item		
Item		
Heading Sub Total:		**327,550.00**
Heading:		
Item		
Item		
Item		
Item		
Heading Sub Total:		**0.00**
Heading:		
Item		
Item		
Item		
Item		
Heading Sub Total:		**0.00**
TOTAL REQUEST CONTAINED WITHIN THIS RESOLUTION		**514,650.00**

Name of Unit: ___Town of Lunenburg_____

Resolution for Pre-Approval of Debenture Issuance Subject to Interest Rate

WHEREAS Section 91 of the *Municipal Government Act* provides that a municipality is authorized to borrow money, subject to the approval of the Minister of Municipal Affairs (hereinafter "the Minister);

AND WHEREAS the resolution of council to borrow for __$154,000.00_____
was approved by the Minister _____;

AND WHEREAS clause 91(1)(b) of the *Municipal Government Act* authorizes the council to determine the amount and term of, and the rate of interest, on each debenture, when the interest on a debenture is to be paid, and where the principal and interest on a debenture are to be paid;

AND WHEREAS clause 91(2) of the *Municipal Government Act* states, that in accordance with the *Municipal Finance Corporation Act*, the mayor or warden and clerk or the person designated by the council, by policy, shall sell and deliver the debentures on behalf of the municipality at the price, in the sums and in the manner deemed proper;

BE IT THEREFORE RESOLVED

THAT under the authority of Section 91 of the *Municipal Government Act*, the

Town of Lunenburg
(Name of Unit)

borrow by the issue and sale of debentures a sum or sums not exceeding $154,000.00 , for a period not to exceed ___10__ years, subject to the approval of the Minister;

THAT the sum be borrowed by the issue and sale of debentures of the

Town of Lunenburg
(Name of Unit)

in the amount that the mayor or warden and clerk or the person designated by the council deems proper, provided the average interest rate of the debenture does not exceed the rate of **5.5%**;

THAT the debenture be arranged with the Nova Scotia Municipal Finance Corporation with interest to be paid semi-annually and principal payments made annually;

THAT this resolution remains in force for a period not exceeding twelve months from the passing of this resolution.

THIS IS TO CERTIFY that the foregoing is a true copy of a resolution duly passed at a meeting of the Council of the

Town of Lunenburg
(Name of Unit)

held on the day of 20

GIVEN under the hands of the Mayor/Warden and the Clerk of the

Town of Lunenburg
(Name of Unit)

this day of 20

Mayor/Warden

Clerk

Name of Unit: ___Town of Lunenburg_____

Resolution for Pre-Approval of Debenture Issuance Subject to Interest Rate

WHEREAS Section 91 of the *Municipal Government Act* provides that a municipality is authorized to borrow money, subject to the approval of the Minister of Municipal Affairs (hereinafter "the Minister);

AND WHEREAS the resolution of council to borrow for __$187,100.00_____
was approved by the Minister _____;

AND WHEREAS clause 91(1)(b) of the *Municipal Government Act* authorizes the council to determine the amount and term of, and the rate of interest, on each debenture, when the interest on a debenture is to be paid, and where the principal and interest on a debenture are to be paid;

AND WHEREAS clause 91(2) of the *Municipal Government Act* states, that in accordance with the *Municipal Finance Corporation Act*, the mayor or warden and clerk or the person designated by the council, by policy, shall sell and deliver the debentures on behalf of the municipality at the price, in the sums and in the manner deemed proper;

BE IT THEREFORE RESOLVED

THAT under the authority of Section 91 of the *Municipal Government Act*, the

Town of Lunenburg
(Name of Unit)

borrow by the issue and sale of debentures a sum or sums not exceeding $187,100.00 , for a period not to exceed ___15__ years, subject to the approval of the Minister;

THAT the sum be borrowed by the issue and sale of debentures of the

Town of Lunenburg
(Name of Unit)

in the amount that the mayor or warden and clerk or the person designated by the council deems proper, provided the average interest rate of the debenture does not exceed the rate of **5.5%**;

THAT the debenture be arranged with the Nova Scotia Municipal Finance Corporation with interest to be paid semi-annually and principal payments made annually;

THAT this resolution remains in force for a period not exceeding twelve months from the passing of this resolution.

THIS IS TO CERTIFY that the foregoing is a true copy of a resolution duly passed at a meeting of the Council of the

Town of Lunenburg
(Name of Unit)

held on the day of 20

GIVEN under the hands of the Mayor/Warden and the Clerk of the

Town of Lunenburg
(Name of Unit)

this day of 20

Mayor/Warden

Clerk

Name of Unit: ___Town of Lunenburg_____

Resolution for Pre-Approval of Debenture Issuance Subject to Interest Rate

WHEREAS Section 91 of the *Municipal Government Act* provides that a municipality is authorized to borrow money, subject to the approval of the Minister of Municipal Affairs (hereinafter "the Minister);

AND WHEREAS the resolution of council to borrow for __$327,550.00_____
was approved by the Minister _____;

AND WHEREAS clause 91(1)(b) of the *Municipal Government Act* authorizes the council to determine the amount and term of, and the rate of interest, on each debenture, when the interest on a debenture is to be paid, and where the principal and interest on a debenture are to be paid;

AND WHEREAS clause 91(2) of the *Municipal Government Act* states, that in accordance with the *Municipal Finance Corporation Act*, the mayor or warden and clerk or the person designated by the council, by policy, shall sell and deliver the debentures on behalf of the municipality at the price, in the sums and in the manner deemed proper;

BE IT THEREFORE RESOLVED

THAT under the authority of Section 91 of the *Municipal Government Act*, the

Town of Lunenburg
(Name of Unit)

borrow by the issue and sale of debentures a sum or sums not exceeding $327,550.00 , for a period not to exceed ___20__ years, subject to the approval of the Minister;

THAT the sum be borrowed by the issue and sale of debentures of the

Town of Lunenburg
(Name of Unit)

in the amount that the mayor or warden and clerk or the person designated by the council deems proper, provided the average interest rate of the debenture does not exceed the rate of **5.5%**;

THAT the debenture be arranged with the Nova Scotia Municipal Finance Corporation with interest to be paid semi-annually and principal payments made annually;

THAT this resolution remains in force for a period not exceeding twelve months from the passing of this resolution.

THIS IS TO CERTIFY that the foregoing is a true copy of a resolution duly passed at a meeting of the Council of the

Town of Lunenburg
(Name of Unit)

held on the day of 20

GIVEN under the hands of the Mayor/Warden and the Clerk of the

Town of Lunenburg
(Name of Unit)

this day of 20

Mayor/Warden

Clerk

Circulated: _____

Document No:
Meeting: October 13, 2020 Council
Circulate To: Council, BR, DH's, KR, Dist's 1&2, LFD, JG-Audit Committee
File: Budget 2019/20

M E M O R A N D U M

TO: **TOWN COUNCIL**

FROM: **LISA DAGLEY, CPA, CGA - FINANCE DIRECTOR**

DATE: **OCTOBER 6, 2020**

RE: **2020/21 CAPITAL AND OPERATING VARIANCE REPORT – TO AUGUST 31, 2020**

Please find enclosed the variance report to **August 31, 2020**. The period ending August 31st represents 42% (5 months) of the fiscal year. Town General expenditures are currently on budget at 37%.

Based on year to date operations to August 31, 2020 and known information at this time staff are projecting an overall $30,000 deficit for the Town General operations in fiscal 2020/21. This projected deficit includes the additional projected operational costs for the Arena for the 2020/21 season.

Index to Reports

Capital Budget Status Report	Page 1
Operating Financial Statements Summary	Page 8
Deed Transfer Tax, Tax & Sewer Report, and Parking Meter Revenue	Page 9
Grants to Organizations Information Update	Page 10

Acknowledged only by:

_____
Bea Renton
Town Manager/Clerk

Encls.

Capital Status Report to August 31, 2020

Any comments in BOLD are changes from the previous report

TOWN	Project	Budget	YTD Actual	Under/(Over) Budget	DH
Buildings & Structures					
Annex					
	Annex Roof	$10,000	$0	$10,000	PW
Comment:					
Due to COVID-19 pandemic work has been slow to progress at the School Annex, this monies was allocated for buying the materials for the roof and NSCC to install. NSCC will continue to work on the building finishing the front façade first then look to starting on the roof in the spring. A possibility that this will not be finished this fiscal year, in which case we will ask to carry the money forward.					
CN Station					
	CN Station - Capital Repairs including Garage Door & Siding	$15,000	$0	$15,000	PW
Comment:					
This project is currently under way and should be finished at the end of October 2020.					
Lunenburg Academy					
	Lunenburg Academy Exterior Capital Repairs Phase II	$1,002,679	$204,185	$798,494	AM
Comment:					
Staff are anticipating substantial completion by the end of October. Project spans two fiscal years. Total budget $1,508,500. Amount spent in fiscal 19-20 = $505,821. **The restoration of the mansard roof, towers, barreled dormers, cladding (including decorative bracket and dentils) and the accessible entranceway have been substantially completed. Roughly 50% of the pediments and cap tops (headers) have been restored. Roughly 75% of the window sash rehabilitation work has been completed and are currently being installed.**					
Environmental Development					
	Comprehensive Community Plan	$229,300	$197,031	$32,269	DS
Comment:					
On Sept.22 Council passed a motion to accept the Comprehensive Community Plan and directed the consultants to prepare the draft Municipal Planning Strategy, Land Use Bylaw and Subdivision Bylaw.					
Equipment					
	Council IPad or Alternative	$10,000	$0	$10,000	KM
Comment:					
Received in September and being programed for new Council.					
	Joint Building Inspection IT (Townsuite Mapping & Laser Fische Software Upgrades)	$10,000	$0	$10,000	DS
Comment:					
Project progress slowed during spring/summer due to COVID-19.					
	CCP Capital Project	$10,000	$0	$10,000	DS
Comment:					
A project has not yet been identified.					

Capital Status Report to August 31, 2020

Any comments in BOLD are changes from the previous report

TOWN	Project	Budget	YTD Actual	Under/(Over) Budget	DH
Public Works Infrastructure					
Wastewater Treatment	Brook Street Storm/Sanitary separation infrastructure finalization	$185,000	$35,518	$149,482	PW
Comment: **Work carried out in late August, early September, has now been completed. Total anticipated cost $182,400.**					
Wastewater Treatment	Recycling Pump	$31,500	$27,636	$3,864	PW
Comment: **Complete. This is a carry over item from fiscal 2019-20. The purchase was delayed because of Dorian flooding at the plant. Budget 19-20 = $31,500 funding from Gas Tax**					
Wastewater Treatment	Improve Treatment Process-Pre-Design	$270,000	$0	$270,000	PW
Comment: **Writing of RFP underway and will issue in Oct. with award early Nov. Expect to meet the 31 March 2021 deadline.**					
Wastewater Treatment	Replace Lines and Diffusers in Aeration Tanks	$388,000	$333,491	$54,509	PW
Comment: **Work completed in June/July and the results are very encouraging. Significant improvement in the aeration process.**					
Wastewater Treatment	Green St., Knickle Rd. (Storm Diversion)	$0	$0	$0	PW
Comment: **Budget was reallocated to Brook Street project, July 21, 2020 Council Meeting.**					
Wastewater Treatment	Upgrade Communication Systems to Pumping Stations	$20,000	$0	$20,000	PW
Comment: **Determining first steps of the communications study.**					
Wastewater Treatment	WWTP-Voltage Reading Monitor at Pumping	$7,000	$6,837	$163	PW
Comment: **Completed**					
Wastewater Treatment	WWTP-Upgrade Rails and Catwalks in Aeration Building	$30,000	$0	$30,000	PW
Comment: **Staff obtaining quotes on metal versus fibreglass replacement.**					
Wastewater Treatment	Lift Stations Capital Pump Repairs	$55,000	$45,492	$9,508	PW
Comment: **Two pumps remaining to repair, waiting on parts to arrive.**					
Wastewater Treatment	Check Valve Installation at WWTP	$10,000	$0	$10,000	PW
Comment: **Completed in early September.**					

Capital Status Report to August 31, 2020

Any comments in BOLD are changes from the previous report

TOWN	Project	Budget	YTD Actual	Under/(Over) Budget	DH
Wastewater Treatment	Raw Sludge Pumps (2)	$50,000	$0	$50,000	PW
Comment: **Process Engineering support determining correct sizing and quotes.**					
Wastewater Treatment	Flowmeter Installation Program	$50,000	$0	$50,000	PW
Comment: **CBCL currently looking at software implementation that would provide flow indication on all but two stations, if successful. If it is not then physical meters will be installed at these locations. There are two stations that will require physical meters.**					
Wastewater Treatment	Backflow Prevention Study for Lift Stations	$40,000	$14,264	$25,736	PW
Comment: **Study is near completion. It will include recommendations on remedial action and indication of what reduction in salt water ingress reduction can be expected. This is critical information for the preliminary design process for the WWTP upgrade.**					
Wastewater Treatment	Flood Study	$47,900	$14,441	$33,459	PW
Comment: **Flood engineering portion is complete and 3D flood model is 90% complete. Final completion for 3D flood model in October 2020.**					
Equipment-Trucks	Dump Truck	$187,192	$187,192	$0	PW
Comment: **This is a carry over item from fiscal 2019-20. Tender awarded November 12, 2019, truck delivered July 2020. Funding is a capital borrowing.**					
Renewals - Sidewalks/Curbs	Tannery Road Seawall-Final Stage and Beautification	$70,000	$23,737	$46,263	PW
Comment: **Seawall work is ongoing by PW and approximately 75% complete. Work is being done on an as-available basis for the PW crew. BCAF is working on a reduced design scope and implementation plan based on 50% funding for Fall 2020 for the Beautification component.**					
Renewals - Sidewalks/Curbs	Brook Street-Beautification Project	$20,000	$0	$20,000	PW
Comment: **BCAF is working on a reduced design scope and implementation plan based on 50% funding for Fall 2020.**					
New Sidewalks/Curbing	Tannery Road-Knickle Rd. to 97 Tannery Road (E) - Council asked staff to prepare a supplementary report regarding how Town Public Works staff can construct the sidewalk on a phased in basis if necessary.	$255,000	$0	$255,000	PW
Comment: **Report to layout costs and plan to do this as a PW self-executed project will be in front of Council fall 2020.**					

Capital Status Report to August 31, 2020

Any comments in BOLD are changes from the previous report

TOWN	Project	Budget	YTD Actual	Under/(Over) Budget	DH
Infrastructure	Streamed Waste Cans	$9,300	$0	$9,300	PW
Comment: **Supplier to construct them.**					
Fire Department	Pumper #2 Replacement	$755,100	$757,894	($2,794)	PW
Comment: **Complete. Council approved overage of $2,794 surplus sale proceeds Sept.8/20**					
Fire Department	Turnout Gear Washer	$5,400	$5,486	($86)	GM
Comment: **Complete**					
Fire Department	Turnout Gear Dryer	$9,700	$0	$9,700	GM
Comment: **To be funded by Fire Dept.**					
Fire Department	Floor Scrubber	$5,100	$4,644	$456	GM
Comment: **Complete**					
Fire Department	Aluminum Garbage Bin	$3,800	$3,582	$218	GM
Comment: **Complete**					
Community Centre/Arena	Community Centre-Bathroom Renovations	$6,263	$6,263	$0	KC/PW
Comment: **Project is complete. This is carry forward balance item from fiscal 19-20. Total project budget was $55,000, spent in 19-20 was $47,230, however there were some stalls that required installation in April due to some covid delays. The $6,263 expended in 2020-21 brings the total completed project costs to $53,493.**					
Community Centre/Arena	Arena-roof Exhaust Replacements	$10,000	$0	$10,000	KC/PW
Comment: **Purchase order issued for $5,042 + HST (Sept.4)**					
Community Centre/Arena	Ice Resurfacer	$125,000	$0	$125,000	KC
Comment: **Tender awarded July 28, 2020 for $108,300 included an edger.**					
Community Centre/Arena	Ride on Mower	$25,000	$0	$25,000	KC
Comment: **Tender specs being reviewed.**					

Capital Status Report to August 31, 2020

Any comments in **BOLD** are changes from the previous report

WATER UTILITY	Project	Budget	YTD Actual	Under/(Over) Budget	DH
General					
	New Services	$7,000	$888	$6,112	PW
Comment: **As required.**					
	Replacement Hydrants	$10,000	$0	$10,000	PW
Comment: **As required.**					
	Replacement Meters	$5,000	$0	$5,000	PW
Comment: **As required.**					
Distribution Mains					
	Water and Wastewater System & GIS Development (includes all underground infrastructure)	$50,000	$1,043	$48,957	PW
Comment: **Consultant was engaged to submit funding application. Funding application submitted and is currently being reviewed for potential approval by FCM.**					
Building Improvements & Construction					
	Chlorinator	$70,000	$0	$70,000	PW
Comment:					
	Road Improvement-Intake House	$10,000	$7,236	$2,764	PW
Comment: **Completed**					
	Pump House-Dares Lake Interior Steel Repair/Gutters	$4,000	$2,683	$1,317	PW
Comment: **Completed**					
	WTP-Paint and Reseal 2 Roof Vents	$7,500	$6,189	$1,311	PW
Comment: **Budget was increased from $5,000 to $7,500 July 28. Work has been completed.**					
	Geotechnical Investigation(Dam/Spillway)	$15,000	$0	$15,000	PW
Comment: **Project awarded to Gemtec Engineering**					

Capital Status Report to August 31, 2020

Any comments in **BOLD** are changes from the previous report

WATER UTILITY	Project	Budget	YTD Actual	Under/(Over) Budget	DH
	Downstream channel assessment, hydrologic/hydraulic modelling, field surveys	$17,500	$0	$17,500	PW
Comment: **Project awarded to Gemtec Engineering**					
	Design of Dam and downstream channel rehabilitation, approvals	$30,000	$0	$30,000	PW
Comment: **Project awarded to Gemtec Engineering**					
Furniture & Equipment					
	Half Ton Truck (1)	$25,000	$0	$25,000	PW
Comment: **RFP returned higher than budget.**					

Capital Status Report to August 31, 2020

Any comments in **BOLD** are changes from the previous report

ELECTRIC UTILITY Project	Budget	YTD Actual	Under/(Over) Budget	DH
Structures				
Capacitor Bank at Substation or Distribution	$480,000	$3,123	$476,877	LD
Comment: **An Engineering Consultant has been engaged for the design of the distribution portion of this project. The distribution portion should achieve 70% of the benefit. The project is in the electrical design and scoping phase.**				
Utility Line Work				
Meters	$15,000	$470	$14,530	LD
Comment: **As required.**				
Overhead Conductors	$125,000	$61,639	$63,361	LD
Comment: **As required.**				
Poles & Fixtures	$50,000	$27,852	$22,148	LD
Comment: **As required.**				
Services	$25,000	$11,853	$13,147	LD
Comment: **As required.**				
Street Lighting	$30,000	$1,700	$28,300	LD
Comment: **As required.**				
Transformers - Line	$70,000	$29,900	$40,100	LD
Comment: **As required.**				

Town of Lunenburg Operating Financial Statements
August 31, 2020
Summary Information
(YTD Pro-rated Budget = 42%)

TOWN GENERAL

Revenue	YTD Actual	Budget	YTD 42% %		Balance
Taxes	$6,000,578	$5,988,100	100%	1.	($12,478)
Grants In Lieu Of Taxes	-	240,900	0%	2.	240,900
Sale of Services	42,329	96,700	44%		54,371
Sale of Service Arena/Community Centre	58,414	249,700	23%	3.	191,286
Other Revenue/Own Sources	104,059	311,200	33%		207,141
Unconditional Transfers/Other Gov'ts	12,609	50,100	25%	4.	37,491
Conditional Transfers/Fed or Prov Gov'ts	700	1,700	41%		1,000
Conditional Transfers/Other Local Gov'ts	87,437	174,900	50%		87,463
	$6,306,126	$7,113,300	89%		$807,174
Expenditures					
General Government Services	$214,999	$508,850	42%	5.	$293,851
Protective Services	670,331	1,598,200	42%		927,869
Transportation Services	276,912	959,000	29%		682,088
Environmental Health Services	474,470	1,358,600	35%		884,130
Public Health Services - Cemetery	32,028	40,700	79%	6.	8,672
Environmental Development	165,393	451,200	37%		285,807
Recreation & Cultural Services	121,957	284,300	43%		162,343
Arena/Community Centre	154,254	504,000	31%		349,746
Fiscal Services	512,602	1,408,450	36%		895,848
	$2,622,946	$7,113,300	37%		$4,490,354
TOWN SURPLUS (DEFICIT) **	**$3,683,180**	**$ -**			

*****Please note expenditures occur over a 12 month period however the majority of revenue is received in two semi-annual tax billings. Revenue billed is at 89% and 37% of expenditures have occurred as of August 31, 2020.***

Legend:

1. Both the interim and final property and sewer tax bills have been issued.
2. Usually received from Province in December or January.
3. Arena revenues are seasonal, opening delayed until Oct.26
4. Only one quarterly equalization payment rec'd, next payment in September.
5. Section 71 Tax Exemptions paid for the year.
6. Cemetery operational expenditures are seasonal.

	YTD Actual	Budget	YTD 42% %		Balance
WATER UTILITY					
Revenue	$424,567	$1,646,500	25.8%	1.	$1,221,933
Expenditures	$501,724	$1,646,500	30.5%		$1,144,776
WATER SURPLUS (DEFICIT)	**($77,157)**	**$ -**			

Legend:

1. One quarterly billing issued. Next billing at September 30, 2020.

	YTD Actual	Budget	YTD 42% %		Balance
ELECTRIC UTILITY					
Revenue	$2,544,495	$6,840,500	37.2%	1.	$4,296,005
Expenditures	$2,378,577	$6,840,500	34.8%		$4,461,923
ELECTRIC SURPLUS (DEFICIT)	**$165,918**	**$ -**			

Legend:

1. Electric consumption billings are seasonal in nature.

TOWN OF LUNENBURG ADDITIONAL FINANCIAL INFORMATION
August 31, 2020

DEED TRANSFER TAX REPORT

		This Month		Year to Date		Variance
	Budget	(#)	Amount	(#)	Amount	to Budget
Revenue this year	$100,000	(5)	$11,620	(38)	$91,337	$8,663
2019/20 Reserve Fund Balance	$498,573					

TAX AND SEWER CHARGES REPORT

OUTSTANDING PROPERTY & SEWER TAXES	Balance 31-Mar-20	2020/21 Tax Billings	Collected To Date	Balance
2019/20 Taxes & Sewer and Prior	299,850	-	155,195	144,655
2020/21 Tax & Sewer billings	(133,360)	5,878,652	2,585,160	3,160,132
	166,490	5,878,652	2,740,355	3,304,787
Interest				29,160
Total Outstanding 56.71%				3,333,947

Final tax bills are posted August 31st each year. Receivable balance at September 30 = $874,233.

PARKING METER REVENUE AND FINES

	Budget 2020/21	Actual to 31-Aug-20	Variance to Budget	% of Budget
Parking Meter Revenue	$50,000	$18,618	$31,382	37.24%
Parking Meter Fines	2,500	402	2,098	16.08%
Court Fines	3,500	974	2,526	27.83%
Total	$56,000	$19,994	$36,006	35.70%

Grants 2020/21		
Status update: August 31, 2020		
Account #01-2-19-5100	2020/21 Approved Grants	2020/21 Notes
Bluenose 100 Committee ***pre-approved Jan.28, 2020***	$5,000	Funds for the Bluenose 100 Committee of $5,000 in the 2020/21 fiscal year and $5,000 of in-kind Town Services for the 2021/22 fiscal year when the celebration events will take place.
Curl for a Cause	$125	Annual event which supports Fishermen's Memorial Hospital, no application but Town traditionally supports
Fishermen's Memorial Hospital - Golf Tournament	$100	Annual event which supports Fishermen's Memorial Hospital, no application but Town traditionally supports
Lunenburg Community Christmas Dinner	$115	The funds requested will cover the rental of the auditorium at the Town Fire Hall. ($100 + HST)
Lunenburg County Lifestyle Centre	$1,000	Requesting municipal sponsorship towards hosting the 2020 Canadian Tire Para Hockey Cup Championships from December 5 to December 12, 2020.
Lunenburg Dog Park	$1,000	The funds requested will be used to pay insurance costs and other yearly expenses. **In-kind** garbage collection.
Lunenburg Folk Harbour Society-Summer Concert Series	$2,500	This grant will assist in providing funding for the bandstand concerts that are held on 10 Sundays, starting on July 5th and ending on September 13th.
Lunenburg Folk Harbour Society-Sponsorship	$1,000	While the Lunenburg Folk Harbour Festival has been cancelled for August 2020, many of the Society's fixed costs of operation still remain, with significant loss in their traditional revenue. Revenue streams of ticket sales, sponsorships from local businesses, and rental opportunities have completely dried up, and yet they still have all of their operating and administrative costs to cover. Because of this, the Society is asking the Town of Lunenburg to consider supporting the Society during this time of need.
Lunenburg Grad Bursary	$500	Bursary will be issued to a graduating high school student.
Lunenburg and District Swimming Pool	$1,500	Support to operate and maintain their outdoor swimming pool. Even with Covid-19 restrictions they plan to provide jobs doing maintenance, renovation and repair of the pool and its facility.
Nova Scotia Sea School	$1,000	The Sea School is seeking funding to assist in the structural long term repair and modification of the expedition vessels Dorothea and Elizabeth Hall. These 30' wooden sailboats, are over 20 years old and require improvements outside of regular maintenance to ensure they are meeting Transport Canada's Safety Regulations as commercial passenger vessels.
Safe Communities Lunenburg County	$1,275	Designed to address a range of seniors' safety issues, to mitigate risk, to reduce incidences of elder abuse, and to foster effective helping relationships between seniors and police.
Society of St. Vincent de Paul	$1,000	Funds will be utilized for any individual of the Town of Lunenburg who demonstrates genuine need. The society assists individuals who need temporary help with basic needs.
VON-Lunenburg County	$2,000	To assist with expenses associated with providing transportation for seniors and those with medical concerns. The service provides drives for medical appointments, provides weekly drives for residents for dialysis, weekly transportation to run errands. The transportation program also is used to delivery frozen meals to residents of the Town. All grant money received from the Town of Lunenburg will be used to offset the cost of the transportation program offered for residents of the Town.
Approvals June 3, 2020	**$ 18,115**	
Approvals since June 3, 2020		
LCLC-Donation for PVEC Grad Event	$ 500	
Lunenburg Doc Fest	$ 1,000	
Updated 2020-21 Grant total	**$ 19,615**	
Total 2020-21 Budget	$ 20,000	
Budget for additional grant requests if required	**$ 385**	

Document No:
Meeting: October 13, 2020
Circulate: Council, BR, KR, DR, GM, PB, KM
File: Budget 2020/21

M E M O R A N D U M

TO: **TOWN COUNCIL**

FROM: **LISA DAGLEY, CPA, CGA - FINANCE DIRECTOR**

DATE: **OCTOBER 1, 2020**

RE: **FIRE DEPARTMENT AWARD OF A FARM CREDIT CANADA AGRI-SPIRT GRANT AND REQUEST FOR A CAPITAL ADDITION TO PURCHASE AND INSTALL A NEW HEAT PUMP SYSTEM AT THE FIRE HALL AUDITORIUM AND CLUB ROOM**

1. FACTS

In the spring the Fire Department applied for a grant from the Farm Credit Canada (FCC) AgriSpirit Fund in the hopes of purchasing and installing a heat pump in the Fire Hall Auditorium and Club Room. The Department was notified in August that they have been approved for the maximum grant under this program, in the amount of $25,000.

2. ISSUES AND OPTIONS ANALYSIS

As a heat pump for the Fire Hall Auditorium and Club Room was not included in the capital 2020/21 budget the Fire Department is seeking Council's approval for this addition to the 2020/21 Capital Budget with the entire project to be funded from the grant gratefully received from the FCC AgriSpirit Fund.

3. FINANCIAL IMPACT

There will be fuel savings by installing this more efficient heading system. However the biggest advantage of this installation will be the ability to have cooling in the summer months.

As noted above the entire capital purchase will be covered by the FCC AgriSpirit grant.

The Fire Department conducted their own purchasing process outside of the Town Purchasing Policy and therefore Town staff are unable to comment on the proposed award.

4. STRATEGIC PLAN RELEVANCE

5) Operate the Town efficiently and effectively by:
A. Making best use of Town-owned buildings and land

5. RECOMMENDATION AND DRAFT MOTION

It is recommended that Council approve the following draft motion:

Motion: moved and seconded that the purchase and installation of a heat pump system at the Fire Hall auditorium and club room be added to the 2020/21 Capital Budget with the funding from the Farm Credit Canada AgriSpirit Grant.

Acknowledged only by:

_____
Bea Renton
CAO

Document No: 9
Meeting: October 13/20
Circulate Council, PB, IT
File:

M E M O R A N D U M

TO: **LUNENBURG TOWN COUNCIL**

FROM: **PAUL BRACKEN, FACILITIES SUPERINTENDENT**

DATE: **OCTOBER 2, 2020**

RE: **PUBLIC WORKS AIR COMPRESSOR**

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1. FACTS

During a recent routine inspection by the Department of Labour Boiler and Pressure division, the air compressor in the Public Works Garage failed inspection.

This compressor is critical to Public Works Operations. This 60 gal. Shop compressor has a number of uses including filling of tires, air tools, spray painting, undercoating just to name a few. Having a large volume tank is critical to be able to efficiently run the tools without starting and stopping and placing excess wear and tear on the compressor.

As per the Town's Purchasing Policy no unbudgeted items are to be purchased unless they are of an emergency nature, in which case purchases up to $10,000 require the approval of both the Purchasing Agent and CAO. This purchase must be reported at the next regular Council meeting. The purchase of a replacement compressor was approved by the Purchasing Agent and CAO because of the urgent requirement for an air compressor. Accordingly, this unbudgeted capital purchase is being reported to Council for ratification.

2. ISSUES AND OPTIONS ANALYSIS

A "Request for quotation" was sent out to get prices for a new compressor, this was an unplanned expense for the 2020/2021 fiscal year.

Cost of a new air compressor:

Air Compressor unit with water separator –	$3,504.00
Installation (electrical) -	$750.00
Total Cost -	$4,254.00 + Tax

We have had to move ahead with this purchase due to the necessity of having compressor in the shop. The old compressor will be taken out of service and recycled properly.

3. FINANCIAL IMPACT

This capital expenditure was not anticipated when the 2020-21 Capital Budget was approved, however as noted this is a critical piece of equipment for the Public Works Department. It is staff's recommendation that funding for this capital expenditure be from the Public Works Equipment Reserve. The current balance of the Public Works Equipment Reserve Fund is $77,200.

4. STRATEGIC PLAN RELEVANCE

5B – Continually and strategically maintaining and upgrading community infrastructure.

5. RECOMMENDATION AND DRAFT MOTION

Staff have purchased a new air compressor for the Public Works garage, due to the urgency and necessity of use and are notifying council as this was an unplanned Capital purchase of over $2,500.

DRAFT MOTION: Moved and seconded to ratify the purchase of a new air compressor for the Public Works Department for $4,254. as an addition to the 2020/2021 Town Capital budget.

Acknowledged only by:

Bea Renton
Town Manager/Clerk